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# Biodiversity & Natural Capital Working Party

Sessional Meeting (webinar)

# AGENDA, MONDAY 26 APRIL

12:30 Introduction to the papers

- The importance of biodiversity risks, Aled Jones
- Link to Zoonotic Diseases, Georgi Bedenham
- Natural Capital – an actuarial perspective, Alex Darsley
- Introduction to biodiversity valuation tools, Ryan Allison
- Biodiversity & Justice, Jessica Fifield

13:00 Roundtables

13:40 Feedback from roundtables

14:00 Close



# AGENDA, TUESDAY 27 APRIL

09:00 Introduction to the papers

- The importance of biodiversity risks, Aled Jones
- Link to Zoonotic Diseases, Georgi Bedenham
- Natural Capital – an actuarial perspective, Rebecca Craddock-Taylor
- Introduction to biodiversity valuation tools, Ryan Allison
- Biodiversity & Justice, Bhavin Bharadwa

09:30 Roundtables

10:10 Feedback from roundtables

10:30 Close





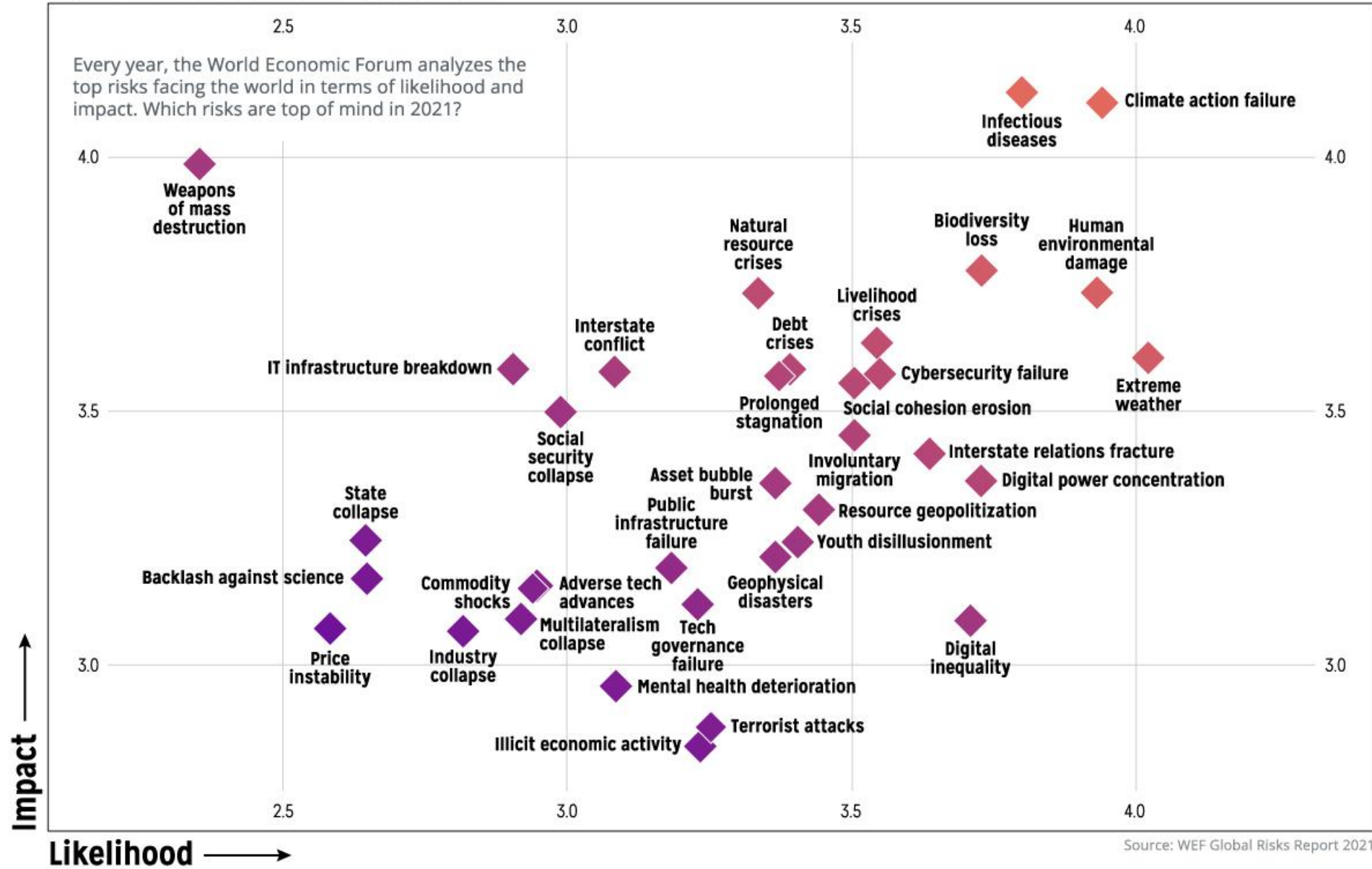
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# The importance of biodiversity risks

