



**USES OF PLURAL, INNOVATIVE  
AND NOVEL EVIDENCE FOR  
DECISION-MAKERS**

# THE CASE FOR PINE

Uses Of Plural, Innovative and Novel Evidence for  
Decision-Makers



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June 2025

This work is funded by the University of Cambridge's Arts and Humanities Impact Fund, and the Capabilities in Policy Engagement (CAPE) programme.

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# EXECUTIVE SUMMARY

**Why would you want advice from a philosopher or a theatre specialist when devising a flood resilience scheme? How can hydrologists support better healthcare? What is a classicist doing advising the National Cyber Security Centre? Why include anthropologists on SAGE?**

Because **PINE** enhances the range of evidence available to policymakers, enabling better decision-making on questions that matter to the public good.

**PINE is plural, innovative, novel evidence.**

**PLURAL** because **decisions are always more robust if informed by more than one type of evidence. Singular perspectives are not enough, whether embodied in an individual expert or only one academic discipline.**

**INNOVATIVE** in **using knowledge, methods or expertise that have not commonly been deployed in relation to policymaking.**

**NOVEL** in **using knowledge, methods or expertise productively in an entirely different policy domain to the context in which they are conventionally used.**

Instead of thinking ‘finance’ and reaching only for economics, or thinking ‘volcano’ and turning to geologists alone, a PINE approach to evidence gathering is determined by the diverse requirements of the policy matter at hand, not by conventional assumptions regarding disciplinary relevance and robustness. PINE describes an evidence culture which supports and extends existing initiatives seeking to facilitate the effective use of evidence in policy in general, and those seeking to advocate for the inclusion of evidence from less common sources, such as the social sciences and the arts and humanities.<sup>1</sup>

Across three domains – Climate and Environment; Health; Conflict and Security – this casebook provides nine case studies of the effective use of PINE, spanning local to global policy-making. However, the case studies have been selected as proof of concept, rather than as a comprehensive review.

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<sup>1</sup> See the Institute for Government, [How to engage with policy makers](#) (2020); S. Dillon and C. Craig, [Storylistening](#) (2021); A. Holmes-Henderson and L. Sewell, [How does Arts and Humanities research influence public policymaking?](#) (2024).

# CLIMATE AND ENVIRONMENT

**Case Study 1.1 Climate Just** shows how innovative philosophical insights can help policymakers to mitigate climate risks by mapping resilience more precisely.

**Case Study 1.2 The Sea Bass Fisheries Management Plan** demonstrates that gathering ethnographic evidence about experiences of a policy system is not only a source of reliable feedback on existing measures, but is also a novel method of generating further ideas for intervention.

**Case Study 1.3 The Aire Resilience Company and the Leeds Flood Alleviation scheme** shows that innovative ideas from theatre and performance can enhance efforts to secure future flood resilience by reframing key stakeholders' roles.

# HEALTH

**Case Study 2.1. The West African Ebola Epidemic** explains how novel insights from anthropology made public health interventions more effective by adapting them to conditions on the ground.

**Case Study 2.2. Malaria Control in Zambia** shows how the novel application of hydrological modelling enhanced efforts to combat malaria by identifying unrecognised drivers of disease.

**Case Study 2.3. The US Diabetes Prevention Program** demonstrates that community participatory research can improve behavioural interventions by producing novel evidence about the ways different social groups think about food.

# CONFLICT AND SECURITY

**Case Study 3.1. The East Asian Security and Peace Project** explains how novel evidence from interdisciplinary social sciences research can help policymakers to understand regional tensions by showing how these antagonisms are rooted in the national identities of the countries involved.

**Case Study 3.2. The House of Lords AI in Weapons Systems Committee** shows how plural perspectives can frame novel, complex challenges by clarifying fundamental terms.

**Case Study 3.3. The National Cyber Security Centre** demonstrates that narratology can strengthen security cultures by enhancing communication, offering innovative evidence about the story structures on which that communication relies.

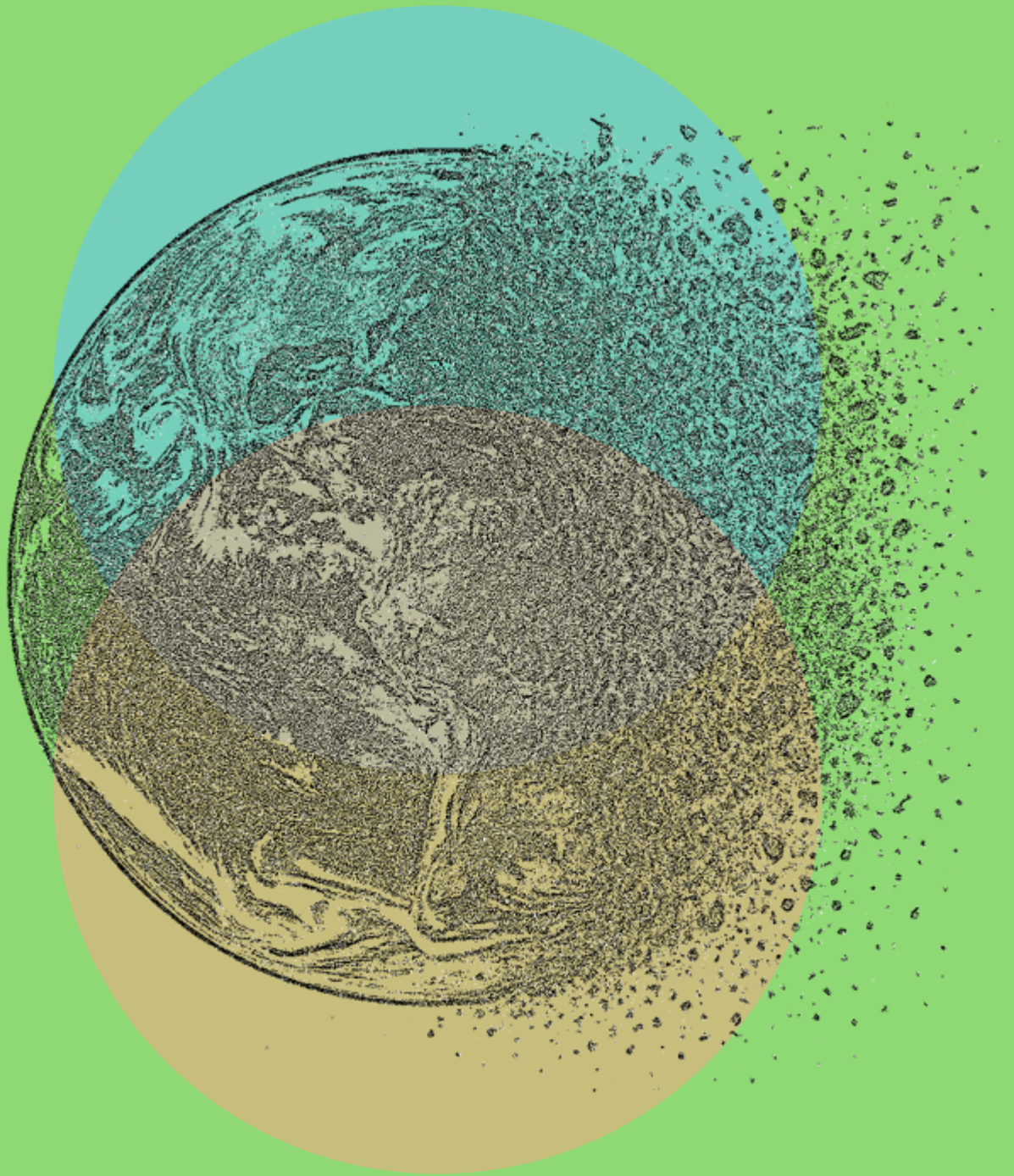
This casebook is for anyone with an interest in better decision-making on questions that matter to the public good. It is primarily written for the people whose task it is to respond effectively to those questions, with the ambition of demonstrating that PINE will make that task easier to accomplish.

PINE adds range to decision-making, extending and enhancing the evidence base upon which good policymaking depends. PINE helps policymakers to:

- R**eframe existing concepts or initiatives
- A**sk and answer the right questions
- N**otice unseen influences on their work
- G**enerate starting points for future interventions
- E**mbed interventions in their wider contexts

It is founded on the principle that effective evidence use in policymaking does not function according to a linear model of direct cause and effect impact from research to decision-making. PINE is therefore embedded in a system of reciprocal interactions, composed of loops rather than lines, knotting these two sectors productively together.





# CLIMATE AND ENVIRONMENT

The urgency and diversity of the climate crisis’s impacts, and the necessity for multiple perspectives to enable coherent responses, make it a natural candidate for innovative approaches to policymaking. Policymakers are routinely required to think beyond singular models, and reconcile conflicting demands.<sup>2</sup> The case studies below collectively illustrate the value of PINE in these contexts – showing, for example, how to complement quantitative understanding of systems with narrative evidence, in order to give policymakers a better grasp of the system being addressed. The use of PINE thus supports better decision-making by enabling policymakers to embed interventions in their contexts, ask the right questions, reframe key concepts, and generate new ideas amidst shifting terrain.

