Identifying Priorities for the
Health & Wellbeing Funding Call:
Web Survey Summary

Introduction

This is an extract from the full report[1] which is available from valuing-nature.net.

The Valuing Nature Programme aims to better understand and represent the complexities of the natural environment in valuation analyses and decision making, by considering the economic, societal and cultural value of ecosystem services. A Programme Coordination Team is running events and activities to help build an interdisciplinary research community capable of working across the natural, biological and social sciences, and the arts and humanities, and to build strong links with research users through the Valuing Nature Network.

The Valuing Nature Programme Coordination Team (VNPCT) ran a web survey to help identify research priorities for the planned 'Health & Wellbeing' funding call. The survey was open from 20 February to 13 March 2015. The 223 respondents identified 595 research areas / challenges and 161 engagement opportunities. Research ideas identified are summarised below.

The focus of the call was defined as improving understanding of the role biodiversity and ecosystem services play in human health & wellbeing for four specific topics: natural hazards & extreme events, vector borne disease, marine toxins, and urban ecosystems (greenspace). The funded projects would need to deliver a step change in understanding of valuation (monetary and / or non-monetary) and help develop interdisciplinary research capability.

Research Topic: Natural Hazards & Extreme Events

What are the key research areas / challenges for improving understanding of the role biodiversity & ecosystem processes play in human health & wellbeing, in the area of natural hazards & extreme events?

[1] Valuing Nature Programme Coordination Team, 2015. Identifying Priorities for the Health & Wellbeing Funding Call: Results from Web Survey, Valuing Nature Programme Report No. 1

Categories used to summarise responses

- Improving our **understanding of health & wellbeing impacts** from natural hazards & extreme events **across time, space, & scale**
- **Understanding** & valuing the impact natural hazards & extreme events on health & wellbeing **impacts with monetary and non-monetary values** (e.g. cost to NHS)
- What are the **perceived risks** of natural hazards and extreme events? How do these affect **people's relationships with the natural environment**?
- **Managing for multiple objectives**: how do we integrate the management of the natural environment to mitigate against natural hazards and extreme events with management for other objectives? (i.e. multiple benefits including health & wellbeing, biodiversity)

Summary of responses

Category	Themes within web survey
Understanding impacts across time, space & scale	• Scale: Local / national, short & long term • Role of green and blue space, including positive regulation • Types of natural hazard: floods, heatwaves, drought, volcanic eruptions • Role of climate change • Understanding function / role / management of named habitats / services e.g. woodlands, wetland, atmosphere, flood buffering at catchment scale, groundwater, offsetting CO_2 emissions • Ecosystem resilience & redundancy – benefits of resilience • Humans as part of natural systems • Susceptibility of different social / cultural groups / populations e.g. rural, maritime • Methods: modelling, mapping, replication, scenario socio-economic modelling
Understanding impacts with monetary & non-monetary values	• How to value health benefits of natural processes that mitigate extreme events e.g. flooding • Economic cost of mental health impacts e.g. flooding – economic • Impact on community resilience e.g. flooding • Valuation of (semi) natural processes e.g. tillage for increased water retention • Incentives for management • Focus on water – value of water / drought /flood costs
Perceived risk & peoples' relationship with environment	• Barriers to preparing for extremes e.g. heatwaves in UK seen as positive, need to prepare for more floods • Public perception of risk associated with rare vs commoner events • Focus on flood, heatwave, volcanoes, coast

Managing for multiple outcomes	• Examples of potentially conflicting management needs, e.g.
	  ▪ flooding may impact cultural heritage with monetary & non-monetary value
	  ▪ for upland management / flood risk
	  ▪ any management vs biodiversity
	• What does effective mitigation for health & wellbeing look like?
	• 'Concrete' infrastructure vs natural management e.g. perception of concrete infrastructure as more reassuring
	• Future cities - need for urban development to deliver multiple outcomes e.g. water sensitive cities to drought and flood, location of rural catchment delivering services to urban area
	• Need for policy but lack of recognition of urgency / priority
	• Socio / economic angle e.g. role of planning for disadvantaged communities

Research Topic: Marine Toxins

What are the key research areas / challenges for improving understanding of the role biodiversity & ecosystem processes play in human health & wellbeing, in the area of marine toxins?

