

Going beyond green: Importance of biodiversity

Dr Melissa Marselle

12 May 2022

BrEPS



Talk outline

Part 1: People -> biodiverse environment



Sustainability

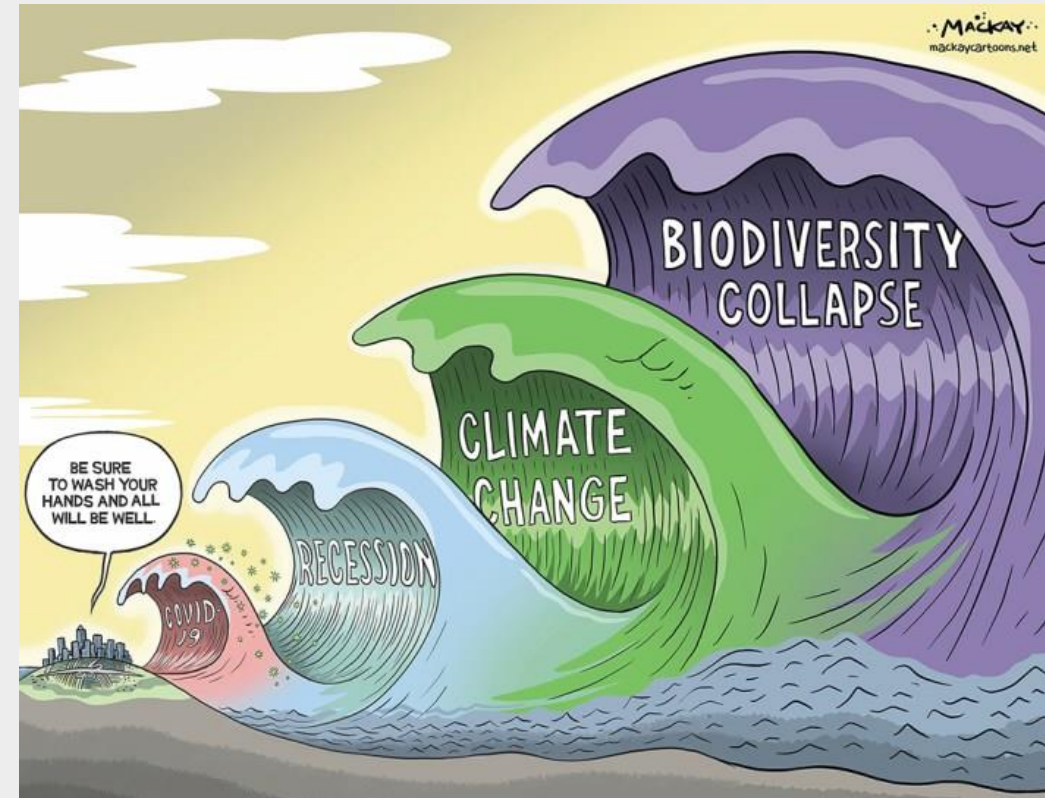
Part 2: Biodiversity -> people's health



The natural environment

CLIMATE CHANGE, BIODIVERSITY & HUMAN BEHAVIOUR

- » The climate and biodiversity crises are **interlinked** (Marselle, Stadler, Korn, Irvine, & Bonn, 2019; IPCC-IPBES, 2021)
- » The World will have to tackle the climate and biodiversity crises simultaneously, or not at all (IPCC-IPBES, 2021).
- » Human activity is the main cause – directly or indirectly - of climate change and biodiversity **loss** (IPBES 2019; IPCC-IPBES, 2021)
- » The solution lies in changing human behaviours (Amel et al. 2017; Cinner 2018; Nilsson et al., 2019; Steensen Nielsen et al 2021)



BUT

- » Behavioural science is rarely used in nature conservation
- » 0.3% of all papers published in the leading conservation journals are related to psychology or behavior change (Selinske et al., 2018)
- » Behavior change interventions for nature conservation often lack grounding in behavioral science theory (Kidd et al., 2019; Nilsson et al., 2019)

PERSPECTIVE

<https://doi.org/10.1038/s41562-021-01109-5>

nature
human behaviour



Biodiversity conservation as a promising frontier for behavioural science

Kristian Steensen Nielsen^{1,2}, Theresa M. Marteau², Jan M. Bauer³, Richard B. Bradbury^{1,4}, Steven Broad⁵, Gayle Burgess⁵, Mark Burgman⁶, Hilary Byerly⁷, Susan Clayton⁸, Dulce Espeloso⁹, Paul J. Ferraro¹⁰, Brendan Fisher^{11,12}, Emma E. Garnett^{1,13}, Julia P. G. Jones¹⁴, Mark Otieno^{15,16}, Stephen Polasky^{17,18}, Taylor H. Ricketts^{11,12}, Rosie Trevelyan¹⁹, Sander van der Linden²⁰, Diogo Veríssimo²¹ and Andrew Balmford¹

