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Science
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Council

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Defra Science Advisory Council

Annual Report: April 2012 – March 2013

(Including SAC's activities during period September 2011 – March 2012)

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Foreword by Defra's Chief Scientific Adviser



Science and evidence are at the heart of most of Defra's policies. This is recognised within Defra's organisational structure by having me, the Chief Scientific Adviser (CSA), occupying a senior position. The CSA is a member of the Defra Executive Committee, which is responsible for the operational management of Defra as well as the Defra Supervisory Board, which is the governing body. The CSA is also a key adviser to ministers, not just to the department, and has a public outreach role that is unusual within the Civil Service. This latter function concerns the need to explain the evidence being used by the Department when it is formulating and implementing policy.

The function of the CSA is supported by a network of advisory committees. Most of these are focused upon particular fields of evidence that are important to Defra and they support decision-making within specific Defra policy directorates under the supervision of the CSA. Defra's Science Advisory Council (SAC) is unusual in that it is tasked with taking a strategic overview of evidence in support of the CSA and it operates at the same level as the CSA. SAC is composed of a small number of senior scientists and social scientists who, through their experience and their long-standing relationship, with Defra have sufficient knowledge of issues to provide relevant advice.

In the past year, SAC has commented on most of the major issues being dealt with by Defra. In my first year as CSA, this has included difficult and controversial problems involving the management of bovine tuberculosis, infection of ash trees by *Chalara fraxinia*, designation of marine conservation zones and GM. The advice from SAC has been very important in all these areas and in many others of lower profile, including those associated with how Defra should prioritise research in future.

I wish to thank all the members of SAC for their help and in particular Professor Chris Gilligan for his dedication to chairing the Council. Finally, I also wish to thank the dedicated team that supports various aspects of SAC in addition to other duties – namely Emma Hennessey, Claire Hill, Chris Jacobs, Gemma Mulholland, and Nicky Gee.

Professor Ian Boyd

Foreword by SAC Chair



The newly-formed SAC began its work in September 2011. Our first objective was to ensure that the eight members of SAC developed a shared understanding of the evidence needs required to support policy across the broad portfolio of Defra's remit. This required discussion with a range of Defra officials, along with the Chief Scientific Adviser (CSA), at the time, Prof. Sir Bob Watson. These exploratory discussions have been supplemented by presentations and examination of specific topics at subsequent meetings. SAC has also met with the former Secretary of State, Rt Hon Caroline Spelman MP, with Defra Ministers, Lord Taylor and Lord de Mauley, and the Permanent Secretary, Bronwyn Hill, for discussion about the use of scientific evidence to inform policy.

Our primary role is to provide independent, constructive challenge and support to the CSA at Defra in ensuring that the evidence that underpins policy is robust, that uncertainties are recognised, and that programmes for collection and assessment of evidence are appropriate for Defra needs. We have, during the past year, reviewed the use of evidence pertaining to a range of topics that include badgers and bovine Tb, neonicotinoids and pollinator health, climate change risk assessment, and marine conservation zones. SAC has also been consulted and provided guidance on emergency responses to Schmallenberg disease and ash dieback as well as contingency planning for exotic animal diseases. Further details of these and other SAC activities are summarised in the report and in detailed minutes of SAC meetings on the web. Defra is currently reviewing its strategy for investment in evidence collection across its remit with input and challenge from SAC.

It is important that SAC maintains independence and can initiate as well as respond. Accordingly, a part of every meeting is reserved for closed SAC discussions. We have also introduced monthly teleconferences to improve engagement, communication and agility between quarterly meetings. A pairing-scheme, with one-to-one discussions between individual SAC members and senior officials within Defra, has also been introduced to improve two-way communication.

Finally, it has been a busy and challenging period and I would like to thank the Secretariat and to acknowledge the commitment and enthusiasm of my fellow SAC members in the work covered in this report. We look forward to continuing to work together and with the current CSA, Prof. Ian Boyd, to support and challenge Defra on its use of evidence.

Professor Chris Gilligan

Introduction

This is the first Annual Report of the re-modelled Defra Science Advisory Council (SAC) and covers the period from the start of the re-modelled SAC (September 2011) until March 2013. This extended period, of beyond a year, has been included because 2011 – 2012 was an incomplete year and only two SAC meetings were held.

The Annual Report is produced as part of the Council's policy on openness, as set out in the Government Office for Science's Code of Practice on Scientific Advisory Committees¹. The report summarises the key activities of SAC during this period. Further detailed information can be found in meeting minutes on the SAC website².

Overview of SAC

What is SAC?

The Defra Science Advisory Council (SAC) is an Advisory Non-Departmental Public Body (NDPB) sponsored by Defra. It was first set-up in 2004 to challenge and support the Department's Chief Scientific Adviser (CSA) in independently assuring and challenging the evidence underpinning Defra policies and ensuring that the evidence programme meets Defra's needs. The Council communicates its advice to the CSA, and through the CSA to Ministers.

An independent review³ and a separate Arms Length Body (ALB) review led to the establishment of a new model for SAC, implemented at the end of 2011. New members were recruited and new Terms of Reference established ([Annex 1](#)).

Membership

Eight members (details in [Annex 2](#)) were appointed in August 2011 in accordance with the Nolan principles⁴ for a three-year term. The selection process sought members with a sound and broad basis of expertise across natural, economic or social sciences of relevance to Defra's portfolio of work. During this reporting period, one member (Professor Pete Smith) resigned from SAC for personal reasons and it has been agreed that he will be replaced during the next recruitment round (2014).

