



Knowledge Exchange Seminar Series (KESS)

The Nexus project: a case study of scenario planning methodology applied to food system planning – *Dr Wayne Foord, Queen's University Belfast*

1. Introduction

The Nexus project is funded by the ESRC through the [Nexus Network](#), and is led by Prof. Sally Shortall (Newcastle University) and Prof. John Barry (Queen's University Belfast). Project research partners include the Institute for Global Food Security, the Department of Agriculture, Environment and Rural Affairs (DAERA), and the Agri-Food and Biosciences Institute (AFBI), Belfast Food Network, and Friends of the Earth.

The project addresses the following research questions: *How might global climate change and future fossil energy depletion impact on food and agriculture systems in Northern Ireland? What are the different ways that food system sustainability is framed by different stakeholders? And what opportunities are there for developing new, shared understandings and options for action?* The project brings together stakeholders from public, private, academic and NGO sectors, with differing perspectives and interests within the food system, and offers a process for developing a broader, more integrated perspective of the food system. The scenario planning methodology also presents opportunities to test and adapt existing policies, and to develop preferred transition pathways, in light of plausible future climate and energy scenarios.

2. 'Nexus thinking'

Nexus thinking¹ highlights inter-linkages between climate change, energy, water, and food security, and promotes integrated governance of these domains, across sectors and scales. The project addresses the impacts of the global nexus at the NI regional scale. It is also mindful of critiques that identify gaps in nexus thinking in relation to power

¹ Bazilian, M., et al (2011) Considering the energy, water and food nexus: towards an integrated modelling approach, *Energy Policy*, 39.12: 7896–7906; Hoff, H. (2011) 'Understanding the Nexus', background paper for the Bonn 2011 Conference: 'The Water, Energy and Food Security Nexus', Stockholm: Stockholm Environment Institute.

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and social justice issues². The nexus is characterised by complex interactions, uncertainty, and contention in terms of different/competing visions of sustainable food systems. The project therefore adopts a participatory, multi-stakeholder approach, providing opportunities to create a shared vision, and facilitate collaborative learning and transformative action.

3. Scenario planning

Scenario planning methodology is appropriate to contexts involving uncertainty. It does not predict the future, but explores plausible futures, facilitating adaptive responses and contingency planning. It lends itself to multi-actor participation, encourages ‘thinking about the unthinkable’³ and strategic policy innovation. Scenario planning is a well-established policy and strategy making tool. It has been used in the global South to address local and regional energy-climate-food security challenges⁴, and also more recently in the global North⁵.

Scenario planning typically involves the following elements:

- *Analysing existing and emerging trends affecting a specific policy area or system*
- *Identifying a range of plausible futures*
- *Creating narrative descriptions of alternative future scenarios*
- *Testing existing or proposed strategic options within alternative scenarios*
- *Adapting/fortifying strategy, developing new options and contingency plans*

The 2 global scenarios used in the workshops describe 1. multiple extreme weather events impacting on global food and feed grain markets, and 2. converging resource, ecological, and geopolitical crises in the Middle East disrupting global energy supply. They are based on recent academic work⁶, and emphasise the risks of more imminent, disruptive shocks. Workshop participants translate these global scenarios into NI regional scenarios.

While scenario planning is a core feature of the project, it also includes a number of other complementary elements, including: public lecture events at Queens University; and interviews with stakeholders to identify the range of perspectives held in relation to food and farming sustainability, and explore options for policy or practical initiatives.

² For example, Allouche, J.; Middleton C. and Gyawali, D. (2015) Technical Veil, Hidden Politics: Interrogating the power linkages behind the nexus, *Water Alternatives* 8(1): 610-626; Allouche, J., Middleton, C. and Gyawali, D. (2014) *Nexus Nirvana or Nexus Nullity? A dynamic approach to security and sustainability in the water-energy-food nexus*, STEPS Working Paper 63, Brighton: STEPS Centre; and, Dupar, M. & Oates, N. (2012) *Getting to grips with the water-energy-food ‘nexus’*, Climate and Development Knowledge Network (London), <http://cdkn.org/2012/04/getting-to-grips-with-the-water-energy-food-nexus/>

³ Kahn H, (1962) *Thinking about the Unthinkable*, Horizon Press, New York.

