Cranfield University

Strategic foresight expertise at Cranfield University and Collingwood Environmental Planning

Futures Framework Agreement

Department for Business, Energy & Industrial Strategy

in partnership with

Collingwood Environmental Planning

Expertise of the consortium

Cranfield University provides leading, cutting-edge research, training and consultancy with significant experience in designing and delivering strategic foresight research and training programmes for a range of government agencies, pan-governmental partnerships, industry and academics. Cranfield has designed and delivered strategic foresight research that has equipped organisations with the necessary knowledge of tools and techniques needed to enable them to look ahead, analyse what is seen, react and use the insights gained to strengthen their approach to policy and strategic planning. Our foresight research includes continuous review of the quality of evidence underpinning trend analysis, the combination of scientific data with expert knowledge to inform scenario development, and the use of scenarios to communicate future challenges and opportunities to policy makers. This research has enhanced organisational capacity to use and apply foresight, develop thinking about future challenges and opportunities, and identify responses that form more robust and resilient policy and strategic plans.

Collingwood Environmental Planning (CEP) is an independent multidisciplinary environmental and sustainability consultancy, working throughout the UK and EU. CEP provides a broad spectrum of practical and advisory services, with a research and capacity-building focus to much of our work. CEP's experts have considerable experience in UK and EU environmental policy and legislation, environmental assessment and evaluation, indicator-based assessments and stakeholder engagement. CEP has extensive experience in forward-looking studies at all scales. This includes expertise in understanding drivers, trends, emerging issues and their implications (risks, opportunities) for the environment and policy. For example, CEP have developed a methodology for participatory foresight and emerging risk identification. CEP have also developed a methodology and adapted it to support clients in identifying and assessing the implications of global megatrends at the national level.

The collective expertise

The collective expertise of the consortium reflects an interdisciplinary project team with experience in:

- conducting foresight and policy research, and developing forward-looking processes (e.g. emerging risk identification, horizon scanning, scenario building) for a range of UK, EU and international government organisations;
- designing strategic foresight processes (e.g. scenario building and horizon scanning processes) and toolkits that can be used by teams with and without prior experience or knowledge;
- conducting foresight research and identifying the implications of that research for the long-term vision of, and the strategic orientation of, the organisation and its policies;
- providing expert assessment of emerging issues and consequences that mediate between policy actors and their different stakeholders;
- conducting UK and EU-wide policy/programme evaluations across all stages of the policy cycle to deliver targeted analysis and recommendations reinforced by an in-depth understanding of the political context of the UK; and,
- delivering training and capacity building to public and private sector organisations in the use of strategic foresight processes.

The consortium's areas of expertise	Relevant case study number(s)	Key
Understand emerging trends and developments that could have an impact on a policy or strategy area, how these might combine, and what impact they might have	1-15	
Understand the consequences, both intended and unintended, of actions taken within a policy or strategy area (system)	1, 2, 7, 8, 11, 12, 15	
Explore underlying issues or causes when scoping or defining a policy or strategy area	3, 5	
Identify the potential trade-offs that policy or strategy design will need to address	10, 12	
Determine a vision for the future for a new policy or strategy area	14	
Articulate the 'why', 'what' and 'how' needed to achieve an outcome or vision	14	
Test the resilience of a decision (policy or strategy) against a number of different alternative possible futures	11	
Environment and sustainability (including climate change, biodiversity, land use, etc.)	2-13, 15	
Workshop design, expert elicitation (and facilitation)	1-10, 13, 15, 16	
Literature reviews	1, 2, 5, 6, 9, 12, 15-17	

Case studies

1 Development of Plausible future scenarios for the UK food and feed system – 2015 and 2035

In this project, Cranfield worked in partnership with the UK Food Standards Agency (FSA) to develop a number of alternative scenarios that examined how the UK food system might develop in the future. The study employed a comprehensive scenario building method (morphological analysis) and relied on expert knowledge, gathered through workshops and interviews, to produce a number of plausible scenarios for the UK food system in 2035. Outputs included case studies of three food types (i.e. a processed product, raw food/ ingredient and feed/ingredient) to explore triggers for change in the UKs' food production and supply in 2035, and to identify what food safety implications might emerge under different scenarios.

Client: UK Food Standards Agency

Key areas of specialisation:

Links to published reports/academic papers:

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2 Revision and extension of UK Environment Agency Socio-economic scenarios for England & Wales to 2050

Cranfield supported the Environment Agency in updating a number of scenarios to explore implications for managing the water environment in England and Wales. Through expert elicitation and collaborative workshops, researchers assessed how robust management approaches were for river basin districts and catchments under a set of plausible scenarios for water and the water environment at 2030 and 2050. Outputs included insights about river basin management in the future and how different management options might perform across a range of futures.

