

Report

Science Council annual report 2022-2023

FSA Science Council Annual Report

1 April 2022 – 31 March 2023

Foreword

Over the past 12 months the Science Council's focus has been very much on food safety and the impact of measures to achieve net zero carbon in the UK. Science Council members led by working group chair, Claire Nicholson and vice-chair Jonathan Wastling have considered how primary production in agriculture is responding to the UK net zero carbon emissions target. Its aim has been to identify potential changes to technology and practice which may alter the balance of future food safety risks. As new approaches, including novel proteins, vertical farming, regenerative and mixed farming, and rewilding, and innovations in aquaculture are implemented, consideration needs to be given to where the FSA should focus its attention on how these changes might affect delivery of its statutory role in the future. There may be areas where new risks might emerge, known food safety risks in new backgrounds and known risks for which guidance exists. We published an interim report in July 2022, and the final report with recommendations to the FSA will be published in May 2023

A self-assessed review of FSA Science Advisory Committees took place between October 2022 and March 2023. The Science Council and the Advisory Committee for Social Science have been subject to independently led tailored reviews, carried out by Professor Sir Charles Godfrey and Professor Annette Boaz. At the time of writing the Science Council is awaiting the FSA response to the reviewers' recommendations. This review is timely because the Science Council has been in place for over six years, and there is scope to consider its past performance and look forward to incorporating new ideas and approaches.

At the end of June 2023, I will be stepping down as Chair of the Science Council after six years in the role. It has been a great privilege and honour to serve during this time and work with so many talented and hard-working individuals on the Council and in the FSA. I should like to take this opportunity to thank Science Council members, past and present, for all their contributions and efforts, and the many FSA staff who have provided such excellent support and advice.

Prof Sandy Thomas, OBE, Chair of the FSA Science Council

Who are the Council Members?

The FSA's Science Council is an independent expert committee comprising a Chair and nine members. It was established in April 2017 and its role is to provide high-level, expert strategic insight, challenge, and advice to the FSA's Chief Scientific Adviser (CSA), the Board and Executive on the FSA's use of science to deliver its objectives. The members during this reporting period were:

Professor Sandy Thomas (Chair)

[Professor Thomas](#) is Director of the Global Panel on Agriculture and Food Systems for Nutrition, and an Emeritus Professor at the Science Policy Research Unit at the University of Sussex.

Professor John O'Brien (Vice Chair)

[Professor J O'Brien](#) is Founder of the Food Observatory, UK and a Visiting Professor at Ulster University, Coleraine. In his previous career to 2018 he led the Nestlé global competence centre for Food Safety & Quality and the company's Food Safety and Integrity Research Programme in Lausanne, Switzerland.

Dr Paul Turner

[Dr Turner](#) is a Reader / Clinician Scientist and Honorary Consultant in Paediatric Allergy & Immunology at Imperial College London, and Clinical Associate Professor at the University of Sydney, Australia.

Professor Patrick J. Wolfe

[Professor Wolfe](#) holds chairs in statistics and computer science at University College London, where he specialises in the mathematical foundations of data science.

Claire Nicholson

[Claire Nicholson](#) is the Science Council member representing the consumer interest and has held a range of roles representing consumer interests including having been an Independent Director to represent Consumer Interests on the Board of Red Tractor.

Professor Jonathan Wastling

[Professor Wastling](#) is Pro Vice-Chancellor and Executive Dean of Natural Sciences at Keele University. He is a Professor of Infection Biology specialising in human and animal infectious diseases with a long-standing interest in food security.

Professor Peter Gregory

[Professor Gregory](#) is Emeritus Professor of Global Food Security at the University of Reading having previously been Professor of Soil Science at the same university. He is chair of the Recommended List Board for the AHDB and the board of Crops For the Future UK CIC.

