

Nexus Shocks Network grant

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Summary report back to the ESRC Nexus Network

I would like to extend my thanks to the ESRC Nexus Network for funding this work. This summary report includes an overview of the project, summary of outputs, breakdown of costs, and reflections on the project.

Overview of project

In early 2015 the ESRC Nexus Network funded the Global Sustainability Institute to set up and chair the Nexus Shocks Network, chaired by Dr Candice Howarth and Dr Aled Jones. We have produced a booklet summarising the key areas that emerged in our workshops and as a result of the Nexus Shocks network symposium. The booklet can be downloaded [here](#).

The funding allowed us to establish the Nexus Shocks Network to bring together interdisciplinary and cross-sectorial expertise to engage in constructive dialogue, identify opportunities to address challenges, and explore opportunities to better inform decision making in response to nexus shocks. The Nexus Shocks Network now comprises over 300 stakeholders from academic, business, government and not-for-profit organisations.

We set up the Nexus Shocks Network to facilitate intelligent and constructive conversations on how to build meaningful inter-disciplinary research and establish connections with relevant stakeholders to co-design ideas on nexus topics. As part of this, in June 2015 we convened an initial advisory group drawn from the Network to help frame our definition and the focus for the network's activities. We adopted a co-design process as a critical component to ensure impactful and useful outputs. This meant that throughout the pilot phase no assumptions were made on the definition of nexus shocks, the process of decision making or how best to construct a research programme to address issues associated with nexus shocks. Following our initial advisory group meeting, we co-produced the aims of the Nexus Shocks Network:

- 1. To overcome obstacles and build on opportunities in responses to nexus challenges*
- 2. To innovatively assess the complexity of societal responses to nexus shocks*
- 3. To better inform business and policy responses*

As part of this we assessed how to define nexus shocks and rather than a clear definition, we agreed on a broad narrative on how these shocks are low probability, high impact events that span energy, water and food systems. They impact multiple actors and scales making them complex to understand and difficult to address, and importantly they represent systemic and cascading risks in both physical and social systems. These types of events are likely to become more frequent given physical trends such as climate change and economic trends including increased globalisation which in itself builds both robustness and fragility.

Initial work by the Nexus Shocks Network

In autumn 2015, we facilitated five workshops exploring specific themes to critically assess how different stakeholders across sectors can contribute to the creation of better decision making processes around shocks to the nexus:

1. Predicting shocks and hazards (hosted by the *Met Office*)
2. Transmission and mitigation of nexus risks through infrastructure (hosted by *Atkins*)
3. Insurance and finance for resilience (hosted by *Lloyds of London & Willis RE*)
4. Local business responses to shocks (hosted by *Climate UK, Cambridge Cleantech and LDA Design*)
5. Governance, governments and shocks (hosted by *Chatham House*)

Each workshop built from a case study of decision making around a nexus shock provided by the hosts and delegates then explored barriers and opportunities associated with wider nexus shocks.

The workshops identified a number of critical issues and themes that require further exploration. Many of those issues and themes are outlined in this booklet. On the 30th November 2015 a symposium was held in London, UK which drew together the lessons from each of these workshops and explored common themes, barriers and approaches to decision making around nexus shocks.

Next steps

The Nexus Shocks Network will continue to act as a bridge between academics and experts in the public and private sectors. It will explore ways to assess methods for capturing relevant data, taking into account the priorities of the stakeholder groups and aims to help construct what 'good' decision making in response to nexus shocks looks like.

Who owns the impacts from nexus shocks? Who pays for resilience? How can judgment based decision-making be better informed by evidence from both physical and social sciences? How to we judge a good decision?

All these are questions we continue to explore whilst allowing space and time for reflection and flexibility in our approach and in the context within which nexus shocks occur.

Outputs

- Howarth, C., Harris, F. and Cooper, A. *Decision making in response to nexus shocks: framing the debates*. Application to Nexus Network Collaborative Grant
- Howarth, C. (2016) *What we've learnt so far: findings from the Nexus Shocks Network*. The Nexus Network, available online at <http://www.thenexusnetwork.org/the-nexus-shocks-network-what-are-we-learning/>
- Howarth, C. Ed. (2016) *What we've learnt so far: findings from the Nexus Shocks Network*. Global Sustainability Institute
- Howarth, C. and Monasterolo, I. (in prep) Understanding barriers to decision making in the energy-food-water nexus: The added value of interdisciplinary approaches. To be submitted to *Climatic Change*
- Howarth, C. and Monasterolo, I. (in prep) The role of interdisciplinary approaches to build opportunities for decision making and modelling practices on the energy food water nexus. To be submitted to *Nature Climate Change*

Reflection on project

Based on questions set by the Nexus Network

1. How helpful or unhelpful was the framing of 'the nexus' for engaging with stakeholders?

We found this framing very helpful to use as it encapsulated many of the concepts that are integral in understanding shocks, including complexity and interconnectedness. In addition it was particularly helpful as it enabled us to focus on the water, energy, and food systems, whilst being sufficiently broad to explore all areas associated with shocks – from local to global.

2. How easy/difficult was it to achieve 'buy-in' to the project from stakeholders outside academia?

We found it relatively easy to achieve buy-in to the project because (i) the topic the Nexus Shocks Network explores is of significant interest to the wide range of stakeholders we engaged with, (ii) we welcomed and encouraged input into the process and design of the network from all stakeholders from the outset, and (iii) we had excellent and high calibre hosts for our workshops.

