Analysis and Use of Evidence

Research and analysis in government

This document is maintained by the Analytical Coordination Working Group (ACWG) who provide support to the Heads of Analysis group.

The Analytical Community

There is an analytical community within government to support those involved in strategy, policy and delivery to develop and use an evidence base.

Government analysts contribute to all stages of policy development and implementation though helping to:

- identify issues
- understand and solve problems
- present options
- assess impacts (costs, benefits and risks)
- interpret existing data
- specify and gather new evidence
- test and assess ideas
- translate research into practical options
- inform decisions on difficult trade-offs
- inform decisions on whether to stop, continue or change a policy.

As well as using their own knowledge and skills, government analysts draw on appropriate external expertise, from the academic and broader research community both in the UK and overseas. They can advise on the quality of available external evidence and the confidence that should be given to it in decision-making.

Analysts are organised differently in different departments, but generally there are five different groups. Members of each discipline have a unique contribution to make as well as shared skills across the disciplines. At a very high level, the particular contribution can be characterised by:

- Economists (members of the Government Economic Service). Maximising welfare from scarce resources. Microeconomics by providing decision metrics for choosing one option or course of action over another; macroeconomics by fostering prosperity, high employment and stability economy-wide.
- Operational Researchers (members of the Government Operational Research Service). Helps people find solutions to complex problems through problem structuring and mathematical and statistical modelling to understand real-world systems, policy options and impact
- Social Researchers (members of the Government Social Research Service). Understanding the potential and actual social impacts of policy decisions/practice, including understanding public perceptions and the opportunities for behaviour change. Advising across government on research methodologies and ethics.
- Statisticians (members of the Government Statistical Service). Ongoing measurement and monitoring of specific and general economic and social trends.

- Scientists and engineers (members of the Government Science and Engineering Community). Applying science and engineering knowledge to understand problems and develop policy solutions, including the application of knowledge from individual specialisms

Each of the five analytical disciplines works together to provide the best possible evidence. Each have different, skills and backgrounds – further details provided later – and has their own leadership and management structures but all should be able to look at the problem and indicate which team of analysts would best be able to answer a problem, or signpost to the appropriate analyst for each particular question.

Each discipline ensures highly skilled and professional staff through rigorous recruitment procedures; adherence to competency frameworks specific to that discipline; continuous learning and development programmes. Many government analysts are also members of relevant professional bodies and learned societies. As a result, government analysts represent a professional and skilled resource that can add expert analysis and advice to inform choices across government and frontline delivery services.

Over the last five years or so the five analytical professions in government have been working increasingly closely together. The most robust and thorough evidence base for a problem will most often come from considering it from a number of perspectives/evidence streams. This can be achieved by ensuring that a multi-disciplinary group of analysts consider the problem. Many departments now ensure analysts work within multi-disciplinary teams to facilitate this approach.

Developing or implementing strategy and policy is, of course, possible without the input of the analytical community, but there are risks associated with this course of action. These risks include implementing a policy that does not work; that is more costly than expected or need be; that has unexpected consequences or poor public acceptance. Working collaboratively with government analysts can help mitigate these risks.

Signed:

Government Economic and Social Research team (GESR)

Government Operational Research Service (GORS)

Government Statistical Service (GSS)

Government Office for Science (GO-Science)/Government Science and Engineering (GSE)

Coordinating Research and Analysis

Within departments, various arrangements exist to ensure the evidence-base is joined-up and coherent, with different structures in place to facilitate this, depending on the departments business need. Across departments, each discipline is supported by a central team which sets strategic direction and upholds professional standards for that profession. Across disciplines various mechanisms and groups facilitate and are responsible for joining up research and analysis within government: the Heads of Analysis group, the Departmental Directors of Analysis Network, the Chief Scientific Adviser's Committee (CSAC) and the Analytical Coordination Working Group.

Heads of Analysis group

The membership of the Heads of Analysis group is as follows:

Nick Macpherson:	Permanent Secretary, HM Treasury (chair)
Tony O'Connor:	Head of the Government Operational Research Service
Richard Bartholomew:	Joint Head of the Government Social Research Service
Jenny Dibden:	Joint Head of the Government Social Research Service
John Beddington:	Government Chief Scientific Adviser
Jil Matheson:	National Statistician
Dave Ramsden:	Head of the Government Economic Service

The Heads of Analysis group aims to champion first-rate analysis across government to ensure policy and delivery of government services is as effective as possible.

Its objectives are to:

- Deliver more consistency between disciplines to achieve the goal of working more effectively together
- Identify emerging issues and new trends through the joining up of issues raised by each discipline and the research councils
- Tackle issues of common interest to all, for example engagement with the Research Councils

Thus, the group will tackle the *how* to collaborate effectively and champion coordinated analysis as well as *what* should be collaborated on. This coordination is both within and across departments.

