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The Place of Research-based Evidence in Policymaking

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Summary

This report discusses the use of research-based evidence in policymaking. It is based on interviews with six ministries/directorates general in the UK, Netherlands, Finland and the European Commission and forms part of a larger project of the Danish Council for Research and Innovation Policy (DFiR), which aims to study and improve Danish practice.

Historically, the new public management movement has been an important driver for using a mixture of research-based evidence and monitoring data in policymaking. A more recent impetus has been the idea – heavily promoted by the Blair and Obama governments but increasingly becoming orthodox – that policy should be based on 'what works', rather than on ideology. The financial crisis has increased the importance of evidence by reducing government funding for both making and implementing policy and making it even more important that scarce budget is used effectively.

Policymakers have to manage a 'dynamic inconsistency' between the pace of evidence generation and the needs of current and future policies. They need a mix of rapidly available evidence to underpin short-term decision-making and programmes of longer-term work that help them address likely future evidence needs. Foresight and related techniques are becoming more attractive because it provides a way to think about future evidence needs (as opposed to being a way to satisfy those needs).

Civil servants rather than politicians generate most demand for evidence because they do the detailed design of policy, manage and monitor its implementation. Politicians sometimes prefer 'evidence-informed' to 'evidence-based' policy. While civil servants generally believe that they can identify selective use of evidence by lobbyists, they feel that on occasion their political masters are not above using this tactic themselves. But the more robust the evidence is, the greater its chances of forming a basis for policy.

A growing number of policy issues cross the boundaries between ministries and their sector responsibilities. Cross-ministry cooperation in evidence collection is fairly easy where few ministries are involved, but wider issues need new external structures.

Ministries use informal as well as formal ways to access evidence. There is a broad trend from using captive evidence sources such as government laboratories towards 'marketisation' and the use of a growing number of other types of organisation including universities, institutes and consultants. Over-use of a small number of evidence sources risks 'lock-in' to their ideas while depending only on the market can put the sustainability of evidence-providers in doubt, especially in small countries.

Technical councils and standing committees tend not to be central to evidence collection – rather they are more important for legitimation and quality control. Surprisingly, high-level councils that potentially could provide policy coordination across government as a whole appeared to have a limited effect on policymaking at individual ministry level.

International sources of evidence tend to be used for benchmarking and background understanding of the international context, rather than for generating specific policy-focused evidence.

In general, ministries are moving towards a model in which they have high internal capacity to acquire and generate evidence, in part by engaging with the wider evidence community – especially universities – in an open way. Their capacity to absorb and use evidence and to specify their evidence needs has been increasing This increased absorptive capacity and the integration of policymakers into the wider research community goes hand in hand with greater transparency – especially in terms of more frequently publishing the evidence used by government.

For the most part, ministries are more interested in the quality of evidence than in who produced it. Policymakers generally make their own judgements about the quality of evidence available to them. In some cases they may use a committee for legitimation. They increasingly want to experiment with new types of evidence though so far this is at an early stage.

Only the European Commission consistently ties evidence collection to a formal policy cycle. At the national level, ministries vary greatly in the extent to which they use such a cycle. Guidelines for doing individual evidence-related activities are available to most policymakers and appear most influential where they are used system-wide rather than being specific to a ministry. But policymakers caution against their heavy-handed application.

Culture makes a difference to how people behave and the transportability of evidence practices. It seems to have particular importance in relation to trust. UK evidence use is influenced by the presence of Chief Scientific Advisers and an increasing focus in government on demonstrating the societal impacts of policy. Dutch ministries have a uniform long-term and strategic approach to collecting evidence for policy. Finland has radically centralised the collection and funding of at least some of the evidence needed for policymaking. The European Commission leans more heavily on formalised processes and the use of expert panels in evidence collection than is the case at national level. Sector ministries are strongly influenced by the national administrative tradition within which they operate. There are nonetheless similarities that result from the characteristics of the sectors themselves.

