



Report from ‘Improving decisions at the food, water, energy and environment nexus: Values and valuation’ workshop

Defra, Nobel House, London, SW1P 3JR
Friday 28 November 2014

Workshop led by Professor Ian Bateman from the University of East Anglia. Report compiled by Dr Ruth Welters, from the University of East Anglia with many thanks for the input and notes taken by workshop participants.

Published on 17 December 2014.

This report is available on the Nexus Network website

<http://thenexusnetwork.org/report-from-values-and-valuation-workshop>

Introduction:

The Nexus Network workshop on ‘Improving decisions at the food, water, energy and environment nexus: values and valuation’ was led by Professor Ian Bateman from the University of East Anglia. The workshop brought together people from government, the business sector, practitioners and civil society organisations and academic researchers. The aims were to promote understanding and explore practical solutions to the challenges of decision making in the Nexus area and to investigate the potential further research needed.

This report is available on the Nexus Network website <http://thenexusnetwork.org/report-from-values-and-valuation-workshop> and has been sent to the Economic and Social Research Council as part of their Nexus theme of research.

Participants:

The 50 workshop participants included policy representatives from Scottish Government, Welsh Government, Defra, DECC, Department of Health, Suffolk Council, Natural England and the Environment Agency; business people from Thames Water, Anglian Water, EDF Energy, Energy Technologies Institute; academics from a number of UK research institutions; research funders and practitioners from organisations including RSPB, Essex and Suffolk Rivers Trust, London Wildlife Trust and the Forestry Commission. This balance of sectors enabled a good mix of views and ideas to inform the discussions. (For a full list of participants see Appendix B of this report).

Presentations:

(See Appendix B. of this report for the workshop agenda). The aim of the morning presentations was to give participants an overview of the challenges to decision-making in both business and policy; to show examples of how these organisations are using economic and other approaches in decision-making now and where there is a need for more evidence:

- Professor Ian Bateman from the University of East Anglia, gave an ‘Introduction to bringing values and valuation into decision-making’.
- Dr Ulrike Hotopp, Chief Economist, Defra, spoke about ‘Economic Appraisal: What we value and how’.
- Dr Simon Maxwell, Defra Social Scientist, talked about ‘Frameworks and techniques to integrate non-monetary evidence in policy and decision-making’.
- Jean Spencer, Director of Regulation, Anglian Water outlined ‘The Future Water Challenge’.

The aim of the afternoon talks was to show some of the latest research areas across the Nexus space; the opportunities and limits of using economic approaches and ways to use visualisation to engage with users:

- Dr Rob Fish, from the University of Exeter, talked about ‘Economic valuation in context: Insights from an experiment in public dialogue’.
- Professor Chris Starmer, University of Nottingham, spoke on ‘Imprecision and measurement of economic values’.

- Professor Nick Hanley, University of St Andrews, talked about ‘Overcoming challenges in the design of Payment for Ecosystem Service schemes’.
- Professor Brett Day from the University of East Anglia, talked about ‘Using valuations of environmental change to target policy and explain its effects: The best use of UK agricultural land’.
- Dr Amii Harwood from the University of East Anglia demonstrated a live fly-through using a visualisation tool to show where new woodland could be planted in Britain.

You can download pdfs of all the presentations from the Nexus Network website <http://thenexusnetwork.org/talks-from-values-and-valuation-workshop-28-november-2014>

Summary of workshop questions:

A huge range of challenges to decision-making in the nexus space were revealed in the round table discussions involving the participants from a range of sectors.

As noted above, the workshop was held in Defra’s Headquarters in Westminster and brought together research users (from government, the private sector, and the third sector) and research providers (from the academic and consulting sectors). Participants were formed into mixed groups of 8 or 9 people and, following the two presentation sessions, provided with a number of facilitated stimulus questions. Detailed and unedited responses are given in Appendix C of this report while a brief summary is presented here. These comments represent the views and ideas of a wide range of people and do not necessarily reflect the views of the Nexus Network team or the funder of the Network, the ESRC.

Question: What are the challenges you face at the food-energy-water-environment nexus in your work?