Departmental Directors of Analysis network (DDAN)

This is a network of the most senior social scientist from each department. It aims to share learning across departments, identifying common challenges and solutions, providing a senior collective voice for departmental cross-government working on the social sciences and brings key issues to the Heads of Analysis.

Its objectives are:

- Peer support, challenge and learning on issues relating to running a multidisciplinary team/a flexible analytical resource
- Influencing the external research community: building capacity and influencing their priorities
- Working with the Research Councils, particularly with the ESRC through the Heads of Analysis to strengthen their representation of, and building of, social sciences in the UK
- Identifying the core priorities for the social sciences in government over the short, medium and longer term

Chief Scientific Adviser's Committee (CSAC)

All major science using departments have a Chief Scientific Adviser (CSA). The GCSA works closely with the network of Departmental CSAs. Under the leadership of the GCSA, CSAs both support each other and work together to address and advise on cross-cutting issues primarily through CSAC which meets regularly to discuss issues relating to science and engineering across government. Its objectives are:

- Provide collective advice on science and engineering to Ministers
- Discuss and facilitate implementation of policy on science and engineering
- Identify and promulgate good practice in science and engineering, including their use in policy making
- Facilitate communication on particular high profile science and engineering issues and those posing new challenges for government.

Analytical Coordination Working Group (ACWG)

The membership of ACWG consists of officials drawn from the support units of each of the 5 analytical professions.

The ACWG aims to coordinate the activities of the analytic support units to promote the development of more effective joined-up analysis and analysts across government and jointly respond to the persistent barriers to the effective use of analysis and evidence.

Its objectives are to:

- Support the Heads of Analysis group
- Share learning across the analytical professions
- Join up on key challenges and issues facing all analytical professions
- Identify and make efficiencies of scale where possible

Government Economic Service – GES

The Government Economic Service is the professional body for economists in the UK public sector. Its Joint Heads are Dave Ramsden (Chief Economic Adviser to HM Treasury) and Tera Allas (Director General of Economics at BIS).

GES promotes the use of economics in government, maintains high standards of fast stream entry and has an externally moderated continuous professional development scheme.

For government, economics is the art and science of choosing one action or thing over another on the basis of analysis, use of evidence and explicit weightings on both ethical considerations and expected outcomes. Economists are equipped with powerful analytical frameworks and tools for empirical studies and have particular strengths in:

- Setting and analysing the effects of incentives
- Understanding and applying the strengths and weaknesses of market based processes
- Making explicit the weightings being given to estimates and ethical considerations
- Option appraisal and evaluation/cost benefit analysis
- Region, sector and macro economic policy
- Econometrics and Forecasting

For more information on the Government Economic Service contact:

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London
SW1A 2HQ
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Government Operational Research Service – GORS

Operational Research Services are provided in most government departments to improve their efficiency and effectiveness.

Operational Research is the application of scientific methods to management problems. It aims to provide a rational basis for decision-making, by understanding and structuring complex situations. Often this involves building mathematical models to predict system behaviour and thereby assist the planning of changes to the system.

Operational Research originated in Britain during World War II when it was used to apply mathematical techniques to the planning of military operations. Since then it has become recognised as an important input to decision-making in business, industry and government.

Examples of Operational Research skills and techniques include:

- Manpower planning and pay modelling
- Modelling and estimation
- Simulation
- Linear and mathematical programming
- Other optimising techniques
- Soft systems
- Output and performance management
- Using statistical methods in research or for prediction
- Forecasting e.g. using time series, multiple regressions and other methods

There are now over 360 Operational Research staff in 17 departments and agencies, working on all areas of policy, operations and corporate functions.

For more information please contact:
GORS Central Management Unit
SW Wing, South Spur
4th Floor
Bush House
Strand
London
WC2B 4RD
www.operational-research.gov.uk

Government Social Research Service – GSR

Social research is scientific enquiry that measures, describes, explains and predicts changes in social structures, attitudes, values and behaviours and the factors which motivate and constrain individuals and groups in society. Good social science research helps make good government strategy, policy and delivery.

Social science research informs the development, implementation and evaluation of a wide range of government policies. The best results are often the result of teamwork, with GSR members and policy/delivery officials working together throughout the development and implementation of an idea to ensure it is as evidence based as possible. Engagement as early as possible in this process helps ensure the results of any analytical work are as useful as possible.

The Government Social Research (GSR) community consists of roughly 1,000 social scientists with a background in many contributory disciplines (e.g. sociology, psychology, statistics, anthropology, criminology, social geography). The research commissioned and conducted by GSR uses the methods of social scientific enquiry including surveys, qualitative research, analysis of administrative and statistical data, case studies, controlled social experiments and trials.

Members of GSR are based in 20 government departments and the devolved administrations. The service is led by the joint heads of the Government Social Research service, Richard Bartholomew and Jenny Dibden, who are supported by the Government Economic and Social team – GESR. GESR is responsible for harnessing existing learning and knowledge across the analytical community; setting professional standards for GSR members; setting recruitment and promotion standards and ensuring training and development opportunities and the continuous development of its members.

