



HM Treasury Evidence Call ToR, Questions & NRW Answers.

1. Background

In March 2019, a new independent global review was announced by HM Treasury to assess the economic value of biodiversity and to identify actions that will simultaneously enhance biodiversity and deliver economic prosperity. This review on the *Economics of Biodiversity* is being led by Professor Sir Partha Dasgupta. The review will report ahead of the 15th meeting of the Conference of the Parties to the Convention on Biological Diversity in China in October 2020. The evidence in the review aims to help shape the international and UK response to biodiversity loss, including the successors to the Aichi Biodiversity Targets. It also aims to inform global action to deliver the Sustainable Development Goals. The primary audiences for the review are economic and finance policy and decision makers who significantly influence the response to biodiversity loss through policy, finance and investment decisions. The review has been asked to examine the evidence on:

- How biodiversity supports sustainable economic growth;
- The implications of further biodiversity loss for the prospects for economic growth over the coming decades, accounting for the interaction with other aspects of environmental degradation, including climate change;
- The impact, effectiveness and efficiency of existing national and international actions and arrangements to limit and reverse the loss of biodiversity and their impact on economic growth.

The review has been asked, based on this evidence, to provide an assessment of:

- A range of scenarios for enhancing global biodiversity compared with business as usual, focusing on the medium to long-term perspective and the relationship with economic growth; and
- The range of best practices, initiatives and interventions for industry, communities, individuals and governments that can simultaneously achieve the goals of enhancing biodiversity and delivering sustainable economic growth. This will draw out implications for the timescales for action and the range of scenarios above. It will recognise the interactions with climate change mitigation and adaptation needs and opportunities.

This Call for Evidence will contribute to the Dasgupta Review's advice. The Dasgupta Review will be based on a thorough consideration of robust, relevant, up-to-date evidence, including the existing work of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), the Millennium Ecosystem Assessment and The Economics of Ecosystems and Biodiversity (TEEB).

The review team is currently using the following definition for biodiversity:

Biodiversity – Biodiversity is the variety of life in all its forms, and at all levels including genes, species, and ecosystems. Different species combine together into communities that interact with the physical world to create ecosystems. The combination of all the ecosystems in the world and the spaces they occupy make up the biosphere.

2. Responding to the Call for Evidence

Please provide a maximum of 400 words per question. You may also add links to supporting evidence. Please focus on sending only the best available evidence. You do not need to answer all the questions. Please answer only those questions where you have specific expertise and evidence to share. The Review Secretariat may follow up for more detail where appropriate.

3. Question and response form

When responding, please provide answers that are as specific and evidence-based as possible, providing data and references if needed. Please limit your response to a maximum of 400 words per question plus links to the best supporting evidence.

Part 1: Biodiversity and Ecosystem Service Science and Evidence

Question 1 (Biodiversity and Ecosystem Service Science): IPBES assessments and GEO6 will form an important part of the Review's assessment of the state of biodiversity, the biosphere and its ability to deliver ecosystem services. What further evidence should the Review consider in this area? What does the scientific evidence on global biodiversity and ecosystem condition decline suggest about the Earth's ability to continue providing services essential to human prosperity over different time periods?

NRW would suggest that consideration be given to The State of Natural Resources Report 2016 which was a first attempt by the organisation to assess how far biotic and abiotic natural resources in Wales are being managed sustainably. The report, which has attracted attention within the EU, can be found here <https://naturalresources.wales/evidence-and-data/research-and-reports/the-state-of-natural-resources-report-assessment-of-the-sustainable-management-of-natural-resources/?lang=en> Chapter 4 deals with resilient ecosystems and Chapter 8 with evidence concerning biodiversity decline.

We have since refined four criteria for assessing the sustainable management of natural resources, at least one of which relates directly to biodiversity:

- Stocks of natural resources are safeguarded and enhanced (extent + condition of biotic natural assets)
- Ecosystems are resilient to expected and unforeseen change (stocks+ connectivity and diversity)
- Wales has healthy places for people, protected from environmental risks (regulating + cultural ecosystem services)
- Contributing to a circular economy with more efficient use of natural resources (provisioning ecosystem services + resource use efficiency)

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The evidence on biodiversity and ecosystem condition at all scales suggests to us that human prosperity is threatened in the medium and long term and that structural change to achieve SDG12 needs to start now.

The **State of Nature** report Launched on the 3rd October this year shows how human impacts are driving sweeping changes in wildlife across the UK, including Wales. <https://nbn.org.uk/stateofnature2019/>.