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Biological Conservation

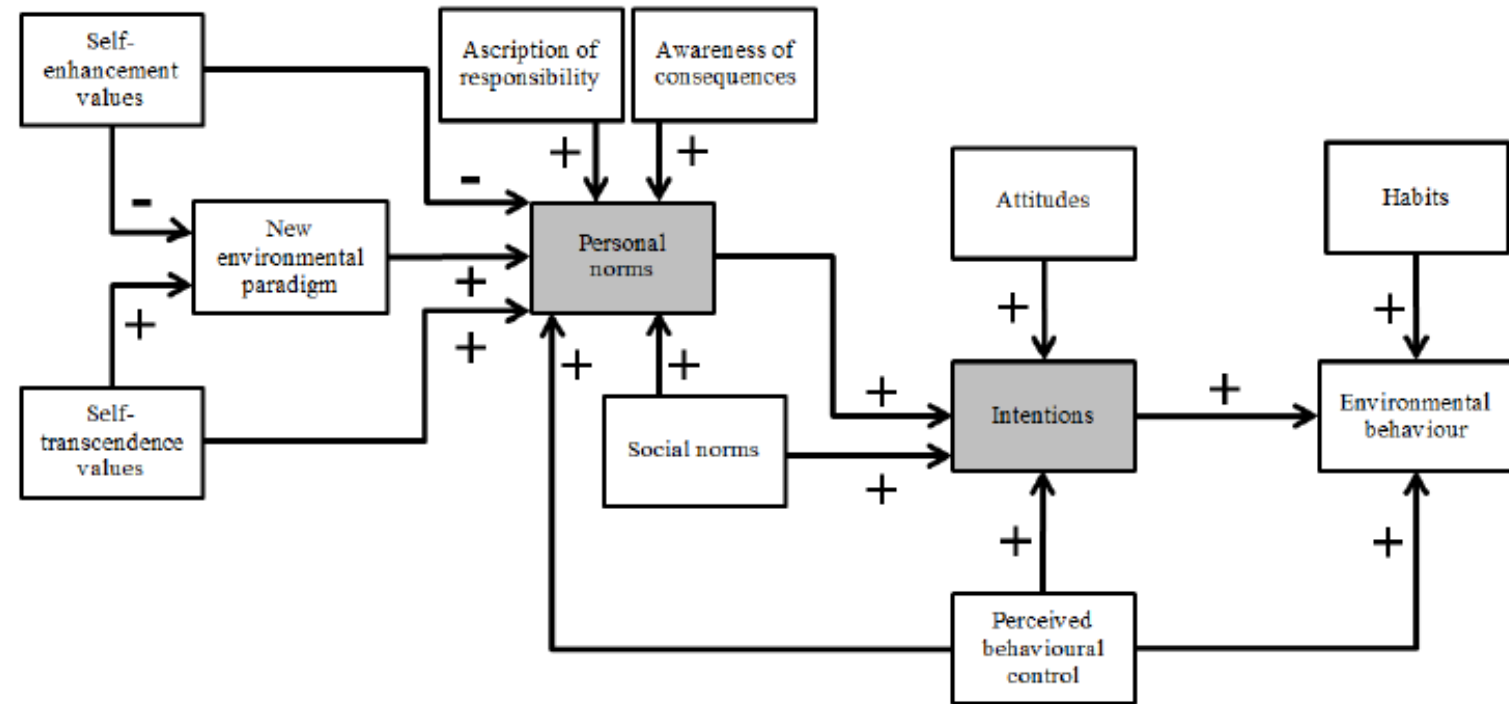
journal homepage: www.elsevier.com/locate/bioco



Making more effective use of human behavioural science in conservation interventions

Andrew Balmford^{a,*}, Richard B. Bradbury^{a,b}, Jan M. Bauer^c, Steven Broad^d, Gayle Burgess^d, Mark Burgman^e, Hilary Byerly^f, Susan Clayton^g, Dulce Espeloso^h, Paul J. Ferraroⁱ, Brendan Fisher^{j,k}, Emma E. Garnett^{a,1}, Julia P.G. Jones^m, Theresa M. Marteauⁿ, Mark Otieno^{o,p}, Stephen Polasky^{q,r}, Taylor H. Ricketts^{j,k}, Chris Sandbrook^s, Kira Sullivan-Wiley^t, Rosie Trevelyan^u, Sander van der Linden^v, Diogo Veríssimo^w, Kristian Steensen Nielsen^{a,v}

- » There are numerous behaviour change theories that can be used to inform behaviour change interventions
- » Any one theory is insufficient for explaining pro-environmental behaviour (Whitmarsh, Poortinga, & Capstick, 2021)
- » There is a need for integrative models of behaviour change (Klößner, 2013; Lokker, McKibbin, Colquhoun, & Hempel, 2015).