For more information about GSR please contact:

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Government Statistical Service – GSS

The Government Statistical Service is a decentralised body spread across 30-plus government departments, administrations and agencies. The National Statistician – Jil Matheson – as well as being the Chief Executive of the UK Statistics Authority, is Head of the GSS. The 1,400 professional statisticians are known collectively as the Government Statistician Group, and the group's primary function is to collect, analyse and disseminate statistics on all aspects of national life.

Through the production and dissemination of statistics, Statisticians make a crucial contribution to good government in a modern democracy, assisting in the formulation and evaluation of policies, in the management of services for which Government is responsible, encouraging and informing debate, and allowing people to judge whether the Government is delivering on its promises. High quality statistics are also a key resource for business, academia, and the wider community. With increasing emphasis on evidence-based policy making and effective performance management, statistics have a greater importance than ever before, and ever increasing scrutiny is placed on them.

Government Statisticians have a responsibility, via their Departmental Head of Profession, to the National Statistician for the professional quality of their work. The *Continuing Professional Development Framework* for government statisticians helps to maintain professional standards through the development of statistical and broader competences.

For more information on the GSS, please contact:

Statisticians in Government Team
National Statistician's Office
UK Statistics Authority
Government Offices
Cardiff Road
Newport
Gwent
Wales
NP10 8XG

Tel: 01633 655339
http://www.statisticsauthority.gov.uk/

Government Science and Engineering (GSE)

What do scientists and engineers contribute?

The science and engineering profession encompasses a vast range of disciplines from water management to mobile phone technology. Scientists and engineers can be involved at any stage of a departments work on policy or delivery.

Broadly speaking science and engineering add value in five key areas, supporting strategic and operational delivery through:

- Contribution to the knowledge base
- Policy development
- Longer-term research to inform or develop policy and delivery
- Identifying (and communicating) risks
- Setting standards/benchmarking

Depending on what is needed, scientists and engineers' advice or input on topics may range from providing comprehensive and robust sets of options and recommendations based on in-depth investigations and knowledge to giving 'quick and dirty' views based on their existing knowledge to address policy questions that have, for example, a two-hour turnaround.

Which policies use science and engineering?

Government scientists and engineers may be leading experts in their chosen fields working in specialist posts, or have general science or engineering backgrounds that can be applied to address more wide-ranging policy or delivery needs.

The professions play a part in a wide variety of issues across Government, from those with an obvious scientific or engineering angle such as Climate Change or better traffic management, to those that may be less obvious, such as creative industries or the development of artificial limbs.

They contribute to a broad range of work throughout Government departments, agencies and laboratories, spanning a wide range of policy and delivery activities, including inspection, policy making, secretariat functions for scientific advisory committees and research.

If you are unsure where to go for science or engineering advice, contact your departmental Chief Scientific Adviser's (CSA's) office or Head of Science and Engineering Profession (HoSEP) who will be able to help. In some cases it may be necessary to go through formal mechanisms to contact scientists and engineers working in arm's-length bodies, again your departmental CSA or HoSEP can offer you advice on this.

When should you call on them?

Scientists and engineers contribute at all stages of the policy and delivery cycles, but should be called upon for new work, by default, and as early as possible. Whilst it may be possible for answers to be 'pulled off the shelf', new research often takes much longer than you may think to conduct.

It is worthwhile getting-to-know and maintaining contact with scientists and engineers working in your area. This will better enable them to keep you informed about the results and implications of new research in your area and suggest where further research might provide greater insight. It also offers opportunities for them to find out about your work, so that they can anticipate issues that might arise and understand the context of any requests from you for information.

You might also consider inviting scientists and engineers along to meetings that you attend, where their knowledge and expertise could usefully inform discussions.

Risk, uncertainty and the unknown

It can take many years for knowledge about an issue to be well understood. For this reason it is often necessary to make recommendations and decisions with the best information or knowledge available at the time. Scientists usually indicate the uncertainty and unknown in research or knowledge as caveats, which, for example, indicate the conditions under which the same findings may (or may not) be expected to occur. Scientists may hold different views on how risk, uncertainty or gaps in knowledge should be interpreted; whilst it can be frustrating, this debate plays an important role in developing the knowledge base.

It is also worth remembering that changes in technology or other factors, such as people's body size, may have an impact on even mature subject areas, and change the advice that scientists may give in relation to it.

Other specialisms

Science and engineering should be considered, as appropriate, as part of the evidence base along with other analytical steams, such as economics and social research. It is worth noting that some specialist scientific streams, such as veterinary scientists and healthcare professionals are managed and, usually consulted, separately from the wider profession.

For information about the Science & Engineering Profession (GSE) and how to sign up, please see http://www.civilservice.gov.uk/my-civil-service/networks/professional/science-engineering/index2.aspx