The key pressures affecting biodiversity loss are cited as:

- agricultural management
- climate change
- urbanisation
- pollution
- hydrological change
- INNS
- woodland management

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Question 2 (Limits): What is the best available evidence on the regenerative rates and carrying capacity of ecosystems e.g. fisheries? What is the best evidence on, and most compelling examples of, maximum sustainable yields, and where ecosystem thresholds and tipping points have been shown to affect sustainable economic growth?

This is a recent NRW example of recent NRW action to protect fragile stocks of salmon and sea trout that spawn in Welsh Rivers. In 2013 the International Council for the Exploration of the Seas advised:

“on the basis of the MSY [maximum sustainable yield] approach, fishing should only take place on salmon from rivers where stocks have been shown to be at full reproductive capacity. Furthermore, because of the different status of individual stocks within stock complexes, mixed-stock fisheries present particular threats. The management of a fishery should ideally be based upon the individual status of all stocks exploited in the fishery”

Technical case supporting a public consultation on proposals for new fishing controls to protect salmon and sea trout stocks in Wales:

<https://naturalresources.wales/media/684367/technical-case-structure-final.pdf>

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Statement by Peter Gough, Principal Fisheries Advisor NRW 2018, to the All Wales Fishing Byelaws Inquiry:

https://cdn.naturalresources.wales/media/687487/nrw_1-peter-gough-proof-of-evidence-final_clean.pdf?mode=pad&rnd=131877971580000000

All Wales Fishing Byelaws Inquiry, closing submission by NRW Counsel:

<https://cdn.naturalresources.wales/media/688437/nrw-inquiry-closing-submissions.pdf?mode=pad&rnd=131975575580000000>

Economic Value of Angling on Welsh Rivers, Guy Mawle, NRW 2018:

<https://cdn.naturalresources.wales/media/687803/180813-final-economicvalueanglingwalesreport.pdf>

Part 2: Biodiversity and Economic Prosperity

Question 3 (Biodiversity and Economic Prosperity – Conceptual Framework):

Biodiversity supports the provision of many ecosystem services, which are important for economic prosperity and growth. Economic growth also affects the demand for, and supply of, the Earth's resources. What conceptual frameworks and typologies clearly describe the relationship between biodiversity, ecosystem productivity and resilience, ecosystem services, economic prosperity and economic growth? Where have these frameworks been applied to reveal critical relationships? What are the most critical aspects of these relationships for the Dasgupta Review?

Ecology and economics both deal with non-ergodic systems characterised by hysteresis, in which initial conditions and the sequence of exogenous shocks really matters. The Millennium Ecosystem Assessment applied an economic style production function approach in which ecosystem functions were conceptualised as intermediate and final ecosystem goods and services (EGS) that link these functions to human well-being. Natural capital is the stock which underpins both the flows of EGS and the flows of non-renewable natural resources such as helium or phosphorous. An adjusted net savings approach with respect to these non-renewable resources seems appropriate even if it does not fulfil the requirement for strict sustainability with respect to ecosystems.

A distinction has been proposed between ecosystem capability and capacity ("Defining Ecosystem Assets for Natural Capital Accounting," Hein *et al*, *PLOS ONE*, 2016). The former envisages a level of use that allows a single EGS to be sustained but at the expense of other EGS; whilst the latter allows all EGS to be sustained. Maximum sustainable yields would be an example of an ecosystem capability measure which can be consistent with substantial

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system degradation and the attenuation of system attributes such as food security. Resilience, particularly with respect to unforeseen future perturbations, is more likely to be related to capacity rather than capability measures. In this respect another analogy between economics and ecology suggests itself using graph theory. Just as firms or sectors can be conceived as nodes in a network and the non-linear relationships between them seen as the edges of the graph (e.g. Acemoglu or Carvahlo), so the number, condition and extent of habitats can be conceived as the nodes of an ecosystem supporting a dynamic metapopulation of a species or assemblage, whilst the edges represent the connectivity between those nodes (e.g. "Defining and delivering resilient ecological networks" Isaac *et al*, *Journal of Applied Ecology* 2018). Some habitats serve that only stand and wait.

The valuation of biodiversity is extremely challenging because it has use value, option value and non-use value. It is also an intermediate and a final EGS and frequently bundled with other EGS. Partial valuations of the true value of biodiversity are likely to provide unhelpful signals.

Game theory in the context of common pool resources, such as the acid rain game, provides a useful approach to securing contingent commitments that underpin better social outcomes than can be achieved by institutions based upon non-repetitive interactions without trust.