¹ <http://www.bis.gov.uk/assets/BISPartners/GoScience/Docs/C/11-1382-code-of-practice-scientific-advisory-committees.pdf>

² <http://www.defra.gov.uk/sac/meetings/>

³ <http://www.defra.gov.uk/sac/files/sac-review-sept-2010.pdf>

⁴ Fair, independent and open assessment

The range of expertise required for SAC may change over time, and therefore, the balance of skills and expertise will be reviewed in the form of succession planning. Consideration will be given to the experience represented by and required by its members in light of current and anticipated future work programmes; and as required 'invited attendees' (whose role and remit is defined in the SAC handbook) will join SAC meetings.

All SAC members have declared any interests that are relevant to the remit of SAC and these are published on the SAC website⁵. Members withdraw from discussion of matters in which they feel that they cannot act impartially, where this occurs it is reflected in the official record of the meeting. To ensure the register is accurately maintained, members inform the Secretariat of any changes and the Register content is reviewed at each quarterly meeting.

Structure of Business

SAC's working practices are organised in four principal ways:

- quarterly meetings incorporating working dinners;
- monthly teleconferences;
- subgroups on specific policy/evidence areas; and
- Defra Official and SAC Member pairing scheme

SAC has a rolling annual work plan that presents the planned topics for discussion in SAC quarterly meetings, subgroup activities, and the monthly teleconferences. It is reviewed at each quarterly meeting and, if required, during a monthly teleconference call. This enables SAC to capture current and emerging priorities, which may influence the planned work schedule.

Defra's Science Minister meets with the SAC Chair on an annual basis, and a key part of their discussion is on SAC's past and future work.

SAC is supported by a Secretariat of Defra staff who assist the Chair and Members of SAC in their role. In addition, the Secretariat promotes SAC within the Department; liaises with other relevant expert committees and advisory groups within Defra; and monitors the performance of SAC and the value for money it delivers.

As much of Defra evidence covers both England and Wales, the SAC meetings are also attended by a representative of the Welsh Government to utilise the SAC advice and outputs on evidence within the Welsh policy context. As the majority of Defra's evidence budget does not cover Scotland, there is not the same requirement to engage with the Scottish Government, however Scottish interests are often brought to the discussion through the membership of Louise Heathwaite in the SAC (who is also the Chief Scientific Adviser, Rural and Environment for the Scottish Government).

⁵ <http://www.defra.gov.uk/sac/about-us/register-of-interests/>

Governance

SAC operates within the Government Office for Science's Code of Practice on Scientific Advisory Committees (CoPSAC)⁶ and the principles of Scientific Advice to Government⁷, which set out the rules of engagement between Government and those providing scientific advice. Utilising this information and in addition, the SAC handbook⁸ provides guidance on the establishment, management, and activity of SAC and its ongoing relationship with Defra. The SAC handbook is reviewed annually to reflect any changes to working practices that may be required.

The SAC secretariat liaises with the Government Office for Science where necessary on governance issues and provides necessary reporting information on membership. The SAC Chair and the CSA provided evidence on SAC to the recent review of Science Advisory Councils across Government Departments by the Government Office for Science.

Updates on the work of SAC are presented at Defra Supervisory Board meetings (chaired by the Secretary of State) thus ensuring that SAC is accountable to the Board and to Ministers, and is more visible across the Department.

The next review of SAC will form part of Cabinet Office's NDPB triennial review programme⁹, and is currently scheduled for 2014.

Monitoring performance of SAC

An annual appraisal of members' performance is conducted in line with recommendations detailed by the Office of the Commissioner for Public Appointments (OCPA) Code of Practice¹⁰. The evidence-based appraisal, conducted by the CSA and the SAC Chair, evaluates member's contributions against the appointment criteria. The CSA and another senior Defra official, who has been involved in SAC, appraise the SAC Chair.

The appraisal provides SAC members with an opportunity to provide and receive feedback on their performance during the course of the appraisal period. The last SAC appraisals took place in July 2012 and covered the period 1 September 2011 – 30 June 2012; this was a shorter period than normal to allow the CSA, at the time, to be involved in the process before his departure from Defra.

⁶ <http://www.bis.gov.uk/assets/goscience/docs/c/11-1382-code-of-practice-scientific-advisory-committees.pdf>

⁷ <http://www.bis.gov.uk/go-science/principles-of-scientific-advice-to-government>

⁸ <http://www.defra.gov.uk/sac/files/SAC-handbook-code-of-practice.pdf>

⁹ <http://www.defra.gov.uk/corporate/about/with/ndpb-review/>

¹⁰ <http://publicappointmentscommissioner.independent.gov.uk/wp-content/uploads/2012/02/Code-of-Practice-for-Ministerial-Appointments-to-Public-Bodies.pdf>

Summary of SAC discussion topics

Since the remodelling of SAC at the end of 2011, SAC members began their terms by developing an understanding of the policy remit and evidence requirements of Defra. They subsequently moved into an advisory and challenge role. The information below summarises the main areas of focus for SAC's discussions to date (presented in alphabetical order and not reflecting any prioritisation).

Further details may be found in the comprehensive minutes from SAC quarterly meetings and teleconferences that are available on the SAC website¹¹.