## 1.1. CLIMATE JUST

Climate Just is a UK-based initiative that supports policymakers to embed measures in their social contexts, and generate new ideas for interventions, by helping them to ask and answer the right questions about regional preparedness for the effects of climate change. Climate Just’s work is centred around ‘climate disadvantage’ – a concept that combines vulnerability to climate-related impacts with an awareness of physical risks.<sup>3</sup> This novel higher-order metric was developed by an interdisciplinary team with backgrounds in philosophy, geography, and urban planning, drawing on key philosophical insights that clarify the nature of wellbeing, and the way different groups are differently vulnerable to the same risks. Pairing this differentiated understanding of resilience with an evaluation of climate-related risk allowed the Climate Just team to develop a mapping tool displaying the distribution of climate disadvantage across the UK. This tool combines data on physical risks (e.g. peak temperatures, likelihood of flooding) with social indices of that area’s vulnerability, and its ability to prepare, respond and recover for the impacts it might face (e.g. age, health, income, housing characteristics, availability of green space, availability of insurance, population transience). It thus allows policymakers to identify the areas in the UK that are most *vulnerable* to climate-related impacts, as well as those that are most exposed.

Climate Just’s maps can thus support better decision-making by identifying priorities for intervention – enabling resources to be directed towards areas that are both highly exposed to physical impacts *and* particularly vulnerable to those impacts when they occur.

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<sup>2</sup> M. Hulme, *Climate Change* (2021); S. Rayner, ‘[Wicked Problems](#)’, in Richardson et al., *International encyclopedia of geography* (2017).

<sup>3</sup> J. O’Neill, ‘[Climate Just: Mapping Climate Disadvantage](#)’ (2021).

First, for example, a decision-maker might call up a filter to display the Environment Agency's assessment of Oxford's risk of riverine flooding (Figure 1).<sup>4</sup>

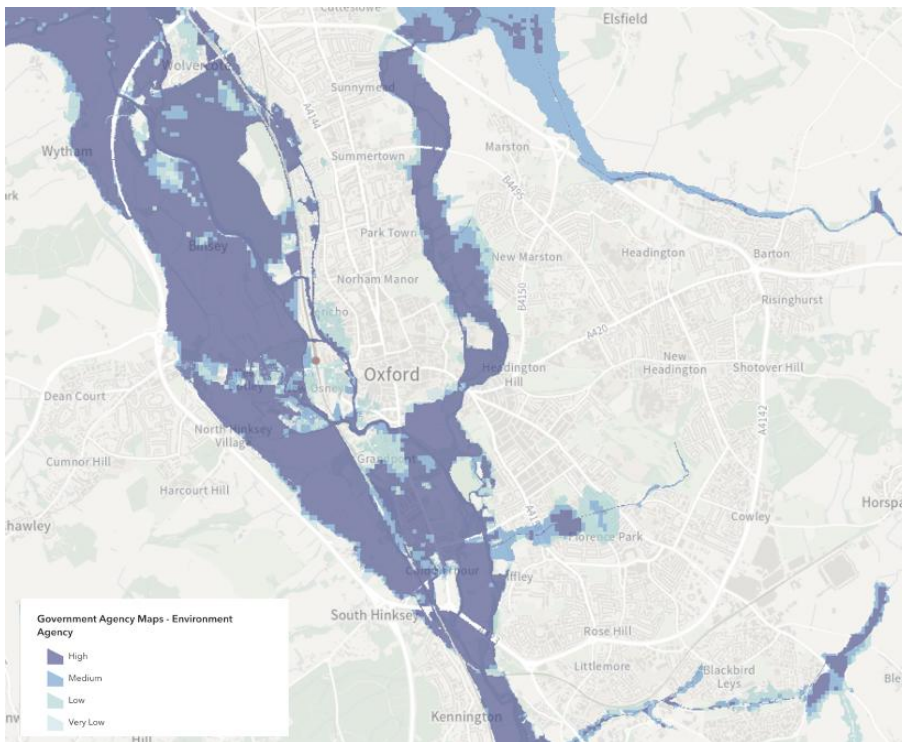
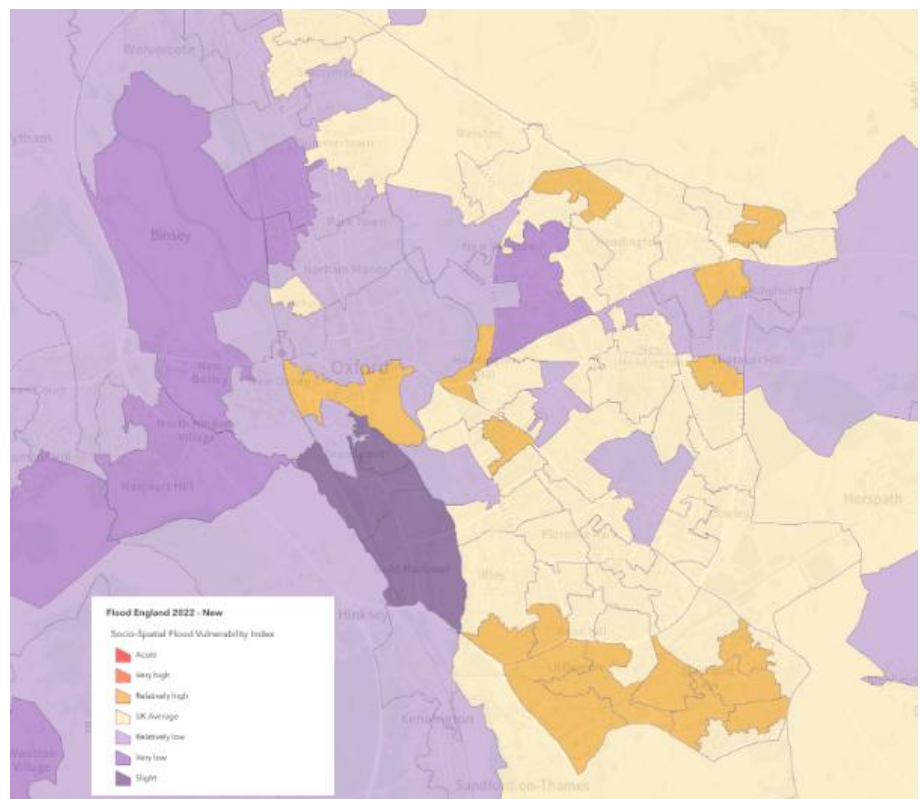


Figure 1 (left): Map displaying EA's assessment of Oxford's risk of riverine flooding.

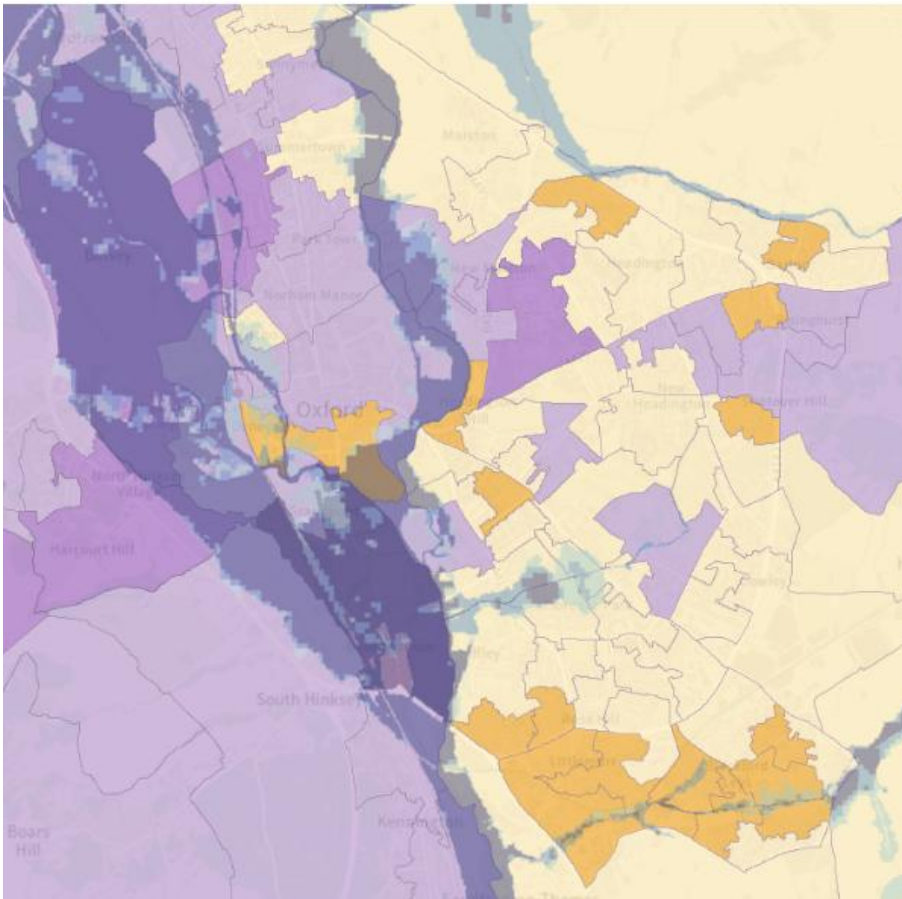
Next, they might exchange this filter for a map of the same area's 'Socio-Spatial Flood Vulnerability Index' (Figure 2):

Figure 2 (right): Same area as Figure 1, filtered for 'Socio-Spatial Flood Vulnerability Index'.