Question 4 (Biodiversity and the SDGs): What are the links between biodiversity and economic prosperity that are most critical to synergies and trade-offs across the SDGs? How should sustainable economic growth be defined and measured given the evidence of how the SDGs and economic prosperity are affected by biodiversity loss? The review is interested in relevant links with biodiversity and economic growth across all the SDGs, particularly climate mitigation and adaptation, poverty reduction, food production, human health and wellbeing, consumption and production, and gender and broader inequalities.

Both affluence and poverty can, in different ways, contribute to the degradation of nature by exerting pressure on habitats. The world is locked into social and

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economic systems that fail to deliver responsible production and consumption (SDG12).

The burgeoning middle classes of converging middle-income countries tend to adopt social norms learnt from the west that support personal values which result in behaviours inconsistent with sustainable consumption. Soya production destined for animal feed (linked to habitat destruction in low latitudes with high biodiversity), for example, is driven by the aspiration to attain western levels of meat consumption.

The glacial pace of demographic transition in non-converging low-income countries will drive population growth in areas that already suffer poor food security, frustrating SDG2. Around 1.5 billion people in developing countries farm on less favoured agricultural land where population growth puts increasing pressure on the ecosystem services upon the people depend. These conditions are typically accompanied by fragile or failed states that allow elites to garner economic rents, frequently related to natural resources, and frustrate progress toward SDG 16. SDG 4 and SDG5 would accelerate demographic transition, but these are frustrated by patriarchal values (a quasi-experiment for this might be the marked decline in TFR in Afghanistan since 2000). The precise relationship between poverty and the degradation of natural capital is contested because people attempt to use linear and non-system based models, for example transitions from semi-arid to desert conditions can be driven by factors such as human conflict that also affect poverty.

Sustainable economic growth represents a system transition to responsible production and consumption which in consequentialist terms could be seen as involving the maximization of the utility of the least advantaged person currently alive and maintaining the opportunities of future generations. This has clear distributional implications, but it also provides a way to reconcile deontological and utilitarian versions of justice. Less abstractly, holistic approaches to achieve regenerative agriculture can encourage the optimisation of food systems that is neglected by a focus upon the increasing the yield of single crops (Poore & Nemecek, *Science* 2018). This study also uses a life-cycle approach to integrate food production with the rest of the supply chain that ends with purchases by consumers. Apart from CO_{2e} emissions, this accounts for about a third of terrestrial acidification and over

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three quarters of eutrophication as well as contributing massively to water scarcity.

Prosperity should be framed in terms of delivering a just foundation for society within planetary boundaries.

Question 5 (Impacts of Biodiversity Loss on Sustainable Economic Growth): What is the best evidence on the sustainability of current global economic growth, based on current rates of biodiversity loss? How much (if any) biodiversity loss needs to be stopped and/or reversed to achieve sustainable economic growth? Please reference any evidence or analysis that underpins your answers.

Biodiversity has use, option and non-use value. It is both a cultural ecosystem service and a supporting service. In its latter role it is fundamental to ecosystem resilience. Ecosystems are a non-ergodic, there is no way back from mass extinction save evolution exploring new possibilities in the very long-term. Human well-being depends upon the health of current and future ecosystems, so human beings cannot escape the imperative to arrest the rapid decline in biodiversity which poses an existential threat. Sustainable economic growth is incompatible with any loss in biodiversity nor a rate of extinction beyond a normal (low) background pace. Improvements in, say, human capital cannot be traded against degradation of natural capital.

Geologists are inclined to date the Anthropocene from the start of the Great Acceleration in the mid twentieth century. EF Schumacher argued in his book *Small is Beautiful* that humanity is behaving like irresponsible teenagers squandering their inheritance because they fail to understand the difference between income and capital. He wrote the book at about the time when global resource use started to exceed the rate at which natural capital could be sustained. This was about two decades after the start of the Anthropocene. In the succeeding half century the gap between actual and sustainable rates of resource use has continued to widen.

Energy is the ability to do work. Between the neolithic and industrial revolutions economic activity rested upon muscle power fuelled by photo-synthesis rather than fossil fuels. Economic growth was spasmodic rather than sustained. This changed with the exploitation of coal. Jevons worried in the middle decades of the nineteenth century about the exhaustion of Britain's coal measures and observed

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that increasing efficiency would not mitigate the problem because it would simply reduce the price of coal and increase demand (the Jevons paradox).

