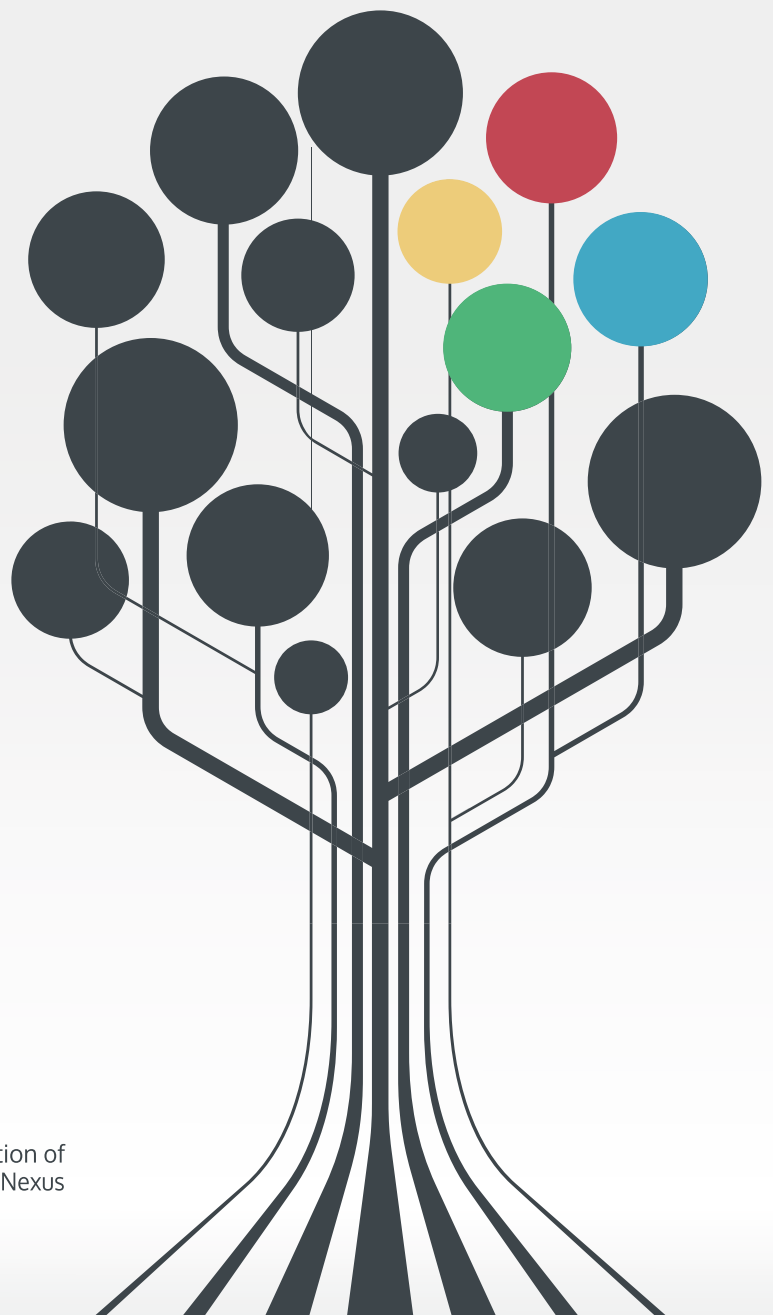


# Policy Evaluation for a Complex World

Find out what CECAN has learnt and how you can apply it  
April 2018



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The Centre for the Evaluation of Complexity Across the Nexus (CECAN) is a £3million national research centre hosted by the University of Surrey, bringing together a unique coalition of experts to address some of the greatest issues in policy making and evaluation.

## What has CECAN done so far...

CECAN's aim is to make policy makers' and evaluators' work easier and more effective, and to reduce the risk of evaluations being inadequate. We work in complex policy areas across the food-energy-water-environment 'Nexus'. Since March 2016, we have been pioneering, testing and promoting innovative evaluation methods and approaches. We have co-produced a range of case studies with government departments and agencies, published a briefing note series for policy makers, run a high-level fellowship programme, developed academic methodological innovations, rolled out an ambitious capacity building programme, and contributed to the HM Treasury's official evaluation guidance in the Magenta Book.

## What is complexity?

Complexity science is an approach to understanding the world which embraces the fact that it is made up of many diverse components, which interact in adaptive and nonlinear ways within 'complex systems'. Key characteristics of complex systems include: adaptation to changes, feedback loops, multiple scales, thresholds for change, areas of relative high and low stability, past states influencing possible future states, being highly dynamic, and being an open system, impossible to bound. These result in complex systems, both social and ecological, exhibiting tipping points, emergent new properties, and unpredictability.