⁴ For example, Addison, a, & Ibrahim, M. (2013) *Participatory scenario planning for community resilience – planning tool*, World Vision, UK; and Vervoort, J. et al (2014) Challenges to scenario-guided adaptive action on food security under climate change, *Global Environmental Change* 28: 383–394.

⁵ For example, Galli, F., et al (2016) Exploring scenario guided pathways for food assistance in Tuscany, in *2016 Fifth AIEAA Congress, June 16-17, 2016, Bologna, Italy* (No. 242439). Italian Association of Agricultural and Applied Economics (AIEAA); and Carroll, B. et al (2016) *Towards a fairer, healthier, more secure and sustainable food system in Cork, Ireland*, TRANSMANGO Scenarios Workshop Report, Dublin City University.

⁶ Bailey, R. et al (2015) Extreme weather and resilience of the global food system: Final Project Report from the UK-US Taskforce on Extreme Weather and Global Food System Resilience, The Global Food Security programme, UK; and, Ahmed, N.M. (2017) *Failing States, Collapsing Systems: BioPhysical triggers of political violence*. Switzerland: Springer International Publishing.

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4. Initial findings

Interviews⁷

15 individuals and representatives of organisations with involvement in policy-development and advocacy in the farming and agrifood sectors, were interviewed. Interviews were semi-structured, with questions providing a broad guide for discussion and seeking to establish interviewees' views about: climate and energy challenges in relation to the food system; government and non-government efforts to address these challenges; and how policy-making processes and governance might be improved. Interviewees were also asked to suggest models of good practice in relation to food system sustainability.

The following sections cover: the range of normative positions held in relation to food issues and food system sustainability; common themes; views about climate change and the food system; views about fossil energy and the food system; governance issues discussed; and models of good practice in NI and elsewhere, identified by interviewees.

Range of positions regarding food issues and sustainability

All interviewees, without exception, expressed positive views about the need to protect the environment, at the same time as promoting a viable farming sector.

Three different positions can be identified, with some overlap between them. Firstly, advocacy for re-localised, non-intensive food production; secondly, emphasis on quality of produce and environmental standards as a global marketing strategy; and thirdly, emphasis on production growth, mitigated by 'sustainable intensification'⁸. The boundaries between these positions are blurred, and the differences are, to some extent, a matter of emphasis, rather than qualitative.

Advocacy of small-scale, re-localised, non-intensive food production is also typically associated with concerns about food poverty, diet-related health issues, food security, food waste and regional food footprint. Some highlighted the paradox of NI exporting 70% of its agricultural produce, and pushing for more productivity and growth, while there are increasing levels of food poverty in the region, especially in urban areas.

The second, and largest, grouping is sceptical about NI's capacity to compete globally on price, hence the emphasis on quality and environmental standards. This position advocates pragmatic, 'win-win' solutions to productivity and environmental sustainability, and is associated with a proposal to base post-Brexit farm subsidies on environmental stewardship of the land, framed as 'public money for public goods'⁹.

⁷ This briefing provides a provisional thematic analysis of the interview recordings. A more in-depth analysis, based on full transcriptions, will be carried out prior to completing the final project report.

⁸ 'Sustainable intensification', according to the Royal Society (2009), is a form of agricultural production whereby 'yields are increased without adverse environmental impact and without the cultivation of more land' – The Royal Society (2009) *Reaping the benefits: science and the sustainable intensification of global agriculture*, London. This approach may, for example, involve the use of agroforestry to reduce nutrient runoff from farmland, or technical solutions, such as, air scrubbers to mitigate GHG emissions from factory farms.