Global primary energy consumption has grown at a compound annual growth rate (CAGR) of 2.5% between 1965 and 2018. CAGRs for the OECD have been substantially below those for non-OECD (1.5% v 3.9%) with the highest growth rates seen in the Middle East and Asia Pacific (BP Statistics). CO₂ emissions have been growing at c1.8% p.a., which suggests that a sustainable rate of growth for primary energy consumption might be less than 0.7% p.a.

SDGs for developing countries are mainly based upon tangible goods and services, developed countries may need to make room for these by substituting intangible for tangible flows faster.

Question 6 (Benefits of Tackling Biodiversity Loss and Costs of Inaction): What is the best evidence on the economic benefits of biodiversity? What evidence exists on who benefits from biodiversity? What positive business cases (win-wins) exist for tackling biodiversity loss e.g. impacts on jobs, productivity, income, human health outcomes? Conversely, what is the best evidence on the costs of current trajectories of biodiversity loss? What evidence is there of the distribution of these costs within and between countries?

As a supporting ecosystem service the welfare value of biodiversity could only be estimated by calculating the value added by the final ecosystem services that depend upon biodiversity. The bundled values of both supporting and final services have been estimated using benefit transfer methods by Constanza and others and these appear to be very substantial in relation to estimated exchange value global GVA. As a cultural ecosystem service the value of biodiversity is difficult to disentangle since it is bundled with services such as recreation. A local shadow price could be estimated from policy optimisations that require no loss in biodiversity, or an improvement in biodiversity, but we have no knowledge of this being attempted. However the substantial sums of money that are frequently spent to conserve highly endangered species indicate that the value is likely to be non-trivial. The option value of biodiversity is even more difficult to assess since it is, of necessity, speculative. They are likely to be highest in the tropics.

Land managers who can exchange for money the final ecosystem services supported by biodiversity clearly benefit. However many such services are common pool resources that cannot be exchanged in a market. Expenditure by institutions that are able to manage such resources sustainably are an indicator of the value to users, and this distribution could, in principle, be observed.

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The state has a poor record in taking over long established communal governance arrangements and triggering a tragedy of the commons. For example the inshore Newfoundland Fishery was destroyed by the extension of the Canadian Exclusive Economic Zone at sea to 200 miles and simultaneously opening the Newfoundland Waters to Canadian trawlers. The direct impact on jobs was the loss of 30,000 Newfoundland fishers, the indirect impact was the loss of a further 15,000 in supporting industries such as shipbuilding and fish processing. Those who benefit from the destruction of well-functioning existing institutions or the introduction of new institutions tend to be those able to lobby in the corridors of power, those who often lose out are the marginalised within society.

The resilience of current unsustainable economic and social systems suggest the need for structural change. Since investment within the current system may well become stranded by such change, there is an argument against procrastination accompanied by marginal change and in favour of urgent change sufficient to attain a better attractor.

Question 7 (Cost and Risks of Action): What evidence exists of 'transition risks' from moving to actions needed to protect, restore and enhance biodiversity? What is the best evidence on the costs of these actions? What evidence suggests who will be most affected by these costs and risks?

More work has been undertaken on non-physical risks with respect to the transition to a low carbon economy than for the transition to an ecosystem resilient economy. However in practice they cannot be separated, they are part and parcel of breaking the resilience on unsustainable production and consumption.

One obvious evidence gap concerns the damage and abatement costs associated with thermo-plastics. The toxicological effects upon fauna are uncertain, but there is a credible fear that the animals at the base of the food chain may simply starve to death having ingested microplastic fragments. The supply of thermo-plastics has been growing at a compound annual growth rate of 8.6% since 1950. Even if this were to be capped, which would involve a substantial abatement cost, thermo-plastics would still accumulate and fragment in the environment. The industry is gearing up for possibly even more rapid growth.

Adverse environmental externalities tend to disproportionately affect those least advantaged within society, contrary to objective of maximising the utility of the least advantaged person. As early as 1979, in the case of *Bean v Southwestern Waste*

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Management the plaintiff argued that the decision to issue a permit for a waste disposal site in a black neighbourhood of Houston Texas constituted racial discrimination and a violation of the Equal Treatment clause of the Fourteenth amendment. The plaintiff lost the case but won the argument. A study found that from the 1930’s until 1978, 82% of waste arisings were disposed of in black neighbourhoods when only 25% of the population was black.