Professor Michael Tildesley

[Michael Tildesley](#) is a Professor in the Zeeman Institute for Systems Biology and Infectious Disease Epidemiology Research at the University of Warwick. His research focuses upon the development of models of infectious diseases and their utility as predictive tools.

Professor Simon Pearson

[Simon Pearson](#) is Professor of Agri-Food Technology and Founding Director of the Lincoln Institute of Agri-Food Technology at the University of Lincoln. He specialises in interdisciplinary research that spans the agri-food system, including agri-food robotics, use of digital systems in food manufacturing, the application of AI across the food chain and data governance in complex systems.

Professor Peter Borriello CB

[Peter Borriello](#) CB has had a long career in research and has led human and veterinary national institutions. These have included the Public Health Laboratory Service Central Public Health Laboratory, the Health Protection Agency Centre for Infections, the Veterinary Laboratories Agency, and most recently Chief Executive of the Veterinary Medicines Directorate.

Members' interests are recorded in the Science Council register of interests which can be found on the Science Council website at <https://science->

Introduction

This report provides a summary of the Science Council's activities in its sixth year (1 April 2022 – 31 March 2023) and reflects on its successes and challenges over the past year as well as a forward look into future activities.

The purpose of the Science Council is to help ensure that the FSA identifies, sources, integrates and uses the best scientific evidence and expertise from all relevant disciplines to inform and deliver its work. FSA defines science in a broad and inclusive way, including the natural, physical, social and economic, digital and data sciences. This means the Science Council takes a multidisciplinary approach to deliver and inform its recommendations.

The Council normally meets four times a year: two open plenary meetings alternating with two closed project plenary meetings. These typically include updates on FSA science activity, progress on ongoing reviews, implementation of previous Council recommendations as well as discussion of science-related questions with the FSA. During this reporting period the Science Council had two open meetings and one closed project plenary meeting due to the Council being subject to a full periodic SAC review.

This year the Council limited itself to one Working Group, putting further development of future reviews on hold pending the outcome of the full periodic SAC review.

Terms of Reference for the Science Council can be found on the Science Council website at <https://science-council.food.gov.uk/SCToR>.

Science Council Work Programme

This section sets out the reviews which have been ongoing for the Science Council over the period of this report.

Working Group 6 on Food Safety and Net Zero Carbon

This review was set up to answer the question:

'What are the possible food safety implications of changes to achieve net zero carbon (NZC) affecting the food system over the next decade?'

The UK has a legal commitment to reach net zero carbon (NZC) emissions by 2050. The way we grow, process and transport food is a major contributor to climate change, with food production accounting for more than a quarter of all greenhouse gas emissions. Reducing this will require dramatic changes in agriculture, manufacturing and transport.

The food we buy is driven by a complex interplay between consumer demand, retail marketing and farm production and all of these will see significant changes in practice and technology over the next decade to help reach that net zero carbon ambition. A deeper understanding of potential implications of achieving net zero on food systems (or identifying areas of uncertainty) would be of considerable value to FSA in pre-empting future policy and evidence needs in this area.

This Science Council review considers which changes to help achieve NZC are likely to have the most significant implications in the next decade for the FSA in delivering its role in ensuring food safety. It identified prioritised areas that warrant further FSA investigation. The focus of the review is the implications of changes to reduce carbon emissions on food safety, and not the effect of climate change itself.

At the 9th Science Council open meeting, the Council agreed in its closed session an initial work plan to deliver a review of the food safety implications of moving to net zero carbon; the [Terms of reference](#) were finalised on 27 October 2021. The governing group is chaired by Claire Nicholson, with Jonathan Wastling as deputy chair. The rest of the group consists of Science Council members and other contributors.

The terms of reference set out the original timeline and approach but in summary the project runs until March 2023 with a report being published soon after. Internal review points will manage the direction of the work and an interim update to the FSA in mid- 2022.