⁹ This proposal was initially put forward by the National Trust in August 2016. See <http://www.countryfile.com/article/farming-subsidies-need-complete-reform-says-national-trust>.

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The third position, places more emphasis on production growth, efficiency, and economies of scale, but also acknowledges the need to maintain quality of produce and environmental standards. This is to be achieved by 'sustainable intensification'. Environmental harm will be mitigated by agroecological and technical solutions.

Common themes

Common themes included: Brexit; the relationship between the environment sector and the farming sector; communicating climate change to farmers; extreme and unseasonal weather; the Renewable Heating Incentive (RHI); and leadership.

Brexit - Almost all interviewees expressed concerns about the uncertainty surrounding the Brexit vote, the risks to farm businesses with the potential loss of subsidies, and a 'race to the bottom' if the UK abandons environmental standards and competes to produce cheap food. Brexit is also seen as a potential opportunity to improve farm efficiency, and to reform subsidy payments to farmers in favour of environmental stewardship.

The environment and farming sectors - The relationship between these 2 sectors was seen as adversarial in the past, and this has created mistrust and misunderstanding. There was recognition that they needed to work together, and that farming was part of the solution to environmental challenges, not just the cause.

Communicating climate change to farmers - A number of interviewees stressed the need to communicate climate change to farmers in a less abstract way, to ground it in their actual experience of changing and disruptive weather, and to promote better practice on the basis of cost-saving and efficiency.

Extreme and unseasonal weather - This topic came up frequently in relation to disruptive and unseasonal weather in Ireland, as well as the impact of extreme weather events on global commodity prices, especially feed grain, and therefore affecting livestock farmers in Northern Ireland.

The RHI scandal - A shared view was that the RHI scandal has undermined efforts to promote renewables and the sustainability agenda generally.

Leadership - The word 'leadership' came up repeatedly, e.g: 'lack of political leadership and vision'; 'need for leadership'; and 'no leadership regarding environmental governance'.

Climate change and the food system

All interviewees expressed views on this subject. Some focussed on mitigation of agriculture's contribution to GHG emissions; others on adaptation issues, such as, the impacts of extreme and unseasonal weather on farming in Ireland, and globally, on food and feed markets. Some remarked on the increasing evidence of climate change happening now. 2 interviewees expressed the belief that global warming would benefit food production here, giving Northern Ireland a competitive advantage.

Fossil energy availability and the food system

Most interviewees did not comment on this issue because of lack of knowledge, or because they had no concerns about it. Some related it to GHG emissions and climate change. 2 interviewees were confident that solutions would be found to future fossil energy depletion, while another 2 interviewees expressed concern about the dependency of the food system on fossil energy and fossil-based inputs, and the impact of future depletion on food security. The

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vulnerability of NI was mentioned several times given its dependency on imported oil and gas, and particularly the risk of Russia withholding gas supplies.

Governance issues

A range of issues was discussed in relation to food, agrifood, and environmental governance and policy processes. As mentioned above, a repeated theme was the need for political leadership and vision, and the concern that the current system is inherently short-termist. The process of policy development and implementation is seen as too slow, and therefore failing to respond in a timely fashion to emerging needs and challenges. Policy making is viewed as too closed, with some industry stakeholders having disproportionate influence. There is excellent input from a few environmental champions, but there is a perception that the wider environmental sector is marginalised and excluded. One interviewee suggested that policy decisions are often, in effect, made prior to public consultation. There are numerous working groups and fora addressing different food issues (e.g. climate change; food poverty, food waste; etc) but no holistic, strategic approach that allows joined-up thinking.

Positive proposals in relation to governance comprised: wider inclusion of environmental stakeholders in policy fora; more genuine engagement of the public across Northern Ireland in policy debates about the future of food and farming; and creation of a regional, strategic process or structure that brings a holistic approach to food, farming and sustainability.