In the past actions to protect, restore and enhance biodiversity have hurt indigenous peoples and local communities. For example the conservation of mountain gorillas in Africa has resulted in the forcible removal pygmies who had lived in harmony with the creatures for millennia. The pygmies have not thrived in their new homes and many die prematurely. The term “conservation refugees” has been coined to describe this phenomenon (Geisler <https://foreignpolicy.com/2009/11/11/11/endangered-humans/>).

Marginalised groups tend to find it difficult to exercise customary or statutory rights concerning the land they occupy both with respect to those who wish to conserve biodiversity and those who wish to extract the maximum resource rent in the short-term. Both poverty and avarice can drive unsustainable practices, such as burning tropical rain forest which is both a customary practice in subsistence agriculture and an illegal practice for companies seeking to establish palm oil plantations.

Question 8 (Opportunities from Tackling Biodiversity Loss): How can new technology assist with restoring biodiversity, while simultaneously delivering economic prosperity? e.g. artificial intelligence, biotechnology. What economic opportunities exist from protecting, restoring and enhancing biodiversity? e.g. learning from nature (biomimicry), biopharma, among others.

The Fourth Industrial Revolution and the creation of a circular economy to support SDG 12 together offer the prospect of pathways to a just and sustainable society that reconciles halting the elevated rate of species loss with prosperity for all. Projects such as the “Mieles Para Conservar” which is part of the Rural Corridors and Biodiversity Project run by the Argentinian National Parks Administration and funded by the Global Environment Facility demonstrate that there are opportunities as well as threats. The project provides cash income from the sale of honey for the Criollo and Qom peoples from the cultivation of Melipona bees. Melipona bees were originally cultivated by the Maya, amongst whom they had a ritual significance.

Technologies such as remote sensing help to identify rainforest fires that can be tackled before too much damage is done, and can also increase the transparency around commitments from large companies (many of which have access to far

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greater resources than local and regional governments) to maintain their license to operate. Similarly drones have been used in the UK to identify and target black grass. Agricultural robots using Artificial Intelligence are starting to be applied to both weeding and harvesting functions. Mobile 'phones provide market intelligence for poor farmers that help them boost profit margins and reduce post-harvest crop waste. Regenerative agriculture can make a substantial contribution to the development of a circular economy. Technologies are being trailed that can take digestate from AD plants or sewage sludge from treatment works and combine them with CO₂ captured from potential industrial emissions to produce a low carbon fertilizer that compares well with conventional inorganic fertilizers with a much higher carbon footprint.

Biomimicry was used to help redesign the shape of Shinkansen trains to reduce tunnel boom. The design was based upon a study of the Kingfisher and it also enhanced the top speed of the trains by 10% and fuel efficiency by 15%. There are several other well-known examples. The option value of biodiversity is potentially immense since tropical ecosystems, for example, have not been adequately catalogued and studied. Trees produce diverse chemical products to help them withstand pests and diseases. Sycamore was traditionally used for dairy equipment because of its antibacterial properties and salicylic acid (the basis of aspirin and skin care products) is a naturally occurring compound associated with willow trees (*Salix*) amongst others.

Question 9 (Economic and Finance Decision Makers): Which sectors of the economy rely most on biodiversity and ecosystem services? How are they affected by biodiversity decline? Please provide strong case and/or sectoral examples and evidence on how changes in biodiversity (loss or gain) has affected, or been affected by, economic and finance decision-making.

All sectors of the economy rely upon biodiversity and ecosystem services, but the linkage is particularly clear for primary producers in agriculture and forest products. These sectors are also responsible for land use decisions that underlie the fragmentation of habitats and other drivers of biodiversity decline. The long term sustainability of these sectors require them to understand these linkages and apply the regenerative principles incorporated in the circular economy. The services provided by pollinators or the importance of preventing soil erosion and restoring the structure and biodiversity of soils are an obvious example relating to agriculture.

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“Agricultural supply chains and global food brands are encountering serious operational risks from climate change, and are facing reputational risks from resource intensive production and low nutrition product lines.”

<https://www.biodiversityinternational.org/e-library/publications/detail/reducing-risks-and-seizing-opportunities-integrating-biodiversity-into-food-and-agriculture-investm/>

This document includes comments from the likes of Beth Hart, head of Agriculture at Sainsbury’s, Juan Gonzalez Valero, Head of Public Policy and Sustainability at Syngenta, and concrete proposals for an Agribiodiversity Index for appraisal and assessment. However the risks to agriculture and food producers go beyond the reputational. There is a need to consider agricultural systems holistically and in terms of place rather than focus upon particular crops or particular systems.