Aled Jones, Chair, Biodiversity Working Party

# 2021 Global Risks Outlook

Every year, the World Economic Forum analyzes the top risks facing the world in terms of likelihood and impact. Which risks are top of mind in 2021?



## One in four species are at risk of extinction

Species assessed by the IUCN Red List



Amphibians

**40%**



Conifers

**34%**



Reef corals

**33%**



Sharks and rays

**31%**



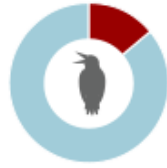
Selected crustaceans\*

**27%**



Mammals

**25%**



Birds

**14%**

**“The crisis of biodiversity loss can only begin to be addressed in earnest if the values of biodiversity and ecosystem services are fully recognised and represented in decision making”.**

**Pavan Sukhdev, TEEB, Mainstreaming the Economics of Nature, 2010**

\*Assessed species include lobsters, freshwater crabs, freshwater crayfishes and freshwater shrimps

Source: IUCN Red List of Threatened Species

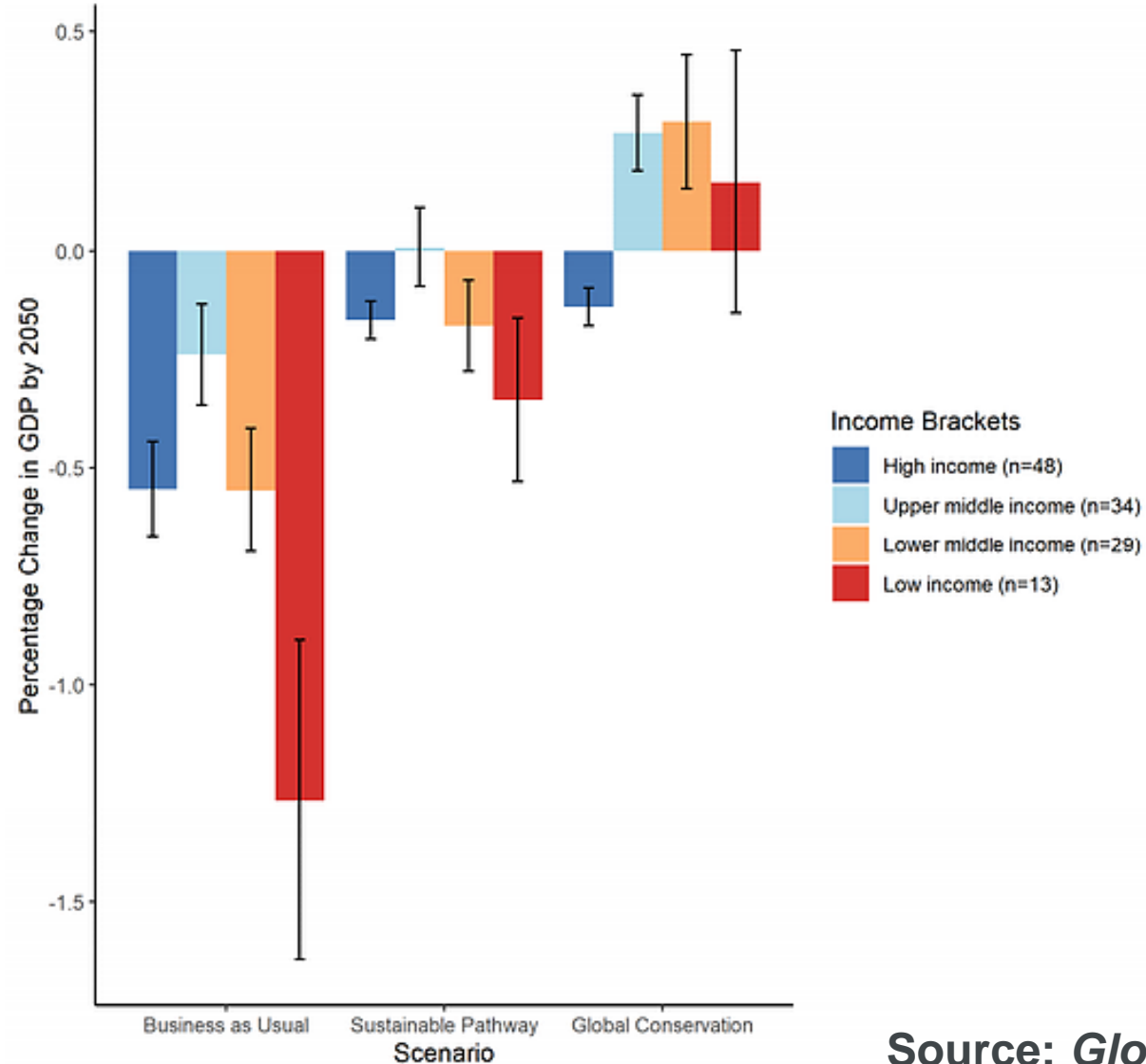
BBC



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**Figure E.3: Percentage change in GDP due to changes in all ecosystem services grouped by regional income classifications for three 2050 scenarios**

- Physical risks
- Transition risks
- Liability risks



**Source: *Global Futures*, WWF**

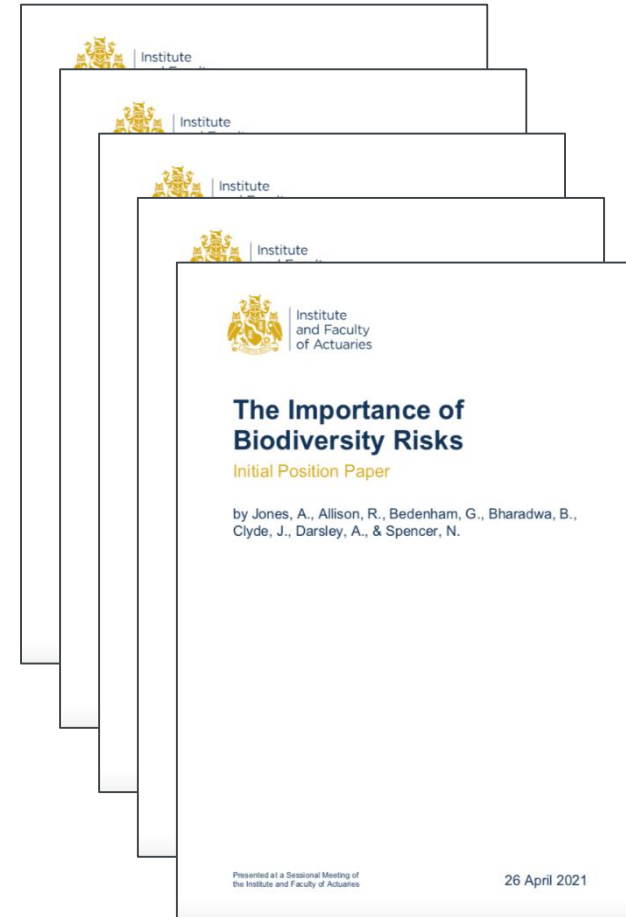
- **Insurance** - Increased severity of natural disasters facilitated by the loss of biodiversity
- **Pensions** – Asset return models based on past rates of economic growth may be invalid
- **Mortality** – Long term mortality trends could be affected
- **Investment** - Reduction in asset value & stranded asset risk.





# Five working group papers

- The importance of biodiversity risks  
Initial position paper
- The importance of biodiversity: link to zoonotic diseases
- Natural capital – an actuarial perspective
- Introduction to biodiversity valuation tools
- Biodiversity & justice





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# The importance of biodiversity risks: Link to Zoonotic Diseases