Finally, overlaying these maps, they would be able to identify areas where risk and vulnerability coincide, including a number of locations in central Oxford, and between Littlemore and Blackbird Leys (Figure 3):



<sup>4</sup> Figures 1-3 produced at <https://www.climatejust.org.uk/map.html>.



*Figure 3 (left): Maps in Figures 1 and 2 overlaid, visualising areas where risk and vulnerability coincide.*

The value of this approach can be seen in Climate Just’s collaboration with Staffordshire County Council, which had been proactively building climate resilience amongst local businesses and communities since adopting a climate adaptation plan and carrying out risk

assessments in 2011. SCC’s risk assessments, however – and their associated hazard maps – lacked easily accessible data on social vulnerability. Climate Just’s web tool offered this input in clearly visualised format, allowing SCC to quickly and easily integrate their risk analysis with a consideration of social disadvantage. SCC were consequently able to identify nine areas across the county with high disadvantage scores, before drawing on council data and engaging with partners to select one of these locations for a pilot resilience project – a village in East Staffordshire named Rolleston on Dove, which subsequently received £30,000 in additional funding to protect properties against flooding. Climate Just demonstrates the way that PINE’s capabilities can interact: asking the right questions about climate resilience by embedding considerations of physical risk into their social contexts, and generating new ideas for intervention as a result.

# 1.2 THE SEA BASS FISHERIES MANAGEMENT PLAN

In recent decision-making around fisheries management, the use of PINE has generated new avenues for intervention by embedding policy questions in their social contexts. This contribution has emerged from the work of Policy Lab, a multidisciplinary team based at the Department for Education whose innovative methods include user centred design, collective intelligence, and film ethnography. Policy Lab were asked to participate in the consultation phases of 2023's Sea Bass Fisheries Management Plan – one of 43 proposed evidence-based action plans ensuring fish stocks are kept at sustainable levels, whilst maximising benefits to a broad array of environmental, commercial, recreational and social interests.<sup>5</sup> Engaging over 1400 stakeholders from across the policy system, Policy Lab produced evidence through a collaborative mixed-methods approach that included informal interviews, ethnographic observation, pop-up port visits, workshops, surveys, and online debates.

This contribution was made amidst an awareness of a need for a broader evidence base, with a particular emphasis on social and cultural factors. Bass fisheries policy is already supported by strong evidence on bass biology, ecology and management, rooting decision-making in clear understandings of the ways bass populations grow and behave, how many fish there are, how many have historically been caught, and how much money bass fishing has tended to produce. As the FMP's review of the existing evidence base made clear, however, other important areas have been comparatively overlooked - with a particular lack of evidence regarding a sense of the socio-economic importance and cultural values of bass fisheries, and an idea of the extent to which social links between people and the sea will be weakened by their loss. This finding is presented in Figure 4, reproduced from the Defra FMP report.

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<sup>5</sup> Defra, [Proposed Fisheries Management Plan for Sea bass in English and Welsh Waters](#) (2023).

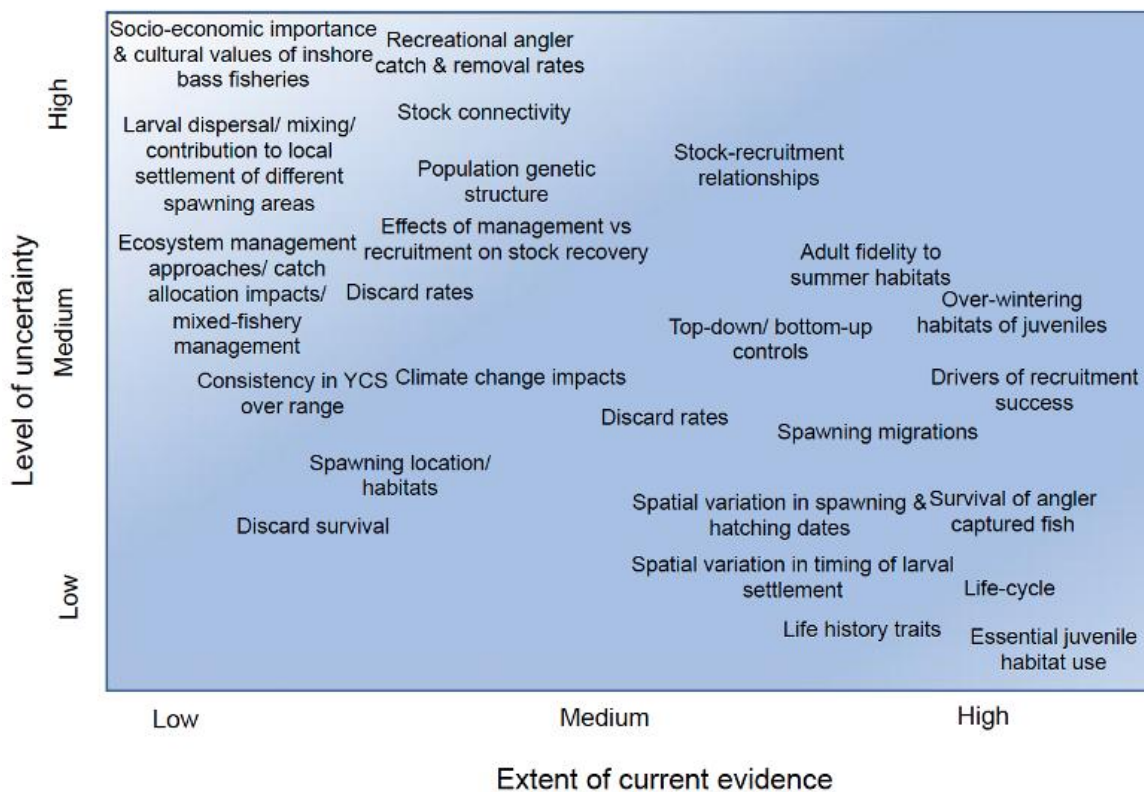
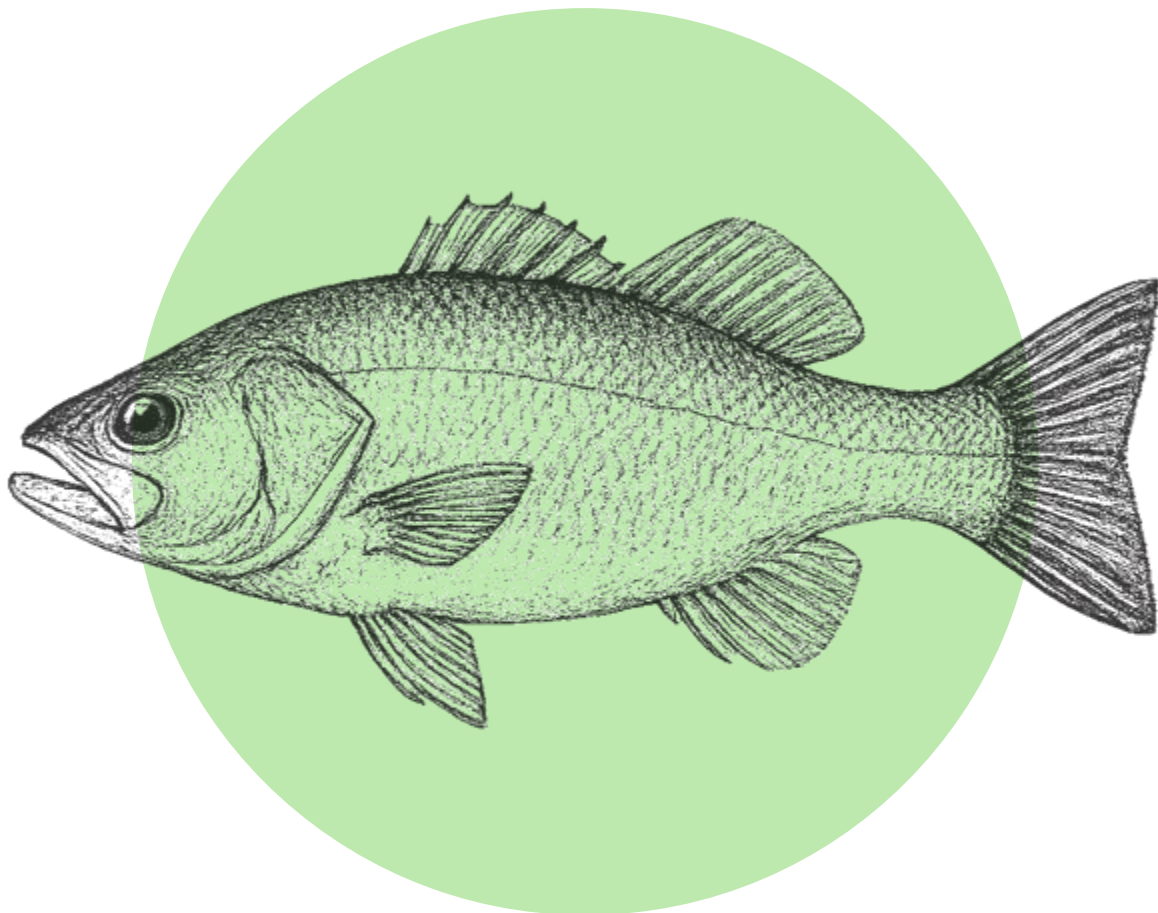