“Providing producers with multiple ways to reduce their environmental impact recognizes the variability in sources and drivers of impact but requires a step change in thinking: that practices such as conservation agriculture or organic farming are not environmental solutions in themselves but options that producers choose from to achieve environmental targets.” “Reducing foods environmental impact through producers and consumers,” J Poore and T Nemecek, *Science* 2018

Land managers also need to be creative in identifying potential revenue streams and seek to use biodiversity to enhance their incomes from cultural practices such as recreational use of the countryside, which would involve sectors such as tourism.

Hitherto economic and financial decision making has not been particularly attuned to the need to take such nuances into account. It is to be hoped that the spread of techniques such as the ecosystem services approach and natural capital accounting will assist people making such decisions.

Part 3: Causes of Biodiversity Loss

Question 10 (Market and Institutional Failures): What are the main market and institutional failures affecting biodiversity? What is the best evidence (including case examples) that illustrate these failures?

Markets are missing because consumption can be excluded for neither common pool resources nor public goods. Adam Smith identified the paradox of value. Use values diverge from exchange values not only because of abundance but also because consumption cannot be excluded for some flows of goods and services.

The tragedy of the commons is avoidable (Hardin 1968) but only by building trust through repeated iterations of assurance type games.

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Governing the Commons: the evolution of institutions for collective action, Elinor Ostrom, Cambridge University Press 1990

“Beyond markets and states: polycentric governance of complex economic system,” Elinor Ostrom, *American Economic Review*, Vol 100 No. 3 pp 641-692, 2010

Question 11 (Economic Sectors): Which economic sectors have the biggest impact on biodiversity loss? Which economic sectors are most affected by biodiversity loss? Please reference evidence and analysis (including case examples) that underpin and illustrate your answers.

ANSWER:

Question 12 (Time): What evidence exists to suggest that balancing short and long timescales is a challenge for decision-making affecting biodiversity? Please provide evidence (including case examples) where short-term decisions have harmed biodiversity. How does this vary for different ecosystems and/or sectors? What should be the approach to discounting for actions that affect biodiversity?

ANSWER:

Question 13 (Business): What is the best evidence on the role the private sector (including the financial sector) plays in driving biodiversity loss and the direct and indirect impacts it has on biodiversity loss? What evidence shows the effect of biodiversity on firms' and investors' risks and/or returns in the short, medium and long term?

ANSWER:

Part 4: Actions to Tackle Biodiversity Loss and Support Economic Prosperity

Question 14 (Valuation and Accounting): Please provide evidence (including case examples) where marginal valuation, natural capital assessments and accounts are helping policy-makers and the private sector to improve decision making in ways that enhance biodiversity and deliver economic prosperity. What evidence exists on the factors that are most critical for this type of information to improve decision-making?

“Conserving tropical biodiversity via market forces and spatial targeting”
Bateman *et al*, Proceedings of the National Academy of Sciences of the USA, 2015

<https://www.pnas.org/content/112/24/7408>

“Biodiversity and ecosystem services in corporate natural capital accounting,”
Cranston *et al* 2016, CISL

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<https://www.cisl.cam.ac.uk/resources/publication-pdfs/biodiversity-and-ecosystem-services-in-corporate-natural-capital-accounting-synthesis-report>

UK Natural Capital Accounts: 2019 (18 October 2019)

<https://www.ons.gov.uk/releases/uknaturalcapitalecosystemserviceaccounts1997to2017>

Natural Capital Accounts: urban accounts (8 August 2019)

<https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapital/urbanaccounts>

Seafish: The Economics of the UK Fishing Fleet

https://seafish.org/media/Economics_of_the_UK_Fishing_Fleet_2018.pdf

Defra Biodiversity Metric 2.0 Consultation (closes 31/12/2019)

<https://consult.defra.gov.uk/natural-england/the-biodiversity-metric-2-0/>

Yorkshire Water Social Value and Impact Assessment *Our Contribution to Yorkshire* (2018)

<https://www.yorkshirewater.com/media/1762/our-contribution-to-yorkshire.pdf>

Natural Capital Account for Greater Manchester, eftec, 2018

<https://naturegreatermanchester.co.uk/wp-content/uploads/2018/06/NCA-for-GM-Final-Report-270618.pdf>

Natural Capital Accounts for Public Greenspace in London, Vivid Economics, 2017

https://www.london.gov.uk/sites/default/files/11015viv_natural_capital_account_for_london_v7_full_vis.pdf