- ○ **Phase 1 (Jun-Oct '21)** the Science Council interviewed 3-4 experts about the broad landscape of carbon reduction efforts (UK and international) to, or affecting, the whole food system. This was followed by a survey of experts to identify specific NZC activities over the next decade.
- **Phase 2 (Oct '21-Apr '22)** included a workshop and follow-up interviews using the survey results to identify activities with food safety implications. The work focuses on primary production, which may

propagate any issues further down the food chain and allows a staged review approach.

- **Phase 3 (Apr-Dec '22)** was a deeper investigation of those activities identified in Phases 1 and 2 to ascertain the outstanding issues and questions needed to identify food safety risks and priorities for their resolution. This was via a multifaceted approach (e.g. talking to experts and interrogating existing reviews and grey literature cited by review participants)
- **Phase 4 (Sep '22-Mar '23)** ran concurrently with phase 3 and draws together findings from phases 1-3 and provide recommendations in a final report.

This review will produce a roadmap that identifies which key changes to reduce carbon emissions may warrant further FSA consideration because of their potential implications for food safety.

Future Work

The Science Council is part of a wider Tailored Periodic Review of FSA's Scientific Advisory Committees during 2022/23. The FSA's SACs are non-statutory and advisory non-departmental public bodies (ANDPBs) or Departmental Expert Committees (DECs) which are subject to assessment under the Cabinet Office Public Bodies review programme. The last Review was commissioned in September 2015 and concluded in 2016; since then, there has been the creation of the:

- Joint Expert Groups (JEGs) to support the FSA's SAC's work on regulated products outside the EU.
 - Food Contact Materials
 - Animal Feed and Feed Additives
 - Additives Enzymes and other Regulated Products.
- Science Council
- Advisory Committee for Social Sciences

The purpose of this Review is to provide assurance to the FSA that the SACs roles and purposes are appropriate in addressing the future needs of the FSA, consumers and wider Government, and that the bodies are operating effectively. The Review will evaluate how the SACs work together and with other relevant bodies against their objectives and provide recommendations for future ways of working.

The Review follows two stages:

1. The ongoing need for the functions provided by the body and the benefits to users and stakeholders; it then considers the best delivery model for the functions that are still needed.
2. Considerations of how the body operates, including relationships with stakeholders, opportunities for efficiencies and improved performance, and governance.

During this, the SACs as ANDPBs will be assessed against three criteria:

- Is this a technical function which needs external expertise to deliver?
- Is this a function which needs to be delivered with absolute political impartiality?
- Is this a function which needs to be delivered independently of Ministers to establish facts or figure with integrity?

Development or scoping of future Science Council projects was put on hold due to the above review, as it cannot be said with certainty what purpose or ways of working Science Council will follow after the review.

Annual Costs

The operation of the Science Council is funded by the FSA. For the financial year 1 April 2022 to 31 March 2023 – covering project costs, members’ expenses (travel, subsistence, and accommodation) and fees and administrative costs for meetings – total costs:

Total Science Council spend (rounded to nearest pound)

(including all attendance fees, T&S and venue costs) **£45,877**

The above figure includes:

- Fees paid out in relation to Working Group 6 **£17,495**
- Total for Chair (including attendance fees and T&S) **£7,701**

Information on fee rates and expenses guidance are included in the [FSA SAC Guidance on Committee Fees and Expenses](#) .

Appendix: Science Council self-assessment against good practice guidelines for the independent scientific advisory committees

Twenty-nine principles of good practice have been developed by the Chairs of the SACs that advise the FSA. These FSA [Good Practice Guidelines for Science Advisory Committees](#) were reviewed and updated in 2012.

Different committees have different duties and discharge those duties in different ways. Therefore, not all the twenty-nine principles set out below will be applicable to all of the committees, all of the time. This list of principles is considered by each committee annually as part of the preparation of its annual report and is attached as an Appendix to it.

