

Evaluation of the AVOID Programme

A report for DECC
May 2012
Issue 1



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Executive Summary

The AVOID programme

The AVOID programme was set up in 2009 and will run until the end of 2012. Its aim is to provide policy-relevant scientific and technical evidence to improve our understanding of dangerous climate change to inform domestic and international mitigation and adaptation strategies. A secondary aim is to communicate programme results and information on dangerous climate change to a wider group of stakeholders, including the public. DECC wished AVOID to grow into a large multi-disciplinary, multi-stakeholder programme. It is delivered by a consortium led by the Met Office Hadley Centre (MOHC) and includes the Walker Institute, the Tyndall Centre and the Grantham Institute for Climate Change.

This review

This independent mid-term review of the programme has examined the impact of the programme and how well it is governed, managed and communicated. It was 'light touch' in nature and was carried out through interview and review of documents and written statements from invited participants. Detailed assessment of the accuracy or robustness of the scientific and technical analysis is outside the scope of the evaluation. Its recommendations address both improvements that can be made to the AVOID programme in its last year, and lessons for future policy-linked research programmes

Conclusions and recommendations

The AVOID programme is delivering interesting and useful, policy relevant work. It helped frame the UK's position going into the Copenhagen COP and supported work internationally including work by the European Union and United Nations Environment Programme. It has helped inform policy making across government, for example, the Committee on Climate Change has used outputs from AVOID to help inform its work on long term (2050) targets for the UK.

The cost of the programme is relatively modest. We have considered alternative approaches to delivering the work, and concluded that feasible alternatives are likely to cost more than the current approach and may not deliver work to the same high quality. We conclude on the basis of this review that the programme is good value for money. Improvements in engagement and communication and a more strategic approach to planning would further improve the value for money of the programme:

- Communication and outreach activities have stalled, fewer departments and wider stakeholders have become involved in the programme than envisaged at the outset, and the dissemination and communication of outputs has not always been well targeted or sustained.
- The largely bottom up process of planning the programme with limited direct involvement of policy makers from DECC and other departments needs to be complemented by a more strategic assessment of need, and by more direct input from policy, to ensure focus UK on the most policy critical areas.

AVOID is not unique in facing these challenges. They are commonly encountered by research programmes that support policy. Our recommendations address these and a number of additional areas:

Communication and outreach: The plans for outreach for the programme at its outset were ambitious, and while resource was specifically allocated to knowledge integration and communication, this was probably insufficient to achieve the desired outcomes. More attention needs to be given to planning and prioritising communications. Particular attention needs to be given to overseas projects; involving local scientists in proposal

preparation and as a core part of the project team, to benefit from their expertise and to provide channels of communication with policy makers.

Governance: The Steering Group is not working as well as it could. Insufficient time is devoted to strategic planning and steering of the programme and representatives of other departments do not appear fully engaged with the programme. DECC also needs to establish mechanisms for periodic review of core 'P' projects to ensure they remain focused on policy need as policy priorities change. Day-to-day management of the programme is working well and benefits from the single points of contact at DECC and the consortium.

Procurement: As AVOID is in its final year it may not be possible to implement fully recommendations in this area, however, ways need to be found to speed up procurement processes to enable the consortium to properly plan for, and effectively deliver, work throughout the year.

New programmes: For new programmes we have made some additional recommendations around procurement, contracting and governance.

Acknowledgement

We would like to acknowledge the input provided by AVOID's many stakeholders and the AVOID team at DECC, without which this review would not have been possible.

Table of Contents

Executive Summary	iii
Table of Contents	v
1 Introduction	1
The AVOID Programme	1
About this evaluation	2
2 Conduct of this review	3
3 Use and impact of research findings	4
4 Quality of outputs	7
5 Effectiveness of communications	8
6 Governance and organisation	14
7 Value for money	18
8 Recommendations	19
APPENDIX 1: Conduct of the review	22
APPENDIX 2: Review of communications	25

1 INTRODUCTION

The AVOID Programme

- 1.1 The AVOID programme was set up to conduct policy relevant research on “dangerous climate change” across different disciplines and to present its results in an integrated way, tailored to users’ needs.
- 1.2 The programme started in 2009 and runs for four years until the end of 2012. It is delivered by a consortium led by the Met Office Hadley Centre (MOHC) and includes the Walker Institute, the Tyndall Centre and the Grantham Institute for Climate Change.

Aims of the Programme

- 1.3 The aim of the AVOID programme is to provide policy-relevant scientific and technical evidence to improve our understanding of dangerous climate change to inform domestic and international mitigation and adaptation strategies. The remit has evolved with time, but is focussed now around three core questions:
1. What levels of climate change are potentially dangerous?
 2. What emissions pathways will avoid “dangerous” climate change?
 3. What is the technical and economic feasibility of such pathways?
- 1.4 The programme is intended primarily to provide evidence for HMG policy communities. In particular, the AVOID programme is intended to enable HMG to achieve better informed negotiating positions on climate change and in its first year, the programme provided the scientific and technical evidence needed to underpin international agreement on action to reduce greenhouse gas emissions post-2012. A secondary aim is to communicate programme results and information on dangerous climate change to the public.

Structure of the programme

- 1.5 The programme was originally structured around three work streams as follows:
- WS1: Provide policy relevant evidence to support UK negotiations for the Bali Action Plan¹;
 - WS2: Undertake core research for understanding dangerous climate change and its implications (including impacts and economic and social consequences and responses);
 - WS3: Build AVOID into a large multi-disciplinary, multi-stakeholder programme focussed on providing policy-relevant research on avoiding dangerous climate change.
- 1.6 During the course of 2009, the main focus was on WS1, supporting the development of the UK negotiating position leading up to Copenhagen using existing tools to produce new scenarios. In parallel a number of medium term projects were completed under WS2 focusing more on characterising which emission pathways were likely to trigger dangerous climate change.
- 1.7 In early 2010, following delivery of Work Stream 1 outputs and after the Copenhagen conference, the programme focus was reviewed. Since then, the programme can be characterised as providing two key work streams:
1. **Rapid response evidence production:** Short-term projects aimed at responding to immediate policy needs - called optional or ‘O’ projects.

¹ This is the outcome of the Bali Summit (December 2007) where after two weeks of intense negotiations, governments of more than 190 countries reached agreement on a roadmap for achieving a global climate change deal by the end of 2009

2. **Longer-term underpinning research** Longer-term core projects to deliver the key information needed to characterise dangerous climate change, and robustly assess whether particular emission scenarios are likely to trigger potentially dangerous change. so-called priority or 'P' projects
- 1.8 Knowledge integration and synthesis capability remains central to the programme. This helps to ensure that core research outputs are tailored to particular policy questions and audiences, and that the programme builds on, and is integrated with other programmes (and specifically with LWEC²). In addition, it is intended to support delivery of AVOID's communication, outreach and knowledge exchange strategy.

About this evaluation

- 1.9 This report presents the independent mid-term evaluation of the AVOID programme. This 'light touch' review has been commissioned by DECC to determine:
- How robust are governance, management and organisation?
 - What is the quality of the programme?
 - How well have outputs been communicated?
 - How have findings been used, and what is the extent of their impact?
 - Is AVOID delivering value for money?
 - What are the key lessons, for both AVOID, and for future policy-linked research programmes?
- 1.10 The review is forward looking; that is, it provides recommendations to improve both the AVOID programme and future policy-linked research programmes. Detailed assessment of the accuracy or robustness of the scientific and technical analysis is outside the scope of the evaluation.

² LWEC – living with environmental change – is a partnership of 22 public sector organisations that fund, carry out and use environmental research and observations. They include the UK research councils, government departments with environmental responsibilities, devolved administrations and government agencies. The private sector is represented by a Business Advisory Board. LWEC aims to ensure that decision makers in government, business and society have the knowledge, foresight and tools to mitigate, adapt to and benefit from environmental change.