Ash dieback and tree health

SAC identified the need for a watching brief on plant and tree health during the initial exploration of Defra responsibilities and risks, noting that plant health had received substantially less attention and investment than animal health in preparedness for epidemics. SAC reviewed the current status of tree health research at its September 2012 meeting, identifying amongst other things the need for improved data on the location of susceptible host species, greater emphasis on epidemiology and sampling and the potential for greater public engagement through organisations such as the National Trust and wildlife groups. The Chalara outbreak was subsequently detected and SAC has been updated on the Defra activities in relation to ash dieback, caused by *Chalara fraxinea*, particularly on modelling of the spread of Chalara¹² and the development of a management plan. SAC has also been updated on the working of the Taskforce on Tree Health and Plant Biosecurity¹³ (see below under other SAC activities).

Bovine TB – badger control pilots

The decision to go ahead with a culling strategy in England was taken ahead of this SAC¹⁴. Nevertheless, SAC continues to review the link between policy and evidence noting that the evidence supports a local effect in reducing the incidence of infected herds, where culling is practised based on the Randomised Badger Culling Trial¹⁵. In addition, SAC is confident that the pilots will be undertaken to clearly defined protocols.

SAC has also reviewed the economic data on culling strategies, the feasibility, and limitations of vaccination. SAC acknowledges that the ultimate decision for a cull is not a

¹¹ www.defra.gsi.gov.uk/SAC

¹² The Chair registered a conflict of interest through involvement with the Chalara modelling exercise was noted.

¹³ <http://www.defra.gov.uk/food-farm/crops/plant-health/tree-taskforce/>

¹⁴ <http://www.defra.gov.uk/animal-diseases/a-z/bovine-tb/badgers/culling/>

¹⁵

http://collections.europarchive.org/tna/20081027092120/http://defra.gov.uk/animalh/tb/isg/pdf/final_report.pdf

science issue alone but a political judgement based on scientific evidence, and other factors that include delivery, cost, and public opinion.

SAC continues to review the scientific support underpinning the pilots though updates from Defra. SAC has advised that further consideration needs to be given to how information is communicated to scientists, farmers and the public. SAC has also asked for information upon how the outputs of the pilots will be used in any future roll out of culling.

Climate Change

In relation to Defra's Climate Change policy, SAC has so far focused discussions on the 2012 Climate Change Risk Assessment (CCRA). The purpose of the 2012 CCRA was to identify and compare risks and to prioritise areas for further research and action. SAC discussed the report in detail and held a joint meeting with Lord Krebs, Chair of the Adaptation Sub-Committee (ASC) of the Committee for Climate Change (CCC) together with Professor Martin Parry, a member of the ASC, to discuss areas of mutual interest.

While noting that the 2012 CCRA was internationally leading in a number of respects and SAC welcomed several key aspects of the report, SAC also raised a number of concerns. These focused on the approach used by the CCRA that it was felt had not always made best use of the scientific community, leading to gaps in the report that might have been filled. SAC also identified some limitations in modelling notably in the failures of response functions to take account of interactions in driving variables, for example in predicating changes in crop yields on temperature alone. Arising from their discussions, the Living with Environmental Change (LWEC) partnership with support from Defra organised CCRA workshops at their 2012 Assembly. The workshops explored issues associated with the recent CCRA; the evidence gaps; and discussed what future actions could be taken to inform better policy formulation and implementation. A version of the final report can be found on the LWEC website¹⁶. SAC has recently been informed that Defra are beginning to plan for the next CCRA and a CCRA Requirements Working Group will be formed. In response to this, a paper is currently being prepared by a SAC sub-group on climate risk and reviewed by SAC for submission to Defra and the ASC summarising SAC's key messages with regard to the CCRA.

Any further work in relation to Defra's climate change policy by SAC will be directed at the aspects of the CCRA that are Defra policy rather than the CCRA as a whole, which is cross-Governmental and coordinated by Defra.

Evidence budgets

In familiarising themselves with evidence gathering across the Defra remit, SAC questioned how the balance of activities was achieved and reviewed. Defra officials have

¹⁶ <http://www.lwec.org.uk/node/1396>

provided SAC with information on the allocations of Defra evidence spend across the department, noting that the current allocations reflect the priorities that were determined by the 2010 Evidence Investment Strategy (EIS) and its subsequent update, which the previous SAC had been engaged in. The current SAC identified the need to increase flexibility in how the budget is spent in response to changing demands, taking account of different timescales for short-term, longer-term, and urgent demands. In advising Defra on priorities, SAC was keen to see a clear summary outlining strategic investment and spend across different topics, supported by executive summaries of the key objectives. Defra is about to undertake a new EIS that will consider how Defra spends its evidence budget. It was agreed that SAC would focus on this and not the detail of decisions made prior to their appointments, which led to the present allocations.

Evidence Investment Strategy

Defra has sought to engage SAC in the early stages of the 2013 EIS by presenting the initial work plans to them. In response, SAC has welcomed the opportunity to engage and raised a number of challenges. These include concerns about how Defra regulatory obligations could be met efficiently. SAC also noted the need to deal with cross-cutting areas, such as data storage and communication, across as well as within work packages. Defra have acknowledged these comments and will address them and keep SAC updated on the development of the EIS and its subsequent implementation once published.