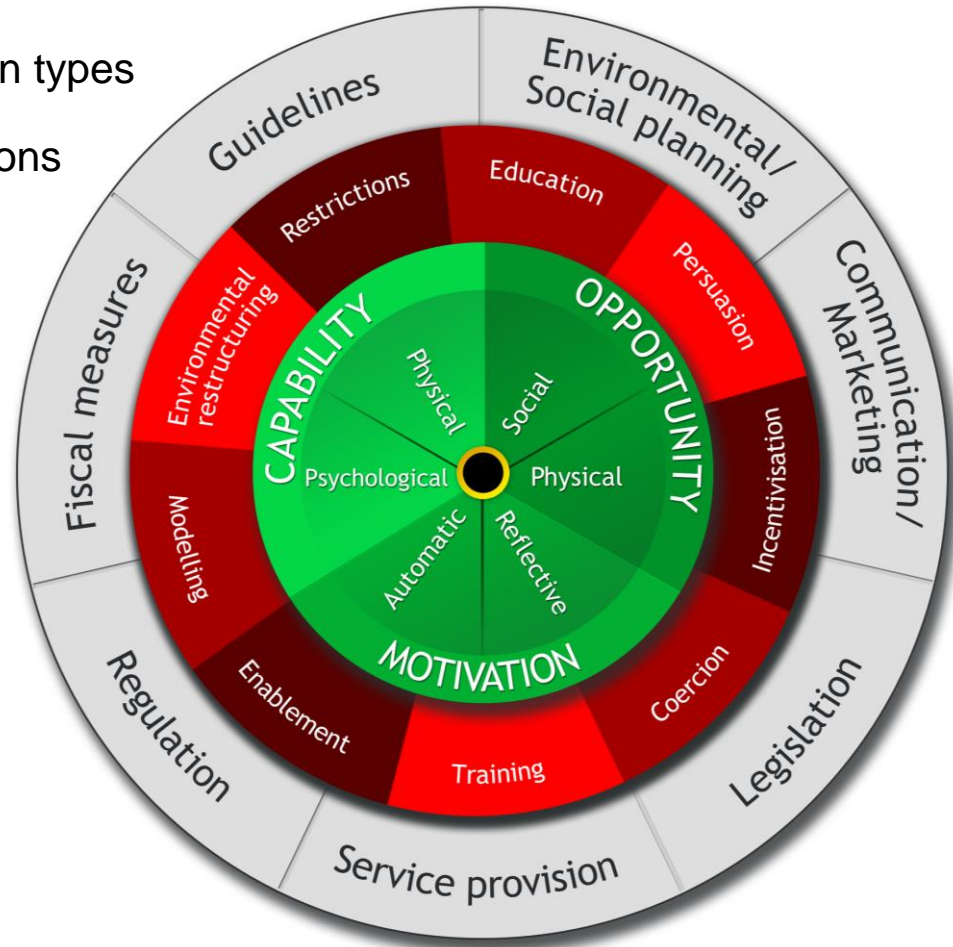
Comprehensive Action Determination Model (Klößner 2013)

BEHAVIOUR CHANGE WHEEL

Sources of behaviour

Intervention types

Policy options








1. **Design** interventions and policies
2. “Retrofit” -- **Identify** what is in current interventions and policies
3. Provide a framework for **evaluation**
 - How are interventions working?
4. Structure **systematic reviews** of evidence

IDENTIFY BEHAVIOURAL CONTENT IN BIODIVERSITY CONSERVATION POLICIES

Conservation Biology

Contributed Paper

Addressing behavior in pollinator conservation policies to combat the implementation gap

Melissa R. Marselle ^{1,2,3}, Anne Turbe ⁴, Assaf Shwartz ⁵, Aletta Bonn ^{1,2,3} and Agathe Colléony ⁵