2 CONDUCT OF THIS REVIEW

- 2.1 This review set out to answer a number of evaluation questions set by DECC, and discussed and agreed at an inception meeting. The questions were reviewed by the Evaluation Steering Group. Members of the Evaluation Steering Group are listed in Appendix 1.
- 2.2 Methods used include review of documentation relating to the programme such as the original specification and bid for the work, financial information on the costs of projects undertaken to date, and documents relating to the AVOID Programme Board and Steering Group.
- 2.3 In addition we interviewed a range of stakeholders about their experiences of AVOID and their views on matters such as governance, scientific quality, quality of communications and the usefulness of outputs from the Programme. Semi-structured interviews were undertaken, using topic guides. The topic guide varied according to the particular interest and interaction that interviewees were expected to have with AVOID. Most of these interviewees were undertaken by telephone.
- 2.4 We also emailed requests for written statements to a number of other stakeholders, with separate requests sent to two groups: potential users of outputs and scientific peers; and people who had registered on the AVOID website to be kept up to date.
- 2.5 To help aid our assessment of the suitability and quality of communications, we reviewed a sample of ten outputs from AVOID, including reports, flyers, an e-bulletin and a presentation. Five of these were selected by DECC as being representative of the best outputs from AVOID, while five were chosen at random from a list of outputs supplied by DECC. We also reviewed the website from the perspective of an interested, informed lay user.
- 2.6 Participants in the study and documents reviewed are listed in Appendix 1.

3 USE AND IMPACT OF RESEARCH FINDINGS

Summary

The programme aims to provide answers to policy questions around the challenges involved in avoiding 'dangerous climate change'. The specific policy questions addressed have evolved as policy needs and the status of the science have changed and understanding of how the work relates to policy has improved. As the programme has progressed the focus of work has moved from an early emphasis on what levels of climate change are potentially dangerous and what emissions pathways will avoid dangerous climate change to work on impacts and the technical and economic feasibility of achieving emissions pathways.

The programme is considered to be well aligned with policy needs in DECC. Individual projects, especially the optional projects are well focused on policy questions. Mechanisms are however needed to ensure that the longer core 'P' projects remain similarly well focussed as policy priorities change.

The programme's outputs have been used by policy makers in DECC and other areas of government. For example it has helped frame the UK position at negotiations and the Committee on Climate Change's work on long term targets to 2050. It has provided input to European Commission and UNEP reports.

While the AVOID programme is considered useful and policy-relevant, its impact has not been as great as envisaged at the outset. Factors that have limited its influence are:

- Failure to build AVOID into a large multi-disciplinary, multi-stakeholder programme as defined in Work Stream 3
- Poor engagement of policy across UK government outside DECC, and
- Failure to disseminate findings as effectively as possible and to capitalise fully on work overseas.

In future the programme needs to focus more on the technical, social and economic feasibility of emissions pathways. It is also of key importance that relevant work is peer-reviewed and published in time to feed into the IPCC fifth assessment report.

The scope and remit of the programme

- 3.1 The programme aims to provide answers to policy questions around the challenges involved in avoiding 'dangerous climate change'. The shape of the programme has evolved as policy needs and the status of the science have evolved. Its scope is now described in terms of the three core questions:

1. What levels of climate change are potentially dangerous?
2. What emissions pathways will avoid 'dangerous' climate change?
3. What is the technical and economic feasibility of such pathways?

A lot of very helpful work has been completed in the areas of 'What is dangerous climate change?' and on emissions pathways to avoid dangerous climate change. However, there remains work to do on the feasibility of achieving these pathways.

Alignment with policy needs

- 3.2 Within DECC there appears to be reasonable understanding of what issues the programme aims to address and general agreement that it is aligned with policy needs. The phrase 'dangerous climate change' presents some problems. It is understood differently by different people e.g. some interpret it as catastrophic, or as a 2 degree C rise in temperatures; 'dangerous' is a value laden word and what is dangerous might depend on how rapidly adaptation might occur.

- 3.3 While the AVOID team felt that in the early days of the project they could not clearly identify the link from the technical requirements (considered quite scientific and coherent) to the policy customer, this has now improved. Similarly some policy staff customers thought that at the start of the programme the questions asked did not prioritise the major policy issues. This was felt to result from insufficient policy input in the early stages, as a result of lack of time. Also policy needs change as time progresses, and for longer term work policy needs have sometimes moved on before work has been completed.
- 3.4 However, policy focus seems to have improved as the programme has progressed, and appears to have benefited from three key factors:
- The DECC programme management team has worked to develop the programme and improve liaison as the programme progressed. The programme has developed so that new projects now begin with a kick-off meeting attended by policy staff as well as researchers, to allow discussion of the underlying policy questions. AVOID managers think that this works well.
 - Some of those working for the research consortium formerly worked for government departments and so have more exposure to policy work than most of the research community, and so have a better than average appreciation of the needs of policy staff.
 - The lead institution for the consortium, the Met Office Hadley Centre, has considerable experience of carrying out work for government. While much of this is on long-term more traditional research, MOHC has considerable experience of consultancy work and the flexibility demanded of rapid response work.
- 3.5 There is general agreement that the high level questions were clear at the beginning of the programme but that policy questions for individual projects are often less clear. DECC management however now consider that the 'O' or optional projects are well-focused on policy questions. As the programme has progressed, mechanisms have been introduced to ensure that work stays well-focused and policy relevant. For example, a presentation near the end of each project allows any late changes to policy questions to be discussed and explored. The 'P' projects however had sometimes become less relevant, because policy questions had moved on before the P projects were completed. There is a need for periodic review of the core, P, projects to ensure that they were still useful, or to refocus them where policy questions have changed.
- 3.6 Not all those working on the AVOID programme have good visibility of the policy questions, although it could be argued that junior researchers do not need this, it is their supervisors who are key to ensuring that policy needs are met.

Have the outputs from AVOID been used by Government Departments?

- 3.7 DECC has used the outputs in many ways. They have fed into UNEP³ and EU⁴ work. AVOID outputs have helped DECC teams understand that there is robust scientific evidence for their position. The research has also been used elsewhere across government:
- The Committee on Climate Change has used outputs from AVOID to help inform its work on long term (2050) targets for the UK.
 - Sir John Beddington, Chief Scientific Advisor to the Government, has used outputs on topics such as dangerous climate change, mitigation, and country level impacts of climate change as one source of input to speeches to a variety of audiences
 - Defra has used AVOID outputs to inform the evidence base that underpins policy more than to inform policy directly. For example, the Durban Impact reports, while not

³ den Elzen et al. (2010): The Emissions Gap Report. Are the Copenhagen Accord pledges sufficient to limit warming to 2°C or 1.5°C? UNEP.

⁴ Fee et al. (2010): Scientific perspectives after Copenhagen. EU Information Reference Document.

produced by AVOID, used many outputs from AVOID, and have helped Defra think about international impacts and how they affect the UK, particularly for supply chains and movement of people.

- The UK Climate Change Risk Assessment 2012 is a major piece of evidence in Defra, and AVOID outputs were used as part of the evidence for this.
- FCO has used some outputs and the Durban Impacts reports are expected to be useful.

3.8 A key objective of Work Stream 1 was to support international negotiations. Politics and economics, rather than scientific evidence, dominates in negotiations. However, the improved understanding AVOID has delivered of what emissions pathways will avoid dangerous climate change, including the idea that the earlier peak emission occur, the easier it is to avoid dangerous climate change, has been important in framing the UK position in support of the UNFCCC⁵ process. AVOID has helped both support the UK's negotiating position and enhance the credibility of that position.

Factors limiting impact

3.9 Most DECC interviewees feel that the programme has not delivered to its full potential. A number of factors have contributed to this. Originally there was an aim to build AVOID into a large multi-disciplinary, multi-stakeholder programme. The programme has not leveraged significant funding from other sources. Engagement of policy makers, particularly in departments outside DECC, has been identified as a weakness of the programme and this has limited the breadth of participation across UK government. The limited focus to date on the technical and economic feasibility of emissions pathways has also affected the range of areas where the programme could have had an impact. This element of the work will grow in importance as the programme focuses more on the feasibility of achieving pathways and impacts.