The initial co-production workshop enabled us to refine our approach to the key concepts we were working with (e.g. nexus and shocks) as well as co-produce the aims and focus of the research so that stakeholders had contributed to the process. The people who attended this workshop then became our Advisory Board who worked with us to suggest venues, connect us with delegates, and provide feedback on our plans.

3. What were the issues or obstacles encountered, and what might have helped to alleviate these?

There were two obstacles in delivering this project.

The first barrier was lack of funding to cover costs of time spent setting up the network and the workshops. As a team we contributed a substantial amount of time (i.e. more than the total value of the grant) to manage, coordinate design, deliver and report findings from the project

The second barrier was ensuring that the structure and plans for the workshops were not only useful for us but also useful for the hosts of the workshops, while remaining consistent throughout. The plans for the workshops were drawn up based on conversations with all the hosts and we listened and took feedback on board. Through collaboration, a flexible approach and co-production methodology we were able to achieve this.

4. How appropriate were the choice of networking activities carried out as part of this grant (e.g. workshops, use of surveys etc.), and what might have been done differently in retrospect?

The networking activities that we adopted were very appropriate. We used workshops whereby through a co-production approach delegates were empowered to contribute their own ideas to our project design and development of the network while also connecting with each other. Feedback from the workshops proved that this was successful, for we were able to bring people together that would not have otherwise met.

5. How easy or difficult was it to engage people from different disciplinary backgrounds in the project?

The transdisciplinary nature of nexus shock decision making is central to the work of the Nexus Shocks Network as a group of committed stakeholders. We believe that developing physical science models to better predict endogenous nexus shocks, while vital, will not contribute to a more resilient society without the equivalent effort in capturing lessons from social sciences as well as engaging those actually involved in decision making from business, government and not-for-profit organisations right at the start.

A number of challenges from communication to ownership of impacts were identified during the discussions but so were a host of potential solutions. The challenges associated for example with different languages and lexicons used to communicate impacts and responses to nexus shocks across different stakeholders and sectors required flexibility, time and sustained engagement in the design of our work, the facilitation of workshops and reporting back to our funders and with members of the Network.

We addressed these issues in the way we structured our workshop: by sector. Each stakeholder group could be attributed to different disciplinary backgrounds, for example, infrastructure would bring a different perspective to governance.

6. What kinds of communication problems or other issues were encountered between disciplines (e.g. conflicting problem definitions and priorities; disciplinary hierarchies), and what helped, or what might have helped to overcome these?

We did not encounter significant communication issues.

We were clear about our definitions from the outset, working on them during the first co-production workshop, meaning that there was no conflict in this area. However we also ensured we were flexible, reflective and open to additional ideas or contributions from network members and/or emerging research/work in this space throughout the project.

7. What kinds of support do you think would be appropriate to facilitate meaningful transdisciplinary collaboration of the kind attempted in this grant call?

In order to continue to extend the activities of the network, we would need additional financial support. We have built on the findings of the first phase of the Nexus Shocks Network, funded by this networking grant, to put together a collaborative proposals with key members of the Network and apply for funds from the Nexus Network Collaborative Grant call to pursue phase 2 of the project.

8. What impact did the project achieve?

The project has achieved a number of impacts:

- The network now comprises over 300 members and we have engaged with a number of organisations (please see list in the Nexus Shocks booklet).
- We have forged strong relationships with our workshop hosts which we will continue to engage with going forward
- Following our workshops we have submitted a proposal to the Nexus Network Collaborative Grant call in collaboration with the University of Hertfordshire and UCL
- A number of outputs, listed above
- We have also established a number of new collaborations, with more projects in the pipeline

Breakdown of costs: expenditure to 31st January 2016

Total expenditure: £18,990.15

Workshop 1: co-production advisory group, London, 19 June 2015. £419.90

- Room hire: £0
- Catering: £228.00
- Team and Participant travel: £191.9

Workshop 2: methodology development, Cambridge, 6 August 2015. £274.30

- Room hire: £165.00 (ARU room internally charged)
- Catering: £86.00
- Team and Participant travel: £23.30

Workshop 3: Predicting Shocks and Hazards, Exeter, 28 September 2015. £1,823.63

- Room hire: £0
- Catering: £256.14
- Team and Participant travel & accommodation: £1567.49

Workshop 4: Infrastructure, London, 1 October 2015. £1,670.55

- Room hire: £1125.60
- Catering: £405.84
- Team and Participant travel: £139.11

Workshop 5: Finance and Insurance, London, 2 October 2015. £90.21

- Room hire: £0
- Catering: £0
- Team and Participant travel: £90.21

Workshop 6: Local Economy, Cambridge, 6 October 2015. £1,113.19

- Room hire: £282.00
- Catering: £405.72
- Team and Participant travel & accommodation: £425.47

Workshop 7: Governance and governments, London, 9 October 2015. £941.94

- Room hire: £0
- Catering: £768.72
- Team and Participant travel: £173.22

Nexus Shocks Symposium, London, 30 November 2015. £5,928.02

- Room hire: £1449.60
- Catering: £1629.60
- Team and Participant travel & accommodation: £2848.82

Other costs: £6,728.41

- Materials and outputs: £5,732.43
- Event attendance: £995.98