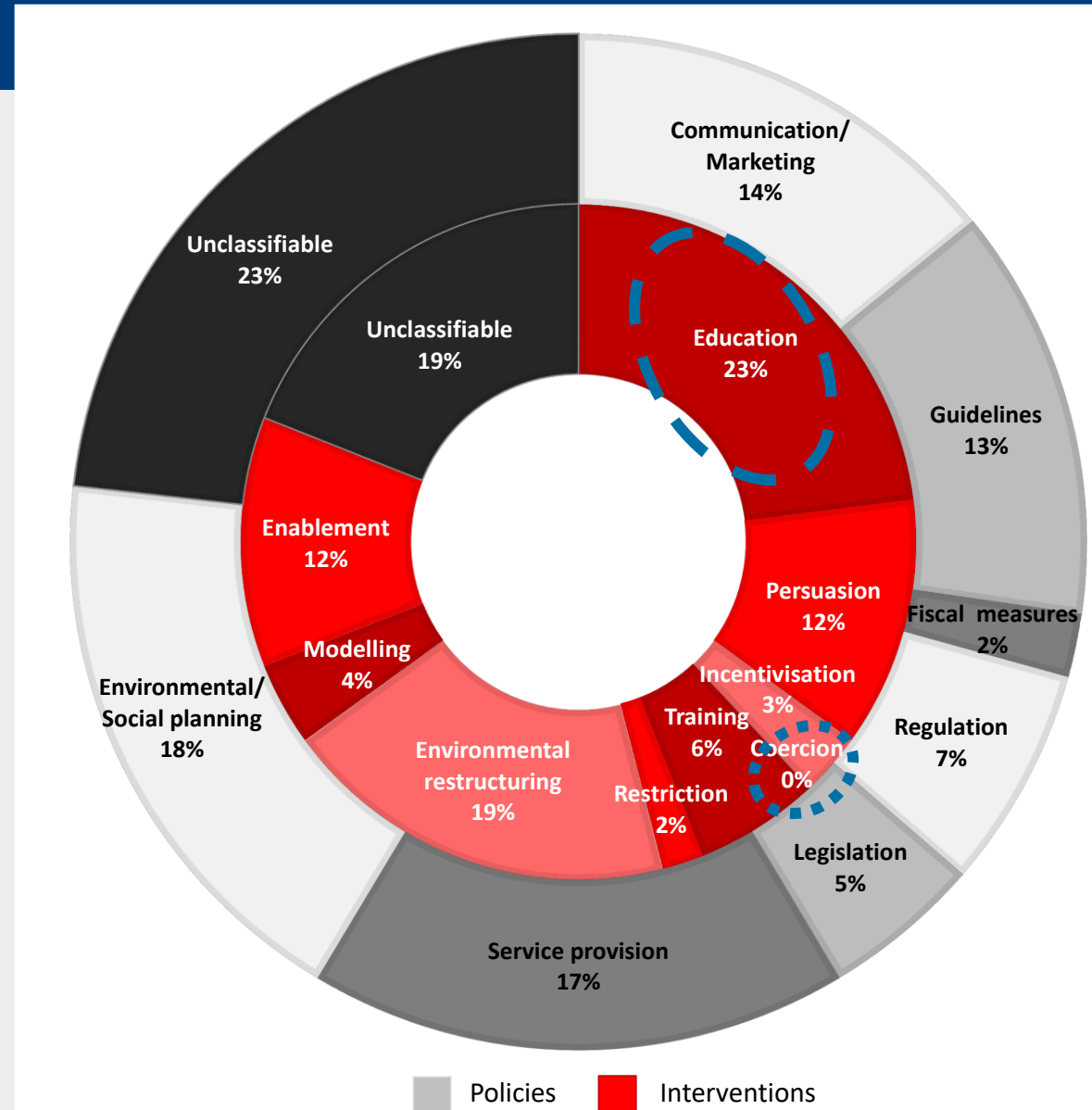
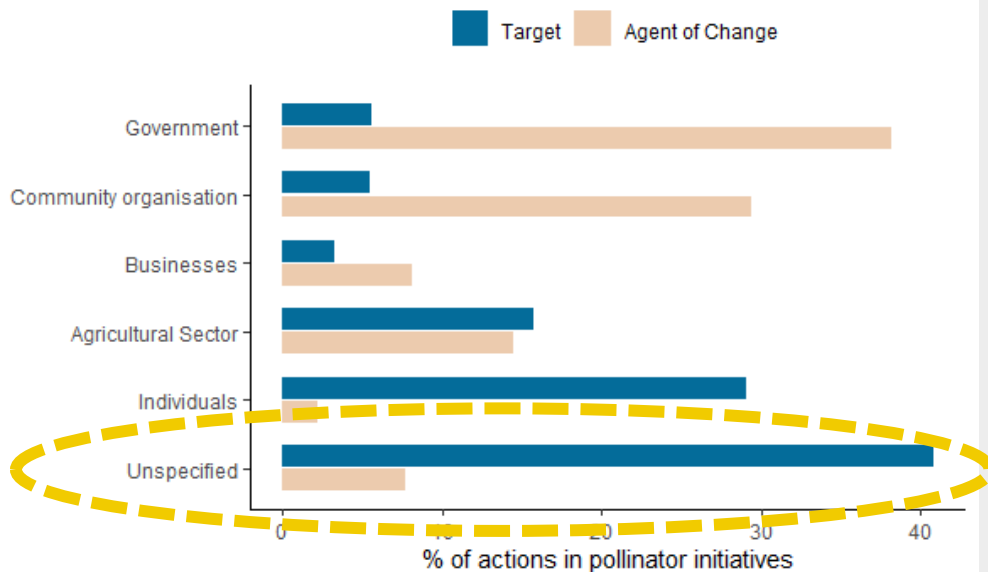
¹Department Ecosystem Services, Helmholtz Centre for Environmental Research - UFZ, Permoserstrasse 15, Leipzig, 04318, Germany

²German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Deutscher Platz 5c, Leipzig, 04103, Germany

³Department of Biodiversity, Friedrich Schiller University Jena, Dornburger St. 159, Jena, 07743, Germany

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Talk outline

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Part 2: Biodiversity -> people's health