Response by the FSA Science Council for the period of its Annual Report (from 1 April 2022 to 31 March 2023)

The role of the Science Council is to provide high-level, expert strategic insight, challenge and advice to the FSA's Board and executive of the FSA and Chief Scientific Adviser on the FSA's use of science to deliver FSA objectives. Its role does not require it to carry out risk assessments or detailed investigations of scientific dossiers on specific risks, products or processes. It did, however, engage with experts to identify potential hazards associated with moving to net zero agriculture/food production, and in doing so, sought to abide by the principles of good practice developed by the FSA and Government Office of Science.

SAC Principles

Defining the problem and the approach

1. The FSA will ensure that issues it asks a SAC to address are clearly defined and take account of stakeholder expectations in discussion with the SAC Secretariat and where necessary the SAC Chair. The SAC Chair will refer back to the FSA if discussion suggests that further iteration and discussion of the task is necessary. Where a SAC proposes to initiate a piece of work, the SAC Chair and Secretariat will discuss this with the FSA to ensure the definition and rationale for the work and its expected use by the FSA are clear.

Complies: The FSA's Chief Scientific Adviser (CSA) attends most Science Council meetings and discusses the rationale for the questions posed to or by the Council with them. The Science Council Chair also has regular meetings with the FSA's CSA, and the Chief Executive where any questions from the FSA or initiated by the Council are considered further. FSA contributions to Working Groups (such as meetings with staff who lead on relevant policy/science areas and contributions to meetings) enables ongoing discussion and clarification.

Seeking Input

2. The Secretariat will ensure that stakeholders are consulted at appropriate points in the SAC's considerations. It will consider with the FSA whether and how stakeholder views need to be taken into account in helping to identify the issue and frame the question for the committee.

Complies: Science Council holds full open plenary meetings twice a year in public. Working Groups do not meet in public but report their work to plenary meetings during open sessions. Working Groups consult stakeholders and the FSA's SACs as and when appropriate. When scoping the specification for the food safety and net zero carbon review, experts in decarbonisation and the food chain were consulted to understand the landscape that the Council was entering.

3. Wherever possible, SAC discussions should be held in public.

Complies: Science Council full meetings are held in public twice a year. Working Groups do not meet in public but report their work to open plenary meetings.

4. The scope of literature searches made on behalf of the SAC will be clearly set out.

Complies: The scope of literature considered as part of preparing the report of the WG6 review is provided in the report.

5. Steps will be taken to ensure that all available and relevant scientific evidence is rigorously considered by the committee, including consulting external/additional scientific experts who may know of relevant unpublished or pre-publication data.

Complies: The Science Council does not routinely consider detailed primary scientific documents, but it does examine rigorously the evidence that is presented. Members and the secretariat are expected to bring relevant additional

materials to the attention of the Council. For the food safety and net zero carbon (NZC) review the Council has consulted experts, initially to understand the scope of the issue (see above) and then through a survey, consulted a wider range of expertise. During the reporting period the Science Council carried out additional expert interviews to fill in gaps and confirm opinions that had existed up to that point in the review.

6. Data from stakeholders will be considered and weighted according to quality by the SAC.

Complies: The Science Council weighed all relevant information according to quality, irrespective of its source. The Science Council, as mentioned above, did additional interviews to test multiple perspectives on key issues, discussing sustainability developments in aquaculture with Centre for Environment Fisheries and Aquaculture Science (CEFAS) in addition to having discussed with various commercial representatives.

7. Consideration by the Secretariat and the Chair (and where appropriate the whole SAC) will be given to whether expertise in other disciplines will be needed.

Complies: The Science Council kept this principle under review, and it has the option to co-opt or invite external input where necessary, through mechanisms such as the FSA's Register of Specialists. As WG6 covers such a diversity of agricultural practices the Science Council has consulted with experts in many fields including animal feed, aquaculture, waste to land and innovation investment.

8. Consideration will be given by the Secretariat or by the SAC, in discussion with the FSA, as to whether other SACs need to be consulted.