Georgi Bedenham, Co-chair, Zoonotic disease subgroup

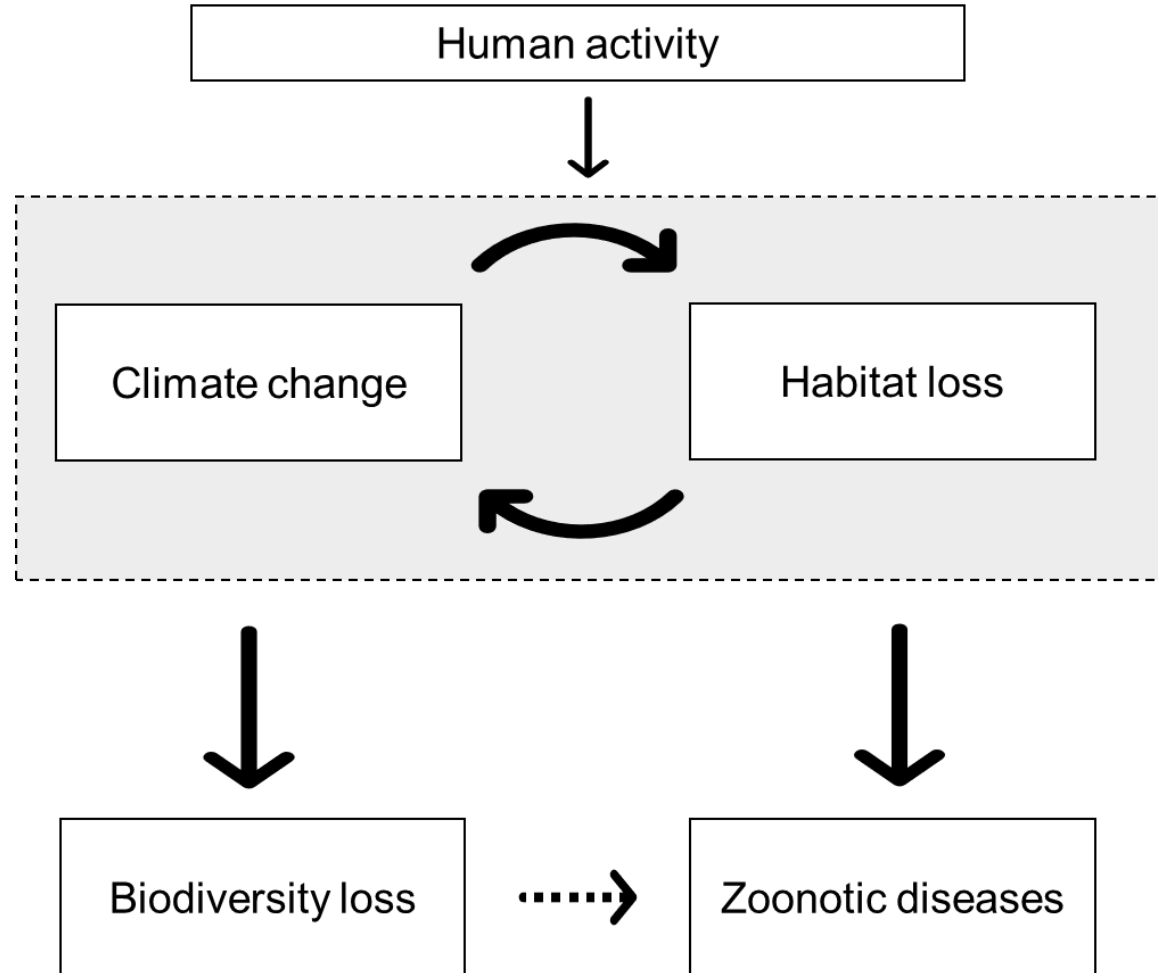
# What are zoonotic diseases?



- Diseases that have been transmitted from an animal source to humans
- Emergences of infectious diseases in humans are increasing
- Can cause global disruption to health services and the economy



# The relationship between risks of biodiversity loss and zoonotic disease



# Future outlook



- Risk of pandemics is increasing rapidly
- Coupled with unsustainable human activity that threatens biodiversity
- Sharper focus on pandemic risk in light of the global impact of Covid-19



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# Natural Capital – an actuarial perspective