Figure 4: Defra’s chart demonstrating the relationship of the extent of current evidence versus the level of uncertainty in that evidence, for aspects of the northern bass stock biology, ecology and fisheries.<sup>6</sup>

Policy Lab’s research for the Bass FMP provided evidence to answer this need, enabling policymakers to fill important gaps in their knowledge. It did so by consulting key stakeholders about the complex roles that bass fishing plays in coastal villages and towns. The knowledge this process produced offered decision-makers two forms of guidance. The first of these was relatively conventional, with evidence from system users serving as a form of feedback. This evidence showed how existing legislation was functioning, and how it was understood and inhabited by the people involved. This kind of evidence was particularly useful in observing that certain poorly-framed interventions were failing to produce their anticipated results. For example, Policy Lab were able to feed back to decision-makers the insight that the definition of ‘unavoidable’ by-catch was proving too difficult to enforce – with it often proving impossible in practice to distinguish between unavoidable bycatch and purposeful targeting of bass.

<sup>6</sup> Defra, [Proposed Fisheries Management Plan for Sea bass in English and Welsh Waters: Annexes](#) (2023), p. 73.

Alongside this conventional application of stakeholder engagement, however, Policy Lab's consultation also shows how the gathering of PINE can be a novel method of generating new ideas for intervention. One goal of the FMP, for example, is to maximise the benefits of bass fishing for local communities. Policy Lab gathered narrative evidence to inform the policy question of what this 'benefit' comprises. This evidence showed that these communities felt that any 'benefit' must be understood multidimensionally, and not in solely economic terms. In a similar vein, the consultation offered evidence regarding the most effective ways to frame and deploy enforcement. Many fishers stressed the importance of the support they had received from enforcement officers in complying with complex regulations. This evidence emphasised the usefulness of mutually framing enforcement as a proactive process of dialogue and education, rather than a reactive system of punishment and suspicion. In both of these examples, the evidence gathered by Policy Lab provided decision-makers with guidance from key stakeholders in the policy system, informing them about possibilities and priorities for further work. These examples thus show how PINE can help to shape future interventions, as well as offering feedback on measures that are already in place.



# 1.3. THE AIRE RESILIENCE COMPANY AND THE LEEDS FLOOD ALLEVIATION SCHEME

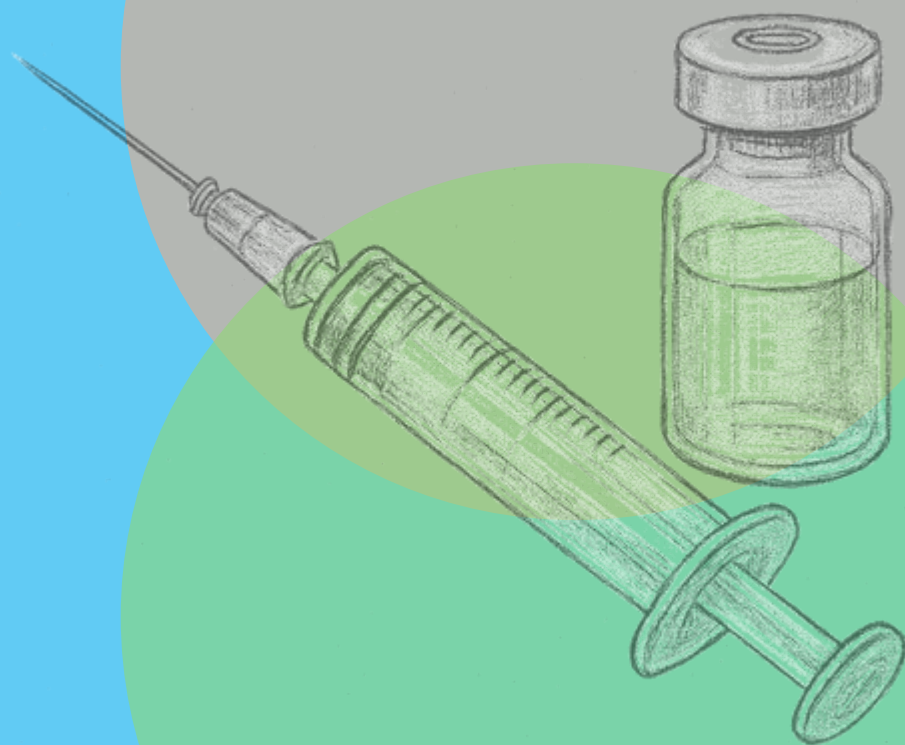
The novel integration of theatre and performance research into the development of a flood resilience project shows what can be gained by reframing existing concepts or initiatives in a way that generates new possibilities for action. The Aire Resilience Company (ARC) is a community interest company co-developed by Leeds City Council, the Environment Agency, the Rivers Trust, the Aire Rivers Trust, and Yorkshire Wildlife Trust, with a remit to 'future-proof' the hard engineered flood defences of the Leeds Flood Alleviation Scheme. By funding ongoing natural flood management interventions in the countryside around Leeds, over the next fifty years ARC will mitigate the increasing flood risk associated with climate change, protecting the city without ever higher concrete walls. To achieve these ambitions, ARC must navigate uncharted financial terrain as existing grants, oriented towards large capital investments, are not designed to support this kind of scheme. ARC's ongoing operations will therefore be sustained by drawing money from private enterprise to pay for work on the land: local businesses will pay annual contributions to ARC, which will then ensure that the natural flood management interventions are renewed and maintained.

ARC depends on private sector support for its success. It is here that the use of PINE to reframe interventions and generate new ideas has proved valuable. Recognising the importance of stakeholder relationships to ARC's work, an LCC representative on the ARC team contacted teatrologists in the University of Manchester's Drama department, with whom he had previously collaborated on projects to drive community engagement. These researchers subsequently conducted narrative interviews across Leeds, exploring business attitudes to climate resilience, and attempting to gauge how ARC was being understood. Through this process, the teatrologists were able to identify potential gains to be made by altering the way that ARC was framed, moving away from its original presentation as a 'buyer-seller' relationship in which businesses were understood to 'purchase' enhanced flood resilience from the people making interventions upstream. Instead, what emerged from the interviews was a preference for ARC to be conceived in terms of partnership or support. This insight helped to shift the project team's terminology from a lexis of 'buyers' and 'sellers' to one of 'business partners' in the city and 'delivery partners' on the land.

On its surface, this linguistic shift might seem trivial – a marketing intervention which, however effective, is of limited broader use. But in fact it shows how PINE’s reframing of key concepts can help decision-makers to craft interventions that are more widely supported, more robust, and which have unanticipated opportunities for growth. Reframing ARC as a partnership identifies it as an engine of social value, rather than calculated returns – a shift in identity that affects both how ARC attracts support, and what it is licensed to do. This framing firstly acts as a basis for ARC to make more effective cases for ongoing funding from local government, as well as from corporate budgets set aside for CSR, thereby diversifying the support on which it depends. Secondly, it allows ARC to extend its positive impacts, generating opportunities for new interventions. This year, for example, the University of Manchester teatrologists have been commissioned to devise and run a programme of interdisciplinary workshops in schools, using ARC’s work to teach separate parts of the curriculum together, through a climate lens. The use of PINE to support a reframing of ARC’s activities and generate new ideas for intervention makes ARC more viable in the long term and more valuable to the communities it serves.