Birmingham Health Economic Assessment and Natural Capital Account revealing the true value of Council managed parks and green space, CEEP/Birmingham City Council, 2019

https://www.birmingham.gov.uk/downloads/file/13452/birmingham_natural_capital_accounts_-_july_2019

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Natural Capital Coalition on British Standards Institute work on setting Corporate Natural Capital Reporting standards:

<https://naturalcapitalcoalition.org/wp-content/uploads/2016/07/BSI-NSB-led-Standardisation-in-the-field-of-Natural-Capital.pdf>

Question 15 (Behaviour): What are the critical factors affecting people’s behaviours that affect biodiversity? What affects the speed and scale of this behaviour change? What evidence exists for individual preferences versus social or ‘socially-embedded’ preferences (to conform or compete with others)? Please provide the strongest examples where policy makers and the private sector have effectively incentivised behaviour change to reduce biodiversity loss.

ANSWER:

Question 16 (Fiscal Policy and Regulation): What are strong examples of fiscal and regulatory policy instruments that have simultaneously enhanced biodiversity and supported economic prosperity? What is the best evidence on the impact and effectiveness of these actions? The review is interested in examples at all scales, including regulation, planning, taxation and government spending, including subsidies.

ANSWER:

Question 17 (Trade, Aid, International Finance and Climate): What measures can be taken to bridge across geographic boundaries when biodiversity loss in one location is driven by action or consumption elsewhere? What evidence exists on how international trade policy, aid policy, and international financial transfers can tackle biodiversity loss? What are the potential win-wins in also tackling climate mitigation and adaptation with such policies and transfers?

ANSWER

Question 18 (Private Sector and Finance): What are the most effective actions that the private sector generally, and finance sector specifically, can take and have taken that both enhance biodiversity and deliver economic prosperity? What actions should government take to enable the private sector and finance to take these actions? What evidence exists on the impact on biodiversity loss and economic prosperity of rules on financial disclosure, standards and certification schemes, and policies affecting investment decisions?

Environmental, social and governance principles (ESG) have come a long way from initial attempts simply to screen out “bad” companies. Today there is much greater emphasis upon identifying firms that are “best in class.” There is no evidence to

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suggest that active portfolio management incorporating ESG criteria results in either under or out performance of market indices. Concerning passive portfolio management, the IMF argues:

“Prima facie, passive investing is not conducive to sustainable investing, given the need for greater engagement with issuers and higher analytical burden and cost, and may prove less effective in generating impact.” IMF *Global Financial Stability Report*, October 2019, p89.

There is a close linkage with approaches such as the British Academy’s *Future of the Corporation* research programme, which reject Milton Friedman’s argument that the sole fiduciary duty of Directors is to maximise short term shareholder value. Instead they argue that earning a market return on capital is a means to an end rather than the end in itself, which should be set out as a clear long term corporate purpose. Colin Meyer adduces evidence that such companies survive for considerably longer periods than others in his book *Prosperity* (OUP 2019).

Clear roles exist for credit rating agencies, financial regulators and pressure from stakeholders, such as the campaigning undertaken by student bodies to influence the investment policy of university endowments in the USA or earlier campaigns against companies associated with apartheid in South Africa. Linking ESG reporting with the financial stability objectives of Central Banks increases the salience of this approach and links it with the license to operate of firms.

At present ESG focusses upon climate change rather than species loss and declining biodiversity. This link needs to be made hand in hand with progress to:

- Standardise terminology
- Establishing minimum standards for corporate reporting
- Clarify the role of ESG in prudential financial management
- Institutionalise assessment of ESG impact

Linkages are also being drawn between ESG and the financial stability objectives of Central Banks and international bodies such as the IMF (*ibid* chapter 6).

Certification schemes can be controversial. For example NGOs will point to past poor performance even if current practices conform to agreed standards or to the actions of suppliers that fail to comply with stated policies. See for example:

https://wwf.panda.org/our_work/forests/forest_publications_news_and_reports/forests2/asian_pulp_and_paper/?346890/New-NGO-report-highlights-APPs-continued-involvement-in-deforestation-despite-its-zero-deforestation-commitment

Question 19 (Technology): What technologies are proving effective for ecosystem restoration and management while also supporting economic prosperity? What is the role for technological change in the short, medium and long-term to improve consumption and production efficiency? Note the review is interested in technologies across a broad range of sectors that have implications for biodiversity e.g. food production technologies.