Client: UK Environment Agency

Key areas of specialisation:

Links to published reports/academic papers:

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3 Secretariat for an EU foresight system to detect emerging environmental issues

CEP is managing this project to provide the secretariat for the EU foresight system to detect emerging environmental issues (FORENV). The project aims to 'improve the understanding of policy-makers of emerging environmental issues by supporting yearly cycles of the system. Working in partnership with colleagues from Milieu, Cranfield University, the German Federal Environment Agency and Vision Communication, in each annual cycle the Secretariat is: conducting horizon scanning to compile and characterise at least 100 weak signals of change; running sense-making workshops to identify ten emerging environmental issues; completing desk based research to characterise the identified emerging issues and related risks and opportunities for the environment; developing communication materials to inform policy-makers, stakeholders and the public on the identified emerging issues.

Client: DG Environment

Key areas of specialisation:

Links to published reports/academic papers:

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4 Methodological Framework for the systematic identification of emerging risks to the environment

This project, led by CEP supported DG Environment and the Environment Knowledge Community (EKC) had the objective to 'devise a methodological framework for the identification of emerging risks to the environment, such that timely and effective policy action at EU level can be considered'. The project involved an in-depth review of existing methods and approaches for the identification and assessment of emerging risks, the coordination and facilitation of stakeholder participation in the development of the methodological framework (through interviews, a brainstorming event and a project workshop), as well as the development of an methodological framework and action plan for is operation.

Client: DG Environment

Key areas of specialisation:

5 EU LIFE SMART Waste Project (Action B4): Build and demonstrate an innovative emerging threats and predictive analysis tool and approach for waste crime

This project was led by Cranfield University and delivered with Waverley Consultants. The project was part of EU-funded LIFE SMART Waste programme, and involved an in-depth literature review of public sector horizon scanning practices and the development of a horizon scanning toolkit to support environmental regulators in building a more common understanding of developments in waste crime. Ouputs included a toolkit that produced a suit of tools and practical guidance for regulatory bodies to implement a horizon scanning process.

Client: Scottish Environment Protection Agency (SEPA)

Key areas of specialisation:

Links to published reports/academic papers:

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6 Regular horizon scanning for emerging issues in environment and food systems

Cranfield delivered foresight research for the Defra Futures Partnership: a package of pan-government futures activities including regular horizon scanning, risk prioritisation/analysis and end-user training. A continuous horizon scanning function was organised around 13 areas of interests, developed by the Partnership. Outputs included in-depth analysis of development of persistent trends and cross-cutting issues over short, medium and long term policy horizons.

Client: Department for Environment, Food & Rural Affairs (Defra)

Key areas of specialisation:

Links to published reports/academic papers:

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7 Methodology development for the project "Mapping Europe's Environmental Future"

In this project CEP supported the development and piloting of a methodology to help European member states explore and understand the implications of global megatrends for the environment and for policy at the national level. A participatory approach was used to develop the method, through a series of expert workshops, combined with desk based research and wider consultation with stakeholders. The project was funded by the Swiss Federal Office for the Environment (FOEN) and delivered under the aegis of the European Environment Agency (EEA) EIONET FLIS.

Client: **Swiss Federal Office for the Environment**

Key areas of specialisation:

Links to published reports/academic papers:

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8 Influence of global megatrends on the state of environment in Slovenia

In this project CEP undertook a study to understand the implications of global megatrends (GMTs) on the state of the environment in Slovenia. The study involved adapting and implementing a methodology and toolkit previously developed by CEP on understanding the impacts of global megatrends at the national level. The work included desk-based research and assessment of how GMT's might impact national environmental priorities and efforts to meet UN Sustainable Development Goals in Slovenia. As part of this study CEP also facilitated two national expert workshops to discuss potential GMT impacts and assess risks and opportunities for the environment and environmental policy in Slovenia.

Client: **Slovenian Ministry of the Environment and Spatial Planning, and the Slovenian Environment Agency**

Key areas of specialisation:

9 Scenarios exploring the noise environment in the UK to 2060

Cranfield supported Department for Environment, Food & Rural Affairs (Defra) in understanding how the noise environment might change in the future. A workshop held with Defra stakeholders assessed the implications for noise in a number of alternative future scenarios (i.e. the UK National Ecosystems Assessment scenarios). The workshop involved a stress-testing exercise with a diverse range of experts (i.e. acoustics, policy, futures, academia) to identify drivers, assess their trends and discuss what they might mean for the noise environment, using the information gathered to evaluate implications for noise policy.

Client: **Department for Environment, Food & Rural Affairs (Defra)**

Key areas of specialisation:

Links to published reports/academic papers:

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10 Extreme weather and resilience in food chain

Cranfield conducted a study that examined how extreme weather was impacting UK food supply chains and how these impacts may change over 10-15 years. The study involved a comprehensive review of the literature, scenario analysis and stakeholder engagement to stress test two food supply chains (i.e. wheat and potatoes), assess vulnerabilities and identify options to improve supply chain resilience.