The practices observed in this study suggest paying attention to the following aims in order to make good use of research-based evidence in policymaking.

1. Be as evidence-based as possible. There is broad agreement that policy should be made on the basis of research-based evidence, wherever possible.

2. Use foresight and other techniques for thinking about the future as ways to anticipate coming policy needs – and therefore the kinds of evidence that will be needed to support them.

3. Devise and invest in research strategies that generate evidence that will be needed in the longer term as well as in the immediate future.

4. Ensure that ministries are staffed with a significant proportion of people who can specify the need for research as well as to make use of external inputs in order to generate evidence for policymaking

5. Have 'evidence champions' – they might look like Chief Scientific Advisors; they might look like 'departments for knowledge' or 'knowledge coordinators – to promote and coordinate the generation and use of evidence for policymaking

6. Create funded arrangements for generating and sharing evidence to address cross-ministry problems

7. Maintain long-term links with organisations like universities that work at the boundary between research and policy but do not let these become monopolies – you also need impulses for change from a wider set of institutions (including foreign ones) working in competition

8. Publish evidence so that policymaking is transparent and others can quality-assure as well as re-use the evidence you employ

9. Use a 'light touch' policy cycle, which suggests good practice guidelines for collecting and using evidence but which is rather more firm about the requirement to evaluate interventions both *ex ante* and *ex post*

10. Be prepared to experiment and learn about new intervention designs and ways to develop evidence

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1. Introduction

The Danish Council for Research and Innovation Policy (DFiR) commissioned this study as one component in a larger effort to review and improve the use of research-based evidence in Danish policy formation. The purpose of the present volume is to provide an international backdrop to the work in Denmark. It will allow DFiR to understand practice in a range of countries, some of whose characteristics are similar to those of Denmark but which also comprise policy contexts that are rather different.

1.1 Scope of the study

The comparator countries are the UK, Netherlands and Finland. In addition, the study addresses the European Commission (EC).

Based on the focus of DFiR's wider project, this report looks at six sectors or policy domains and hence the corresponding ministries, departments and Directorates General.

- Education
- Environment
- Foreign Affairs
- Health
- Research and Innovation
- Transport

For simplicity we refer to this mix of ministries, departments of state and directorates general as 'ministries', while recognising that these categories have differing purposes. In this report, 'research-based evidence' means evidence either published in the peer-reviewed scientific literature or commissioned for the purpose of supporting policy. The latter is not usually published in peer-reviewed journals but is increasingly available in the form of studies, typically published on the World Wide Web.

Our report focuses on policymakers but also considers politicians. Since not all languages distinguish between politics and policy, it is perhaps useful to clarify the distinction here. Politics is the business of (hopefully!) elected politicians, who normally belong to political parties and make commitments to the electorate that they will follow certain courses of action, ie policies. Politicians usually have a rather broad-brush approach to policies. Policymakers are typically civil servants, who take the broad lines of policy from the political level and translate them into specific

actions that can be implemented. Policymaking involves answering a lot of 'how?' questions; politics more often asks 'what?' Both levels need access to evidence.

1.2 Method

We began by reviewing available literature about the use of research-based evidence in policymaking (see Appendix G). We used the results of the review together with a number of questions posed by DFiR and discussed with us ahead of starting the study in order to generate a checklist of issues to investigate (see Appendix A). Based on DFiR's suggestions, we then identified administrations corresponding to the policy areas set out above (Table 1).

The main phase of the study consisted of interviews with key individuals in each selected ministry, as well as additional desk research, studying relevant documents (eg work plans, research strategies and guidance handbooks for evidence use). We conducted 1-2 interviews per ministry. Interviews lasted between 45 and 90 minutes. Interviewees participated on the basis that responses would be reported in an aggregated manner, with no use of attributable quotes. Although we took care to cover all questions on our checklist, we opted for a semi-structured approach to allow interviewees to elaborate on issues that had not been anticipated through the checklist and literature review. Around 30% of interviews were conducted via telephone, the remainder face-to-face in the ministries themselves. The interview data were coded so that we could compare answers to our checklist of questions across ministries within the same country, as well as across comparable ministries across countries.