ANSWER:

Question 20 (Other Comments): Please provide any other comments or evidence you think the Dasgupta Review should consider in its advice on how simultaneously to enhance biodiversity and achieve economic prosperity. The review welcomes evidence on where economic and financial decision makers in both the public and private sector can have the greatest impact.

ANSWER:

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4. Processing of Personal Data

This notice sets out how HM Treasury (the data controller) will use your personal data for the purposes of this consultation for the Dasgupta Review on the Economics of Biodiversity, and explains your rights under the General Data Protection Regulation (GDPR) and the Data Protection Act 2018 (DPA).

The data we collect about you (Data Categories)

The personal data that we collect may include the name, address, email address, job title, and employer of the correspondent, as well as their opinions. It is possible that respondents will volunteer additional identifying information about themselves or third parties.

Legal basis of processing

The processing is necessary for the performance of a task carried out in the public interest. The task is requesting evidence or obtaining opinion data in order to develop good effective proposals and recommendations to government.

HM Treasury may use the contact details provided to contact respondents during the consultation period in order to request clarification or further information regarding the response provided where this is deemed necessary.

Special category data

We do not expect that any special category data will be processed.

Purpose

Any personal information will be processed for the purpose of obtaining evidence from members of the public and representatives of organisations and companies about departmental policies, proposals, or generally to obtain public opinion data on an issue of public interest.

Information and data provided to the controller in response to this call for evidence will be used by Professor Partha Dasgupta and the Dasgupta Review Secretariat to support their independent review of the economics of biodiversity.

Whom we share your responses with (Recipients)

Information provided in response to consultations may be published or disclosed in accordance with the access to information regimes, in particular those under the Freedom of Information Act 2000 (FOIA), the Environmental Information Regulations (EIR) 2004, the GDPR and DPA.

Where you consider that the information you provide should not be disclosed under these regimes, you should state that you are providing the information in confidence and explain why you consider the information to be confidential. If the controller receives a request for disclosure of the information, they will take full account of your explanation, but they cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on HM Treasury.

The Dasgupta Review's work will be independent of government. It will make a final report with its recommendations before the meeting of the Conference of the Parties to the Convention on Biological Diversity in China in October 2020.

Where someone submits special category personal data or personal data about third parties, we will endeavour to delete that data before publication takes place.

Where information about respondents is not published, it may be shared with officials within public bodies involved in this consultation process to assist them in developing the policies to which it relates. Examples of these public bodies appear on gov.uk.

As the personal information is stored on HM Treasury's IT infrastructure, it will be accessible to HM Treasury's IT contractor, NTT. NTT will only process this data for

HM Treasury's purposes and pursuant to the contractual obligations they have with HM Treasury.

How long we will hold your data (Retention)

Personal information in responses to consultations will generally be published and therefore retained indefinitely as a historic record under the Public Records Act 1958. Personal information in responses that is not published will be retained for three calendar years after the consultation has concluded.

Your rights

You have the right to request information about how your personal data are processed and to request a copy of that personal data.

You have the right to request that any inaccuracies in your personal data are rectified without delay.

You have the right to request that your personal data are erased if there is no longer a justification for them to be processed.

You have the right, in certain circumstances (for example, where accuracy is contested), to request that the processing of your personal data is restricted.

You have the right to object to the processing of your personal data where it is processed for direct marketing purposes.

You have the right to data portability, which allows your data to be copied or transferred from one IT environment to another.

How to submit a Data Subject Access Request (DSAR)

To request access to personal data that the controller holds about you, contact:

HM Treasury Data Protection Unit

G11 Orange

1 Horse Guards Road

London

SW1A 2HQ

dsar@hmtreasury.gov.uk

HM Treasury provides a secretariat function to the Dasgupta Review.

Complaints

If you have any concerns about the use of your personal data, please contact HM Treasury via this mailbox: privacy@hmtreasury.gov.uk.

If HM Treasury is unable to address your concerns to your satisfaction, you can make a complaint to the Information Commissioner, the UK's independent regulator for data protection. The Information Commissioner can be contacted at:

Information Commissioner's Office

Wycliffe House

Water Lane

Wilmslow

Cheshire

SK9 5AF

0303 123 1113

casework@ico.org.uk

Any complaint to the Information Commissioner is without prejudice to your right to seek redress through the courts.

Contact details

The controller for any personal data collected as part of this consultation is HM Treasury, whose contact details are:

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The contact details for HM Treasury's Data Protection Officer (DPO) are:

The Data Protection Officer
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