The flexibility of this contribution is an indication of PINE’s wider potential in this domain – highlighting a deeper principle that is present across all three case studies. The climate and environment case studies demonstrate PINE’s value in informing at least three important aspects of a given policy system. Using PINE helps to clarify: the contexts that interventions impinge on; the purposes that key stakeholders feel those measures should be serving; and the possibilities there might be for further development. It does so, moreover, within contexts that will not stay still, and which present a range of unprecedented challenges. Amidst this instability, an evidence base that is sensitive to shifts, alert to opportunities, and which has a tolerance for emergent ideas to match emergent needs, is a valuable asset. In these dynamic contexts, the role played by PINE’s alertness to socio-cultural factors is not finicky but fundamental, with these forms of evidence orienting the technical work to be done.





**HEALTH**

**PINE has demonstrated its value in multiple areas of health, where a rise in plural, integrated thinking has led to a corresponding increase in the use of novel forms of evidence. Expert Patient Programmes, for example, are rooted in evidence drawn from personal experience, understanding people with chronic illnesses as experts in managing their disease. The growing popularity of these programmes – and the increasing inclusion of expert patients elsewhere, including in policy planning and decision-making – is one indication of an emergent openness to more socially- and culturally-focussed types of evidence, visible in the UK and many other countries worldwide.<sup>7</sup> This shift points to a growing belief that novel forms of evidence can help to answer pressing policy needs, complementing conventional approaches with different forms of alertness to the contexts in which they are deployed. The case studies in this domain correspondingly demonstrate the value that PINE can offer, enabling policymakers to notice obstacles that conventional approaches are unable to detect, and embed interventions in their contexts to allow these challenges to be overcome.**

## **2.1. THE WEST AFRICAN EBOLA EPIDEMIC**

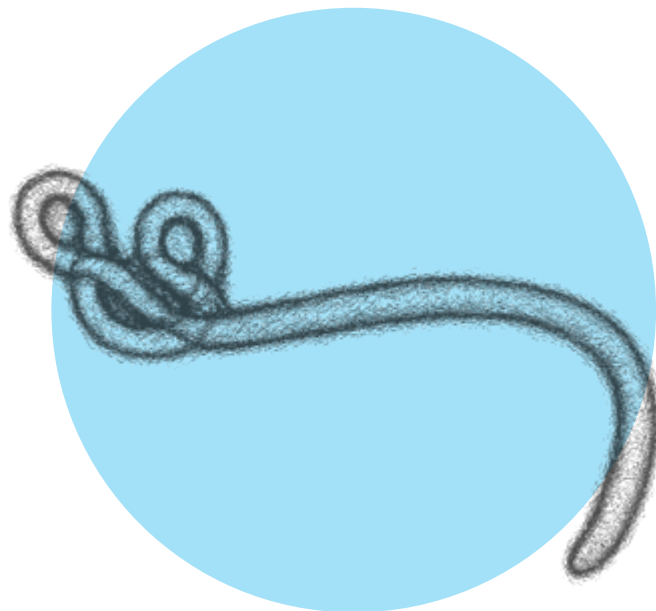
Perhaps the most prominent use of PINE came during the Ebola epidemic in West Africa in 2013-16, where the value of embedding interventions in their wider contexts was made especially clear. After the outbreak was designated as a Public Health Emergency of International Concern in August 2014, the UK made significant contributions to the humanitarian response, with leading roles taken by Public Health England and the Ministry of Defence, supported and informed by input from the Scientific Advisory Group for Emergencies (SAGE). Early efforts to counteract the epidemic, however, met resistance from people in the countries involved – with many aspects of the humanitarian response perceived locally as inappropriate or even aggressive. Ebola transmission occurs through coming into contact with an infected person’s bodily fluids, and so is strongly associated

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<sup>7</sup> See for example J. Cordier, ‘[The expert patient: Towards a novel definition](#)’ (2014); G. Foster et al, ‘[Self-management education programmes by lay leaders for people with chronic conditions](#)’ (2007); J. Franek, ‘[Self-management support interventions for persons with chronic disease: an evidence-based analysis](#)’ (2013).

with specific social contexts such as nursing the sick, and preparing corpses for burial. Ebola transmission is therefore significantly shaped by conventions surrounding funerary rites and practices of care – sensitive and highly charged forms of behaviour in which it is difficult to intervene.

It was from this socio-cultural crux that the demand for PINE arose, in response to what anthropologist and SAGE member Melissa Leach described as ‘an urgent need for agencies to shape their response to the Ebola crisis with respect and understanding of social and cultural practices and structures in the affected areas’.<sup>8</sup> Leach and Chris Whitty (then Chief Scientific Advisor to DFID) established a Social Sciences Sub-Group of SAGE, with a remit to offer evidence on the local socio-cultural and political dimensions of a range of issues including diagnosis, home care, funeral practices, community engagement, violence against health workers, and clinical trials. This novel evidence was crucially important in constructing what Whitty describes as ‘a response and a communication strategy which ran with the grain of social beliefs and organization rather than against it’, and so finding ways to circumvent these unanticipated obstacles.<sup>9</sup> Anthropological evidence regarding West African funerary customs, for example, equipped public health officials to design safe ceremonies that were acceptable to local communities (and in which they would therefore participate). By thus embedding public health measures into the wider contexts of their deployment, PINE’s broader, complementary frame was a vital component in these interventions’ ultimate success.



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<sup>8</sup> V. Benson, ‘[IDS Ebola Initiatives shortlisted for ESRC Impact Prize](#)’ (2016).

<sup>9</sup> C. Whitty, ‘[The contribution of biological, mathematical, clinical, engineering and social sciences to combatting the West African Ebola epidemic](#)’ (2017), p. 3.

## 2.2. MALARIA CONTROL IN ZAMBIA

PINE made significant contributions to malaria control in Zambia, where the incorporation of novel evidence permitted policymakers to notice unrecognised factors in the spread of the disease. Malaria is endemic in Zambia, with its greatest presence in rural areas, where 61% of the population live. In the first decade of the 21st century, public health measures – including the (re-) introduction and expansion of indoor residual spraying (IRS) and insecticide-treated nets (ITNs) – had achieved some notable successes in combating the problem, including a 66% reduction in in-patient cases and deaths between 2000 and 2008.<sup>10</sup> Over the next ten years, however, this progress slowed or in some cases even went into reverse. In Western Province, for example, malaria prevalence amongst under-5s was 10% in 2019 – twice as high as it had been in 2010.<sup>11</sup> This unexpected slowdown prompted broad efforts to strengthen the available evidence base in the hope that this might produce new interventions, and explain the faltering of those already in place.

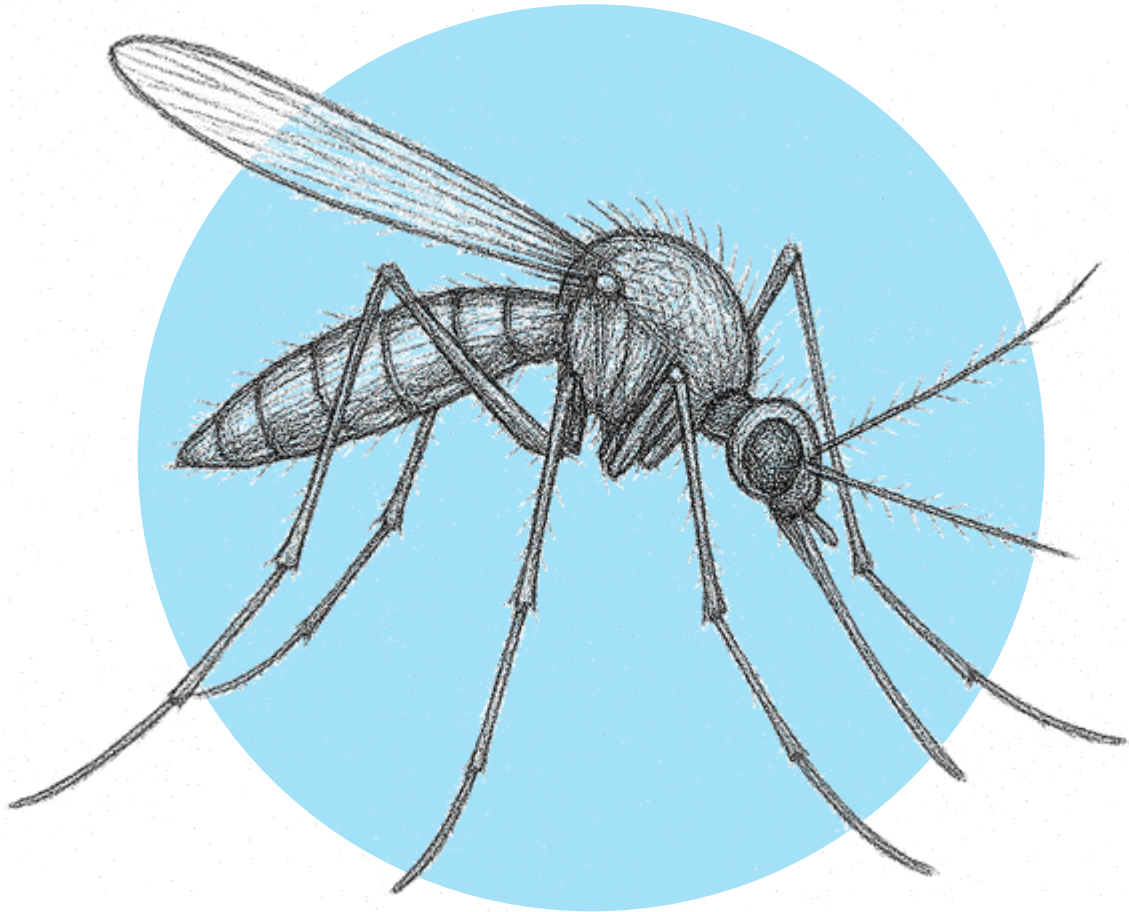
It was here that PINE made a striking contribution. Previous approaches had incorporated some data about the disease's physical contexts, connecting rainfall and temperature levels to mosquito distribution. Combining mosquito surveys with novel evidence from hydrology and geomorphology, however, produced highly significant insights into malaria's unexpected persistence. By relating data on mosquito populations to the way water moved across the land, an interdisciplinary team from Zambia, Canada and the UK - including zoologists, biologists, hydrologists, and geomorphologists - were able to establish that a diverse range of mosquitoes were present in unanticipated locations across the region during a longer than expected season. This evidence offered an explanation for the unexpectedly high prevalence of disease in the riverine habitats that dominate Western Province. These had previously been thought to be poorly suited to malaria transmission, as river water is too cold, deep, and fast-flowing for the species of mosquito most involved in transmitting malaria to breed. The researchers were able to establish that so-called 'secondary vector' species were playing a far larger role in transmitting malaria than had previously been thought, and to suggest a rationale for the failure of previously successful interventions. Where primary vector species tend to bite humans at night and indoors – and are thus susceptible to bednets and indoor residual