We targeted individuals at the highest possible level responsible for strategy and/or evidence in relation to policymaking. The full list of interviewees is in Appendix A. Most of the people we approached were very keen to participate and themselves to receive this report, although the level of enthusiasm was lower in the EC, where two administrations declined to be interviewed (see Appendix F).

Table 1 Countries and Ministry Sectors Studied

	UK (Pilot)	Netherlands	Finland	EC
Education	Department for Education (DfE)	Ministry of Education, Culture and Science (OCW)	Ministry of Education and Culture (OKM)	DG Education and Culture (EAC)
Environment	Department of Environment, Food and Rural Affairs (DEFRA)	Ministry of Infrastructure and Environment (I&M)	Ministry of the Environment (YM)	DG Environment (Env)
Foreign Affairs	Foreign and Commonwealth Office (FCO)	Ministry of Foreign Affairs (BZ)	Ministry for Foreign Affairs (UM)	Foreign Policy Instruments (FPI)

Health	Department of Health (DoH)	Ministry of Health, Welfare and Sports (VWS)	Ministry of Social Affairs and Health (STM)	DG Food Safety and Health (Sante)
Research & Innovation	Department for Business, Innovation and Skills (BIS)	Ministry of Economic Affairs (EZ)	Ministry of Employment and the Economy (TEM)	DG Research and Innovation (RTD)
Transport	Department for Transport (DfT)	Ministry of Infrastructure and Environment (I&M)	Ministry of Transport and Communications (LVM)	DG Mobility and Transport (Move)

Most interviewees were able to answer most questions. Moreover, we have strong indications of high reliability of the interview data

- Where two interviews were conducted per ministry, most answers given were consistent with each other; this was also the case where the two interviewees held quite different positions within the ministry. We can thus be confident that selection bias – a known risk when working with a small number of interviewees – is kept to a minimum
- Interviewees also demonstrated a high degree of openness, very frequently to the point of self-criticism. We can therefore be relatively confident that self-censorship did not play a major role in our data collection

Limitations of this study include that

- It addresses a small number of countries, so it does not reflect the full international range of practices and approaches to the generation and use of research-based evidence in policymaking
- It relies heavily on interviews and therefore on the views and perceptions of those people with whom we spoke. The scope for triangulation between the interviews and other sources of data was limited
- In particular, our interviews focused on professional policymakers (civil servants and researchers in positions of giving advice to ministries). We were not able to collect much information about the political perspectives of the ministers and commissioners in overall charge

1.3 Structure of this report

The report is in two parts. This main report is intended for policymakers and general readers. We look first at general results that appear to apply across all or most of the administrations considered. We then describe some results that are more specific, first to the way things are done in particular countries and, second, to the individual sectors considered. We briefly summarise what was already described in the

literature about the use of research-based evidence and comment on this based on the results of our study. We conclude with some suggestions about good practice, though in reading these, the reader should be mindful of the importance of both national and sector contexts in determining the best way to develop policy.

The second part of the report comprises appendices that describe our method, country by country findings and the results of our literature review in more detail. It is aimed at those conducting the Danish part of the DFiR study and at others wanting to verify, reproduce or extend the research.

2. The use of research-based evidence in policymaking

In this section, we set out the major conclusions that apply across countries and ministry sectors. We consider why policymakers (generally civil servants) want to use research-based evidence in setting policy, especially in this period of austerity. We look at the way policymakers see the role of politicians in relation to evidence use and then at the use of evidence in addressing policies that cut across the interests of individual ministries. Next we look at the way ministries use different suppliers of evidence. We point out how important it is for ministries to have people with the capacity to work with research-based evidence, how evidence is quality controlled and the extent to which the use of evidence is connected to a formalised 'policy cycle' that systematically maps a course from problem definition through designing and implementing a policy or programme, evaluating it and learning from the experience in the design of future policy.