Food Security and the Green Food Project

SAC requested summaries from Defra on food production, food security, and GM. Defra provided outline papers on all three topics with most detail on the Green Food Project¹⁷. SAC discussed the Green Food Project in detail with Defra officials. SAC noted that, while it was very important for the Green Food Project to be driven by stakeholders, it was essential to have adequate scientific input, in particular to tease out the short and longer term contributions that science can make to sustainable food production. SAC also reflected on the importance of recognising the tensions between increasing food production and minimising environmental costs and the need to bring together the broad stakeholder and scientific communities to recognise and address these tensions. Defra officials welcomed the challenge offered by SAC to this project. Updates were provided to SAC over the year. The initial SAC challenge on stakeholder and scientific engagement at the start of the project was noted, and a stakeholder approach throughout the work to ensure buy-in and to encourage the different groups to work together was implemented. SAC has identified the need to understand Defra research in sustainable food production and how this research is co-ordinated across Defra.

¹⁷ <http://www.defra.gov.uk/publications/2012/07/10/pb13794-green-food-project/>

Marine Conservation Zones

The Marine Conservation Zones (MCZs) and the process by which they are chosen has been a topic of SAC discussion. SAC's initial considerations, which included a criticism that the approach to identifying reference areas appears minimalistic, were taken on board by Defra. Subsequent information presented to SAC acknowledged that the conservation objectives will be drafted to ensure that they are realistic, feasible and measurable; encompassing a risk-based approach. However, SAC raised the remaining issues around the existing evidence base: the limited habitat maps of the seabed; and the issue of monitoring on limited resources. In response to these discussions, Defra policy officials and a sub-group of SAC members agreed to explore this in more detail (see subsequent section for sub-group response).

National capability

SAC raised two issues around Defra and capability. The first issue related to Defra's in-house capability to be an intelligent customer for, and user of, scientific and other evidence. The second related to Defra's access to, and dependence on, external capability, broken down into two areas: expertise, and specialist facilities.

Discussion has focused on approaches to assess capability, including trends in supply and approaches to managing supply sustainability. The criteria for assessing sustainability has also been discussed.

National capability and Defra in-house capability will form part of the EIS and SAC will be asked to contribute its opinions to this.

Neonicotinoids

SAC has examined the regulation of neonicotinoids and the evidence associated with this. SAC was content with the rigour with which with Defra was handling the evidence. SAC raised some queries with regard to the experimental design that resulted in a meeting with the Advisory Committee on Pesticides (ACP).

Specific discussion with the ACP noted that there are a number of areas emerging of mutual concern. These include potential weaknesses in statistical analyses of trial data; experimental design and assessment, whereby experimental protocols are clear for laboratory-based experiments but less so for progression to other stages of assessment including cage studies and field trials. Problems were also identified in accounting for the cumulative effects of pesticides on behaviour as distinct from acute effects and the difficulties of accounting for potential interactions between pesticide dose and environmental factors on bee behaviour. These issues are being addressed through the EU regulatory system and are picked up in revised guidance issued by the European Food Safety Authority.

Risk

SAC received information about the Risk Centre at Cranfield University¹⁸ and the work of Defra's risk coordinator. SAC was impressed with the work done by the Risk Centre on comparing different environmental risks. Members also felt that the next steps for this work needed careful consideration. SAC noted that it would be beneficial to have further discussion around the issues of the precautionary principle, and hazard versus risk-based decision making at a future meeting. This has been added to the 2013-14 work programme.

Updates

There have been a number of areas that SAC have received updates on, although there was, or is at present, no specific need for active SAC engagement. These include the National Ecosystem Assessment; Defra Science reviews of Kew and Cefas; the Natural Capital Committee; the Social Science Expert Panel; and Defra's Change programme.

¹⁸ <http://www.cranfield.ac.uk/sas/risk/>

SAC subgroups

Background information

It was agreed that SAC would establish time-limited sub-groups in relation to emergencies, or to focus in more detail on a specific issue. The groups report directly to SAC and are chaired by a SAC member, who is responsible for developing terms of reference for the sub-group. Sub-groups may also include non-SAC members, co-opted on an *ad hoc* time-limited basis, to increase the range of expertise. Representatives of Defra agencies and the Devolved Administrations may also be invited to attend.

SAC-ED

In partnership with Defra's Chief Veterinary Officer (CVO), SAC established an Exotic Diseases sub-group (SAC-ED) to give oversight and assurance for dealing with animal exotic disease outbreaks. In an emergency situation, SAC-ED can be called upon, by the CVO, to provide strategic advice on the use of evidence rather than on specific operational actions. The CVO is the main recipient of the subgroup's challenge and advice; although, SAC-ED will also report to the CSA.

SAC ED had its first meeting in January 2013, the purpose of which was to agree ways of working and terms of reference, as described in [Annex 3](#). The Devolved Administrations are represented on the sub-group, and are considering whether they might wish to use SAC-ED in the case of outbreaks in their countries.

In establishing its role and the specific value it can offer to Defra, SAC-ED plans to review the wide range of information being provided to the CVO in outbreak situations and to identify gaps in the evidence. The group will also review Defra's outbreak response plans, including those for the recovery stage. In addition, SAC-ED may have a longer-term role of reviewing Defra's animal disease outbreak evidence processes and structures.

During 2013, the sub-group plans to meet to consider a hypothetical outbreak as a test case, after which it would meet annually unless an outbreak necessitated a meeting(s).

SAC members involved: Professor Quintin McKellar (Chair)

Climate Risk Evidence

SAC formed a climate risk sub-group amongst SAC members to articulate SAC's position in relation to the Climate Change Risk Assessment (CCRA) and in particular in relation to its suggestions for consideration in the planning of the next CCRA. The report of the group has been discussed and agreed by SAC for forwarding to Defra and the Adaptations Sub-Committee.