Ten highlight challenges were identified as follows:

1. *The challenge of working across disciplines and across sectors*

- Key issues here included the need for interdisciplinary thinking and expertise aligned with a desire to overcome siloed thinking by finding the commonalities which link different sections and interests.

2. *Innovation challenges*

- Focussing upon novel applications which encourage innovation and connections across disciplines.

3. *Nexus resource challenges*

- Each resource has its own characteristics but the nexus challenge is to resolve conflicts and exploit synergies in the interactions between food, energy and managing the environment for nature, conservation, access and aesthetics.
- A key issue is to identify the absolute boundaries for trade-off limits, e.g. Planetary Boundaries?

4. Challenges of refining and using tools and methods

- Method refinement needs improved science basis and to balance different conceptions of value, e.g. in valuing biodiversity. We also need improved techniques for robust measurement of valuations for non-market goods.
- The use of tools and methods depends crucially upon making it easier to use values in policy decisions. This includes the ability to understand the complexity of space and scale across the Nexus. A key advance here would be the development of desktop tools for decision makers allowing them to easily access frontier research analyses; this requires research investment.
- Data challenges were also identified and linked to the problems of incorporating and conveying uncertainties.

5. Decision-making challenges

- A variety of issues were raised ranging from the need to clarify the objectives for decision making, improving and accessing monetary valuations, addressing the limits of valuation and tackling the fact that the Nexus issues of biodiversity, floods and water are a massive interaction of policies which need increased coordination.

6. Governance challenges

- How can we bring open policy/ valuation/ deliberative processes into new devolution/ localism debates and systems and see past short-term political cycles?

7. Communication and engagement challenges

- Making use of current research and knowledge and identifying where and what type of new knowledge is required.

8. Behaviour change challenges

- Clarifying actual versus presumed behaviour of stakeholders/ public and demonstrating the value of improved information about human preferences and how this might influence behaviour change.

9. Impacts on society

- What is the place of distributional concerns within environmental policy? Should we simply tackle inequality as an economic issue (e.g. through redistributive taxes) or should environmental policy be used to improve the distribution of public goods for the disadvantaged? If so then how should this be achieved?
- Are some aspect of nature non-tradable? Or do such preferences indicate vary high values?
- Research needed on mental health and wellbeing benefits of a nature-rich environment e.g. just green space or birds and meadows?

10. Implementation and action challenges

- Analysis paralysis: need a cycle of do-learn-do etc.
- How do we achieve actions now?
 - Challenges so big no one will move, or invest.
 - Time is an issue, we need to act now but the time to change takes years.

Question: Have you used any economic or other approaches already in your work?

Following from the afternoon talks, workshop participants were asked if they were familiar with economic and other approaches and if they were already using them:

- A considerable proportion of the audience had either direct or (more-often) indirect experience of valuation methods (e.g. in river basin planning).
- There was considerable support for economic valuation, especially when undertaken within an integrated analysis (see talk by Brett Day) and when used to facilitate Payments for Ecosystem Services (talk by Nick Hanley). The use of visualisation techniques (as demonstrated by Amii Harwood) was considered a persuasive and powerful communication tool provided its assumptions were clarified. The Westcountry Rivers Trust is using visualisation at a catchment scale.
- Toolkit for practitioners and managers in Wales is in development (due 2015). This includes:
 - Spatial mapping for complex systems.
 - Habitat creation – with priorities and interventions.
 - Benefits and where needed, including health.
- All London Green Grid ‘to promote the design and delivery of green infrastructure across London’. Includes
 - Detailed map, overlaid with areas of deprivation.
 - Over 1000 project sites.
 - Shared strategy between local and national government and NGOs
www.london.gov.uk/priorities/environment/greening-london/improving-londons-parks-green-spaces/all-london-green-grid
- National Grid are undertaking an ecosystem services assessment
<http://www.businessgreen.com/bg/news/2337785/national-grid-charges-up-natural-capital-thinking>

Research questions: what else do you need to know to help you to make the best use of economic or other approaches in nexus decision-making?