3.10 The programme has also failed to disseminate its findings effectively to many stakeholders and has struggled to capitalise fully on work overseas. Several interviewees consider that overseas stakeholders (outside of the USA) often feel that they are 'being told what to do' by UK scientists. In some countries, avoiding dangerous climate change is often not just about the science, but about development issues, and interviewees were concerned that research is very, perhaps too, UK-focused. This is a general issue for research programmes, not just AVOID. For these projects it is important that local scientists are involved in the work as part of the core team. We note that AVOID has worked with overseas researchers, but evidence from interviewees suggest that they have not always been fully engaged. This may be because time pressures have made it difficult for research leads to involve overseas researchers fully.

3.11 Effective engagement and dissemination of research findings, especially good communication with policy makers, requires commitment of considerable resource and deployment of specialist skills. We discuss this further below.

Looking forward

3.12 Looking forward it is anticipated that work will focus more on multi-disciplinary projects addressing impacts and the technical, social and economic feasibility of achieving pathways to avoid dangerous climate change.

3.13 It is also of key importance that papers in preparation are peer-reviewed in time to feed into the IPCC fifth assessment report. The consortium and DECC will need to prioritise this against other requirements.

⁵ International negotiations on climate change are formally conducted under the United Nations Framework Convention on Climate Change (UNFCCC). All countries that have ratified the UNFCCC meet every year at the Conference of the Parties (COP) to negotiate global climate change agreements. The most recent COP, COP17, was held in Durban, South Africa in late 2011.

4 QUALITY OF OUTPUTS

Summary

Overall the programme is considered to have delivered excellent quality research using methods and approaches appropriate to the questions being posed and the timescales over which answers are required.

The people and institutions involved in the AVOID consortium are highly regarded and they are drawing on high quality research from the UK science base and more widely. This provides additional confidence that the work is of good scientific quality.

One particular benefit of the work cited is the breadth of issues covered, including social science and economics, this is an area however where AVOID has carried out less work than anticipated.

An important quality assurance mechanism is publication in respected, peer reviewed journals. To date we believe the programme has not published as many papers as it could, though several are in preparation. The consortium should seek to publish relevant papers promptly, to improve the accessibility of the work, provide additional confidence in its robustness and ensure that it can support IPCC AR5.

To what extent is AVOID representative of scientific best practice?

- 4.1 Researchers, customers and scientific peers all believe that the work is of good quality and represents best practice. In many instances, AVOID is using existing science rather than carrying out fundamental research, where this is the case it is leveraging work, much of it funded by UK Research Councils, that is itself representative of best practice.
- 4.2 The methods and approaches used are tailored to the timescales on which the answers are required, and some innovative thinking has been necessary to develop these. Timescales generally preclude the use of large, complex models with long run times. AVOID researchers consider their methods firmly based in robust science, and appropriate to the evidence available and the outputs required. One researcher expressed some concern that impacts assessment was less credible scientifically than the approaches used for climate modelling but that they were the most appropriate to the questions posed and the timescales. DECC managers believed that the methods and approaches used were appropriate.
- 4.3 While several people felt that they had insufficient visibility of the outputs from the programme, or insufficient expertise, to judge the quality of the work, to the extent that they felt able to comment, they believed the quality of the work was high, with sound methodologies. Where there is overlap, results appear consistent with other published research. The reputations of the people and institutions involved also provide confidence that the work is of good scientific quality. One respondent noted a benefit of AVOID is that it covers a breadth of climate change issues including not only natural science, but social science aspects such as the economics of climate change. A number of economics projects were undertaken in 2009, although this is an area where the programme has not been as active recently.
- 4.4 The number of papers published and cited in respected, peer reviewed scientific journals should ultimately provide a good measure of the quality of the programme. However, it is too early for these measures to be useful. While one DECC interviewee thought that more papers had been published than might have been expected for the cost of the programme, some AVOID researchers would like to have published more, and noted that several papers are in preparation. To date, fourteen papers have been published and a further seven are in preparation. The consortium should seek to publish relevant papers promptly, to improve the accessibility of the work, provide additional confidence in its robustness and ensure that it can support IPCC AR5.

5 EFFECTIVENESS OF COMMUNICATIONS

Summary

Communication and knowledge management is of central importance to AVOID. Good communication is vital to ensure that the:

- Broadest constituency of stakeholders become involved in, and champions for, the work
- Research builds on the existing body of research, and
- Outputs reach relevant users and have the most impact.

It is clear that this is an area where the consortium has struggled to deliver. While communication of outputs to policy advisors within DECC has improved as the programme has moved forward, communication to policy advisors in other departments has not been as successful. Wider communications, to external stakeholders such as local authorities, business, and members of the public has relied on the web site, and ad-hoc individual talks by members of the consortium (which would probably have happened in the absence of AVOID).

Interviewees considered the UK/US scientific workshop and the briefing to Capitol Hill staffers successful and the consortium has also presented work in China. While relationships with China have continued (including a visit to the UK by officials from China's Energy Research Institute), engagement with US researchers has not been sustained due to funding and political constraints from the US side.

Lack of time, resources and perhaps skills has led to a somewhat fragmented approach to communication. Going forward much more attention needs to be given to planning and prioritising communications. The communications strategy should be refreshed, focusing on identifying and prioritising the different audiences, how each of these can be best reached and the skills and resources required to deliver this.

Careful consideration should also be given to how awareness of individual projects can be raised, from the outset, and how outputs should be disseminated and communicated.

Particular attention needs to be given to overseas projects; local scientists should be included as a core part of the project team, to benefit from their expertise and to provide channels of communication with policy makers.

The work currently being carried out to prepare an accessible synthesis of results to date is welcomed. In addition, there are a number of simple, relatively low cost, improvements that can be made to methods and materials that will help improve communications. For example:

- More frequent e-bulletins including links to results
- Policy targeted flyers for every report
- Posting videos of presentations on the website and YouTube, use of AVOID branded social media (e.g. to publicise newly published reports), posting a list of published academic papers and a glossary
- Routine attendance at other departments' climate events
- Considering how to raise the profile of the AVOID website on search engines.

However more fundamentally there is a need for the consortium to adopt a key client management approach to priority policy advisors in other departments and over seas.

The communication strategy should be given particular scrutiny by the programme board and steering group, to establish priorities for communication and review budget allocations. More generally DECC need to consider ways to raise the profile of scientific research across the Department and ensure that appropriate resources are committed to policy involvement in planning and delivering research programmes designed to support policy.

The central importance of communications

- 5.1 Knowledge integration was envisaged as a key aspect of the AVOID programme. It was important that the programme built on the best scientific research available elsewhere and that AVOID results fed back into other programmes. It was also recognised that tackling policy-relevant questions with outputs tailored to a policy audience is a different challenge to that of conducting longer term fundamental science and reporting to a largely scientific audience. Good communication and outreach is also central to achieving the objective of broadening the reach and influence of the programme.

Strategy and planning

- 5.2 Work Stream 3 aimed to build AVOID into a large multi-disciplinary, multi-stakeholder programme focused on providing policy-relevant research on avoiding dangerous climate change. It had four specific objectives
1. To achieve LWEC accreditation
This was achieved
 2. To establish an AVOID research programme under LWEC, with LWEC partner funding, complementing the existing AVOID project
Interviewees told us that the way LWEC is funded didn't make this feasible
 3. To establish collaborative links with other international research programmes
The Climate Change Knowledge Map, which is currently being compiled, identifies other international research initiatives. The AVOID core team / knowledge integrator are currently identifying contact points with these initiatives.
 4. To support targeted and coordinated proposals to UK/EU funding bodies for projects addressing AVOID objectives
The AVOID consortium has made some progress here, for example applying for funding from QUEST GSI – this has been more about leveraging AVOID to get additional work, rather than expanding AVOID itself. However increasing work to address AVOID objectives is not the same as expanding AVOID.
- 5.3 Since the review of the programme in 2010, Work Stream 3 is no longer emphasised. Nevertheless interviews with DECC management suggest that this remains a key aim of the programme.
- 5.4 To support Work Stream 3 and broader communication and engagement planning, a communications, engagement and outreach strategy was prepared at the start of the programme⁶. This identifies the following stakeholder groups:
- Primary stakeholders
 - UK Government policy makers
 - Funding organisations
 - Research community
 - AVOID partners: DECC, Defra, LWEC
 - The AVOID consortium
 - Other stakeholders
 - Business
 - General public
 - Voluntary sector organisations, particularly environmental NGOs
 - UK local and regional authorities
 - Non-UK policymakers

⁶ The AVOID Communication, Outreach and Knowledge Exchange Strategy, April 2009

- Schools

- 5.5 The strategy is short, and is structured around communication and dissemination methods, rather than around consideration of individual audiences. This latter approach might have provided a better way of ensuring that all groups were reached, or that the potential problems reaching some groups were more apparent.