2.1 Drivers and demand for evidence

2.1.1 Demand for evidence in a time of austerity

The new public management movement has historically been an important driver for using a mixture of research-based evidence and monitoring data, in policymaking

All the people we consulted said that research-based evidence is of fundamental importance in policymaking. They tended to see opportunities for increasing and improving the use of evidence beyond present-day levels. They would regard such a development as intrinsically a good thing. However, they also acknowledged that policy itself can never be **fully** evidence driven and understand that political, electoral, financial and diplomatic pressures as well as a host of other factors naturally inform decision making.

Most saw the New Public Management movement as one now relatively long-standing driving force behind this interest in research-based evidence. To varying degrees, all the ministries had an 'evaluation culture' (Dahler-Larsen 2012, 2013) that has its origins in the New Public Management going back to the 1980s (Hood 1991).

While the New Public Management is clearly an important influence, its focus has historically been the on daily operations of the state. Typically, it is implemented through 'performance contracts', for example between a ministry and its agencies. In the UK these are known as 'service level agreements', which is a useful label reflecting the focus of the new public management on the state delivering services to citizens at agreed levels of quality, reliability and cost. That is, it tends to focus on the delivery of existing policies rather than the development of new ones.

Lack of resources is frequently noted as an issue in ministries. But whilst the recent funding cuts often referred to by interviewees derive from the financial crisis and austerity programmes of recent years, it is worth noting that trends towards smaller ministries and more accountability through evaluation have been in place since well before the financial crisis.

A more recent driver has been the idea that policy should be based on 'what works', rather than ideology

It was after the Blair (and subsequently the Obama) administrations started emphasising the importance of 'what works' as opposed to ideology in designing policy (see Appendix C) that the need for research-based evidence extended further beyond the monitoring perspective relevant to managing service level agreements and towards the more wide ranging types of evidence relevant to setting policy directions.

Implicitly, this increased role of evidence in policy formulation challenges the boundary between 'politically inspired' policies and those generated by more technocratic means, potentially challenging the boundary between the responsibilities of civil service policymakers and the politicians they serve.

The financial crisis has increased the importance of evidence

Recent economic pressures have further increased demands for greater efficiency. Across the board, funding cuts are a two-fold driver for evidence use. First, decreased levels of funding for ministries reduce the resources available to carry out research or to procure, generate or analyse evidence. At the same time, funding cuts have also led to demands for greater accountability in policymaking. In many cases, this involves an especial emphasis on quantitative methods of estimating the economic benefits of policy. New policies increasingly need to be justified, notably though ex ante impact assessment, interim and ex post evaluation.

Critically, this has also led to the need for more sophisticated data, as well as methods to measure, assess or forecast wider impacts, both of a direct economic and a wider social and economic nature. This dual effect means that the demand for evidence has increased, but the resources with which to generate and analyse it have shrunk.

Policymakers need a mix of rapidly available evidence to underpin short-term decision-making and programmes of longer-term work that help them address likely future evidence needs

The main high-level conclusion when looking across our sample of three countries and the European Commission is that there is a fundamental tension that decisively shapes the landscape of evidence-based policymaking. On one side, pressures on funding have led to a need for greater accountability, efficiency, standardisation and clear explanation, direct utility and targeted focus of all activities undertaken by ministries, including collection of evidence. At the same time, the complexity of ministries' activities, the political challenges of the present day and the need better to understand a diverse range of long-term impacts of policies, necessitates a broad and integrated understanding by ministries. This in turn triggers demands for cross-ministry coordination and dialogue as well as the need for evidence collection of wider scope not directly targeted at measuring or justifying particular, immediate policy needs. This type of work is variously termed 'strategic', 'prospective' or 'foresight' and is essential in providing the policymaking sphere with a broader view and making it more responsive and prepared for emerging policy needs. However, these endeavours do not readily fit into the 'New Public Management' paradigm of direct efficiency, accountability and targeted, immediate focus.