Models of good practice

Examples of good practice identified and proposed as models for NI include:

- Community supported agriculture (CSA)
- Agricultural colleges in the Netherlands teaching sustainable farming as mainstream practice.
- FareShare and Bia's more holistic model of addressing food poverty by supporting charities that address poverty more generally, and/or teach food growing & cooking skills.
- Development of 'Right to Food' legislation in Scotland.
- DAERA GHG stakeholder group and Climate NI's engagement with non-government stakeholders.
- Energy self-sufficient/exporting towns in Austria and Sweden.

Scenario planning workshop 1

The first workshop was held on 4th May. Participants took part in an envisioning exercise, and development of NI scenarios. Key features of the ideal food systems described included:

- Diversification of farming
- Support for exemplars/models of best sustainable practice
- Reduction in intensive farming, and prioritisation of environmental management
- Removal of direct subsidies, and diversification of subsidies that reward environmental stewardship, beyond grass-based production eg. horticulture.
- Fair farm gate prices and farm business viability

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- Sustainable Land Management Strategy to actively support development of sustainable farming, not just mitigate environmental harm of intensive farming.
- Government policy and training provision to support transition to sustainable farming
- Strengthening of research base and closer collaboration between DAERA, AFBI and universities.
- Broad, independent stakeholder forum bringing together NGO, academic, government, agrifood, and farming sectors.

Participants then considered 2 global scenarios. The first entailed crop failures in multiple ‘bread basket’ regions around the world due to extreme weather events, and resulting in shortages of cereals. The second involved converging ecological, resource and geopolitical crises in the Middle East, resulting in disruption of global oil supplies. Potential impacts in NI, identified by participants, are summarised below.

Extreme weather events & multiple ‘bread basket’ failures

NI would face high food and feed grain prices. Cereal growers will benefit from higher grain prices. Livestock and dairy farmers will suffer. Beef finishers would struggle to finish continental breeds on a more grass-based diet, and may stop buying. Dairy farmers would rely more on grass than feed grain, resulting in weight loss, less milk output, decline in fertility, and more calves lost.

There would be risks of panic buying, increased food poverty, decline in calorie intake, looting, social disorder and sectarian tensions, but also potential for community solidarity, supported by government, e.g. a 2WW ‘Dig for Victory’ style response.

Longer-term there would be a shift to more cereal growing, particularly oats, and more people willing to work in agriculture and horticulture.

Global energy crisis

This would entail rising costs of fuel, food, feed, and all other agricultural inputs. Many farms have some form of renewable energy, but all are still very dependent on fossil energy for machinery and tractors. They would be unable to harvest crops or feed livestock.

Other impacts and risks may include: general price inflation; queueing at the petrol pumps; panic buying; food shortages; looting, social disorder. People living in rural residential estates, with oil-dependent lifestyles, would be stranded. Again, there is also the potential for positive community-based responses, including: urban/peri-urban food growing initiatives; community supported agriculture; and occupations of unused land. There may be a decline in environmental standards as food production is prioritised, e.g. dumping of slurry in waterways and the sea.

In the longer-term, this would force transition to low-carbon farming, including: more labour-intensive methods; short supply chains; reintroduction of animal traction, along with a shift to electrification and renewables. There would be a return to mixed farming, and self-provisioning.

5. Conclusion

Broad generalisations and definitive conclusions are not possible from the small sample interviewed, but the findings do suggest a possible shift in thinking, across all sectors, towards greater strategic emphasis on quality of produce

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and environmental standards, and less emphasis on production growth. Some sectors of the agrifood industry appear to have a leading role in this shift.

Scenario planning is potentially a valuable strategic tool for policy-makers, especially in contexts of uncertainty and change. It can also be an effective way engaging a wide range of stakeholders in the policy-making process. This approach may be of benefit in addressing the challenges and uncertainties posed by Brexit, in particular to the food and farming sectors.

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