Reach and impact

Communicating to policy customers

- 5.6 Researchers believe that their outputs have reached policy makers in DECC very well, and interview evidence supports this. Interviewees also felt that AVOID while not transforming their understanding of dangerous climate change, had added detail.
- 5.7 Policy-makers in other departments are not well-engaged and they do not feel that AVOID has improved their understanding. AVOID needs to do more to sell itself here. The programme has not always taken up suggestions about who they should contact within other departments. Defra were engaged early on, but withdrew their funding from the programme; although they remain represented on the Programme Board. FCO and DfID take an interest in some of the outputs, and DH has shown some interest. However, opportunities have not been built upon. Interviewees from government departments other than DECC were all aware of at least one AVOID output, but generally thought that more could be done to disseminate results, or to improve awareness of the outputs.
- 5.8 For policy staff communications need to make clear, quickly, why the work is of relevance and importance to them. This generally means adopting a shorter, punchier style that communicates the key messages for policy in plain, direct language. Policy interviewees generally felt that AVOID did not target its communications appropriately for this audience.
- 5.9 Better use could have been made of e-bulletins to communicate the existence of outputs – monthly or bi monthly bulletins perhaps. The steering group also has a key role to play in raising AVOID's profile in other departments.
- 5.10 We understand that the consortium is now producing a synthesis of results to date, and welcome its decision to employ an external consultant with experience and expertise in science communication and knowledge exchange for climate change. The perspective this brings should help to ensure that the synthesis is accessible and relevant to policy-makers.

Communicating to non-UK policy makers

- 5.11 The programme has made particular efforts to reach overseas scientists and policy-makers. For example they have held a workshop in the USA and carried out projects focusing on other regions. AVOID also runs stands at side events at UNFCCC conferences, although it is not clear who has been reached at these events. The workshop for the US climate change science community was well-received and was accompanied by a briefing event held in Washington, attended by many Capitol Hill staffers. US based interviewees were impressed by the calm but firm manner with which consortium leads handled questions posed by climate change sceptics at the briefing. Work on China's low carbon technology options to 2050 is believed to have reached researchers and policy-makers in China; UK researchers attended a workshop that was also attended by Chinese government staff. Senior officials of China's Energy Research Institute (ERI) visited the UK in March 2012 and ERI's Director General expressed a desire for continued cooperation between the UK and China⁷.
- 5.12 Interactions however have not always been sustained and built into productive, long term relationships. A number of factors have contributed to this including changing political priorities in overseas administrations and the sheer level of resource required to sustain and

⁷ http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/naturalsciences/climatechange/newssummary/news_22-3-2012-13-35-37

build relations. In future the reach and impact could be improved by measures such as better targeting of outputs for local audiences, and embedding local scientists fully in project teams.

Communicating to other external stakeholders

- 5.13 There is no evidence of any particular efforts to communicate with the second group of stakeholders shown above, with the exception of the non-UK policy-makers. Other than the web site, and ad-hoc individual talks by members of the consortium (which would probably have happened in the absence of AVOID), it appears that resources have not been sufficient to allow activities tailored to these stakeholders. Local authorities, business, and members of the public are groups where many interviewees thought communication could be improved. Communication of outputs to the wider scientific community could also be improved. That said, some outputs have reached more widely than the primary stakeholder group. Work on the potential for deployment of negative emissions technologies in the UK for example has been used by bodies as diverse as the IMechE and Friends of the Earth.

Review of methods and materials

- 5.14 The programme uses a range of methods to raise awareness of the programme and communicate its outputs including:

- Reports and flyers
- Presentations and face to face briefings
- e-bulletins
- The AVOID website
- Peer reviewed publications.

We have reviewed a sample of these and the results are summarised below and presented in Appendix 2.

Reports and flyers

- 5.15 Written outputs could reach wider audiences if more time was taken to ensure that non-technical summaries were clear, punchy, and required little knowledge of technical terms and abbreviations. Some outputs, particularly Power Point presentations, would benefit from less complex graphs and more interpretation and explanation of graphs and tables, to make them more accessible to those without a scientific analytical background. We note that the external consultant referred to in paragraph 5.10 is also producing a flyer for a recent project; using someone not involved in the science may result in a more accessible flyer.

e-bulletins

- 5.16 e-bulletins could be used to greater effect to maintain and build awareness of AVOID, especially across other government departments. They should be issued more frequently, monthly or bi-monthly. Links could be included to non-technical summaries of research, with further links to technical summaries and whole reports for those with more time or different needs. They should also mention work scheduled to report in the near future, to raise awareness and develop interest.

Face to face briefings or presentations

- 5.17 All interviewees who had delivered or attended face to face briefings or presentations considered that they worked well, as they provided an accessible route into the results, and an opportunity to ask questions to clarify details that were not immediately clear. Some interviewees suggested that it would be useful to hold a government stakeholder event presenting a synthesis of results to date, with invitees from across government.

The web-site

- 5.18 The website is suitable for the educated lay reader who is interested in climate change. The language is mostly fairly clear, although there is no glossary of technical terms.
- 5.19 The first thing that greets the browser is an interactive tool to explore predicted global temperature rise under different peak emission and annual reduction scenarios. Using the tool is not intuitive. It is an attempt to translate a graph into a different form for non-mathematical lay readers, but in its current form we are not convinced it is a useful approach.
- 5.20 In general the site is easy to navigate, with clear signing from the top menu bar or from other links within the pages. However it was noted in interviews that there are no links to any material sponsored by the AVOID programme that has been published in peer-reviewed journals. This would be a useful addition to the site for academic users.
- 5.21 We think the site would benefit from use of a wider range of media. At present, all material is in pdf form, there are no podcasts or videos of e.g. presentations. There are no links to social media such as Facebook and Twitter. Consideration should be given to a presence on social media. Appendix 2 shows some examples from other organisations. LWEC, for example, tweeted the publication of AVOID's report on China's low carbon technologies to 2050.
- 5.22 It is not clear why the AVOID part of the Met Office ENSEMBLES website exists. This website is referred to in reports we reviewed as a source of additional information about AVOID. However, it is out of date (for example, the 'Research' page lists the three original Work Streams, rather than reflecting the restructured programme) and its purpose is not clear. It would be better to delete the content here and autodirect to the main AVOID website, or to provide a link straight through to it.

Peer reviewed publications

- 5.23 Scientific peers, and at least one interviewee from another government department, noted that publications in peer-reviewed journals were important. Researchers from AVOID have focused very much on completing reports for their direct customers ahead of publishing academic papers, and that often subsequent pieces of work had taken priority over publishing papers. This introduces significant delays in publication.
- 5.24 Given the clear policy focus of the AVOID programme, it seems appropriate to have focused on internal reports for policy customers. However, to reach the wider scientific community (and indeed some HMG stakeholders) publications are important. Fourteen academic papers have been published to date (we understand that there are a further seven in preparation), but it is not straightforward to find a list of publications. The e-bulletins do not list them, and there is no list on the web site (reports to government are listed). Letting stakeholders know what has been published should be a key part of engaging with them.