Policymakers have to manage a 'dynamic inconsistency' between the pace of evidence generation and the needs of current and future policies.

The dynamic inconsistency between the timescales relevant in politics and research is well known. The political incentive system rests on politicians being (re-)elected and therefore on doing things that generate approval in the comparatively short term. Hence ministers are always in a hurry. Research often cannot produce results within a parliamentary term and very rarely can research results be put into social practice in such a short time. One of the preconditions for successful research policy is therefore to generate political rewards in a relevant timescale. Changing the nature of the political debate so that the act of supporting research is itself seen as a sensible long-term investment in the interests of the nation often does this. Where research policy is not politically contentious, this brings political credit to those who promote it. High-level research and innovation councils often help play a bridging role between political and research timescales, legitimising the idea that supporting research is a good thing in and of itself (OECD, 2009).

The use of research-based evidence for policymaking runs into a similar dynamic inconsistency. Many policy problems (or opportunities) have to be addressed immediately; often there is little time to wait for new or missing evidence to be generated. The policymakers we interviewed have collectively a repertoire of

behaviours for obtaining evidence, depending upon its urgency and whether they can act proactively to obtain it (Figure 1).

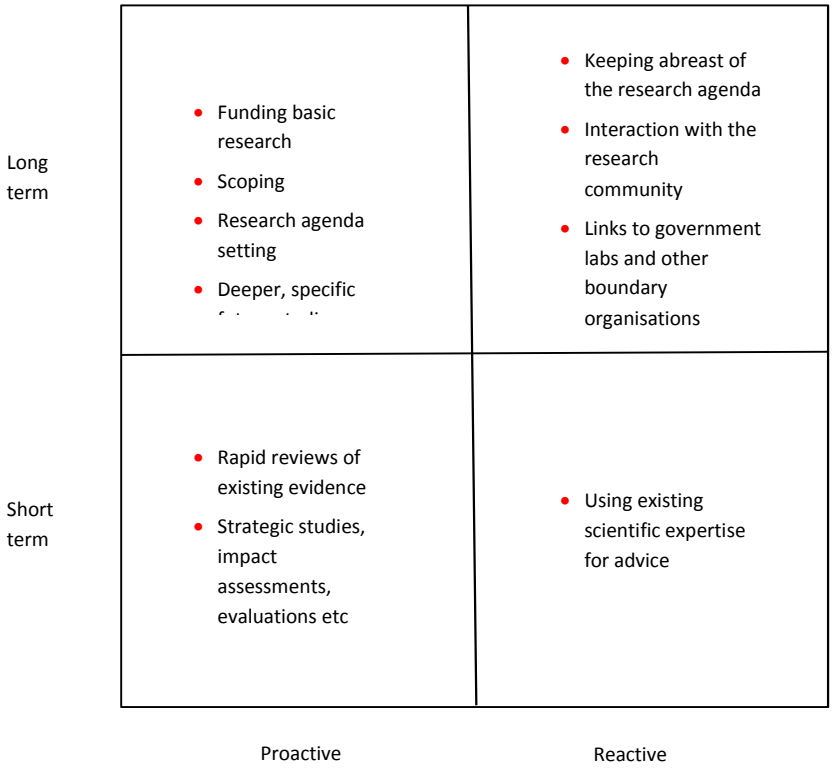

Figure 1 Options for obtaining research-based evidence

Where policy has to react to a new and urgent situation (such as an epidemic) there may be little choice but reactively to use available scientific advice. One of the strengths of the UK system is that its Chief Scientific Advisers are ready at any time to connect ministry evidence needs with research through their personal and professional networks. The key seems to be as efficiently reactive as possible, whether by using 'captive' information sources such as government labs or outputs from other kinds of boundary organisations (SE quadrant of Figure 1).