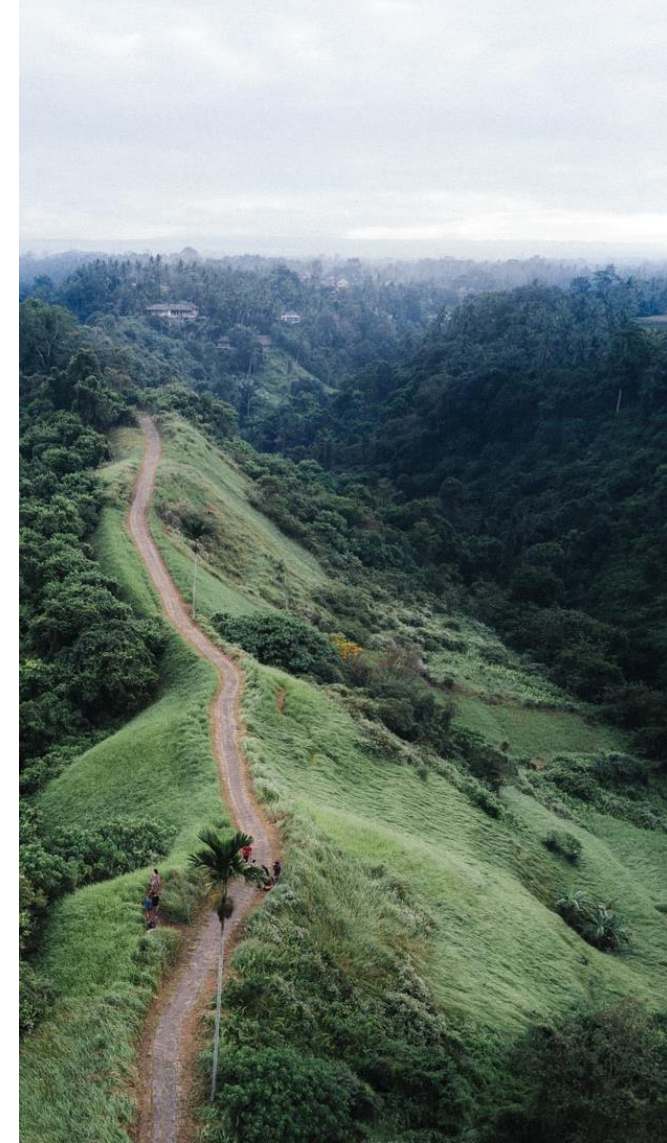
Alex Darsley, Co-chair, Natural Capital subgroup (26 April)

Rebecca Craddock-Taylor, Co-chair, Natural Capital subgroup (27 April)

# Defining Natural Capital

*“The stock of renewable and non-renewable natural resources that combine to yield a flow of benefits to people ” Natural Capital Protocol*

- Soil
- Air
- Water
- All living things



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# Ecosystem services provided by a forest