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<sup>10</sup> F. Masaninga et al, '[Review of the malaria epidemiology and trends in Zambia](#)' (2013).

<sup>11</sup> C.J. Thomas and M. Macklin, '[Mapping Malaria Transmission using Hydromorphology to Inform Public Health Strategies in Africa](#)' (2021).

spraying of insecticides – the secondary vectors found in Western Province predominantly bite humans outdoors, during the day. By complementing quantified data with qualitative understanding, PINE enabled the interdisciplinary team to map the areas that were at risk, and to help the Zambian Ministry of Health to understand where additional forms of intervention would be required.



## 2.3. ENHANCING DIABETES PREVENTION THROUGH COMMUNITY PARTICIPATORY RESEARCH

PINE has played a crucial role in improving the USA's Diabetes Prevention Program (DPP), allowing policymakers to notice unseen influences on participants' outcomes, and enhance the program's effectiveness by embedding it more fully in its social contexts. Diabetes is widespread across America, bringing with it substantial human and financial burdens: as of 2024, 38 million people (11% of the population) had diabetes, and a further 97 million people (38% of the population) were prediabetic, driving direct and indirect costs of \$413 billion per year (\$307bn direct, \$106bn indirect).<sup>12</sup> This problem is closely linked to lifestyle factors, with 89.8% of people with diabetes in the US also being overweight or obese: obesity, in fact, is the single most significant modifiable risk factor for type 2 diabetes, and people with obesity are 80 times more likely to develop this kind of diabetes than people with a BMI under 22.<sup>13</sup> The DPP – piloted in 1996, and authorised nationally in 2010 – has correspondingly emphasised behavioural interventions to encourage physical activity and healthier eating, including supervised exercise sessions, and education around nutrition, exercise, and behavioural self-management.<sup>14</sup>

Although the DPP has overall proved to be both economical and clinically effective,<sup>15</sup> it has struggled to extend this efficacy to certain social groups. There are distinct disparities in diabetes outcomes across ethnicities in the USA, with minorities at substantially higher risk for type 2 diabetes, and experiencing 50-100 % higher morbidity and mortality than their white counterparts.<sup>16</sup> A 2012 meta-analysis of relevant RCTs discovered little evidence to indicate that ethnic minority groups benefit from traditional diabetes educational programs.<sup>17</sup> It found that adjusting these programs to account for culturally-specific factors

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<sup>12</sup> Centers for Disease Control and Prevention, [National Diabetes Statistics Report](#) (2024).

<sup>13</sup> CDC, [National Diabetes Statistics Report](#) (2024); Watts, '[Obesity and Diabetes](#)' (2025).

<sup>14</sup> The Diabetes Prevention Program Research Group, '[The Diabetes Prevention Program](#)' (2002); S.C. Sepah et al, '[Translating the Diabetes Prevention Program into an Online Social Network](#)' (2014).

<sup>15</sup> Sepah et al, '[Translating the Diabetes Prevention Program](#)' (2014).

<sup>16</sup> R.G. Tabak et al, '[A review of diabetes prevention program translations](#)' (2015).

<sup>17</sup> S. Nam et al, '[Effect of culturally tailored diabetes education in ethnic minorities with type 2 diabetes](#)' (2012).

enabled them to significantly outperform the usual care. Although disparities in outcomes from diabetes are diversely driven – rooted in genetic and environmental factors, as well as responses to intervention – policymakers have recognised an urgent need to adapt these otherwise effective programs to specific cultural needs.

It is in this process of adaptation that PINE proved its worth. Developments in this area have shadowed a broader trend in obesity-related decision-making, which has increasingly incorporated novel evidence that accounts for what food *means* to people, as well as what they know about it.<sup>18</sup> This enables policymakers to notice cultural obstacles to existing measures, and subsequently to embed adapted interventions more effectively in their contexts. In New York, for example, open-ended focus group discussions with Chinese-speaking immigrants identified unrecognised barriers to engagement with the DPP, and opportunities to enhance its effectiveness. In a 2022 study, participants explained that existing programs encouraged foods that were not part of a conventional Chinese diet, and excluded the foods that the participants would habitually eat.<sup>19</sup> Participants also emphasised the particular importance of family support for behaviour change within Chinese cultural contexts, and offered guidance on how physicians could interact more effectively with their patients.<sup>20</sup> These changes can lead to impressive results: in an earlier study, insights from a similar process allowed public health researchers to produce a culturally and linguistically tailored version of the DPP, which led to a 3.5% weight reduction amongst participants at 6 and 12 months, despite low initial BMI values.<sup>21</sup>

The example of the DPP speaks to the broader theme of the case studies in this domain, showing how using PINE can enhance the efficacy of struggling interventions. Firstly, using PINE allows decision-makers to notice unrecognised obstacles within the policy system, detecting unseen problems through unconventional means. Following this initial recognition, PINE can also inform decision-makers' responses by helping them to understand the contexts of their work. In the case of the DPP, for example, the use of PINE produced a revised, culturally-tailored version of the program, launched as PreventT2 in 2016.<sup>22</sup> Gathering PINE can thus help to produce inflection points for troubled interventions, offering a breadth of awareness that can detect problems not captured by single approaches, and also produce novel means of overcoming them.