Branding

- 5.25 We were told that the branding of AVOID presented some issues and took up time for both the consortium and DECC. This formed part of post contract negotiations. There was strong pressure to use AVOID branding, but some consortium members also felt strongly that their own branding should have presence. There are good arguments for what appears to have been agreed – AVOID branding is generally used (although more strongly on flyers than on reports) while the branding of individual consortium members also features. (The perceived quality of the work done by AVOID seems, from our interviews, to rely on the quality of the reputations of the individual consortium members.) The key lesson for future programmes is that consideration could have been given to branding at an earlier stage, with the ITT specifying that Programme Specific branding would be required. Consortia members should also be encouraged to promote the programme and its work as much as possible in their day to day interactions – ie to actively 'sell' the brand.

Resourcing

- 5.26 The successful bid for the AVOID programme allocated about 8% of the total amount envisaged at that time to knowledge integration and communication. This probably underestimates actual resource allocations. The overhead element of time for those in MOHC includes an allocation for communications, marketing and the Met Office press office, which the programme makes use of. Also the scientific leads have all undertaken knowledge integration work, although funding was not necessarily explicitly included for their time, in respect of this.
- 5.27 However, the size of the AVOID programme is larger than the core programme covered by that bid, as additional 'O' projects have been commissioned to meet particular policy needs as they have arisen. These projects have not included a specific allocation to dissemination and communication. In total to end 11/12, the total programme spend has been £2.12 million, of which the core programme contributes £0.65 million. In this context the allocation for knowledge integration and communications does not seem high.
- 5.28 There was a general feeling from consortium members that the resources allocated to knowledge integration (KI) were not sufficient, and that this element was under-funded. It was noted that a proposal for an 'O' project had been submitted relating to knowledge exchange work, to try to get more out of some of the earlier outputs from the programme.
- 5.29 It is hard to establish benchmarks for this type of work as it will depend on the nature of the work. The FCO expects approximately one third of any project budget to be allocated to dissemination and policy support, recognising the importance, and complexity, of making sure the key messages from work get to the right people, in the right way. In future consideration should be given to using individuals with specialist expertise in stakeholder engagement to help identify the best way of engaging with different groups.
- 5.30 DECC need to consider ways to raise the profile of scientific research across the Department and ensure that appropriate resources are committed to policy involvement in planning and delivering research programmes designed to support policy.

6 GOVERNANCE AND ORGANISATION

Summary

The governance structure has evolved during the course of the project and now comprises a Steering Group, with representatives from policy and research teams and several departments across government, and a smaller programme board with responsibility for more day-to-day Programme Management.

The Steering Group is not working as well as it could. Insufficient time is devoted to strategic planning and steering of the programme and representatives of other departments do not appear fully engaged with the programme. It may be worth considering not presenting results at the Steering Group, but holding separate results presentations to which the Steering Group members are invited. This would allow the Steering Group to focus on setting the direction of future work. For future research programmes, a Customer Group role may be appropriate, with representatives of funding departments attending. This might assist engagement and provide greater incentive for the Group to steer the research programme.

The procurement model has two key issues. The first issue is one of timing, for 'O' projects. Budgets available are not known until the start of a financial year, and the process of identifying and commissioning work takes up several months; as it does not seem possible to commit money over the year end, this leads to short timescales for researchers to complete work.

The second issue is how work is identified and commissioned. This relies on DECC management teams and the consortium's knowledge of policy needs and research gaps. While science will always have a role in anticipating research needs, DECC recognises that there is a need for a process that provides a top-down, strategic steer on requirements and involves policy directly in the process.

Governance

- 6.1 At the start of the programme, the governance structure comprised a Project Management Team within the AVOID consortium, and a Programme Board attended by representatives of DECC, Defra and other government departments. This did not work well; attendance was poor, because of the wide range of departments represented and other commitments of those representatives. As early as the second meeting of the original Programme Board, minutes show 7 apologies from the 18 invited to attend.
- 6.2 In June 2009 the Programme Board agreed that day-to-day programme management should be undertaken by a smaller subset of that Board, to be named the 'Programme Board', and that the existing Programme Board, would be known as the 'AVOID Programme Steering Group', and would be responsible for setting the overall direction and content of the AVOID programme.
- 6.3 In practice, it appears that while the governance structure is appropriate, it does not, at the Steering Group level, function as well as it could. The Steering Group devotes too little time to steering and oversight with meetings dominated by presentation of results. It is not clear whether members then take these results and use them in their departments. Activities such as risk management, oversight of the communication, outreach and knowledge exchange strategy, and direction and prioritisation of the research programme do not appear to have been given priority. For example, it is apparent that a risk register was produced at the beginning of the programme; this identified lack of knowledge integration and lack of engagement with external stakeholders as risks (low probability/ high impact and medium probability/ high impact respectively). However, no updates of the risk register are evident.

- 6.4 Several interviewees, from different stakeholder groups, suggested that engagement is an issue. There are a number of potential explanations for the apparent lack of engagement:
- The right people are not attending: While some stakeholders felt that policy colleagues wanted a team to act as an interface between them and the science, many felt that greater representation from policy is required
 - Lack of continuity: Representatives from other departments change relatively frequently and this contributes to the apparent lack of engagement.
 - Other departments have no real stake in AVOID: Steering Group members might be more engaged in setting the direction of the research if their departments were contributing funding to the programme. Indeed a central aim of the programme is to widen participation to other Departments and organisations and it is disappointing that this has not happened to a greater extent.
 - Other departments see AVOID as a DECC-owned programme: Departments do not appear to recognise AVOID as a programme they can influence (and indeed use) by contributing ideas for research. One interviewee noted that a department had commissioned work separately that could have been done through AVOID, another that a key reason for attending the steering group was to ensure that their department did not commission the same research.
 - Lack of communication between meetings to maintain interest and communicate findings as they arise. The Steering Group's last meeting was in March 2011; one contributor was concerned that they had not been invited to any meeting subsequent to that date, wondering whether their name had been dropped from the distribution list; this was the last substantive contact the individual had with the work of AVOID.

Management of the programme

- 6.5 Both researchers and DECC AVOID management feel that the day to management works well. The AVOID programme manager and DECC programme officer act as key points of contact, acting as a channel between the consortium and customers; this is seen as a strength of the programme. While there are formal channels for dealing with any concerns, minor issues are often resolved informally via this route.
- 6.6 AVOID managers felt that the DECC programme management team had worked to improve the day-to-day working of the programme and in particular, communications with policy customers for 'O' projects, as the programme had progressed.
- 6.7 The DECC programme officer attends the consortium's internal programme management meetings (the APMT meetings), indicating a good level of open-ness and partnership working. DECC AVOID management are also invited to attend AVOID internal 'wash-ups' held approximately every two months, to review progress, in particular what has gone well and where things could be improved.
- 6.8 An area where the AVOID team has concerns is resourcing and timing. Many projects are very short and the timescales often ambitious. It has been difficult for the consortium to respond effectively to some requirements or to deliver to time, if problems occur. There are also concerned that resourcing constraints and conflicts with other DECC work have led to key activities, central to the programmes remit, being squeezed out, for example communications activities (see Section 5) and publishing of papers (see Section 3).

Procurement

- 6.9 Work under the AVOID contract is funded through a 4 year contract placed with a consortium led by the Met Office. The original contract was for a core programme of work; but it recognised that this would be supplemented by additional optional "O" projects falling within the scope of AVOID in response to urgent or emerging requirements and funding availability. The programme comprises a mix of short pieces of work responding to very short term questions from policy, projects defined by scientists and CESA trying to anticipate policy

needs, and the longer term core or “P” projects. As Figure 1 shows, funding for optional projects varies and to date has accounted for more than half of the programme funding. (Note that 2012/13 optional spend has not yet been allocated.)