SAC members involved: Professor Peter Liss (Chair), Professor Ian Bateman, and Professor Lynda Warren.

Marine Evidence

An initial meeting was held to discuss Defra's remit in relation to marine issues and the associated evidence. The aim of this meeting was for a limited number of SAC members to obtain greater clarity on Defra's marine evidence programme; and to discuss any issue within the evidence base and where SAC might usefully contribute. It was agreed a follow up workshop on the utility of marine ecosystems models would be the next focus of the sub-groups activities, as it was concluded that this was where there is most need for consideration of the evidence base.

Alongside this meeting, the SAC members provided feedback on the Marine Evidence Plan.

SAC members involved: Professor Louise Heathwaite, Professor Peter Liss and Professor Lynda Warren

SAC-Defra pairing scheme

Overview

The pairing scheme was introduced during this reporting period to improve SAC's visibility within the department and to develop and foster regular, light touch, engagement with key policy officials. The purpose of the scheme is to help ensure SAC is kept up-to-date with key developments and thinking across the Department enabling them to contribute to the SAC discussions with a greater knowledge of the Department. The pairing scheme also provides the Defra with another avenue to access the valuable expertise of the SAC members.

During this reporting period, the pairing scheme has been explored with a number of pairs being initiated (as described below) and the options for further ones explored. Each pairing operated on a slightly different mechanism to meet the preferences and needs of the pair.

- Professor Judith Petts and the Chief Social Researcher

Professor Petts and Gemma Harper interact regularly and not least around the activities of the Defra/DECC Social Science Expert Panel, and the identification of key social science knowledge and approaches that are relevant to current Defra policy areas. During the year points of informal discussion have included bovine TB, social amplification of risk, citizen science, policy evaluation and assessment of ecosystem value,

- Professor Pete Smith and the Chief Statistician (until Prof. Smith's retirement from SAC in February 2013)

The pairing between Prof. Smith and the Chief Statistician resulted in the office of the Chief Statistician providing Prof. Smith with a regular update on the work that Defra was undertaking in relation to statistics; and an open arrangement for ad hoc communications as required. Both parties felt that this was an effective mechanism for working.

Other SAC pairings reflected the expertise and experience of the SAC member.

- Professor Heathwaite was paired with the Head of Sustainable Farming and Food Science Division and the Director of Water, Floods, Environmental Risk & Regulation. Regular meetings outside the SAC quarterly meetings ensured Professor Heathwaite had insight to the main policy drivers and evidence needs in these areas of Defra.
- Professor Quintin McKellar was paired with the Chief Veterinary Officer working closely on SAC-ED amongst other things. Professor Chris Gilligan and the Chief Scientific Adviser were paired with a focus on broad SAC issues.
- Professor Ian Bateman and the Chief Economist (since the appointment of the Chief Economist in January 2012) formed a pairing working closely discussing economic issues relevant to Defra.

Other SAC activities

SAC members have been asked to be engaged in other Defra activities beyond the core of SAC activities. Of particular note are engagement with the Triennial review of the Environment Agency and Natural England; and the Social Science Expert Panel.

Triennial review of the Environment Agency and Natural England

Lynda Warren participated in the Triennial Review of Natural England and the Environment Agency through membership of the Analytical Quality Assurance Group. The Group were responsible for reviewing the use of evidence, analytical approach and results, outputs and recommendations of the Triennial Review of Natural England and the Environment Agency.

Social Science Expert Panel

As part of her SAC duties, Professor Judith Petts has acted as an independent Chair to the Defra and Department of Energy and Climate Change (DECC) Social Science Expert Panel (SSEP). The panel was established in May 2012, and since then Professor Petts has chaired all three meetings of the panel as well as contributed to discussions outside meetings.

The SSEP is designed to bring external high quality social science expertise to DECC and Defra to complement existing capacity and ensure, as a part of a wider interdisciplinary approach, high quality social science can inform policy development, delivery and decision-making. The panel's scope covers issues related to Defra and DECC's social research and evaluation needs including: identifying research needs; supporting research commissioning; providing expert advice and independent challenge; quality assuring social research products; and championing social science and promoting an inter-disciplinary approach.

The panel consists of twelve academics appointed through open competition. The panel meets three times a year and in between meetings, panel members provide additional support.

Review of Quality Assurance and Modelling in Defra

The Chair of SAC, together with the Chair of the joint DECC and Defra Social Science Expert Panel and the Chair of the Defra Economics Advisory Panel were appointed as external members of a Defra group chaired by the Defra Chief Economist. The group was

tasked with reviewing quality assurance in modelling and models used across Defra. Work is on-going.

Tree and Plant Biosecurity Expert Taskforce

Following the incursion, and detection of ash dieback in autumn 2012, the Secretary of State requested the CSA, Professor Ian Boyd, set up an expert taskforce to make recommendations on Tree health and Plant Biosecurity¹⁹. Two members of SAC were appointed to the taskforce because of their expertise in epidemiology (Professor Chris Gilligan) and social sciences (Professor Judith Petts) (noting this appointment was independent of their role on SAC). Other members of the taskforce brought expertise in entomology, plant pathology, economics, as well as in national and international legislation and management of plant disease. The taskforce was chaired by Professor Chris Gilligan and was tasked with producing an interim report within three weeks of meeting in 13 – 14 November 2012, with a final report by the Spring of 2013. SAC was kept aware of progress through monthly teleconferences and quarterly meetings with opportunities to comment on these updates.