Participants were asked to select 2 main challenges per table, and outline research questions related to these. This was used in the workshop as a way to narrow the focus into a more manageable list of research suggestions and to give a flavour of the research opportunities. This list should not be taken as a prioritisation of the need for research. Indeed, some of the challenges outlined at the start of the workshop were not selected for a research question, but may still be very pertinent to specific sectors. This resulted in identification of ten research areas as follows:

1. *Promoting working across disciplines and across sectors*

- How can a common understanding across the evidence base be developed and funded, leading to truly integrated research?

2. *Reframe research questions to address the interconnections and scale issues highlighted by nexus thinking*

- Need to ask questions differently – what are the mechanisms that will get us there and how do these work at varying scales from local to global?
- What innovations would help in implementing novel water storage solutions?

3. *Refining and using tools and methods - research questions:*

- Improving valuation methods and turning them into cost-effective tools
- Enhancing and facilitating Payment for Ecosystem Services schemes
- How can models deal with uncertainty and future change?
- Can we develop non-monetary values that are tangible, logical and uniform
- How to bring together economic and other valuations together
- How can we make visual tools persuasive and powerful for communication but also make the assumptions in the models clearer?

4. *Decision-making: objectives*

- Do we know where we want to be? E.g. with water use that is sustainable and affordable?
- How do we find the right balance of motivations and valuation? Need qualitative as well as quantitative research.
- How do we hold business and government to account?

6. *Decision-making: process*

- Need to understand the process of decision-making and the pressures on decision-makers, as well as evidence used. How can we better understand
 - What decisions are being made?
 - Who is making these decisions?
 - What the purpose of the decision is?
 - What are the pressures on decision-makers? E.g. non-valuation evidence; socio-political pressures (such as not wanting to upset certain bodies).

7. Communication and engagement - research questions:

- How can we bring together different people at the beginning of an assessment and how to understand each other's language?
- How can we ensure quality public dialogue?

8. Behaviour change - research questions:

- Does economic evidence really change behaviour and lead to action?
- How does valuation map onto communities to incentivise/ enable collective change?
- What is the process for change? What makes business, government or communities shift?

9. Impacts on society - research questions:

- What are 'economic impacts'? This term means different things to different people.
- Distribution of costs and benefits: who actually pays and who actually saves?
- Information on health risks and benefits is not known outside of the health sector – how can we translate these findings so they are cross-sectoral and specific?

10. Implementation and action - research questions:

- How can we make a strong business case with evidence for action?
- Can valuation tools be used to inform investment in natural capital?

Appendix A. Agenda

10.00 Tea, coffee and registration

10.30 Welcome and introduction Professor **James Wilsdon**, Director Nexus Network

Session A: Challenges

- **Chair:** Professor **Ian Bateman**, University of East Anglia. Introduction to bringing values and valuation into decision-making.
- User needs for valuation, Dr **Ulrike Hotopp**, Chief Economist, Defra.
- The wider social science dimension, Dr **Simon Maxwell**, Defra Social Scientist.
- The multi-sector approach to water stewardship, **Jean Spencer**, Director of Regulation, Anglian Water.

11.30 Q+A

11.45 Workshop session on the challenges

12.45 Networking lunch

13.30 Session B: Response: Principles and Practice

- Economic valuation in context: Insights from an experiment in public dialogue. Dr **Rob Fish**, University of Exeter.
- Imprecision and measurement of economic values, Professor **Chris Starmer**, University of Nottingham.
- Overcoming challenges in the design of Payment for Ecosystem Service schemes, Professor **Nick Hanley**, University of St Andrews.
- Using valuations of environmental change to target policy and explain its effects: The best use of UK agricultural land. Professor **Brett Day** and Dr **Amii Harwood**, University of East Anglia.