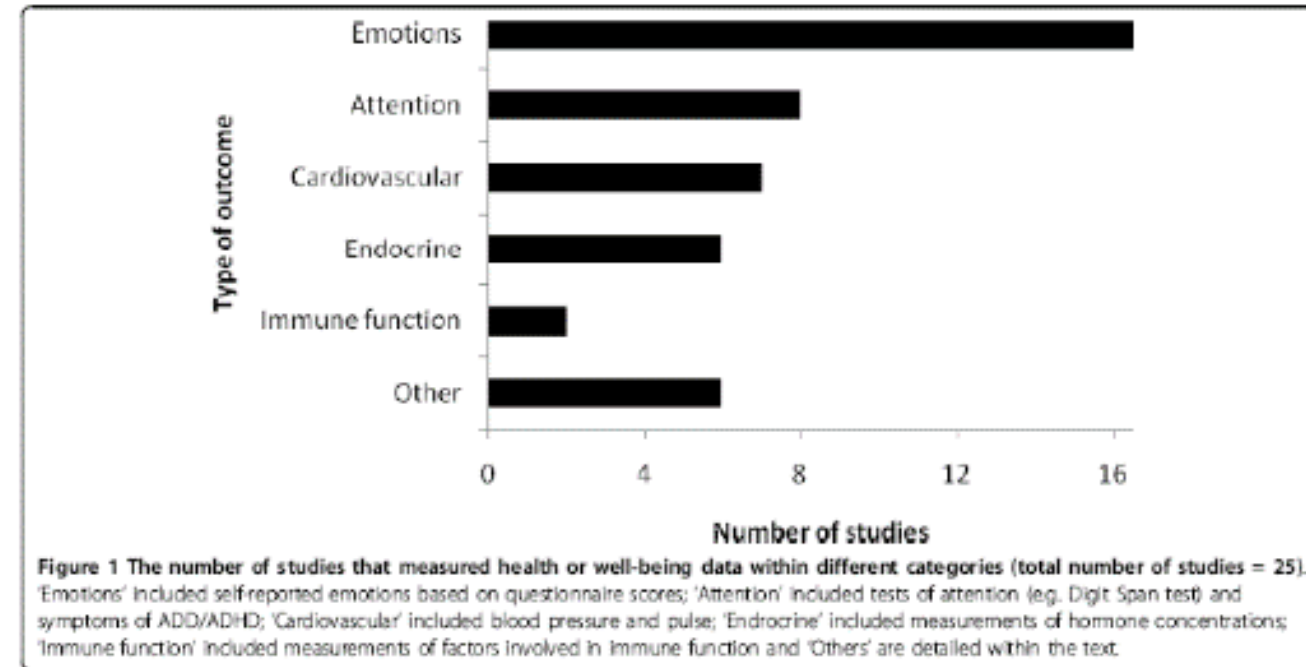
The natural environment

PSYCHOLOGICAL BENEFITS OF NATURE

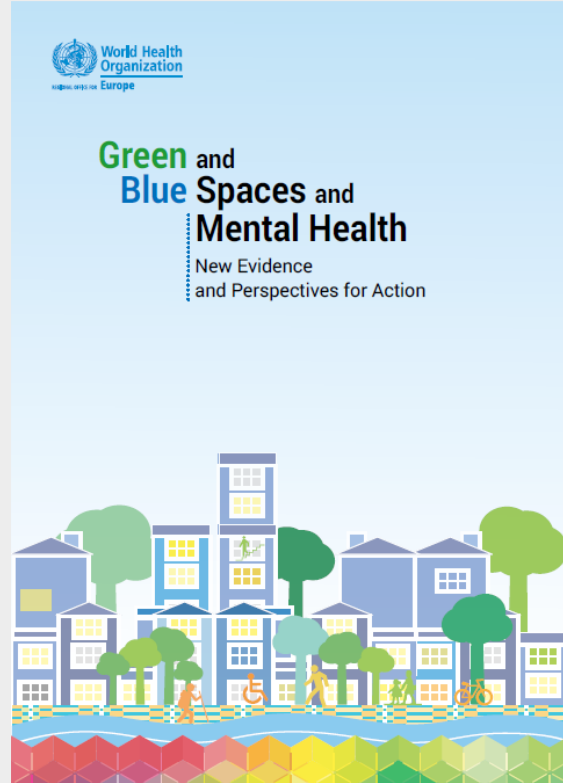
- » There is a vast and growing amount of evidence to support the health and wellbeing benefits of nature
 - Improves mood
 - Fosters sense of connectedness
 - Provides meaning and purpose
 - Supports pro-environmental action
- » Living near nature, viewing nature, gardening,
- » Less is known about which *types* and *qualities* of these natural environments

Bowler et al. *BMC Public Health* 2010, 10:456
<http://www.biomedcentral.com/1471-2458/10/456>

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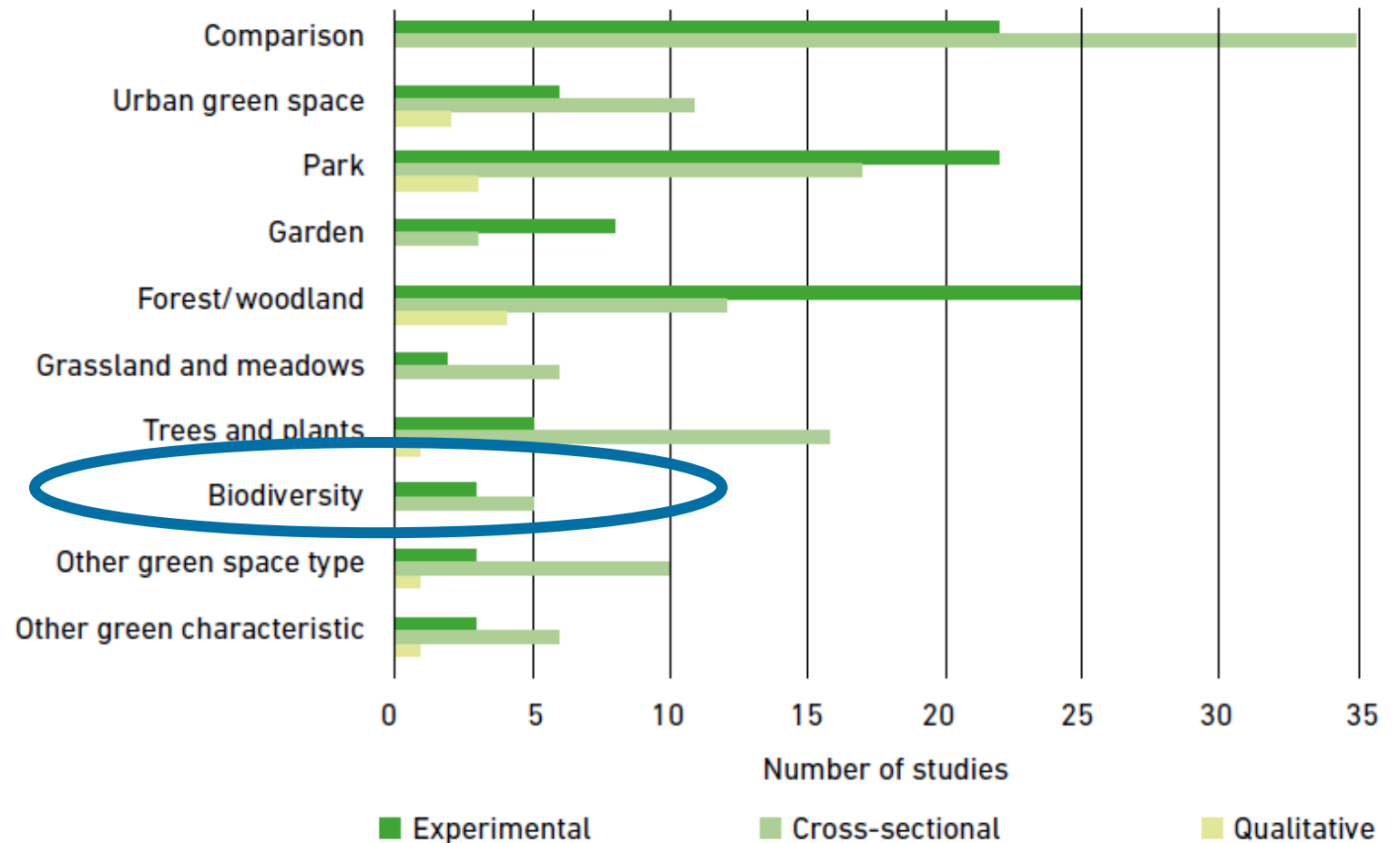