Complies: Working Groups consult the FSA SACs as appropriate. The Council is developing its engagement with the SACs and, as well as the Council Chair attending the regular workshops of SAC Chairs, some Council members are paired with a SAC relevant to their expertise, for regular updates and cross-engagement. The ACSS has also been engaged in the development and progress of the WG6 review as their own review Climate Change and Consumer Behaviour has relevance to the Council's net zero work.

Validation

9. Study design, methods of measurement and the way that analysis of data has been carried out will be assessed by the SAC.

10. Data will be assessed by the committee in accordance with the relevant principles of good practice, e.g. qualitative social science data will be assessed with reference to guidance from the Government's Chief Social Researcher.

11. Formal statistical analyses will be included wherever appropriate. To support this, each SAC will have access to advice on quantitative analysis and modelling as needed.

12. When considering what evidence needs to be collected for assessment, the following points will be considered: the potential for the need for different data for different parts of the UK or the relevance to the UK situation for any data originating outside the UK; and whether stakeholders can provide unpublished data.

13. The list of references will make it clear which references have been subject to external peer review, and which have been peer reviewed through evaluation by the Committee, and if relevant, any that have not been peer reviewed.

Science Council complies, to the extent these criteria apply to its work:

The Science Council does not generally consider the type of detailed risk assessment and analyses of scientific data that are the primary focus of these criteria. However, it does advise on foresight, best practice, governance and assurance of the FSA's use of science.

Uncertainty

14. When reporting outcomes, SACs will make explicit the level and type of uncertainty (both limitations on the quality of the available data and lack of knowledge) associated with their advice.

15. Any assumptions made by the SAC will be clearly spelled out, and, in reviews, previous assumptions will be challenged.

16. Data gaps will be identified and their impact on uncertainty assessed by the SAC.

17. An indication will be given by the SAC about whether the evidence base is changing or static, and if appropriate, how developments in the evidence base might affect key assumptions and conclusions.

Science Council complies to the extent these criteria apply to its work:

The Science Council does not generally consider the type of detailed risk assessment and analyses of scientific data that are the primary focus of these criteria. However, it does advise on foresight, best practice, governance and assurance of the FSA's use of science. In reporting the results of its strategic reviews, the Science Council always seeks to be clear about limitations on data informing conclusions and any caveats on their conclusions.

Drawing Conclusions

18. The SAC will be broad-minded, acknowledging where conflicting views exist and considering whether alternative interpretations fit the same evidence.

Science Council complies to the extent these criteria apply to its work:

This is implicit in the Science Council's role to provide high-level, expert strategic insight, challenge and advice to the FSA's Board and executive and Chief Scientific Adviser on the FSA's use of science to deliver FSA objectives. For WG6 the Council sought several perspectives where it was felt necessary to get a rounded view of a topic, as mentioned above meeting first with significant businesses working in the aquaculture sector and then with CEFAS.

19. Where both risks and benefits have been considered, the committee will address each with the same rigour, as far as possible; it will make clear the degree of rigour and uncertainty, and any important constraints, in reporting its conclusions.

Science Council complies to the extent these criteria apply to its work:

The Science Council does not carry out formal assessments of risk and/or benefits as such. It would consider the advantages and disadvantages of different options in making its recommendations. The Science Council will always make clear any caveats or limitations on its advice.

20. SAC decisions will include an explanation of where differences of opinion have arisen during discussions, specifically where there are unresolved issues, and why conclusions have been reached. If it is not possible to reach a consensus, a minority report may be appended to

the main report, setting out the differences in interpretation and conclusions, and the reasons for these, and the names of those supporting the minority report.

Science Council complies to the extent these criteria apply to its work:

This is covered explicitly in the [Science Council Code of Practice](#).

21. The SAC's interpretation of results, recommended actions or advice will be consistent with the quantitative and/or qualitative evidence and the degree of uncertainty associated with it.