14.30 Q+A

14.45 Workshop on response and research needs, with tea and coffee.

16.00 Summary and plans for addressing research needs; shaping the agenda for the Nexus Network. End at 16.15.

Appendix B. List of workshop participants

Matthew	Agarwala	University of East Anglia
Olly	Bartrum	Centre for Social and Economic Research on the Global Environment
Ian	Bateman OBE	University of East Anglia
Tim	Benton	Global Food Security
Ian	Christie	University of Surrey
Rebecca	Clark	Natural England
Nick	Collinson	Suffolk Council
Keith	Colquhoun	Thames Water
Gemma	Cranston	Cambridge Institute for Sustainability Leadership
Rob	Cunningham	RSPB
Alastair	Davies	EDF Energy
Andrew	Davies	Essex and Suffolk Rivers Trust
Brett	Day	University of East Anglia
Helen	Dunn	Defra
Rob	Fish	University of Exeter
Lorna	Friis	Economic and Social Research Council
Andy	Gibbs	Economic and Social Research Council
Giles	Golshetti	Defra
Jonathan	Green	Cambridge Institute for Sustainability Leadership
Nick	Hanley	University of St Andrews
Julian	Harlow	Defra
Amii	Harwood	University of East Anglia
Ulrike	Hotopp	Defra
Ann	Humble	Welsh Government
Alex	Inman	Independent Consultant
Kate	Irvine	James Hutton Institute
Claire	Johnstone	Environment Agency
Liam	Kelly	Scottish Government
Samantha	Kennedy	DECC
Glada	Lahn	Chatham House
G Carlo	Laurenzi OBE	London Wildlife Trust
William	Lecky	DECC
David	Maddison	University of Birmingham
Simon	Maxwell	Defra
Diane	Mitchell	National Farmers Union
Rachel	Muckle	Defra
Louise	Newport	Department of Health
John	O'Neill	University of Manchester
Jonathan	Oxley	Energy Technologies Institute
Ece	Ozdemiroglu	Eftec
Stuart	Rickards	Environment Agency
Matt	Smith	Joint Nature Conservation Committee
Pat	Snowdon	Forestry Commission

Jean	Spencer	Anglian Water
Chris	Starmer	University of Nottingham
Sarah	Taigel	University of East Anglia
Teresa	Tucker	Economic and Social Research Council
James	Vause	Defra
Anita	Weatherby	Valuing Nature Network
Graham	Welland	Thames Water
Ruth	Welters	The Nexus Network
Sue	Williams	Natural Resources Wales
James	Wilsdon	The Nexus Network
Harvey	Wood	Clean Rivers Trust

Appendix C. Workshop notes in bullet point format.

These are the points that workshop participants noted on cards and discussed in groups of 8 or 9 people.

Participants were not asked to group their challenges and research suggestions in any particular way – the grouping of points in this report is intended to show common themes and help the reader digest the wealth of material, but is not intended to impose a set framework on future work or discussion in this area.

Note these bullets represent the views and ideas of a wide range of people and do not necessarily reflect the views of the Nexus Network team or the funder of the Network, the ESRC.

Question: What are the challenges you face at the food-energy-water-environment nexus in your work?

1. Challenge of working across disciplines and across sectors

- Need for interdisciplinary expertise
 - Disciplinary boundaries get in the way.
 - Need integrated thinking, not silos and experts.
 - Overcoming siloed thinking – find the commonalities which link different sections and interests.
 - Problems of doing interdisciplinary work in a pure economics department.
- Communicating with other disciplines (science, economics etc) and with policy and practitioners, using different terms and with different objectives and priorities. All possible to combine but difficult to communicate.
- Lack of leadership, resources or initiative to work in different ways across boundaries.
- Establishing cross-sectoral partnerships on shared natural resources.
- Need to work across central government departments, possibly in collaborative problem-orientated teams, on specific challenges. Better integrated government thinking to allow joined-up regulation.
- Other sectors
 - Need to engage the financial sector.
 - How to represent SME interests, e.g. landowners, the Church?
 - How to represent individuals?
 - Importance of cultural diversity.

2. Innovation challenges

- Where can we find novelty/ innovation beyond the usual examples and applications?
- Enabling better options. Why don't we think of these at the start e.g. making catchments more absorbent?

3. Nexus resource challenges

- Challenges in resolving conflicts and exploiting synergies in the interactions between food, energy and managing the environment for nature, conservation, access and aesthetics.
- What are the absolute boundaries for trade-off limits? E.g. Planetary Boundaries?