Categories used to summarise responses

- **Review / scoping** (e.g. What do we know & where are the gaps? What is the significance? (health burden, economic costs / benefits); What existing monitoring could help and what is needed? What can we learn from international / historical experience?)
- **Future forecasts** (e.g. Risks in context of environmental change, underlying mechanisms, needs for evidence base for modelling, what are the implications of human behaviour?)
- **Land and Water management** (e.g. catchment management to reduce the risk of disease / toxins, understanding risk / mitigation, assessing pre-emptive vs reactive approaches)

Summary of responses

Category	Themes within web survey responses
Review / scoping	• Understanding mechanisms • Evaluating impacts • Examples of systems: marine environment, marine aerosols, toxic algae, environmental quality, cities
Future forecasts	• Future climate predictions • Impact of human activitye.g. atmospheric deposition impact on phytoplankton • Understanding mechanisms for future scenarios e.g. algal blooms; marine litter; physiological pathway for toxin production; need for monitoring e.g. blue green algae

Land and water management	• Examples of systems / issues for marine environment:
	    o Increasing shipping atmospheric emissions
	    o Dredge spoil disposal
	    o Toxic chemicals released in exploitation of coast
	    o Role of local / regional marine stewardship

Research Topic: Vector Borne Disease

What are the key research areas / challenges for improving understanding of the role biodiversity & ecosystem processes play in human health & wellbeing, in the area of vector borne disease?

Categories used to summarise responses

- **Review / scoping** (e.g. What do we know & where are the gaps? What is the significance? (health burden, economic costs / benefits); What existing monitoring could help and what is needed? What can we learn from international / historical experience?)
- **Future forecasts** (e.g. Risks in context of environmental change, underlying mechanisms, needs for evidence base for modelling, what are the implications of human behaviour?)
- **Land and Water management** (e.g. catchment management to reduce the risk of disease / toxins, understanding risk / mitigation, assessing pre-emptive vs reactive approaches)

Summary of responses

Category	Themes within web survey responses

Review / scoping	• Understanding mechanisms & evaluating impacts
	      o Exposure & assessment of risk
	      o Monetary & non-monetary valuation
	      o Economic, political & social aspects
	      o Use of earth observation data
	      o Prevalence of exposure to disease occurrence
	 • Examples of systems / issues :
	      o Animal-human disease interactions (disease biobanks, public health, economic inequality
	      o Use of pesticides in managing infections
	      o Value of genetic resources
	      o Effect on reproductive health
	      o Burden from human recreation

Future forecasts	• Forecast for future climate predictions / climate extremes o Disease activity & Exposure

	○ Impact of human activity e.g. International trade • Understanding mechanisms for future scenarios e.g. ○ Viral pathogens ○ Digestate & sewage sludge ○ Parasite biodiversity ○ Microbial biodiversity ○ Wildlife /domestic animal / human interaction ○ Molecular interaction of organisms ○ Beyond malaria ○ Antibiotic resistance • Need for baseline & long term modelling • High risk groups – detection & meeting needs • Public awareness of risk, behaviour
Land and water management	• Examples of systems / issues for vector borne diseases: ○ Pasture management / parasite load ○ Urban greenspace & vectors e.g. lyme disease ○ Role of microbiota on health of wild populations ○ Aquaculture economics & welfare ○ Marine management ○ Wetlands & mosquito habitat

Research Topic: Urban Ecosystems (Greenspace)

What are the key research areas / challenges for improving understanding of the role biodiversity & ecosystem processes play in human health & wellbeing, in the area of urban ecosystems (greenspace)?

Categories used to summarise responses

- **Scoping** and describing what is already in place / being used; **Evaluating** what works / what doesn't work (e.g. existing initiatives, international policies / design / management, green/blue health and wellbeing experience of different groups); **Understanding** why it

works / doesn't (e.g. how to get impact on health & wellbeing, understanding mechanisms, characterising effect)

- **Design & management** (including social, cultural, historical)
- **Mainstreaming** (from research to decision makers, toolkits, governance issues)

Summary of responses

Category	Themes within web survey responses

Scoping, Evaluating, Understanding	• Need to examine current evidence / evaluate / understand role in human health and wellbeing of greenspace – examples of impacts / study systems:
	   ○ Health aspect (e.g. Mental health, Lung disease, Immune regulation, inflammatory processes)
	   ○ Environment (e.g. Air pollution, Soils, Woodland, Abiotic (geodiversity),Wild places, Water management)
	   ○ Activity/Use (e.g. Physical activity (cycling), Food production, Zoos)
	• Scope of topic
	   ○ Beyond urban – peri-urban / rural
	   ○ Include Blue space including coastal (incl coastal cultural value, urbanised coastlines)
	• Other major issues
	   ○ Role of climate change
	   ○ Quality of biodiversity – does it matter?
	   ○ What works in delivering multiple benefits
	   ○ Monetary valuation especially related to NHS savings
	   ○ Access vs Actual Use of greenspaces
	• Socio-economic inequalities & value for different groups e.g. childhood (e.g. obesity, outdoor learning, early experience and valuation later in life), aging population, ethnicity, gender,
	• Cultural value (green/blue/grey, soft outcomes of engagement, beliefs, behaviours, connection with creativity)
	• Methodologies & measurements – interdisciplinary for valuation
	   ○ Intervention studies & comparison with other interventions
	   ○ Scale and time (Longitudinal studies, long term, national & local, how much space, where located)
	   ○ Beyond monetary values
	   ○ New technologies (e.g. neuroimaging, phone apps)
	   ○ Measures to suit users / policy makers e.g. health-dose response, link to biodiversity indicators