Science Council complies to the extent these criteria apply to its work:

Science Council aims to follow this principle. Recommendations in the WG6 final report will clearly set out the limitations on the conclusions based on the type of evidence available.

22. SACs will make recommendations about general issues that may have relevance for other committees.

Science Council complies to the extent these criteria apply to its work:

This is implicit in the Science Council's role to provide high-level, expert strategic insight, challenge and advice to the FSA's Chief Scientific Adviser, the Board and the executive of the FSA on the FSA's use of science to deliver its objectives.

Communicating SAC's conclusions

23. Conclusions will be expressed by the SAC in clear, simple terms and use the minimum caveats consistent with accuracy.

Science Council complies to the extent these criteria apply to its work:

Given the high-level strategic advice the Science Council provides, this tends to lend itself to minimal use of jargon and technical terms and it aimed to make its reports clear and concise to the lay audience. The Science Council's documentation published from the June 2020 open meeting onwards has been reviewed against accessibility criteria so the Council's work is more inclusive.

24. It will be made clear by the SAC where assessments have been based on the work of other bodies and where the SAC has started afresh, and there will be a clear statement of how the current conclusions compare with previous assessments.

Science Council complies to the extent these criteria apply to its work:

Science Council meeting papers and minutes made clear the origin of issues

under discussion. It put its conclusions in the context of other work where appropriate.

25. The conclusions will be supported by a statement about their robustness and the extent to which judgement has had to be used.

Science Council complies to the extent these criteria apply to its work:

The Science Council made clear the basis for its recommendations and any assumptions and caveats.

26. As standard practice, the SAC secretariat will publish a full set of references (including the data used as the basis for risk assessment and other SAC opinions) at as early a stage as possible to support openness and transparency of decision-making. Where this is not possible, reasons will be clearly set out, explained and a commitment made to future publication wherever possible.

Science Council complies to the extent these criteria apply to its work:

The Science Council did not carry out risk assessment or assessment of detailed scientific data of the type that is the focus for this criterion.

27. The amount of material withheld by the SAC or FSA as being confidential will be kept to a minimum. Where it is not possible to release material, the reasons will be clearly set out, explained and a commitment made to future publication wherever possible.

Science Council complies to the extent these criteria apply to its work:

The Science Council followed this criterion.

28. Where proposals or papers being considered by the FSA Board rest on scientific evidence produced by a SAC, the Chair of the SAC (or a nominated expert member) will be invited to the table at the Open Board meetings at which the paper is discussed. To maintain appropriate separation of risk assessment and risk management processes, the role of the Chairs will be limited to providing an independent view and assurance on how their committee's advice has been reflected in the relevant policy proposals, and to answer Board Members' questions on the science. The Chairs may also, where appropriate, be invited to provide factual briefing to Board members about particular issues within their committees' remits, in advance of discussion at open Board meetings.

Science Council complies to the extent these criteria apply to its work:

This did not apply directly, since the Science Council did not carry out full risk assessments or detailed reviews of scientific evidence. This is because the Science Council reviews topics of strategic science interest and presents recommendations based on those reviews but does not carry out risk assessment or assessment of detailed scientific data. However, Science Council annual activity and Working Group reports (where commissioned by the Board) are presented to the FSA Board, in most cases by the Science Council Chair and the Chair of the relevant Working Group. During this reporting period, however, no review commissioned by the FSA Board was reported.

The Science Council Chair (Prof. Sandy Thomas) provided [her annual update to the FSA Board in March](#) which summarises the Council's activity during this reporting year.

29. The SAC will seek (and FSA will provide) timely feedback on actions taken (or not taken) in response to the SAC's advice, and the rationale for these.

Science Council complies to the extent these criteria apply to its work:

When submitting recommendations at the end of a review, the Science Council asks for feedback and reports from FSA on progress in acting on these recommendations (typically 12 months from the review report being presented to the FSA Board). No working Groups submitted recommendations from their reviews during this reporting period.