## Provisioning Services



Biofuel



Livestock



Timber

## Supporting Services



Pollination



Climate stability



Flood defences

## Regulating Services



Nutrient cycling



Carbon sequestration

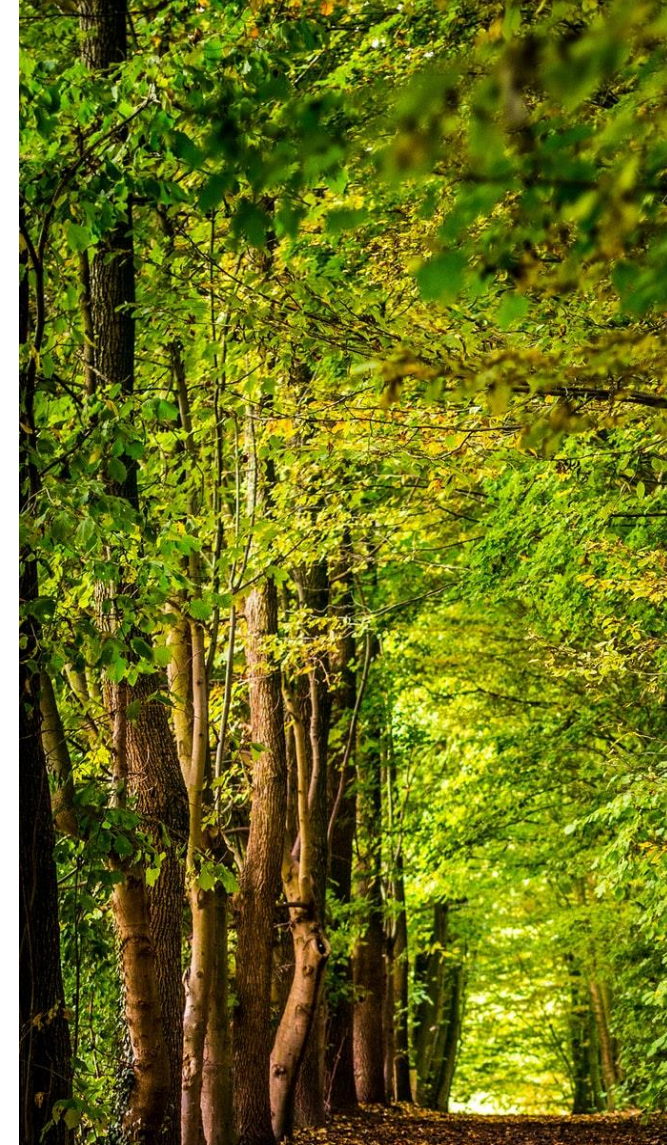
## Cultural Services



Wellbeing



Recreation



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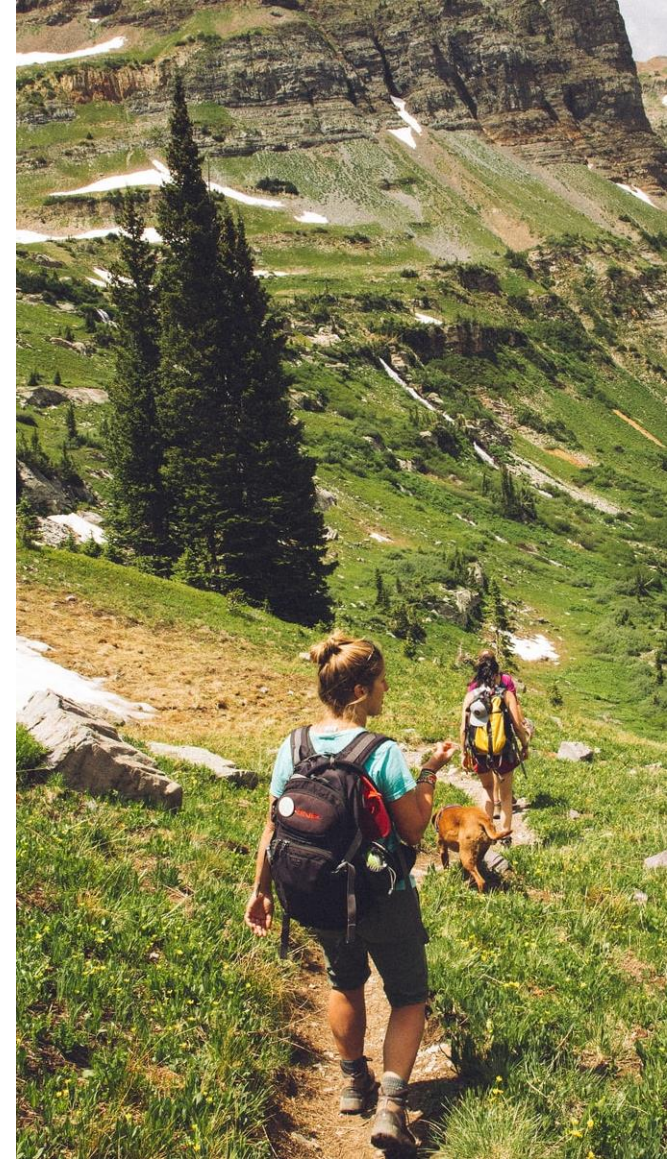
# Examples of uses

- Cost / benefit analysis
- Tracking improvement (**‘natural capital accounting’**)