## What is the Nexus?

The food-energy-water-environment Nexus is an approach to understanding the tensions, interdependencies and trade-offs between the food system, energy production and security, water systems, and the environment. Taking a Nexus approach means acknowledging these areas are linked, and efforts to improve sustainability in one domain without consideration of the others is likely to fail or have unintended consequences. The Nexus also emphasises connecting the social sciences to the natural sciences, and connecting academic research with decision makers in policy, business, and civil society.



Complex systems are fundamentally **unpredictable**. Our work does not 'solve' this, but gives us the approaches and tools to explore the uncertainty with rigour, and provides policy makers with the information they need to make decisions.

“How do you plan an evaluation when you have absolutely no idea what the outcome of an intervention will be since outcomes are emergent?”

**Government evaluator  
from a survey of CECAN collaborators**

## What does policy evaluation for a complex world look like?

Policy evaluation for a complex world can be described as ‘complexity-appropriate’. Complexity-appropriate evaluation is a rigorous and holistic approach that makes evaluators’ work both easier and more effective. It is an approach that:

- emphasises adapting to emerging findings;
- mandates iterative cycles of design, data collection and learning;
- engages a wide spectrum of stakeholders at all stages;
- embraces the full complexity of the policy and context being evaluated;
- assumes we can only steer complex systems, rather than control them fully.

Designing a complexity-appropriate evaluation requires many of the things that evaluators see as good practice, but doing them even better, whilst also being creative in considering how an evaluation can be more impactful. The choice we face is not whether to do a ‘complex’ or a

‘simple’ evaluation, but whether to do an effective or ineffective one.

Complexity-appropriate evaluation does not always necessitate using methods that we may perceive as being particularly sophisticated, data intensive, or advanced. Rather, it emphasises more than ever using methods that are fit for the purpose of answering our evaluation questions: methods that are appropriate. Using different methods in combination for different questions and stages of evaluation is central to complexity-appropriate evaluation. There is no exhaustive list of complexity-appropriate methods, however, with our collaborators we have focussed on developing and testing the use of: Systems Mapping (including dependency modelling and fuzzy cognitive mapping), Qualitative Comparative Analysis, Theory of Change Mapping, Hybrid Dynamic Bayesian Decision Networks, Bayesian Updating, Agent-based Modelling, and broader Methods Guides. You can read more about these methods in our briefing note series at [cecan.ac.uk/resources](http://cecan.ac.uk/resources).



Complexity is a **great opportunity** to improve policy evaluation; reducing the risk of evaluations being inadequate and increasing their rigour and impact. The choice we face is not whether to do a ‘complex’ or a ‘simple’ evaluation, but whether to do an **effective** or ineffective one

A photograph of several white sticky notes pinned to a surface. The most prominent note at the top has the words "DON'T PANIC" written in large, bold, red capital letters. Below it, another note says "Context Matters" in black ink. To the right, a note says "SERIOUS RECON" and "IMPLICATION" in black ink. Other notes are partially visible with words like "Unpredictability" and "DYNAMIC".

DON'T PANIC

Context  
Matters

SERIOUS RECON  
IMPLICATION

Unpredictability  
→ all the things

DYNAMIC  
MANAGEMENT



## What has CECAN learnt so far...

### In relation to practical policy evaluation?

- All government interventions in social and environmental domains are acting on complex systems. The best policy teams, analysts and evaluators in government acknowledge this, and are taking steps to address it. Many government departments have examples of evaluations that did not take account of complexity, and either failed to measure impacts in a meaningful way, or showed that a pilot policy achieved great success which was then not reproduced when rolled out at scale. There are some occasions where evaluations may not need to be complexity-appropriate, though these are rare, and the emphasis should be on being sure this is the case, rather than assuming simplicity.
- Government departments crave the time and space to develop capacity for complexity-appropriate evaluation. Without a clear picture of available solutions, they may struggle to articulate clearly their complexity-related needs; evaluators must give a strong and creative lead to government for successful complexity-appropriate evaluation.
- There is not enough of a focus on cross-departmental evaluation to deal with unintended consequences and Nexus interactions beyond one policy area. Nexus-related objectives and outcomes must be considered.
- Acknowledging the complexity of an area highlights the importance of decisions around the scope of an evaluation; artificially separating questions about the intervention, knock-on effects, and its context, may be counter-productive.
- The policy evaluation landscape is shifting; government is evaluating more varied policies, often made up of multiple projects, delivered in collaboration with multiple stakeholders. This means effective evaluation designs will be more bespoke, co-produced, and flexible; echoing the implications of complexity.