Energy

- Siting of energy infrastructure requires co-location: understanding constraints that determine availability of sites for power generation (wind, water, waste etc).
- Understanding constraints that determine availability of biomass for energy production.
- Hydropower company does not understand why upstream peatland restoration should be important to them (i.e. does not want to pay for it).
- Need better knowledge of tools in the energy toolbox.

Food

- More information needed about the value of local food.

Waste

- Viewing waste as a resource: closed loop economy.

Water

- Pumping water out to sea in winter (in Suffolk) when we need that same volume in the summer for irrigation – need to close this loop.

3. Challenges of refining and using tools and methods

Refining methods

- How to balance different conceptions of value, e.g. in valuing biodiversity?
- Should we prioritise developing new monetary methods or developing non-monetary metrics?
- How to incorporate preventative benefits into valuation and decision-making?
- Improved methods for customer acceptability consensus on 'willingness to pay' is difficult when impacts are spatially differentiated.
- How to bridge the gap between economics and cost?
- Allocating costs for pollution- air quality and public health impacts etc – where robust studies are not available.
- How to value benefit not realised due to static or inappropriate regulation?
- Need improved techniques for robust measurement of valuations for non-market goods.
- Understanding that pricing/ monetisation does not equal valuation, but pricing/ monetisation does equal decision/ valuation support methods.

- Asking people's preferences about e.g. drought or flood changes will vary significantly if they have just experienced such an event.
- Need better science to support nature-based solutions.

Use of tools and methods

- The affordability of good valuation studies.
- Presenting systems of costs (not just monetary) in an easy to understand way as a learning tool and helping to inform a common starting pace for change.
- Making it easier to use values in policy decisions.
- Valuation is just the start, need the tools to make it real.
- Evidence of the role of nature in providing solutions.
- Understanding the complexity of space and scale across the Nexus.
- Tools hide complexities and miss the opportunity to engage, involve and learn. If we can understand the process of valuation, which assumptions have been made and how, then we can benefit from the £-estimates, otherwise it's all just numbers.
- Provision of cultural services is a late developer but has increased development in values.
- Avoid re-inventing the wheel – revisit the 'Quality of life Capital' method, explored by the Countryside Agency, around 10 years ago.
- Complexity can lead to perverse outcomes.
- Stakeholder and deliberation on values is fundamental – cost benefit analysis/ monetisation are decision *support* not decision-*making* tools.
- Decision-support is not decision-making. Decision-support needs economic appraisal, but decision-making is always political and bound up with many preferences and values that are not economic.
- Risks in presenting an entirely economic framework for valuation and decision-making.
- In one of the talks it was stated 'In most cases, market prices are a good guide to *value*' - no, they are a good guide to the state of *supply and demand* for a good or service.
- How to differentiate between
 - Damage/ impact avoidance?
 - Preventing damage/ impact?
 - Repairing damage/ impact?

Challenges to use of data

- What is enough data?
- Do we have enough data to be certain about valuations?
- Are the data today telling us what to plan for?
- Making the links- joining data sets, use and translation of data.
- Sharing data between agencies and industries to form a more complete picture of the inter-sectoral linkages and costs.

- Difficulties of applying best practice for data management at local place-based scale when outcomes needed for interdisciplinary coordination.
- Understand the need to translate data for decision-makers.
 - Valuation data are not always fit for purpose; not specific for the case in point, too complex and not accessible by Defra analysts.

Challenge of uncertainty

- How to deal with uncertainty: understanding uncertainties and the influence of this on trade-offs. Need for greater certainty in data to value costs and benefits of projects.
- How to reflect scientific uncertainty over impacts, in valuation and cost benefit analysis.

4. Decision-making challenges

- Do we know what we are trying to do?
- Getting all the relevant factors to consider on the table.
- Engaging with the right people to identify the varied aspects of the nexus challenge.
- At what level does the decision need to be made?
- Understanding different motivations to adopting a natural capital/ ecosystem approach.
- Decisions should be evidence-based.
 - Unrealistic expectations about how much and how good an evidence base is need to make decisions at all levels.
 - Need for better evidence at the local level for local decision-making.
 - Using the supposed uncertainty and lack of evidence as an excuse for not making decisions.
- Are decisions future-proofed e.g. if food prices increase, what would the impacts or trade-offs be?
- Valuations for government policy is different to making business decisions.
- Including ethical and social values in decision-making which cannot be commensurate with monetary values.
- Getting decision-makers to see beyond headline Net Present Value.
- Nexus issues of biodiversity, floods and water are a massive interaction of policies: need increased coordination.
- Conflicts between risk and commitments.
- How to counter 'free rider' problems?
- Default 'no' usually presented as an option, but it rarely is!