- Design policies and targets
- Education
- Raise nature’s profile
- Create an investible asset e.g. reef credits



# Limitations and risks

- Valuation is **partial** (only considers ‘use’ value)
- Each person may put a **different value** on nature
- **Misunderstanding** by users
- “**Trade-offs**” of nature against other assets



# Implications for actuaries

Traditional  
actuarial areas



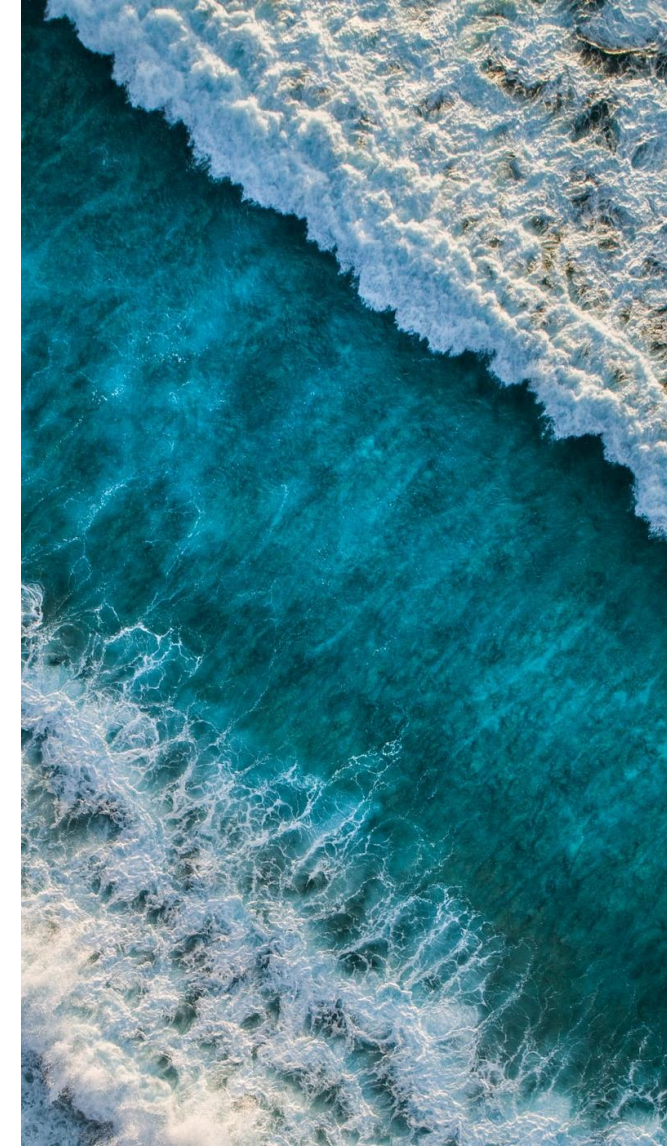
Nature-based  
risks and  
opportunities