Meetings attended by the SAC Chair

The SAC Chair represents SAC at the Government Chief Scientific Adviser's (GCSA) quarterly meetings with Chairs of SACs and Chief Scientific Advisers (CSAs). These meetings are an opportunity to be briefed by the GCSA on new developments and emerging cross-cutting policy issues. SAC Chairs and CSAs may also raise matters and several of the issues listed in the body of this report have been discussed.

In addition, the SAC Chair has attended a number of meetings in his capacity as SAC Chair in order to make wider links for SAC and obtain information of relevance to SAC's activities, as detailed below.

October 2011: Food Security and Land Research Alliance Meeting (House of Commons).

March 2012: Meeting with Lord Krebs, Chair Adaptation Sub-Committee (ASC) of the Climate Change Committee to discuss joint response of SAC and ASC on Climate Change Risk Assessment.

January 2013: The SAC Chair attended and gave an account of SAC to GO-Science as part of the overarching review of Science Advisory Councils.²⁰

February 2013: Science Foundation Lecture at the Royal Society discussing past and future directions for the Government Chief Scientific Adviser.

¹⁹ <https://www.gov.uk/government/publications/tree-health-and-plant-biosecurity-expert-taskforce-final-report>

²⁰ <http://www.bis.gov.uk/assets/goscience/docs/s/13-850-science-advisory-council-review-2013.pdf>

Defra Expert Scientific Committees

In accordance with the recommendations of the independent review of SAC and the Arms Length Body (ALB) review, the Defra CSA has oversight of all Defra expert scientific committees, and SAC supports and challenges the CSA in this role. During this reporting period the SAC engagement with other expert committees has been limited; however, this role will be explored and developed in the next reporting period.

Below is a summary of each of the committees and, where available, information about their activities during this reporting period. The CSA has an annual meeting with the Chairs of each of the expert scientific committees.

Hazardous Substances Advisory Committee (HSAC)

The Hazardous Substances Advisory Committee (HSAC) is the successor body to the Advisory Committee on Hazardous Substances (ACHS) and provides expert advice on the science behind hazardous chemicals. Further information about HSAC can be found at:

<https://www.gov.uk/government/policy-advisory-groups/hazardous-substances-advisory-committee>

The 2012 annual report of HSAC can be found at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/208636/hsac-annual-report-2012.pdf

Air Quality Expert Group (AQEG)

The AQEG provides independent scientific advice on air quality, in particular the air pollutants contained in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland and those covered by the EU Directives on Ambient Air Quality. Specifically, AQEG gives advice on levels, sources, and characteristics of air pollutants in the UK. It does not advise on health impacts or air quality standards.

Further information about the AQEG can be found at:

<http://uk-air.defra.gov.uk/library/aqeg/>

Darwin Expert Committee

The Darwin Expert Committee is a scientific expert committee managed by Defra to support the Darwin Initiative. Through the funding of collaborative projects which draw on UK biodiversity expertise, the Darwin Initiative assists countries that are rich in biodiversity but poor in financial resources to meet their objectives under one or more of the three major biodiversity Conventions:

- the Convention on Biological Diversity (CBD);
- the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES); and
- the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Further information about the Darwin Expert Committee can be found at:

<http://darwin.defra.gov.uk/dec/>

Farm Animal Genetic Resources Committee (FAnGR)

The Farm Animal Genetic Resources (FAnGR) Committee's principal role is to provide advice to UK Government and interested parties on all issues relating to farm animal genetic resources, particularly their conservation and sustainable use. The Committee was reclassified as a Departmental Expert Committee following a Government review in 2010. This year, the Committee has supported Defra in publishing the first UK Country Report on FAnGR for a decade (<https://www.gov.uk/government/publications/uk-country-report-on-farm-animal-genetic-resources-2012>). This report looks at how our farm animal genetic resources are currently being used and conserved, how this is likely to change in future and outlines some important steps to ensure the UK continues to make progress in conserving and sustainably using these resources.

Details of the Committee's other recent key activities can be found in its newsletter at:

<http://www.defra.gov.uk/fangr/2011/03/16/newsletter-issue-4/>

Farm Animal Welfare Committee (FAWC)

The Farm Animal Welfare Committee (FAWC) is an expert committee that provides advice to Defra and the Devolved Administrations in Scotland and Wales on the welfare of farmed animals, including farmed animals on agricultural land, at market, in transit and at the place of slaughter.

Information about FAWC's current activities can be found at:

www.defra.gov.uk/fawc/activities/

Pesticide Residues in Food Committee (PRiF)

PRiF works closely with the Chemicals Regulation Directorate and the Food Standards Agency to provide independent advice to the Health and Safety Executive and the Food Standards Agency FSA, and UK Ministers on: the planning of surveillance programmes for

pesticide residues in the UK food supply; the evaluation of the results; and procedures for sampling, sample processing and new methods of analysis.

PRiF reports and results, and other information about surveys, can be found at:

- 2011 Programme: Including the PRiF 2011 annual report

http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/PRiF_Results_and_Reports/2011_Results_and_Reports.htm?wbc_purpose=basic&WBCMODE=presentationunpublished.rss

- 2012 Programme: PRiF expect to publish their 2012 annual report during September 2013

http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/PRiF_Results_and_Reports/Monitoring+Programme+2012

- 2013 Programme

http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/PRiF_Results_and_Reports/2013++Programme

- 2014 Programme

http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/PRiF_Results_and_Reports/2014_+Programme.htm?wbc_purpose=basic&WBCMODE=presentationunpublished.rss

Veterinary Residues Committee (VRC)

The Veterinary Residues Committee is an independent scientific advisory committee that advises government on the testing of foods from animals to look for residues of veterinary medicines and banned substances.