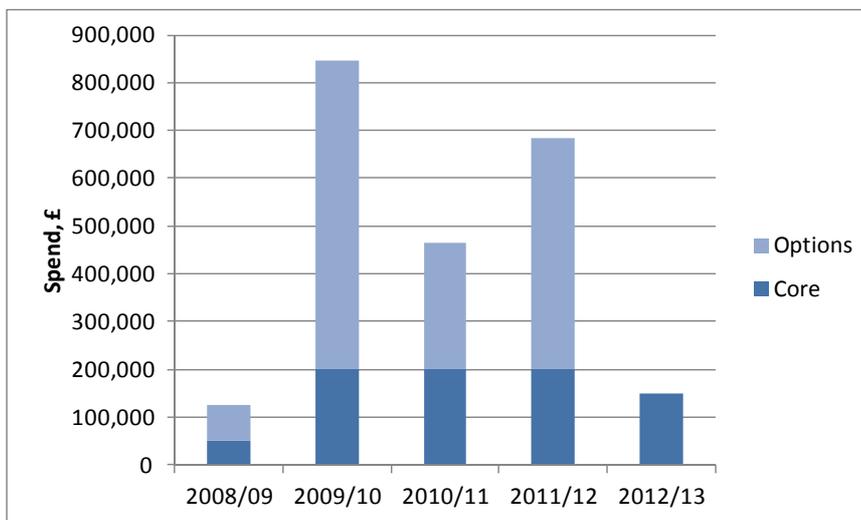


Figure 1: AVOID spending on core and optional projects

- 6.10 Until recently, the additional “O” projects were procured as variations to the main AVOID contract. While the intention was to allow additional work to be called off under the contract, this was not explicit in the documentation and procurement do not now allow further variations to be raised under the AVOID contract. The consortium is supported by a wide network of academic experts. Procurement is constrained by government, and within AVOID, Met Office requirements and guidelines and is a slow resource intensive process.
- 6.11 This model has advantages and disadvantages. Advantages include:
- It gives access to a core of skilled researchers, who can build up an in-depth understanding of policy needs and constraints, and through these to a wide network of other organisations and experts
 - The combination of core and optional projects in theory provides DECC with the flexibility to “call-off” work as it is required to support policy needs and funding allows
 - This model where the core team can call on others inside or outside the satellite group should be more flexible than a framework as contracts are not tied into the same people for the length of the framework.
- 6.12 However, funding tends to be strongly cyclical and planning horizons short. Funding levels for the following year are only confirmed towards the end of a financial year, and optional projects must then be procured. Procurement processes are slow and this means that projects often cannot be let until October or November. There appears to be little flexibility to carry funding over the year end. This places pressure on the consortium to deliver quality work in very short timescales. Also, additional funding is often identified at the end of the year and new work requested. This increases the pressure on the team, particularly those in academic institutions who have other commitments.
- 6.13 Greater clarity on levels of funding in the longer term would enable the consortium to plan more effectively to deliver the work. Academic partners raised concerns about their ability to support “O” projects as committed funding for these projects is too small to enable them to fund research places, which might allow them to dedicate a PhD student to the work, for example.
- 6.14 The process of identifying “O” projects is largely driven bottom up. Ideas are generated by the AVOID consortium in a brainstorming session (the last was in June 2011) based on policy questions and on previous research that has raised interesting questions. Outline proposals

are issued to DECC who review the ideas, and a selection of the best ones are then worked up to full proposals in consultation with DECC. In addition DECC sometimes ask for ideas it has generated to be worked up into proposals. The aim is to always try to keep a coherent, integrated suite of projects.

- 6.15 Both DECC and consortium interviewees said that they found the process is burdensome and time consuming. It can take several months to proceed from the original ideas to a contract.
- 6.16 While policy customers may raise urgent questions, they have not, in the past, been directly involved in routine processes of project selection – which has relied on the DECC management teams and the consortium’s knowledge of policy needs and research gaps. At its inception, one of the programme aspirations was to widen participation beyond DECC but it has proved difficult to involve both DECC and other departments’ policy teams in the programme (indeed Defra were involved in the programme when it was set up and subsequently withdrew).
- 6.17 While science will always have a role in anticipating research needs, DECC recognises that there is a need for a more considered process that provides a top-down, strategic steer on requirements and involves policy directly in the process through the steering group.

Looking forward

- 6.18 Some interviewees expressed concerns about how competitive the procurement processes was, given that Met Office involvement was almost certainly essential if the ambitious work plan to support the Bali Action Plan was to be delivered. There are also concerns about the extent to which the consortium members have looked outside the core team to deliver. In future consideration should be given to how in similar situations more competition can be introduced for example by tendering for programme management and communication aspects

7 VALUE FOR MONEY

Summary

The AVOID programme is delivering interesting, useful and policy relevant work. Among other achievements, it has helped frame the UK's position going into the Copenhagen COP and enhanced its credibility. It has contributed to international reports including the European Commission report on the 2°C target. It has also helped inform policy making across government, for example, the Committee on Climate Change has used outputs from AVOID to help inform its work on long term (2050) targets for the UK.

Alternative approaches to obtaining the work can be envisaged, but are likely to cost more than the current approach, and require greater input from DECC to make them work well

We conclude that AVOID is delivering good value for money. Improvements in engagement and communication and a more strategic approach to planning would further improve the value for money of the programme.

- 7.1 Most of the interviewees considered that AVOID offers very good value for money. None were aware of any programme in the UK or elsewhere that could deliver the outputs in the absence of AVOID.
- 7.2 Alternative approaches include in-house synthesis and interpretation by DECC of, for example, scenarios commissioned from MOHC, or the use of separate contracts with a range of suppliers to provide different areas of expertise. However, the resulting programme would be less coherent, less integrated and probably less timely. Alternative approaches would also have required additional resources from DECC to carry out the synthesis or manage the interfaces between different researchers and the additional procurement and contract management required.
- 7.3 AVOID provides access to an excellent body of underlying research through the consortium partners, who as well as bringing their own expertise to the table, offer access to a wider academic network in an integrated and coherent manner. The programme as a whole has cost DECC just over £2 million to date but has allowed exploitation of the outputs of programmes of research funded by both DECC and the Research Councils for policy.
- 7.4 Value for money of the programme could be further improved:
- The wider impact of the work could be increased by improving the dissemination and communication of outputs.
 - The relevance of the work for DECC policy, other departments and external stakeholders could be further improved through a more strategic approach to planning and better engagement of broader stakeholders in the design of the programme and delivery of work.
 - Changes to how 'O' projects are procured could allow better planning and allow more efficient working.
- 7.5 Design of overseas projects requires particular attention to ensure local scientists are more fully embedded in teams and communication of outputs is targeted on local audiences. One interviewee raised an interesting point relating to value for money achieved for work in overseas contexts, noting that involving local academics from overseas might offer the opportunity both to engage better with the overseas scientific community and increase value for money as costs might be lower and impact better.
- 7.6 These challenges are not uncommon. We address how they can be addressed for AVOID and future programmes in our recommendations.

8 RECOMMENDATIONS

8.1 Our recommendations address:

- Recommendations for the AVOID programme, and
- Recommendations for the design and implementation of future programmes.

Given the relatively short remaining time for the planned AVOID programme, we do not expect that they can all be implemented in full. Those we consider priority recommendations, to be considered in the short-term, are shown in **bold**.

Recommendations for AVOID

Communication and outreach

8.2 The plans for outreach for the programme at its outset were ambitious, and while resource was specifically allocated to knowledge integration and communication, this was probably insufficient to achieve the desired outcomes. Going forward much more attention needs to be given to planning and prioritising communications.

1. **Consortium:** The communications, outreach and knowledge exchange strategy should be refreshed, focusing on identifying and prioritising the different audiences. The strategy or accompanying plan should identify the benefits each audience could derive from AVOID, how each priority audience can be best engaged and engagement sustained (relationship management), and the skills and resources required. Prioritisation should take account of the time remaining for the current programme.
2. **Consortium:** Consideration should also be given to how the reach and impact of broad brush engagement tools such as the web-site, e-bulletins, reports and flyers can be maximised (we have included a detailed list of recommendations below).
3. **Steering Group: The steering group should review the programme's plans for improving communication and engagement to help prioritise audiences and methods. For the remainder of AVOID, prioritisation may mean focusing on a limited group of key audiences only.**
4. **Consortium:** Keep the steering group informed and engaged between meetings.
5. **Consortium:** Give careful consideration, from the planning and proposal stage of a project, to how awareness of the project can be raised, how key stakeholders and champions for the work will be involved in the project, and how outputs should be disseminated and communicated. Particular attention needs to be given to overseas projects; including involving local scientists in proposal preparation and as a core part of the project team, to benefit from their expertise and to provide channels of communication with policy makers. Resources should be explicitly allocated to these activities in the proposal resource plan.
6. **Consortium: The consortium should seek to publish relevant papers promptly, to improve the accessibility of the work, provide additional confidence in its robustness and critically in the short term, to ensure that work is available to support IPCC AR5.**
7. **DECC:** DECC need to consider ways to raise the profile of scientific research across the Department and ensure that appropriate resources are committed at a realistic level to policy involvement in planning and delivering research programmes designed to support policy.