Actuarial  
skillset



Natural Capital  
Approaches

*To discuss in roundtable sessions*



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# Introduction to biodiversity valuation tools

Ryan Allison, Co-chair, Valuation Metrics subgroup

# Three quotes to set the scene

1. “We must understand and accept that we are embedded within Nature, not external to it” *Professor Dasgupta*
2. “Climate considerations must be embedded in every financial decision for a truly green recovery” *Mark Carney*
3. “I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind” *Lord Kelvin*



# Using the UK Government's research into biodiversity tools as a solid foundation



Department  
for Environment  
Food & Rural Affairs

**Enabling a Natural Capital Approach:  
Guidance**

March 2020

1) ENCA Services Databook

2) ENCA Assets Databook

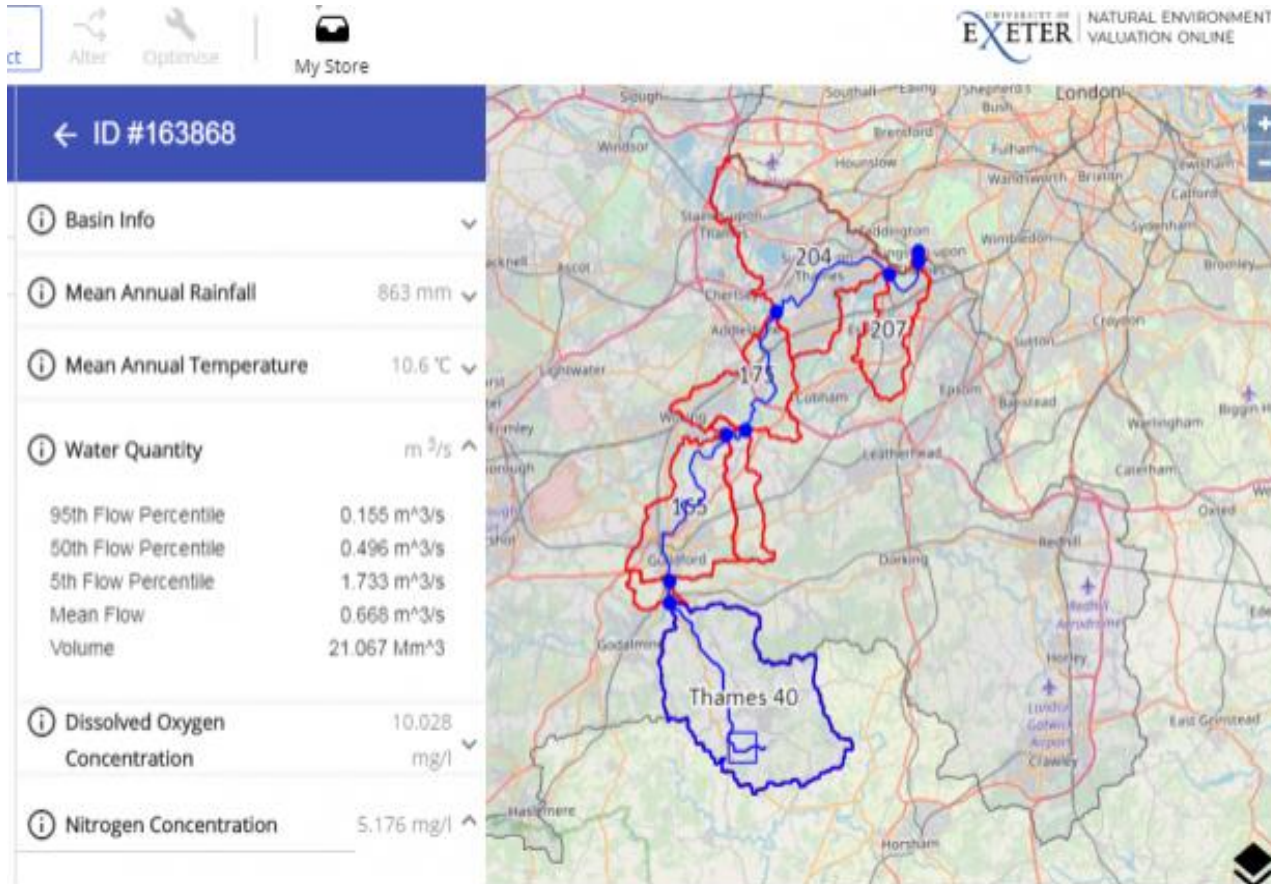
3) Local Environment and Economic  
Development Toolkit