5. Governance challenges

- How can we bring open policy/ valuation/ deliberative processes into new devolution/ localism debates and systems?
- Short-term political cycles.

6. Communication and engagement challenges

- Do we have enough evidence and should we simply communicate it better and add value to existing thinking?
- Need coherent and simple messages to people across the whole agenda:
 - Confusion about ecosystem services and natural capital definitions.
 - Need to explain the nexus and valuation in a jargon-free and transparent way.
 - Translation of scientific knowledge to different audiences.
 - Need to develop the right language to open discussion of our work to wider audience, including business.

Making use of current research and knowledge

- Communication between academic and non-academic spheres to extract useful tools for applied purposes.
- How do we mobilise and/or package existing data and knowledge to better inform decision making?
- How can overarching valuation tools/frameworks can be scaled down to inform local decision-making?

7. Behaviour change challenges

- How to influence behaviour change?
- Actual versus presumed behaviour of stakeholders/ public.
- How to demonstrate the value of improved information about human preferences?
- Responsibility for individual decisions leading to collective outcomes.
- Influencing social norms.
- Business models around potential from existing investments by creating demands and doing things differently; making the business case to do things differently.
- Understanding where calculating monetary costs are useful as a means to incentivise sustainable consumption; and where other means are more appropriate.

8. Impacts on society

- Addressing the distributional and procedural injustices that result from monetary measures.
- Mapping the dimensions of wellbeing that require non-monetary valuation.
- Mapping social vulnerabilities to environmental impacts.
- Dealing with cultural values in complex Nexus decisions- see experience of Rio Tinto in working with indigenous communities and sacred sites.
- If we see some aspect of nature as non-negotiable, sacred, non-tradable, this is not a problem to be overcome, but could be the best starting point for consequent

decision-making. This is not a limitation to be regretted and overcome by some universal economic framework. The refusal to set a market price on some things could actually be seen as a strong guide to its value.

- Understanding of ecosystem 'consumers' e.g. protecting estuarine communities with increased walls can destroy salt marshes.

Health

- Mental health is costly when it goes wrong. Anything to improve mental health and wellbeing is beneficial and brings huge financial benefits.
- Research needed on mental health and wellbeing benefits of a nature-rich environment e.g. just green space or birds and meadows?

9. Implementation and action challenges

- Analysis paralysis: need a cycle of do-learn-do etc.
- How do we achieve actions now?
 - Challenges so big no one will move, or invest.
 - Time is an issue, we need to act now but the time to change takes years.
- Use of valuation tools to inform investments in natural capital.
- Closer links between decision makers at the top and the people on the ground.
 - Make people/ citizens an integral part of developing policies, priorities and solutions.
 - Need to empower the people on the ground.
 - Unrealistic to expect small organisations such as the Rivers Trusts to deliver evidence for higher level strategic policy.
- Convincing resource owners of the value of a nexus approach and why it should be supported with their resources.
- Public perception of privately owned utilities.

Question: Have you used any economic or other approaches already in your work?

Following from the afternoon talks, workshop participants were asked if they were familiar with economic and other approaches and if they were already using them:

- Have used **Stated Preference** in river basin planning. Double win if engage at local level; better values and deeper engagement.
- **Payments for Ecosystem Services Approach** (presented by Nick Hanley): good approach; helps pay the 'right' amount; good ideas to incentivise cooperative working. Worth testing this approach for health.
- RSPB example: developing a **Payments for Ecosystem Services** project around Poole Harbour, Dorset. This includes exploring negotiations across a range of players; ended up with a dialogue, but these were critical elements that stakeholders wanted to consider and weren't prepared to compromise on.
- Already familiar with the Defra **Payments for Ecosystem Services** projects <http://ecosystemsknowledge.net/resources/programmes/pes-pilots>
- There are links to **Nudge** in the behaviour change side of the work, but these are not obvious.
- Like **The Integrated Model** (presented by Brett Day) but would like to also see water quality and water quantity incorporated and to see the effect of this on land-use change.
- **Visual tool** (presented by Amii Harwood) is very persuasive but not very transparent (black-box nature of the model). A powerful communication tool but need to show the assumptions.
- Westcountry Rivers Trust – using **visualisation** at a catchment scale.
- **Toolkit for practitioners and managers** in Wales is in development (due 2015). This includes
 - Spatial mapping for complex systems.
 - Habitat creation – with priorities and interventions.
 - Benefits and where needed, including health.
- All London Green Grid 'to promote the **design and delivery of green infrastructure** across London'. Includes
 - Detailed map, overlaid with areas of deprivation.
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 - Shared strategy between local and national government and NGOs www.london.gov.uk/priorities/environment/greening-london/improving-londons-parks-green-spaces/all-london-green-grid
- National Grid are doing an **ecosystem services assessment** <http://www.businessgreen.com/bg/news/2337785/national-grid-charges-up-natural-capital-thinking>

Research questions: what else do you need to know to help you to make the best use of economic or other approaches in nexus decision-making?

Participants were asked to select 2 main challenges per table, and outline research questions related to these. This was used in the workshop as a way to narrow the focus into a more manageable list of research suggestions and to give a flavour of the research opportunities. This list should not be taken as a prioritisation of the need for research. Indeed, some of the challenges outlined at the start of the workshop were not selected for a research question, but may still be very pertinent to specific sectors.

1. Working across disciplines and across sectors- research questions:

- How can we access the funding to generate the evidence needed?
- How can real integrated research (not pretending) be achieved?
- How can a common understanding across the evidence base be developed?
- Can we agree on theoretical frameworks for integrated research?

2. Innovation - research questions:

- Need to ask questions differently – what are the mechanisms that will get us there and how do these work at varying scales from local to global?
- What innovations would help in implementing novel water storage solutions?

3. Nexus resource - research questions:

Water storage on farmland

- What are the costs and opportunities of storing water on farmland in winter to use for crop irrigation in the summer?
 - Who should be involved and how would you incentivise uptake of such a scheme and encourage cooperation across different players?
- How to deal with uncertainty and make sure decisions are robust?
- How to gather evidence base to show catchment absorption benefits and applicability?

Are there additions to the Nexus challenge that need to be addressed, such as carbon budgets?

- How would this affect business?
- What legislation would be needed?

4. Refining and using tools and methods - research questions:

- Can we develop low cost methods for evidence gathering (not in the £100k range!).
- How to value high impact, low probability events?

- How can we make better use of existing evidence? How to identify gaps and bring this to the audience?
- Timescales are difficult to get public institutions and government to consider – how can we improve this?
- What incentives are needed to avoid rebound effects?

Payment for Ecosystem Services

- Are *collaborative* Payment for Ecosystem Services schemes possible and how can they be enabled?
 - How can benefits for non-users be valued?
 - How do individuals buy into schemes (literally – how do they pay)?

Future-proofing and uncertainty

- How can models be future proofed? What are the nexus parameters that would need to be measured to do this? How would this change trade-offs?
- How do models change in an uncertain future, e.g. with food price rises? How can uncertainty be incorporated into models?
- How can we quantify the loss of services before they are lost? Are measures for this consistent?

Non-monetary valuation

- How can we get better data on benefits without having to use monetary values for everything?
 - Can we develop non-monetary values that are tangible, logical and uniform?
- How to bring together economic and other valuations together (e.g. cost-benefit versus 'hearts and minds') – how to do this in different ways or at different stages?

Visualisation

- How can we make visual tools persuasive and powerful for communication but also make the assumptions in the models clearer?

Data

- How do we use metrics that are appropriate to the audience? People need to be able to understand the evidence before they decide what they think.
- How can multi-criteria analysis and other models be used to bring data together?
- Commercial sector gets direct customer feedback, but this much slower in the public sector. Can we make use of commercial sector methods and data?