The annual report of VRC activities can be found at:

<http://www.vmd.defra.gov.uk/vrc/reports/annual.html>

Resources and Expenditure

The Defra SAC is an independent SAC but does not have resources of its own. The activities of the Council are funded by Defra; and information on the fee rates and expenses guidance can be found in the SAC members handbook²¹. Table 1, below, summarises how the budget for SAC has been spent in financial year (2012-13) (NB: Not the entire duration covered by this report). A total of £31.2K was spent on SAC activities in 2012-13. No comparison can be made to previous years as SAC was remodelled at the end of 2011; however, to note that the Secretariat has actively worked to ensure that venues for meetings offer the best rates available and have worked with SAC to ensure that cost-saving options are chosen where ever possible.

Table 1: SAC expenses (Financial year 2012-13)

| | Member fees | Member travel and subsistence expenses | Other expenses (as defined by footnote) |
|--|---------------|--|---|
| Quarterly SAC meetings | £10.5k | £2.7K | £8.4K ²² |
| Monthly SAC teleconferences | £1.8K | N/A | N/A |
| Subgroup activities | £1.1K | £0.3K | N/A |
| Additional SAC member activities ²³ | £5K | £1.4K | N/A |
| Total Expenditure | £18.4K | £4.4K | £8.4K |

²¹ <http://www.defra.gov.uk/sac/files/SAC-handbook-code-of-practice.pdf>

²² Expenditure associated with working dinners and meeting refreshments.

²³ Contribution of Judith Petts to the Social Science Expert Panel. Lynda Warren to the Triennial review committee. Pairing scheme. Contribution of Judith Petts and Chris Gilligan to the Defra Oversight Panel for the Modelling Review. Activities of the Chair. Chris Gilligan contribution to the Tree health Taskforce (although this activity was not due to Chris' role as SAC chair the SAC budget was used to support his contribution).

Contact for further information

Further information about the Defra SAC can be found at:

www.defra.gsi.gov.uk

or by contacting the SAC Secretariat:

SAC Secretary
Defra
Area 2C, Nobel House
17 Smith Square
London
SW1P 3JR

Email: science.advisory.council@defra.gsi.gov.uk

Annex 1: Terms of Reference of the Defra SAC

1. Defra's Science Advisory Council (SAC) is an advisory Non-Departmental Public Body sponsored by the Secretary of State. Lord de Mauley will act as the lead Minister accountable for SAC, and will:

- set terms of reference for the Council and make appointments to it;
- agree strategic work plans, receive reports and advice;
- receive periodic reviews of the Council's functions and value for money;
- consult other Departments as appropriate about the Council and its work.

2. SAC will challenge and support the Department's Chief Scientific Adviser (CSA) in independently assuring and challenging the evidence underpinning Defra policies and ensuring that the evidence programme meets Defra's needs. In doing so SAC will:

- review, on a rolling basis, the evidence plans put in place to support policy programmes, and identify any gaps in Defra's science or evidence base at present or likely in the foreseeable future;
- provide advice, when asked or on their own initiative, in emergency situations;
- respond to requests for, or provide on their own initiative, ad hoc advice on broad strategic and cross-cutting issues (relating to the use of science or evidence) facing the Department;
- identify and publish advice on substantial strategic and cross-cutting issues of Government-wide as well as Defra concern;
- contribute, as required, to the CSA's quarterly reports to the Defra Supervisory Board;
- support and challenge the CSA in his oversight role with respect to other scientific expert committees of Defra, and include annual updates on the work of such committees in the SAC Annual Report;
- via the CSA, ensure the Defra lead Minister receives the highest quality advice.

3. SAC will achieve this by:

- horizon scanning, and planning and publishing an annual programme of work that best challenges and serves the CSA and the needs of the Department;

- co-opting experts to time limited sub-groups, chaired by a SAC Member, to review Departmental evidence plans or other cross-cutting or strategic issues. Subgroup reports and recommendations will be reviewed and adopted by SAC, forwarded to the CSA, to help him advise Defra, and published;
- working with the CSA to respond to GO-Science or other Government-wide policy initiatives or consultations, as appropriate;
- via the CSA and the SAC Chair, maintaining links with the Government Chief Scientific Adviser (GCSA) and other departmental SAC Chairs;
- maintaining and developing links with Research Councils, other scientific institutions and the Devolved Administrations to further the work, aims and objectives of SAC.
- publishing an Annual Report;
- re-reviewing evidence programmes that have previously been subject to SAC's scrutiny where appropriate, and publishing new advice if necessary;
- contributing to reviews of science bodies within the Defra network as required;
- maintaining open lines of communication with Defra, the CSA and its Ministers;
- operating in line with the Government's Principles for Scientific Advice and the Code of Practice for Scientific Advisory Committees.

4. In line with the Commissioner for Public Appointments Code of Practice an annual appraisal of members' performance will be conducted.