Governance

8.3 The Steering Group is not working as well as it could. Insufficient time is devoted to strategic planning and steering of the programme and representatives of other departments do not appear fully engaged with the programme.

8. **DECC with the steering group:** Review for the steering group:
 - Membership of the group
 - The standing agenda – to strengthen the role in terms of strategic direction of programme and risk management. Steering group members should be provided with information between meetings and invited to periodic presentations of findings so that meetings do not become focused on taking findings.
9. **DECC:** DECC should establish mechanisms for periodic review of core ‘P’ projects to ensure they remain focused on policy need as policy priorities change.

Procurement

8.4 As AVOID is in its final year it may not be possible to implement these recommendations fully in this the final year of the contract. However, ways need to be sought to speed up procurement processes to enable the consortium to properly plan for and effectively deliver work throughout the year.

10. **DECC:** Develop with the consortium and steering group a more managed and inclusive process of identifying ideas for research and prioritising them which combines ‘bottom-up’ exploration of needs with a more ‘top down’ perspective of likely policy developments in this area. This process should be started earlier in the year, so that once budgets are confirmed priority projects can be started more promptly at the start of the financial year.
11. **DECC: Prioritise ideas for this years programme and start the process of procurement as soon as possible for the highest priority needs. Consider a mid year review to identify emerging needs ahead of the “final quarter” rush.**
12. **DECC:** Discuss with procurement varying the AVOID contract to allow a call-off element for short term, rapid response work that falls within AVOID’s scope, to support more timely procurement of research to support policy through AVOID.

New programmes

8.5 For new programmes we recommend that the recommendations included above are implemented as appropriate and in addition:

13. **DECC:** Discuss with procurement from the earliest stages the objectives and constraints a programme will operate under to establish how these can be met under current HMG procurement rules. Seek mechanisms for carrying projects over the financial year.
14. **DECC:** Require a strong programme management and communications element backed by appropriate skills. Consider how programme management and communication elements can be competitively tendered, if for all practical purposes a particular core supplier e.g. the Met Office, must be included in any consortium
15. **DECC:** Make clear the requirement for any branding in the contract
16. **DECC:** Get commitment from other government departments up front if possible, to support the programme with some core funding
17. **DECC:** Configure the Steering Group as a customer group with representation from contributing departments.

Ideas for strengthening communications materials and methods

Method	Recommendation
Web site	More needs to be done to make the web-site a living resource: <ul style="list-style-type: none"> • DECC and the consortium should review the written text posted on the web-site • Review quality assurance processes for web content; consider using a professional writer to draft content, and requiring approval of content by

Method	Recommendation
	DECC <ul style="list-style-type: none"> • Considering how to raise the profile of the AVOID website on search engines • Consider posting videos of presentations on the web-site and YouTube and use of AVOID branded social media • Post a list of published academic papers and a glossary • Remove content from Met-Office Ensembles AVOID web-site and redirect links to this web-site to the current AVOID web-site • Collect and review statistics about use of the site
e-bulletins	<ul style="list-style-type: none"> • Issue e-bulletins, including links to results, on a monthly or bi-monthly basis
Reports and flyers	<ul style="list-style-type: none"> • All reports should be accompanied by a policy/broader impacts flyer. These should be accessible to the non-technical reader and should make clear the policy impact of the work.
Results seminars	<ul style="list-style-type: none"> • Run periodic results seminars – to which the steering group should be invited – to share results. To maximise attendance these should be relatively short, on related themes, and designed to communicate how the findings are important for policy.
Other outreach	<ul style="list-style-type: none"> • Consider presentation at other departments' climate events

APPENDIX 1: CONDUCT OF THE REVIEW

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Jolene Cook	DECC
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Professor Bob Watson	Defra
Signatories to the website	

List of documents reviewed

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Lowe J.A., Gohar L.K., Huntingford C., Good P., Bernie D., Pardaens A., Warren R. and Raper S.C.B. Are the emission pledges in the Copenhagen Accord compatible with a global aspiration to avoid more than 2°C of global warming? A technical note from the AVOID programme. March 2010

The AVOID programme - a pre COP briefing (Presentation - pre-Cancun)

Workshop report: AVOID UK-USA Workshop on Avoiding dangerous climate change.

Supported by DECC, FCO, NCAR. September 2010

AVOID Steering Group Agendas, Minutes and other documentation

AVOID project financial information

AVOID Programme Board documentation

The AVOID Communication, Outreach and Knowledge Exchange Strategy, April 2009

Communication Protocol - the AVOID Programme version 8, April 2009

Specification for AVOID

AVOID tender

APPENDIX 2: REVIEW OF COMMUNICATIONS

Summary

In summary, outputs could reach wider audiences if more time was taken to ensure that non-technical summaries were clear, punchy, and required little knowledge of technical terms and abbreviations. e-bulletins could be used to greater effect to maintain and build awareness of AVOID, especially across other government departments. Links could be included to non-technical summaries of research, with further links to technical summaries and whole reports for those with more time or different needs. Some outputs, particularly Power Point presentations, would benefit from less complex graphs and more interpretation and explanation of graphs and tables, to make them more accessible to those without a scientific analytical background.

Reports

The first observation we make concerning AVOID reports for government is that even when generally clear, they use a number of terms that the reader who is new to climate science might find difficult to understand. Those we reviewed would, we think, benefit from a glossary of terms and abbreviations. We think a glossary of climate science terms and abbreviations would also form a useful addition to the AVOID website. This issue could be managed for flyers by adding one or two footnotes where explaining a term in the main text would take up too much space.

From the small sample of **reports** we reviewed, we suggest that the non-technical summary offers an ideal opportunity to 'sell' the report to non-technical and policy audiences with some headline findings. It should not simply describe what was done. The quality of non-technical summaries varied in the small sample of reports we reviewed. Some reports make good use of the non-technical summary to try to highlight key messages for policy audiences, but one report we reviewed had a single paragraph non-technical summary that included (but did not explain) two terms we considered technical. The paragraph described briefly what work had been done, but did not present any key findings or conclusions; these should have been relatively straightforward to extract from the main summary. All contained at least one abbreviation or technical term that was not explained. Use of footnotes would avoid the need for the reader who is very short of time to turn to other pages.

Technical notes

The **technical note** we reviewed included a 'Headlines' section that with one exception was very clear, and in our view accessible to non-technical but interested audiences, with headline facts presented at the start in a clear and punchy style.

e-bulletins

We were surprised to find only two **e-bulletins**; we would suggest that these be issued on a monthly or bi-monthly basis. The e-bulletin is short, clear, and provides a useful summary of recent work. It might be useful to add work in progress that reports soon - and perhaps to have two very brief lists at the top 'Work recently completed...' and 'In progress, to be completed soon...' This might help to engage other government departments, given a suitable stakeholder list including policy and science.

For e-bulletins sent to members of the public especially, it would add interest to let people know of any changes, modification or interesting additions to the website, with links. For future programmes, consider setting up an e-bulletin frequency at the start - to raise awareness early in the programme, keep all interested stakeholders informed, and make sure that other departments have more visibility of what is happening, and know where to go for further information if anything of particular interest appears.