5.& 6. Decision-making & governance - research questions:

- Do we know where we want to be? E.g. with water use that is sustainable and affordable?

- How can decision-makers get better access to evidence –with accessible language and methods?
 - How can we focus on evidence related to real world, applied problems?
- How do we find the right balance of motivations and valuation? Need qualitative as well as quantitative research.
- How can we gain a better understanding of the true costs of a regulatory framework to different sectors? E.g. change of regulatory standard for a pesticide level in water- what is the cost of this to agriculture and the water industry?
- Values are imprecise but valuation is being used in a black and white way by companies and regulators. How should valuation be used in these circumstances and what are the limitations?
- To what extent and when are economic assessments, such as cost-benefit analysis, used in companies and by the regulators? How is has this been used in decision making? Is this appropriate and robust over time?
- If go beyond cost-benefit analysis approaches then what democratic processes need to be in place for that to happen?
- What is the line we do not want to cross? The downright ‘no’, for example on environmental limits?
- Reform of EU legislation – if we had a choice, what legislation is useful and would be want to keep?
- How do we price the risk of doing nothing?
- How do we hold business and government to account?

How are decisions-made?

- Need to understand the process of decision-making and the pressures on decision-makers, as well as evidence used. How can we better understand
 - What decisions are being made?
 - Who is making these decisions?
 - What the purpose of the decision is?
 - What are the pressures on decision-makers? E.g. non-valuation evidence; socio-political pressures (such as not wanting to upset certain bodies).
- How does devolution affect decision making on nexus issues?
- How do we take into account that political reality often trumps the economic assessments?

7. Communication and engagement - research questions:

Who to engage?

- How can we bring together different people at the beginning of an assessment and how to understand each others’ language?
- How do we tackle the knowledge spectrum – from a layman’s narrative to a specialist narrative? Do not assume an information deficit!

How can we ensure quality public dialogue?

- Are multi-criteria processes too complex or do they bring some simple rigour to public engagement?
- Are models helpful in public dialogue? How should these be developed?
- Is the 'Nexus' concept relevant at the local scale? Still too theoretical and national-level. Can we create local Nexus stories?
- Deliberative approaches are very costly and resource intensive but get better results.

Dialogue topics

- What is the public perception of different valuation methods?
- How can we enable better discussions on the economy and on the public sector?
- How can we make a watertight case for consideration of the natural environment? How does this compare with schools, roads, public health?

8. Behaviour change - research questions:

- Does economic evidence really change behaviour and lead to action?
- How does valuation map onto communities to incentivise/ enable collective change?
- What is the process for change? What makes business, government or communities shift?
- How can we enable collective action?
 - What is the role of the individual?
 - What is the role of a city?
- Business: rewards for business are currently based on share price/ profitability – so how can we change the reward? Are there alternative value systems?

9. Impacts on society - research questions:

- What are 'economic impacts'? This term means different things to different people.
- Distribution of costs and benefits: who actually pays and who actually saves?
- How important is heterogeneity?
- How can we assess distribution of benefits at different scales (e.g. farm-catchment-country- GB- Europe?).

Health

- Information on health risks and benefits is not known outside of the health sector – how can we translate these findings so they are cross-sectoral and specific?
- How do we demonstrate to policy makers and users that there are private and public benefits to using the environment?
 - Need robust methods to unpick the mental and physical benefits.
 - Need to engage with the public to understand the perceived benefits.

10. Implementation and action - research questions:

- How can we make a strong business case with evidence for action?
- Can valuation tools be used to inform investment in natural capital?
- How can we encourage local economic solutions that are suitable for different places and different circumstances?
- How does the planning system help/ hinder Nexus implementation?
- Can Local Nature Partnerships and Local Economic Partnerships help realise the value of natural capital?

Report compiled by Dr Ruth Welters and Professor Ian Bateman drawing from workshop notes taken by participants (given in unabridged form in Appendix C).

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This report is available on the Nexus Network website <http://thenexusnetwork.org/report-from-values-and-valuation-workshop>