4) Natural Environment Valuation  
Online

5) Artificial Intelligence for Environment  
and Sustainability



# Case study: Insights into the Natural Environment Valuation Online (NEVO)



- Web-based application that assists in understanding, valuing and forecasting the benefits of land in the UK.
- Map-based view of various ecosystem services such as agriculture, recreation, forestry, carbon emissions, biodiversity, water and air quality.
- The tool can be leveraged by insurance and pensions investment teams looking to understand the impact of direct investments on ecosystem services





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# Biodiversity & justice



Jessica Fifield, Co-chair, Justice subgroup (26<sup>th</sup> April)

Bhavin Bharadwa, Co-chair, Justice subgroup (27<sup>th</sup> April)



# Biodiversity & justice

## Considerations for recognising different views of stakeholders:

- Varying monetary valuations of the same ecosystem.
- Distinctive types of value (for example, cultural or physical) for the same ecosystem.
- Lack of clarity of which stakeholders should be involved.

## Proposed definitions to use when considering issues of justice:

<b>Recognition</b>	inequality and discrimination must be recognised and considered
<b>Participation</b>	all those affected must be involved in the decision-making process <sup>1</sup>
<b>Distribution</b>	resources must be allocated as fairly as possible
<b>Socio-ecological</b>	nature must be considered as a participant <sup>2</sup>



<sup>1</sup> Paloniemi et al., 2015

<sup>2</sup> Shoreman-Ouimet & Kopnina, 2015

# Case studies

	Participatory	Recognition
Forests	Brazilian ecological tax, international analysis on the disclosure of forest risk	
Fishing	Canadian Northern cod fisheries, foreign fishing fleets in West Africa.	
	Participatory	Distributive
Water	Mining in Central and South America	
Farming	Payments for ecosystem services in China	

Each case study illustrated the importance of **socio-ecological** justice and the need to include nature in decision making.



# Implications for actuarial work

Liability risks

Valuation risks

Systemic risks

Investment risks

Health risks

Supply chain risks

Catastrophe risks



# The actuarial skillset

Data analysis

Model governance

Long term horizons

Equitable allocation of resources

Multiple stakeholders

Speaking up

Acting with integrity

Impartiality



Biodiversity loss and justice



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# Roundtables

26 & 27 April 2021

# Where next?

Sustainability Board continues to grow the sustainability resources available to actuaries.

Do get involved, take advantage of these and join our community:

- IFoA Sustainability Board (details, activities, links blogs): <https://www.actuaries.org.uk/practice-areas/sustainability>
- Lifelong learning <https://www.actuaries.org.uk/learn-and-develop/lifelong-learning/sustainability-and-lifelong-learning>
  - Curated Climate Guide (Curated Biodiversity guide imminent): <https://www.actuaries.org.uk/learn-and-develop/lifelong-learning/sustainability-and-lifelong-learning/climate-change-curated-library>
  - Sustainability Practical Guides: <https://www.actuaries.org.uk/practice-areas/sustainability/sustainability-practice-area-practical-guides>
- Articles in the Actuary: Eg <https://www.theactuary.com/2021/03/03/march-2021-digital-issue> (look out for May edition!)

*Do also join our [LinkedIn group](#), [sign up for the Newsletter](#) and join the [Sustainability Volunteer Group](#)*



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