Complexity does not pose new challenges to evaluation, rather, it **intensifies** the challenges practitioners already tussle with

- Evaluation should be embedded throughout the policy process. This improves the quality of evaluations and increases their ability to deal with complexity; by improving, for example, data availability and collection, and policy design for learning. The best policy teams and evaluators are well-used to embedding evaluations in this way.
- Users must be willing to accept and use preliminary or provisional findings, and evaluators must be willing to provide these.
- Practitioners instinctively and intuitively want to evaluate in a complexity-appropriate way but are constrained by practicalities, time, and capacity. Government should be clear in its demand for complexity-appropriate evaluation from contractors.
- Commissioning will need to change to be more complexity-appropriate. We are currently exploring what improved commissioning processes and the resulting evaluation designs might look like.

#### ... in relation to methodological innovation?

- Complexity-appropriate evaluation methods are: co-produced with users, adaptable, iterative, and often a combination or hybrid of other methods. Rather than delivering precise but flawed answers, they provide ranges and likelihoods of outcomes, and deliver enormous learning in the process of their use.
- Many methods can be re-purposed for complex policies and contexts; the innovation is getting them in the right place, in the right hands, and using them in the right combination, at the right time.
- Using complexity-appropriate methods to develop theory of change maps and policy maps that include feedbacks and interaction between levels and paths is a key first step.

#### ... in relation to modes of working?

- Evaluation teams, hierarchical structures within and between organisations, and contracts need to be setup to have the capacity to adapt to the emergent requirements of complex-appropriate evaluations.
- Interactional expertise (i.e. understanding a subject, concept, or method well-enough to discuss it appropriately, without being an expert) is vital. Evaluation planners and leads must have high interactional expertise, must develop it as quickly as possible, and regularly maintain it.

### **Our work: Enforcement on Waste Crime case study, with the Environment Agency**

CECAN team members have been providing expert advice and guidance to members of the Environment Agency's Evidence, Assessment and Evaluation team as they seek to understand the effectiveness of their waste crime enforcement activity and develop their evaluation in this area. After several scoping and design workshops, the Environment Agency are now collecting data to feed into using Qualitative Comparative Analysis in the evaluation of their waste crime interventions.



### **Our work: Energy Trilemma case study, with BEIS**

CECAN team members have been working with BEIS to produce a systems map (and our associated network analysis) of the energy trilemma policy landscape (i.e. policies affecting energy prices, carbon, and security). The aim is to generate a deeper understanding of the interaction of the many policies in this area, how their aims and mechanisms overlap, the potential for unintended consequences, and then to use this to identify evaluation priorities and opportunities in the future.



### **Our work: Rural Development Programme for England case study, with Defra**

CECAN team members have been providing expert advice and guidance to Defra policy and evaluation leads on how they can embed complexity-appropriate approaches in their existing evaluation work, and in future scoping of the rural development landscape. One element of this has been to utilise the Evaluation Assessment Tool developed by Barbara Befani and Bond to explore options for, and the appropriateness of, new evaluation methods.



### **Our work: Writing an HM Treasury Magenta Book annex on Complexity**

We are writing an annex on Complexity for the Magenta Book. The Magenta Book is the key resource for government evaluation. Produced by HM Treasury, it lays out the benefits of evaluation, alongside detailed information on planning and delivering good evaluation. It is used across government (and many government commissioned evaluations must be Magenta Book compliant) but is also used by local government, businesses, and civil society. Our annex will consolidate understanding on what complexity is, its implications, and how evaluators and policy makers can deal with it.

## Our work: Regulating Our Future case study, with the Food Standards Agency

“Regulating Our future” (ROF) is an overarching, strategic programme which aims to ensure the Food Standards Agency can fulfil its statutory purposes and public expectations. It will deliver a fundamental redesign of the FSA’s regulatory role and the way in which regulation is delivered. The CECAN team has been supporting staff at the Food Standards Agency



as this approach is designed, co-producing an evaluation approach based on a Theory of Change in a complex setting. The CECAN team has also helped to build capacity and skills in the FSA so this evaluation plan and Theory of Change can be updated over time to provide continuous evaluation.