WHICH TYPES OF NATURE BENEFIT MENTAL HEALTH?



Beute, Andreucci, Lammel, Davies, Glanville, Keune, **Marselle**, O'Brien, Olszewska-Guizzo, Remmen, Russo & de Vries (2021)

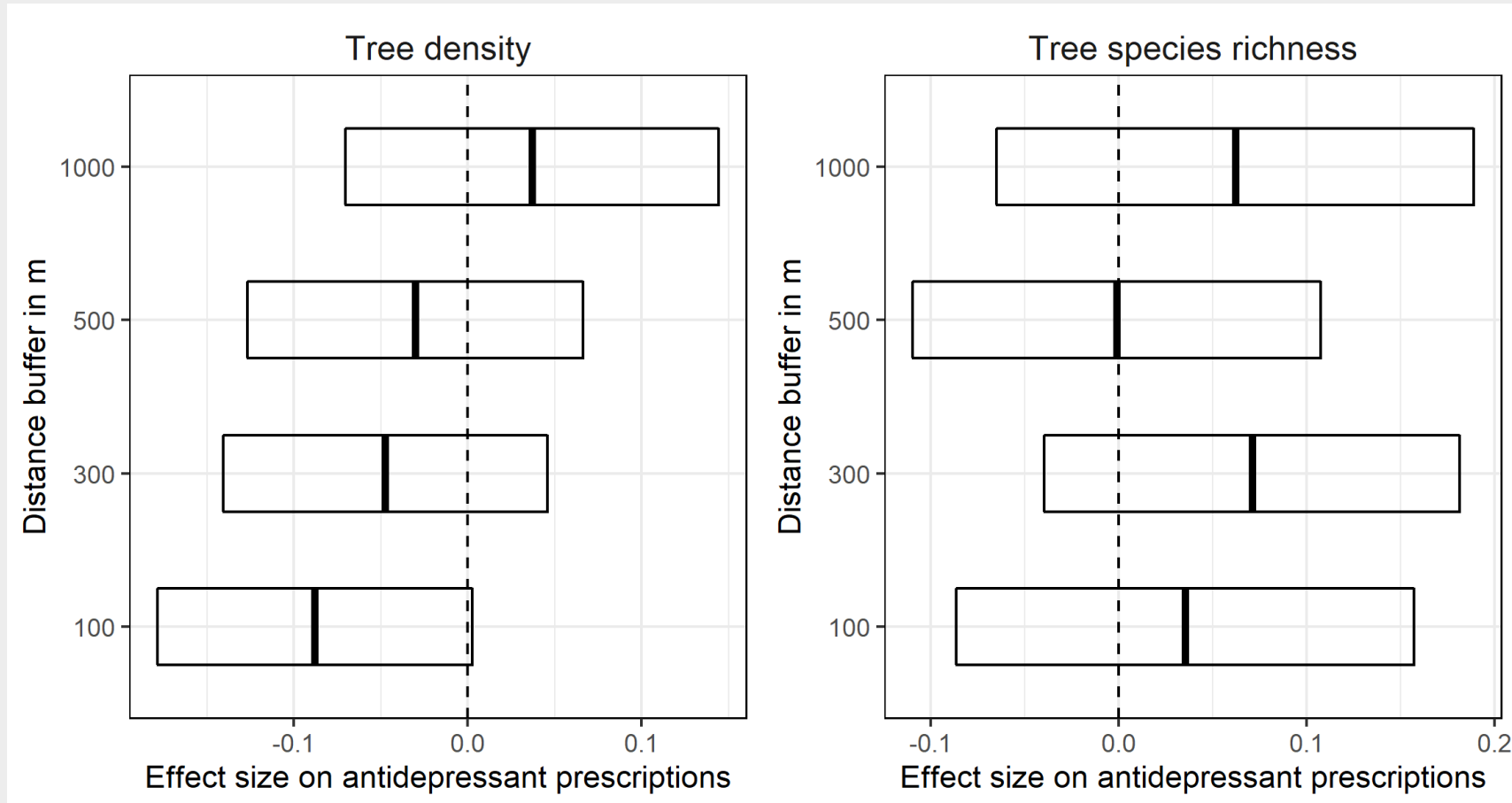
Fig. 1. Number of studies per green space category and study type