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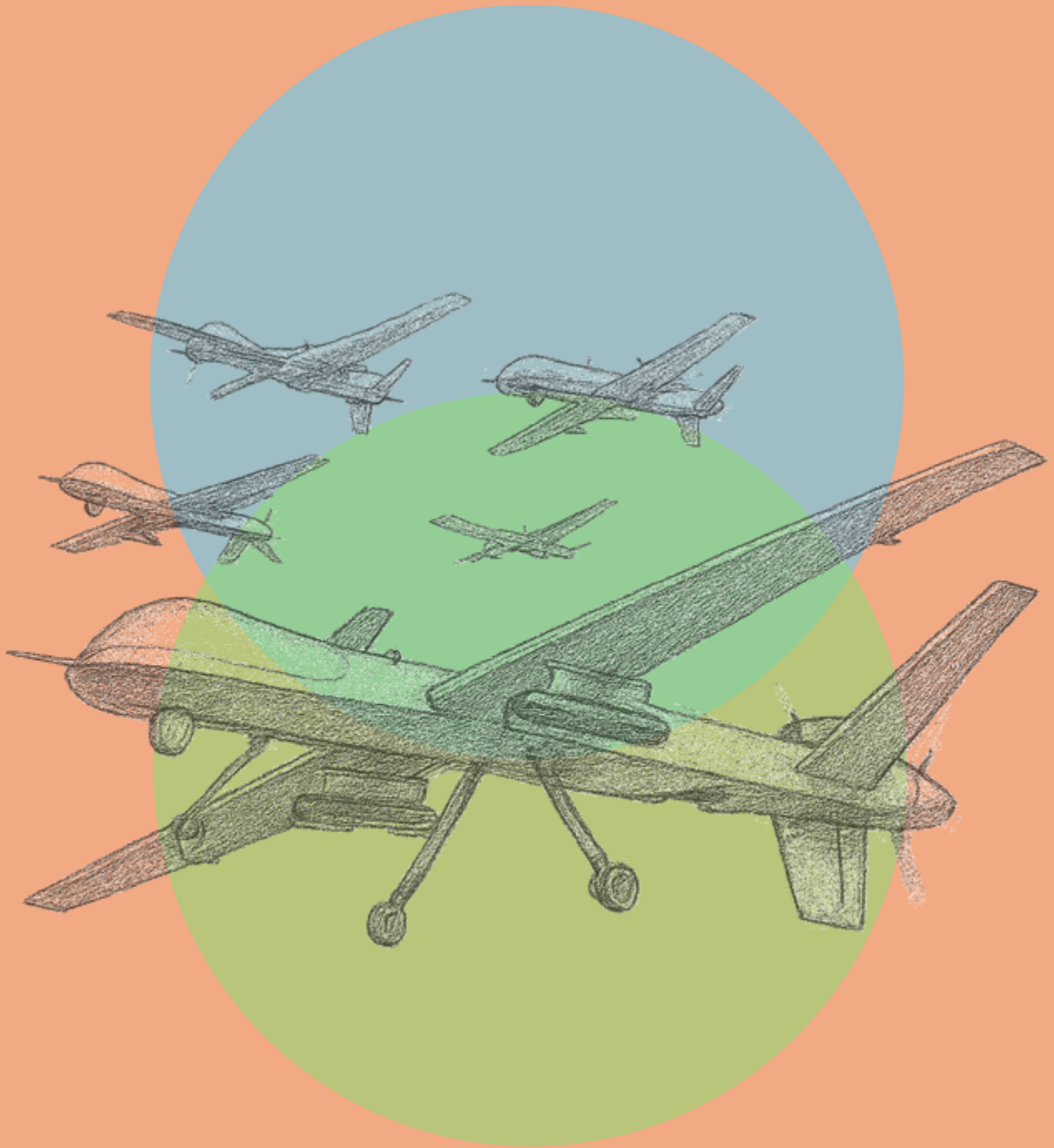
<sup>18</sup> T. Greenhalgh, [Cultural contexts of health](#) (2016), p. 14.

<sup>19</sup> M.C. Yeh et al, '[Adaptation of diabetes prevention program for Chinese Americans – a qualitative study](#)' (2022).

<sup>20</sup> Yeh et al, '[Adaptation of diabetes prevention program](#)'.

<sup>21</sup> M.C. Yeh et al, '[Translation of the Diabetes Prevention Program for diabetes risk reduction in Chinese immigrants in New York City](#)' (2016).

<sup>22</sup> Yeh et al, '[Adaptation of diabetes prevention program](#)'.



# CONFLICT AND SECURITY

In many regards, conflict and security policymaking has long been accustomed to using PINE. Artistic responses to conflict, for example, are established sources of evidence on experiences of war. The British programme of government-commissioned War Artists began in 1916, and speaks to the way that this form of evidence is commonly understood: as a ‘bitter truth’ communicated from the front to those at home.<sup>23</sup> In a different deployment of PINE, security and defence decision-makers have drawn on multiple forms of evidence including human and open source intelligence (HUMINT and OSINT) alongside quantified data as a matter of course, combining forms of evidence to produce more effective understandings. This latter example offers an insight into the value demonstrated in the case studies below, which show how PINE’s potential uses in this sphere extend beyond these conventional roles. By enabling decision-makers to notice unrecognised factors within complex systems, embed security risks and opportunities in their cultural contexts, reframe key concepts, and ask the right questions in response to developing threats, PINE can strengthen the foundations on which decision-making stands, making it more alert to opportunities and more robust against threats. PINE thus adds range to interventions in this area by increasing their breadth and depth – widening their view, and rooting them in stabler ground.

## 3.1 THE EAST ASIAN SECURITY AND PEACE PROJECT

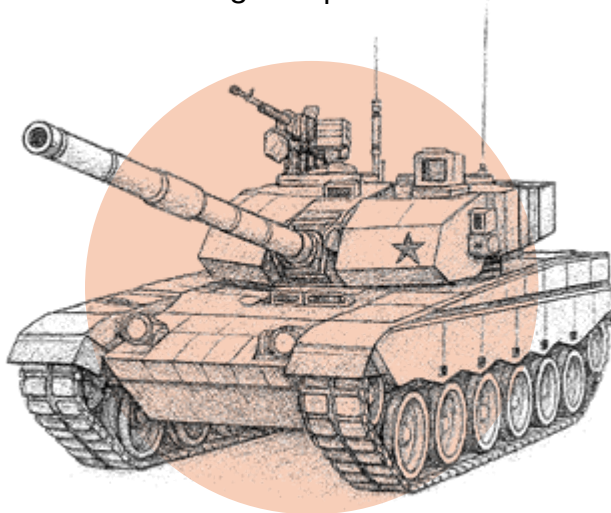
Existing research into great power rivalry in East Asia has tended to be materially focused, emphasising military rivalry and economic competition. This framing fails to account for key contributory factors in tensions across the region, which persist despite tight economic links between the countries involved. Research from the East Asian Security and Peace Project (EASPP), by contrast, enables policymakers to notice the unrecognised influence of national identity in East Asian security politics. The research focuses on questions of national identity amongst key regional players, concentrating on how populations and governments form ideas of what it means to be, for example, Japanese, Korean, American, or Chinese. The EASPP’s interdisciplinary approach – rooted in insights from International Relations, Media and Communication Studies, Social Psychology, and

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<sup>23</sup> P. Nash, [Letter to Margaret Nash, 13 November 1917](#) (1917).

Sociology – thus offers an example of PINE’s complementary strengths, supporting material analyses of this region’s security politics with an awareness of its ‘identity dilemma’.<sup>24</sup>

Whilst the EASPP often works with policymakers behind closed doors, the value of this kind of evidence to decision-making is relatively plain – offering clearer perspectives on the ways in which regional actors understand themselves and their potential adversaries, and the ways in which these understandings are entwined. The EASPP’s analysis of Chinese foreign policy discourse, for example, supplemented by off-the-record interviews, demonstrates that Chinese elites primarily view the identities and aspirations of other major global actors in relation to China’s efforts to construct an identity as a great power. Within this frame, China is understood to view assertive Japanese and American public identity with apprehension, whilst conversely welcoming the idea of a prominent EU – seen as an indicator of the multipolar world order that China has been encouraging for some thirty-five years.<sup>25</sup> By placing these kinds of national stories alongside one another, the EASPP’s evidence allows this ‘identity dilemma’ to be understood from multiple points of view – one of the key features of narrative evidence.<sup>26</sup> The EASPP’s research indicates that these kinds of perceptions have a material effect on key actors’ responses to their counterparts’ foreign and security policies, which are profoundly swayed by re-evaluations of national identity, in relation to the changing identities of perceived competitors. A comprehensive understanding of the region’s identity system, facilitated by PINE, therefore brings important clarity to decision-makers’ appreciation of the policy system as a whole, alerting them to hidden factors in the region’s persistent tensions.



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<sup>24</sup> R. Li, ‘[Understanding the role of identity in shaping foreign policy discourse and preventing conflict in East Asia](#)’ (2021).

<sup>25</sup> Li, ‘[Understanding the role of identity](#)’.

<sup>26</sup> Dillon and Craig, *Storylistening* (2021), pp. 22-56.

## 3.2 THE HOUSE OF LORDS AI IN WEAPONS SYSTEMS COMMITTEE

At the nexus of conflict, security, and artificial intelligence (AI), PINE is proving that emergent challenges require an openness to many complementary forms of expertise, enabling decision-makers to ask and answer the full range of questions presented within these evolving domains. The Ministry of Defence has identified the rise of AI as a major strategic challenge, with implications for every aspect of its activity.<sup>27</sup> The scope and complexity of the issue calls for a similarly diverse and interconnected evidence base, capable of approaching the issue from a variety of complementary perspectives. Policy responses in this area have recognised this need. In 2021, for example, the MoD convened an AI Ethics Advisory Panel to provide scrutiny, challenge and advice. In 2023, the House of Lords special inquiry committee on AI in weapons systems drew on evidence provided by activists, ethicists, strategists, computer scientists, political theorists, human rights experts, disarmament and war studies specialists, high-level military personnel, weapons manufacturers and experts in international law, alongside a range of practitioners from businesses engaged with AI.<sup>28</sup>

The evidence presented to the House of Lords special inquiry offers a striking example of PINE in action. It shows how a plural evidence base can support robust decision-making by clarifying the broad range of concepts through which those decisions are framed. This fundamental clarity on a varied array of basic terms allows for precise perceptions of policy challenges downstream, meaning that policymakers can ask and answer the right questions within dynamic and uncertain terrain. By refining the committee's understanding of the idea of an AI 'arms race', for example, war studies expert Lawrence Freedman offered a more accurate understanding of the strategic relationships involved. The image of a 'race', Freedman observed, unhelpfully suggests a dynamic of linear competition, misrepresenting a policy system in which asymmetrical actors pursue divergent objectives in different ways.<sup>29</sup> Philosopher Mariarosaria Taddeo, meanwhile, clarified to the committee that AI is not simply 'a new tool like any other digital technology', but 'a form of agency' – noting that this fact is 'the origin of all the ethical issues and risks we face when we use

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<sup>27</sup> Ministry of Defence, '[Ministry of Defence AI Ethics Advisory Panel: Terms of Reference](#)' (2020).