## How you can work like CECAN

We have utilised a case study approach for much of our work. These projects have been co-produced, with their purpose, mode of working, and outputs planned and delivered in partnership with our government co-funders. Using an Agile methodology (an approach to team-working and product development which emphasises multiple, adaptable, and quick iterations of self-organised team effort or ‘sprints’), each case study has had a ‘scrum master’ to facilitate each iteration of effort and draw in expertise from across our wide team. The role of scrum master is key; the interactional expertise needed for their role has to be developed quickly, and refreshed regularly.

We believe this mode of working has great potential to be used more widely in research and policy. Through its flexibility, rigour, multiple iterations, and regular interaction with users, it allows the efforts of research teams to be of high value to policy, business, and civil society users. Teams will need to be creative in ensuring funders can assess proposals which utilise this approach given the inherent unpredictability of how case studies will develop prior to their commencement.



Use a **co-produced case study** approach, utilising **Agile** methodology, with particular emphasis on gaining and maintaining **interactional expertise**



## Future directions

- **Commissioning and design:** Much of our work has pointed to a need to reshape evaluation commissioning and design. While we have ideas on how this might look, this is a large topic which will require further exploration on the commissioning process, the format of tenders, and more broadly, evaluation designs.
- **Methods:** There are still specific methods which could be further developed and tested, and/or packaged in more user-friendly toolkits. For example, there is a clear need to make improved configuration methods (such as Qualitative Comparative Analysis) more accessible to a wide spectrum of evaluation practitioners. Opportunities also remain to explore how agent-based modeling can be used in testing assumptions, and providing counterfactuals in evaluation.
- **Communication:** There is potential to further develop and articulate our ideas about how complexity provides opportunities, new solutions and value to users, rather than more difficulty, cost, or problems. There is also likely to be high value in efforts to consolidate and refine the use of complexity-related terminology in evaluation. This will help reduce both potential for miscommunication, and the feeling of insolvability and paralysis in the face of complex policy areas.



“As evaluators, we have to remember that most of our audiences are only interested in the findings, not the methodology”

**Evaluation practitioner  
from a survey of CECAN collaborators**

“We’re starting to plan for what we’ll do in [the next few years] and we’re hard wiring complexity methods into it”

**Government Senior Evaluation Advisor  
from a reflections interview with CECAN**



- **Policy design and appraisal:** We believe there are compelling reasons to embed complexity approaches and tools across policy making, rather than just limited it to evaluation. In particular, embedding complexity approaches at the beginning stages of policy formulation, has the potential to be transformative and far reaching. This entails both greater use of complexity-appropriate tools in ex-ante appraisal, but also more widely throughout policy design. Moreover, taking a complexity-appropriate approach to policy making in general would reduce the emphasis on different policy stages or cycles, with the aim of creating constant and agile iteration and feedback between policy design, implementation, and evaluation.
- **International:** The UK is one of the world’s leaders in evaluation; there is great potential for extending our approach both to evaluation of policy in other countries, but also to evaluation of international policy interventions.
- **Beyond central government:** With the shift towards decentralised policy making there is likely to be value to applying our approach to evaluation in local government. Businesses and civil society also conduct evaluation and learning which would benefit from a complexity approach.
- **Expanding our case studies:** The teams, policies, and areas we have worked with in our case studies are ripe for further development. This could be in further maturing and extending the work, expanding the areas of effort, or in helping these innovative teams to share their work elsewhere.
- **Expertise:** We believe there is likely to be huge value for evaluation users, commissioners and practitioners in developing a deeper and more formal understanding of the expertise required for conducting complexity-appropriate evaluation and embedding it into the policy system.

“What CECAN were saying resonated strongly and it felt like it was pulling together other bits of work I’d done”

**Government Deputy Programme Manager  
from a reflections interview with CECAN**

"[CECAN] has made me think more holistically across the programme"

**Government Programme Manager  
from a reflections interview with CECAN**

## So, what now?

If you think our work and ideas sound interesting, please do **get in touch** via our website, email, or Twitter: [cecan.ac.uk](http://cecan.ac.uk) | [cecan@surrey.ac.uk](mailto:cecan@surrey.ac.uk) | [@cecanexus](https://twitter.com/cecanexus).

You may also wish to consider:

- Getting in touch to **explore new opportunities** for collaboration between CECAN and your organisation
- Applying for a CECAN **Fellowship**, info at [cecan.ac.uk/fellowships](http://cecan.ac.uk/fellowships)
- Attending an upcoming CECAN **event or training session**, info at [cecan.ac.uk/events](http://cecan.ac.uk/events)
- Joining our **mailing list** via the menu at [cecan.ac.uk](http://cecan.ac.uk)
- Checking out our latest **news** at [cecan.ac.uk/news](http://cecan.ac.uk/news)
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