Street Trees & Antidepressant Prescriptions

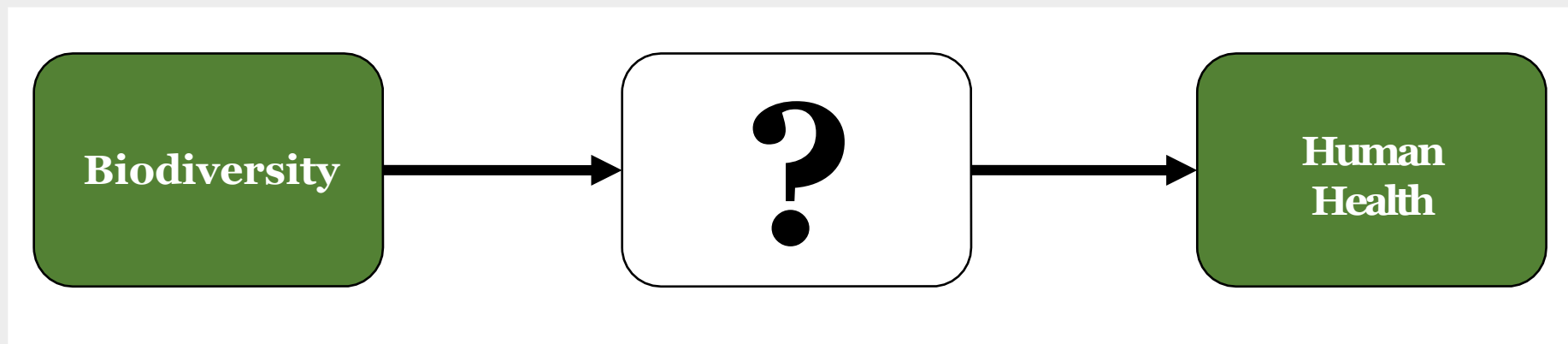
OPEN Urban street tree biodiversity and antidepressant prescriptions

Melissa R. Marselle^{1,2,3,6,7}, Diana E. Bowler^{1,2,4}, Jan Watzema^{1,2}, David Eichenberg^{1,2,5}, Toralf Kirsten^{6,7} & Aletta Bonn^{1,2,4}