Flyers

We were also surprised that only four **flyers** were readily accessible on the AVOID website, as the length and style of flyers should be particularly suitable for the wide range of audiences that might access AVOID via the website. The clarity of outputs and their suitability for wide audiences varies. One flyer we reviewed contained interesting and compelling content, with good use of graphics and photographs, but the language used was unnecessarily technical, almost as if it had been cut and pasted from a technical summary. This might have resulted from a lack of resources to review and rewrite technical content in language suitable for a wider audience, or from lack of time. We were also surprised that the flyers provide a link to the AVOID website that is part of the Met Office, which does not then immediately redirect the user to the general AVOID web site.

The AVOID Website

The website is suitable for the educated lay reader who is interested in climate change. The language is mostly fairly clear, but there are several terms used that might be considered jargon, and will make the site less accessible to the general lay reader, e.g. mitigation, anthropogenic, CCS, WRI, EDGAR. . We also found several typographical errors e.g. on the 'Climate Impact' page it states that "...in high altitudes such as in the Arctic...", which should almost certainly read "latitudes". Some text seems to stray from presenting results into recommending particular approaches over others, e.g. on answers to the 'Big Questions' "Mitigation that is joined to adaptation... will be the best approach". It is not clear what this means, or if it appropriate for the website to assert this.

The first thing that greets the browser is an interactive tool to explore predicted global temperature rise under different peak emission and annual reduction scenarios. This tool is based on the research results that are shown graphically on the page 'what emissions pathways will avoid 'dangerous' climate change'. The interactive tool is actually a little confusing for the user – the changes to the 'Predicted Global Temperature Rise' are small for changes in Peak Emissions Year and Annual Reduction, so the user plays with the sliding scales and can take a little while to notice where there are any differences. Changes are not observed unless the 'Impact on Year' slider is set to a different year than the base of 1990 – while this is obvious in retrospect, for the first-time user it is not at all clear what this year represents or that it needs to be changed. The tool is an attempt to translate a graph into a different form for non-mathematical lay readers, but in its current form we are not convinced it is a useful approach (although one academic user told us they particularly liked this tool).

These issues indicate that the quality assurance processes for the web site content may not be appropriate. We suggest that web content should be reviewed by a professional writer to ensure that it is suitable for a general audience, and that content should be reviewed by DECC to ensure that it is appropriate, particularly where it might stray towards policy.

In general the site is easy to navigate, with clear signing from the top menu bar or from other links within the pages. No broken links were found (although we did not test them all). The links to outputs were clear and easy to find, however it was noted in interviews that there are no links to any material sponsored by the AVOID programme that has been published in peer-reviewed journals. This would be a useful addition to the site for academic users. It was also noted that peer-reviewed publications have a much bigger impact within the academic community. One interviewee commented on how long it had taken for a report to actually appear on the website – over two years in at least one case – and another interviewee mentioned the delay in getting the website itself up and running.

The AVOID part of the Met Office ENSEMBLES website is an inferior site in all respects. It is not as immediately user-friendly, the 'Outputs' link does not actually do anything (so outputs are not available through here) and neither does the 'Sitemap' link. It is not at all clear why this site exists – it would be much better to simply provide a link straight through to the main AVOID website. We note that some outputs from the AVOID programme include a link to this website for further information on AVOID.

There are no podcasts or videos of e.g. presentations – all the material is presented in pdf form. There are no links to social media.

The web-site appears in the top three entries if you type “avoid” or “avoiding climate change” into Google, but is not on the first page if you type “climate change avoidance” or “climate change mitigation”. It is not likely to be found easily by people who do not know of its existence.

Statistics about use of the site are not automatically collected and analysed.

User views

The website has been described as ‘dull and pedestrian’ by one interviewee, although another found it useful and said it had everything they needed on it, although they did question how easy it would be to find the website if one didn’t already know about it. Some interviewees commented on the lack of social media links and videos. We sought views on the website from those who had registered on it to receive updates. Only three replies have been received to-date, all from people with a professional interest in climate change science. One particularly liked the predicted global temperature rise thermometer, while another found the fast facts page particularly useful. One respondent had noted that the publications page did not always seem up to date, and another thought the site would benefit from having more images available to download. Several interviewees thought that links to social media would help dissemination of AVOIDs work. We have included below some examples of the use of social media by other climate sites. This includes an LWEC tweet of an AVOID publication.

Examples of tweets from other organisations



CDKN @cdknetwork

12 Mar

Happy #climateweek! Check out our broad range of resources on climate compatible development cdkn.org



CDKN @cdknetwork

8 Mar

First global database of NAMAs (nationally appropriate #mitigation actions) from @Ecofys #climate #globaldev bit.ly/A9vkDT



LWEC @lwec_uk

20 Jan

Study of low emissions technology options in China dlvr.it/16Dlyy

Part of one of NCAR's facebook pages

The screenshot shows a Facebook page for 'AtmosNews - NCAR & UCAR Science'. The browser address bar shows 'https://www.facebook.com/AtmosNews'. The page header includes the Facebook logo, a search bar, and the user's name 'Michelle Boath'. The main content area features several posts:

- A post from 'AtmosNews - NCAR & UCAR Science' dated Friday, sharing a link to a study about hot summers. The text reads: "It's about summer: Evidence is gathering for a new normal--extreme summer heat: <http://www2.ucar.edu/atmosnews/research/6574/hot-summers-increasing-us>". Below the text is a photo of a sunset over water and a link to "Hot summers increasing in the U.S. | UCAR www2.ucar.edu". A sub-headline states: "March 1, 2012 | A new study in the journal Climatic Change finds that extremely warm summers are not only occurring more frequently in the contiguous United States, but are likely to become normal by".
- A post from 'AtmosNews - NCAR & UCAR Science' dated Friday, sharing NOAA NWS Space Weather Prediction Center's photo. The text says: "NOAA's Space Weather Prediction Center is posting great updates on this week's solar activity, here:". Below is a link to "Solar Activity Continues, Another CME On Its Way:" and a paragraph: "The coronal mass ejection (CME) associated with the R3 (Strong) Radio Blackout event from 0024 UTC March 7 (7:24 p.m. EST March 6) continues to affect the Earth and G3 (Strong) storming lev...See More".
- A post from 'AtmosNews - NCAR & UCAR Science' dated Friday, sharing a link to a DASHlink site. The text says: "Into data mining or machine learning for the Earth & space sciences? The Conference on Intelligent Data Understanding will focus on bringing geoscience data and models together. Hurry: the deadline to submit papers is 3/18! <http://c3.nasa.gov/dashlink/events/1/> (then see you in October at NCAR for CIDU 2012). Info:". Below is a graphic for "ENVIRONMENT CHANGE INITIATIVE" and "DASHlink - A Collaborative Site c3.nasa.gov". The text below the graphic says: "The 2012 Conference on Intelligent Data Understanding (CIDU 2012) is organized under the theme of 'Bringing Data and Models Together' and will attract top researchers and practitioners in the".
- A post from 'AtmosNews - NCAR & UCAR Science' dated March 8, sharing a link. The text says: "A lot data going in, and a lot of data going out." And all of it mission-critical for keeping us weather aware. New video explains how NOAA keeps its satellites humminging: [http://www.noaa.gov/.../.../.../...](#)".

At the bottom of the page, there is a graph titled "Planetary K index (3 hour data) Begin: 2012 Mar 07". The graph shows a horizontal line at G4 and a vertical line at G3. There are two red bars at the bottom of the graph, one at G3 and one at G4.

Example tweets from Spark SciEducation, linked to via the NCAR web site

The screenshot shows a Twitter profile for Spark SciEducation (@SparkSciEd). The profile header includes the name, handle, bio, location (Boulder, CO, USA), and website (http://spark.ucar.edu/). It also shows 122 tweets, 219 following, and 87 followers. A 'Follow' button is present. Below the header is a 'Stay in touch with Spark SciEducation' section with a sign-up form for full name, email, and password. To the left of the tweets is a navigation menu with options: Tweets, Following, Followers, Favorites, Lists, and Recent images. The main content area displays a list of tweets, including several retweeted posts about 'Something in the Air: Smog on Display' and a tweet from Diana R. Johns about Kiribati relocation. The footer contains the Twitter logo and copyright information for 2012.