Design & Management	• Designing & managing urban ecosystems H&W benefits for:
	   ○ Different user groups (e.g. aging population, childhood engagement, cultural differences, health inequalities)
	   ○ Real biodiversity as well as other benefits
	   ○ Heatwaves
	   ○ Urban design (e.g. green walls, green roofs
	   ○ Real use for physical activity, urban agriculture etc

Mainstreaming	• Providing evidence
	   ○ Provide businesses and policymakers with economic evidence (PHE, local health boards, health & social care commissioners etc)
	   ○ Evidence in the way decision makers need it (e.g. robust as RCT)

	o Raise awareness of benefits (e.g. health commissioners, land managers, local authorities, housing associations, constructors)
	• Integrated decision making
	    o Unite public health & spatial planning (e.g. ecosystem approach into statutory plan frameworks, unified models for planners)
	    o Integrating greenspace use into education / health / work spheres
	• Develop practical methods to broaden "dose of nature" prescription (e.g. Intermediaries to link GPs to land managers
	• Produce case studies of effective use of broader valuation in decision making, showing partnership delivery & role of local communities

Research Topic: Cross Cutting Issues

What are the key cross cutting research areas / challenges for improving understanding of the role biodiversity & ecosystem processes play in human health, in the area of natural hazards & extreme events, vector borne disease & marine toxins, and urban ecosystems (greenspace)?

Categories used to summarise responses

- **Pluralistic approach**: methodologies, data, infrastructure & evidence (e.g. developing interdisciplinary capability, beyond monetary methods, potential for public evidence)
- **Social and cultural dimension** (e.g. inequality/environmental social justice, value of nature and health culturally defined, class/race/gender)
- **Links to decision making** (e.g. different models / scales of governance)

Summary of responses

Category	Themes within web survey responses
Pluralistic approach	• Biodiversity (economic, aesthetic, trade off with other land use, invasive species, understanding specifics of role e.g. species rich vs amenity grassland under drought conditions, restoration of natural habitats

	- Scale: Local / landscape / national - Importance of place / landscape scale evaluation, Public Health – national framework - Climate Change - Water and coastal management & cultural values - Methodologies – **development of common measures for valuation, quantification of benefits** universal currency, indicators, , visual mapping shared across disciplines, explicit link natural elements and values e.g. do waterbirds increase the aesthetic value of a catchment - Making best use of the existing evidence base - Future scenarios e.g. ecosystem services and food prices - Role of humans: Humans as part of nature, behaviour & decision making - impact on the environment, experience of nature related to exposure, culture - Deeper interdisciplinary working (bring together philosophies & knowledge systems of natural, physical, social sciences, economics, arts), bringing in relevant disciplines (e.g. neuroscience, ecosystem-based adaptation, human geography, environmental psychology, archaeology) - Transdisciplinary approach, cross sector working (research, policy, practice, citizens) - Integrating monetary & non-monetary values – market based systems, shared and social values, payment systems, ethics, evaluation of translation into financial value, Trade off in values, Linking economic values to ecosystem service science - Interdisciplinary research to encompass valuation approaches to specific topics: e.g. atmospheric services, ecological burial sites, turf stripping, peatland/carbon conservation - Techniques: Genetics, epigenetics, microbiota & host, systematic mapping, remote sensing
Social & cultural dimension	- Mapping cultural landscape - Social alienation - Understanding motivations - Socio-economic link -Impact on different groups, poverty alleviation - Societal understanding of ecosystem services - Language construction of relationships e.g. of economics, landscape, natural processes - Divergent cultural values & spiritual values - Use of natural space - understanding motivation
Links to decision making	- Stakeholder engagement to identify research priorities & barriers to uptake, and relate to policy and practice needs – co-design, translation of complex messages - Decision making frameworks for national accounting / local picture - Public understanding of risk and ecosystem services - Access to data e.g. for rural businesses - Public participation & role of local communities - involvement in ecosystem service assessment and provision, pressure groups in urban democracy, role in citizen science - Making (economic) valuation easier to use, more affordable, more applicable, developing and piloting new approaches - Providing evidence for range of users e.g. private sector, healthcare, NHS, NGOs, across government departments, national parks