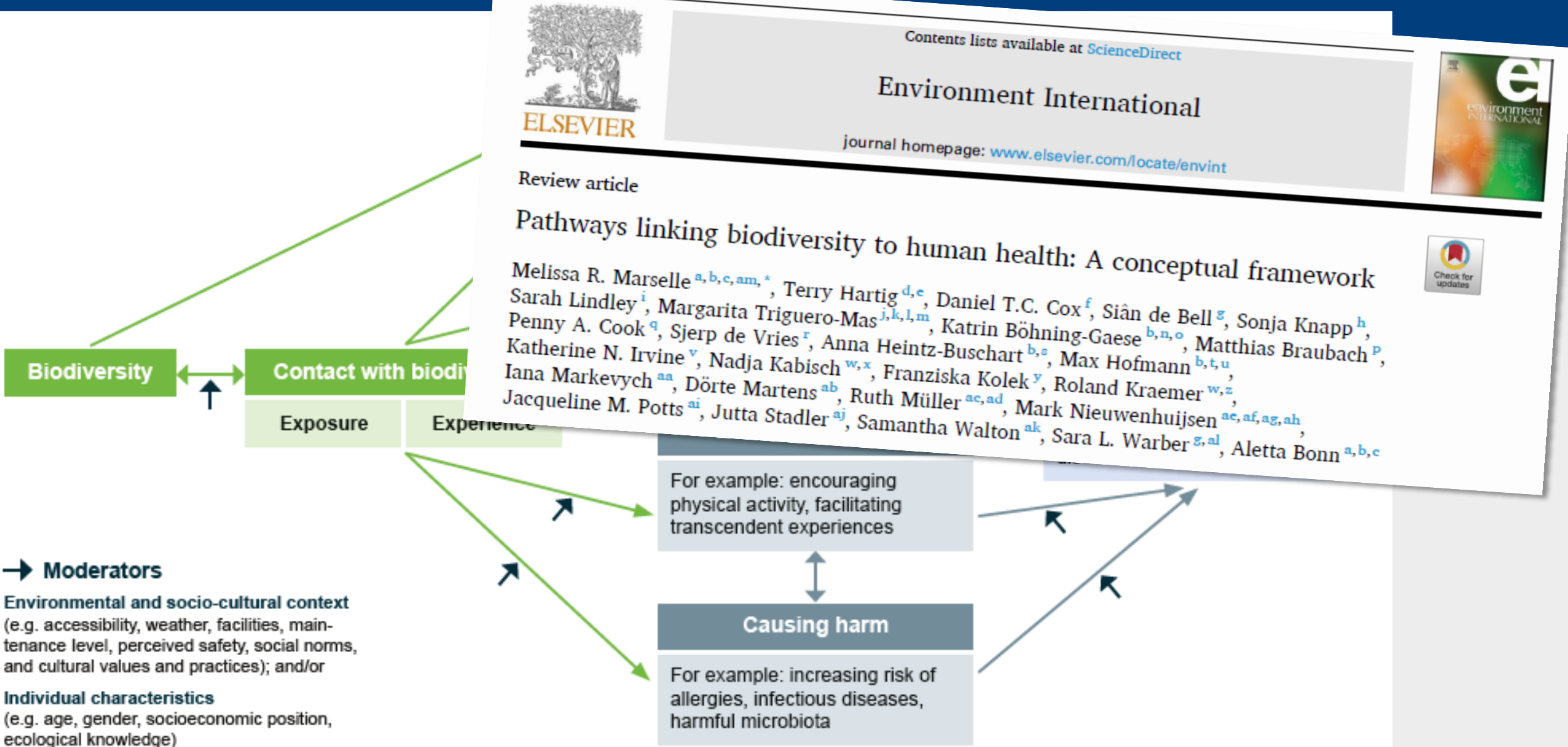


Tree abundance immediate around the home matters

How can the relationships between biodiversity and health be explained?



BIODIVERSITY & HEALTH MODEL



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Environment International

journal homepage: www.elsevier.com/locate/envint



Review article

Pathways linking biodiversity to human health: A conceptual framework

Melissa R. Marselle^{a,b,c,am,*}, Terry Hartig^{d,e}, Daniel T.C. Cox^f, Siân de Bell^g, Sonja Knapp^h, Sarah Lindleyⁱ, Margarita Triguero-Mas^{j,k,l,m}, Katrin Böhning-Gaese^{b,n,o}, Matthias Braubach^p, Penny A. Cook^q, Sjerp de Vries^r, Anna Heintz-Buschart^{b,s}, Max Hofmann^{b,t,u}, Katherine N. Irvine^v, Nadja Kabisch^{w,x}, Franziska Kolek^y, Roland Kraemer^{w,z}, Iana Markevych^{aa}, Dörte Martens^{ab}, Ruth Müller^{ac,ad}, Mark Nieuwenhuijsen^{ac,af,ag,ah}, Jacqueline M. Potts^{ai}, Jutta Stadler^{aj}, Samantha Walton^{ak}, Sara L. Warber^{g,al}, Aletta Bonn^{a,b,c}



INTERNATIONAL POLICY CONTEXT

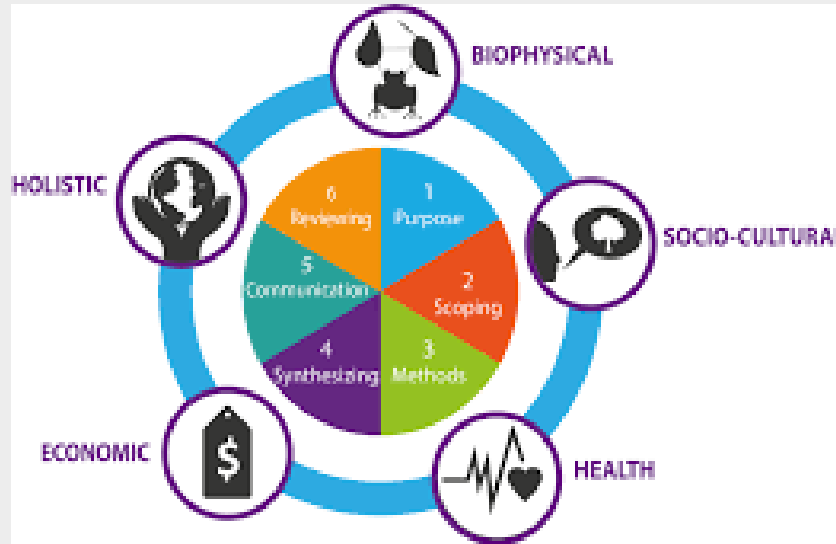


People → biodiverse environment

IPBES Values Assessment

2022 release

Multiple values of nature and its benefits, including biodiversity and ecosystem functions and services



IPBES Transformative Change Assessment

Coming in 2025

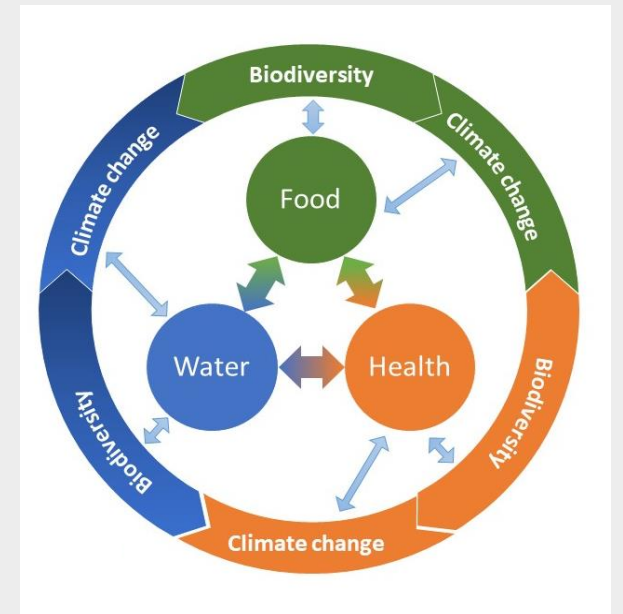
Causes of biodiversity loss, determinants of transformative change ...

Biodiversity → people

IPBES Nexus Assessment

Coming in 2025

Interlinkages among biodiversity, water, food and health



Thank You!



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