Client: Department for Environment, Food & Rural Affairs (Defra)

Key areas of specialisation:

Links to published reports/academic papers:

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11 Water Use in the Western Balkans: regional outlooks and global megatrends

CEP was part of a team commissioned by the European Environment Agency (EEA) to undertake a study: Water Use in the Western Balkans: regional outlooks and global megatrends. The team was led by the European Topic Center on Inland, Coastal and Marine Waters (ETC/ICM), which is managed by the Helmholtz Centre for Environmental Research. CEP led work related to global megatrends, which involved: undertaking desk-based research and assessment of how global megatrends might impact on the Western Balkans, focussing in particular on the nexus of water, energy and food; organising and facilitating regional expert workshops to discuss potential impacts and assess risks and opportunities for the environment and environmental policy in the region; and, preparing outputs to be published by the EEA.

Client: European Environment Agency (EEA)

Key areas of specialisation:

Links to published reports/academic papers:

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12 Assistance to the development of the report 'Drivers of change and their implications on the European environment - A systems-based overview' and to the extension of the analysis of European policies through the resource nexus lens

This project build on a previous project (Assistance to the consolidation and update of the knowledge base on global megatrends and resource nexus in support of SOER 2020), and had the objective to: develop a standalone report on drivers of change and their implications on the European environment through a systems perspective; and support the identification and illustration of synergies and trade-offs across European, long-term policy frameworks, by discussing them in the light of biophysical constraints and systemic challenges. CEP provided: overall project management and coordination; desk-based research; leading the work on drivers of change and their implications on the European environment ; organising and facilitating a project workshop; and preparing the final report.

Client: European Environment Agency (EEA)

Key areas of specialisation:

Links to published reports/academic papers:

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13 EU environmental foresight system: pilot 2017 - 18: emerging environmental issues in the field of new technologies in the urban environment.

The study, delivered by Cranfield University, characterised emerging environmental issues and related risks and opportunities identified in a foresight activity carried out by DG Environment on "New Technologies in the Urban Environment". The project involved in-depth review of the most relevant recent scientific literature, with the purpose of highlighting potential risks and opportunities for the environment and human health. The study described the chain of causal links associated with an emerging issue, using the Driver-Pressure-State-Impact-Response (DPSIR) framework, to derive and describe the impacts on environment and health.

Client: European Commission (DG Environment)

Key areas of specialisation:

Links to published reports/academic papers:

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14 Foresight for food: train the trainers project

Cranfield designed and delivered a foresight training programme to Thai policy makers, academics and business enterprise. The training programme was designed to build participants' capacity in strategic foresight and to support strategic planning through the development of roadmaps that map out the trajectory of food research and innovation development in the Thai food industry. Training included horizon scanning, visioning and roadmap development. Ouputs included an educational video and training resources for participants to develop skills in their own organisation in the future.

Client: British Council and Food Innoplis (Thailand)

Key areas of specialisation:

15 Assistance to the consolidation and update of the knowledge base on global megatrends and resource nexus in support of SOER 2020

The overall objective of this project was to update and consolidate the knowledge base underpinning the analysis of global megatrends and around the interplay between resources, natural capital and ecosystem services. The project objectives were to: consolidate the knowledge base underlying EEA's global megatrends (GMTs); take stock of literature on the concept of 'resource nexus'; analyse the implications of long-term trends on resource demand, trade-offs associated with resource use, and impacts on natural capital in Europe and globally, based on the socio-ecological metabolism approach; and assess the synergies and trade-offs between selected long-term European policy frameworks, based on the evidence provided by the resource nexus approach. CEP led the work on a stock-taking of evidence to provide the basis for proposed updates to the EEA GMTs as published in 2015. Updated proposals were characterised and recommendations made to the EEA based on the extent to which new information was considered available and the estimated resource required for complete each update.

Client: European Environment Agency (EEA)

Key areas of specialisation:

Links to published reports/academic papers:

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16 Consumer views on emerging food technologies

In this project for the UK Food Standards Agency (FSA) CEP researched consumer views of emerging food technologies. The research involved: a rapid evidence assessment (REA) on public attitudes to emerging food technologies to update the FSA's 2009 review; and a programme of public dialogue to explore the views of consumers in different parts of the UK on emerging food technologies. The emerging food technologies of interest include lab grown meat; food where nanotechnology has been used; food that has been 3D printed; food that has been genetically modified; food from a cloned animal; novel food processes; functional food and synthetic biology.

Client: **UK Food Standards Agency (FSA)**

Key areas of specialisation:

17 Future Cities Catapult - social impact assessment peer review and advice

Future Cities Catapult helps UK firms develop innovative products and services to meet the changing needs of cities, and to sell them to the world. In this project CEP provided expert input to the development of guidance for assessing and understanding the social impact of Future Cities projects. This was intended to be read and implemented alongside the Future Cities Environmental Impact Assessment Framework and Economic Impact Assessment Framework. It included information to inform the user about what is meant by social impact and outlined some key concepts and indicators of social impact. CEP's role also included participation in an expert advisory group.

Client: **Future Cities Catapult**

Key areas of specialisation:

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