<sup>28</sup> House of Lords, '[Proceed with Caution](#)' (2023).

<sup>29</sup> House of Lords, '[Artificial Intelligence in Weapons Systems Committee: Corrected Oral Evidence, 11 May 2023](#)' (2023).

this technology in any domain'.<sup>30</sup> Taddeo explained that this understanding allows three root policy challenges to be identified, from which other challenges derive: the prospect of an AI agent acting unpredictably in a dynamic context; the question of responsibility for that agent's actions; and the possibility of bias being incorporated into the agent itself.<sup>31</sup>

The plural evidence presented to the House of Lords Committee demonstrates PINE's value in clarifying a major policy challenge, one which is reframing some of the fundamental principles of its domain. The use of PINE enables policymakers to correctly position their responses. Freedman and Taddeo's contributions individually demonstrate the way that different pieces of evidence lend depth and precision to decision-makers' understanding of specific issues, relevant to the witnesses' expertise. When combined, they show how PINE can illuminate different facets of an emergent policy domain, one that requires a prismatic perspective to be adequately addressed. Taddeo in fact specifically highlighted a need for this approach when discussing the MoD's AI Ethics Advisory Panel (of which she is a member), arguing that further expertise is necessary to translate this panel's theoretical expertise into practical action.<sup>32</sup> Whilst it is not necessarily novel to consult ethicists and war studies experts in matters of defence, the HoL inquiry demonstrates the value of drawing on plural, complementary forms of evidence when facing a challenge that is novel in itself. The inquiry thus shows PINE's value as a resource in tackling unprecedented problems – asking and answering the right questions across all aspects of a multifaceted policy response.



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<sup>30</sup> House of Lords, [Artificial Intelligence in Weapons Systems Committee: Corrected Oral Evidence, 27 April 2023](#) (2023).

<sup>31</sup> House of Lords, [Artificial Intelligence in Weapons Systems Committee: Corrected Oral Evidence, 27 April 2023](#) (2023).

<sup>32</sup> House of Lords, [Artificial Intelligence in Weapons Systems Committee: Corrected Oral Evidence, 27 April 2023](#) (2023).

## 3.3 THE NATIONAL CYBER SECURITY CENTRE

At the British National Cyber Security Centre (NCSC), the use of PINE has contributed to stronger security cultures by enabling policymakers to reframe the way that the NCSC is understood. The NCSC’s mission is to ‘help to make the UK the safest place to live and work online’, meaning that much of its work is highly technical – including securing public and private networks, and responding to cyber security incidents across the UK. Alongside these technical activities, however, the NCSC also must communicate effectively with a wide range of different audiences, including individual citizens, the Citizens’ Advice Bureau, Ofcom, HMRC, the Home Office, the Cabinet Office, and GCHQ. This communication is not a mere PR exercise, but an integral part of the NCSC’s core mission – recognising that effective cyber security is not confined to internet-connected devices, but extends to the people using them, and the social and cultural systems within which this use is contained. This socio-technical framework for cyber security policy requires PINE, with social and cultural insights complementing technical expertise across the NCSC’s ‘narrative ecosystem’ – the key stories, storytellers, audiences and interactions that frame and explain the NCSC’s work (see Figure 5).

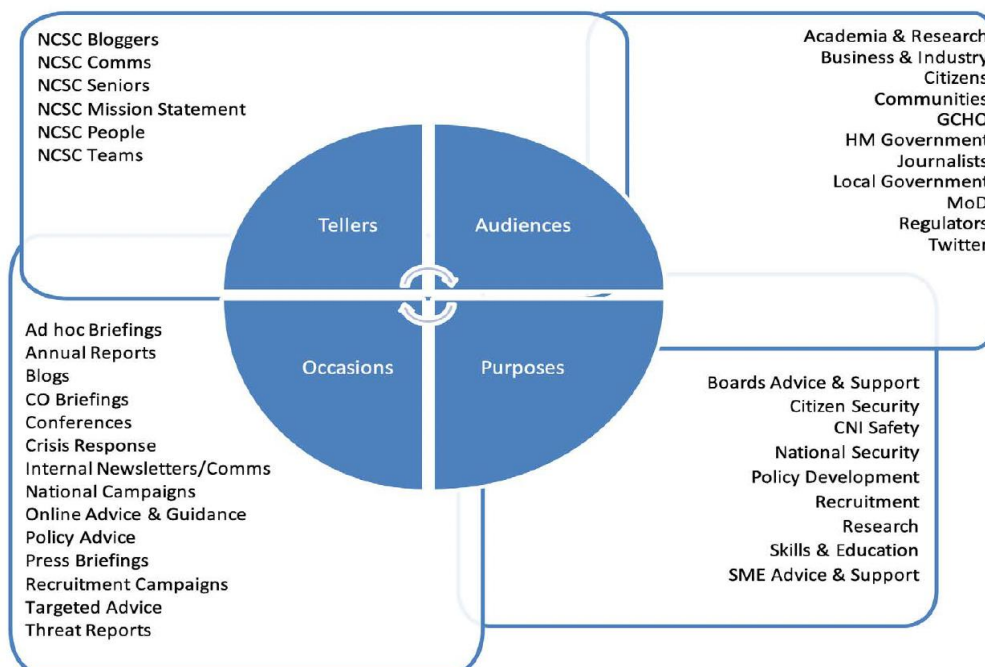


Figure 5: The NCSC narrative ecosystem chart, reproduced from SOCS<sup>33</sup>

<sup>33</sup> G. Liveley, *Stories of Cyber Security* (SOCS) (2021), p. 5

The NCSC has implemented PINE to enhance the way it communicates with this diverse array of stakeholders. Narratologists from the University of Bristol and the Research Institute for Sociotechnical Cyber Security (RISCS) conducted a series of semi-structured interviews with key stakeholders and selected NCSC staff, using these interviews to model the NCSC's narrative ecosystem. This narrative evidence enabled the researchers to offer the NCSC practical recommendations to enhance the effectiveness of their communication with various groups and, as a result, to strengthen the cyber security culture that it is the NCSC's duty to protect. For example, finding that cyber security is most productively framed as a collective endeavour or quest, the narratologists offered the NCSC guidance on ways they might achieve that framing. This was possible, for example, by avoiding accidentally scapegoating anonymised 'victims' of cyber crime, and instead encouraging storytelling that more effectively recruits its audiences to be part of a team by deploying relatable details from individual lives. The narratologists also established that the effectiveness of NCSC's interventions would be enhanced if this sense of collaboration was accompanied by the NCSC being strategically positioned as a 'donor' or a 'helper' – an archetypal character that correspondingly casts the service user as a hero, overcoming a villain with the NCSC's aid. These recommendations offer policymakers fundamental principles to unite the NCSC's messaging, allowing the NCSC's story to remain consistent and effective across its narrative ecosystem's challenging range of audiences, purposes, and occasions.

This last example helps to clarify the contribution PINE can make to more effective policymaking in this domain. On a superficial level, each of the examples above might appear to concern itself with semantics – fussily preoccupied with the terms in which issues or adversaries are understood. Yet as the NCSC example shows, the framings of these ideas and relationships have material effects. In this case, the framing either weakens or strengthens a cyber security culture on which critical infrastructure depends. These case studies demonstrate that by offering evidence on underlying language and narratives, PINE can help decision-makers detect core drivers of conflict, improve the health of security cultures, and clarify the contours of emergent domains in which defence systems will be forced to operate. The case studies discussed in this domain show that PINE can expand policymakers' horizons and add dimensions to their analysis, equipping them to perceive, understand, and work with otherwise unseen phenomena with material impacts on their work.

# CONCLUSION

This casebook illustrates some ways in which PINE has contributed to improved public reasoning and practical outcomes. It is not possible here to be exhaustive, nor to provide general but simple guidance on how to proceed. We (the authors) hope that the material here encourages others to try out their own ways to use PINE, and gives them the evidence they need to convince those whose approval or permission they may need to seek to do so. For our part, we aim to continue the journey by developing flexible tools and approaches to help those who wish to use PINE but would like support in getting started.

PINE is rooted in collaboration, and predicated on multiple forms of expertise. It is also an approach that we wish not only to promote amongst, but develop alongside, those who are interested in better decision-making for the public good. We therefore warmly encourage responses, challenges and questions to Alex, Claire or Sarah. Please contact Claire in the first instance, at [claire.craig@queens.ox.ac.uk](mailto:claire.craig@queens.ox.ac.uk)