Annex 2: Membership of the Defra SAC

| Name | Organisation | Expertise | Biography |
|---|---------------------------|--|---|
| Professor Chris Gilligan (Chair of SAC) | University of Cambridge | Biological sciences, specifically epidemiology, and mathematical biology | Professor Gilligan is Head of the School of Biological Sciences and Professor of Mathematical Biology, University of Cambridge. He also holds Professorial Fellowship at King's College and is Head of the Epidemiology and Modelling Group in the Department of Plant Sciences. His research has developed and tested a suite of models to predict invasion persistence and control of botanical epidemics in agricultural and natural environments. |
| Professor Ian Bateman | University of East Anglia | Environmental economics | Professor Bateman is Professor of Environmental Economics and Director of the Centre for Social and Economic Research on the Global Environment at the University of East Anglia. His main research interests are integrated environmental and economic modelling for decision making, formation and valuation of preferences for non-market goods and services, applying geographic information system (GIS) and experimental techniques to empirical problems, and working with policy makers to address real world environmental resource management issues. He is Head of Economics for the UK National Ecosystem Assessment. |
| Professor Louise Heathwaite | Lancaster University | Land and water system science | Professor Heathwaite is Co-Director of the Centre for Sustainable Water Management in the Lancaster Environment Centre, Lancaster University. She also works part-time as a science champion for the Natural Environment Research Council (NERC) as Theme Leader for the Sustainable Use of Natural Resources theme. Her research expertise is in land and water systems science. She has over 25 years research experience in diffuse nutrient pollution, wetland hydrochemistry, and water quality. Her applied research interests cut across the environmental sciences to interface with social science and economics. |

| Name | Organisation | Expertise | Biography |
|----------------------------|-----------------------------|-------------------------|--|
| Professor Peter Liss | University of East Anglia | Environmental chemistry | Professor Peter Liss is a Professorial Fellow in the School of Environmental Sciences at the University of East Anglia. His research interests are in ocean-atmosphere interaction particularly involving trace gases. He served as chairman of the International Geosphere-Biosphere Programme (IGBP) for 5 years and was subsequently Chair of its Surface Ocean – Lower Atmosphere Study (SOLAS). He is a Fellow of the Royal Society. |
| Professor Quintin McKellar | University of Hertfordshire | Veterinary Science | Professor McKellar is Vice-Chancellor at the University of Hertfordshire. He was previously Principal of the Royal Veterinary College, University of London. His research interests are in the pharmacology of anti-infective and anti-inflammatory drugs in domestic animals. He has been a member of the Biological and Biotechnological Research Council, the Government's Veterinary Products Committee, Special Advisory Committee on Antimicrobial Resistance, Regulatory Agency Strategy Board, and Chairman of its Scientific Advisory Committee on Bovine Tuberculosis. |
| Professor Judith Petts | University of Southampton | Social science | Professor Petts is Dean of the Faculty of Social and Human Sciences, University of Southampton. Her research has focused on environmental risk governance and response to environmental and health hazards in areas such as climate change, energy, waste management, land contamination, natural hazards, and health and wellbeing. Professor Petts holds one other Ministerial appointment as a member of Sciencewise Expert Resource Centre Steering Group. |
| Professor Lynda Warren | Aberystwyth University | Environmental law | Professor Warren is Emeritus Professor of Environmental Law at Aberystwyth University. Her research interests centre on how law and science are used in developing and implementing environmental policy, focusing on two main areas – radioactive waste management and nature conservation. Professor Warren holds three other Ministerial appointments: Deputy Chair of the Joint Nature Conservation Committee, Member of the Committee on Radioactive Waste Management, and Chair (honorarium) of the Wales Coastal and Maritime Partnership. |

| Name | Organisation | Expertise | Biography |
|------------------------------------|------------------------|--|--|
| Professor Pete Smith ²⁴ | University of Aberdeen | Biogeochemistry, particularly climate change | Professor Smith is Professor of Soils and Global Change at the University of Aberdeen's Institute of Biological and Environmental Sciences, and the Science Director of the Scottish Climate Change Centre of Expertise. His main research interests are soil carbon, greenhouse gas emissions, biogeochemistry, global change impacts on ecosystems, and bio-energy. He has coordinated and participated in many national and international projects on soils, agriculture, greenhouse gases, climate change mitigation and impacts, and ecosystem modelling. |

Ex-officio members during this reporting period were:

- Representing the Living With Environmental Change Partnership²⁵: Professor Andrew Watkinson
- Representing the Global Food Security Programme²⁶: Professor Tim Benton

²⁴ Resigned due to personal reasons from SAC February 2013

²⁵ <http://www.lwec.org.uk/>

²⁶ <http://www.foodsecurity.ac.uk/index.html>

Annex 3: SAC SAC-ED Subgroup (Terms of Reference and Membership)

The Terms of Reference for SAC ED are:

- To respond to requests by the CSA and/or CVO to advise and challenge on Defra's preparedness to deploy evidence and analysis in the event of an exotic disease outbreak, on the evidence relating to policies during an exotic disease outbreak on control and through to any recovery phase, and on any issues or gaps and how they might be addressed.
- To offer advice, through the CSA and/or CVO, to the Devolved Administrations (DAs) as requested.

Members of SAC ED are:

Quintin McKellar – Chair, SAC member

Dirk Pfeiffer; The Royal Veterinary College. Providing expertise in epidemiology.

Neil Ferguson; Imperial College London. Providing expertise in risk and modelling.

Anne Bruce; University of Edinburgh. Providing expertise in social science.

Jonathan Cave; University of Warwick. Providing expertise in economics.

Peter Nettleton; Independent expert. Providing expertise in virology.

Charles Milne; Food Standards Agency. Providing practical expertise.

In addition, there are representatives from Welsh Government, Northern Ireland and Scottish Government.

From Defra, the Chief Veterinary Officer and a policy official are in attendance.