Where there is a little more time, typically in the design of a new or modified policy intervention, it is also possible to do or commission studies to underpin policy development. All the ministries we interviewed had budgets for this. Inherently, the fairly short time available focuses the evidence collection towards the collection and use of evidence based on existing knowledge or theory – and therefore studies – than original research ('discovery'). Here the policy maker needs either to get a good overview of what is known by reviewing existing literature, surveying the extent of the problem etc or to engage more closely with the scope, design or evaluation of the policy intervention. Some of this work – especially evaluation - may be mandatory, providing a strong basis for the ministry to ask for budget (SW quadrant).

Filling evidence gaps, however, requires research and a longer timescale. In some cases, the need will be for more fundamental work than can be conducted in the short term. Policymakers can proactively commission needed research and studies, including basic research, or buy work such as road mapping that helps identify and set research agendas required to understand and satisfy future evidence needs (NW quadrant).

Not everything can be anticipated, so the policymaker needs also to be able to monitor and understand signals emerging from research that is initiated bottom up or that has been conducted based on others' needs (NE quadrant).

Foresight is becoming more attractive because it provides a way to think about future evidence needs (as opposed to being a way to satisfy those needs)

Across many interviews, participants noted the growing need for foresight studies that are broader than typical policy evaluations and have a strong forward-looking element, which aim to help develop an understanding of future policy needs, or of emerging fields of concern and/or opportunity.

- Foresight provides a way to reflect on future policy needs. It is not a useful way to **predict** the future but is helpful as a technique for thinking about future possibilities in a structured way so that the ministry is prepared for alternative policy futures
- Once alternative policy futures are understood, the ministry can also understand its likely evidence needs – and use this understanding to inform its strategy for research and evidence collection

Whilst interviewees are enthusiastic about foresight and rate it as a growing and important field, it does not readily fit into the paradigm of focused and targeted, policy-specific culture of evidence, exemplified by the strong focus on policy monitoring, ex ante assessment and evaluation. Foresight by definition is broad, with open outcomes, and its ultimate value is contingent on whether the threats and opportunities it highlights actually materialise. Moreover, the robustness that foresight can have is inherently in question: even with significant expert input, looking ahead, or extrapolating from past and present to the future entails clear methodological dangers.

As such, where ministry's research budgets are cut, wider strategic and foresight projects may be vulnerable. But despite this it is evident that its potential longer-term benefits have led to a resurgence of foresight. High quality foresight requires some degree of formal commitment. Whilst foresight activities are generally not formalised in as much detail as for instance evaluations, the trend is towards having a general strategy for foresight, noting for instance some key areas where a ministry

intends to conduct and commission work to generate a greater understanding, as well as the need to allocate a suitable budget to such endeavours.

2.1.2 Evidence and the political sphere

Civil servants rather than politicians generate most demand for evidence

While there has been pressure for increased use of evidence from the political level, responsibility for the sustained evidence production and the strategies needed to generate it remains firmly with the civil service. This is perhaps not surprising, since in the countries we looked at the civil service tends the machinery of government and implements policy over the long term.

Politicians sometimes prefer 'evidence-informed' to 'evidence-based' policy

There is broad consensus amongst our interviewees that evidence is not the only aspect influencing political decisions. Other relevant factors include financial concerns, electoral concerns – both tactically in terms of ensuring re-election, but also more broadly to respond to public opinion or concern – as well as wider diplomatic concerns (ie considering potential responses to policy from abroad). Among the civil servants we interviewed, too, there was little appetite for a 'dictatorship of science', where the task of policymakers and politicians would be simply to do what the evidence said. As our literature review suggested, 'evidence-based policy' is perhaps a misnomer, and 'evidence-informed policy' is a more accurate descriptor of the fact that at the political level there is a need to trade off the implications of the evidence against other considerations. Interviews in from Finland suggest that some degree of dialogue between politicians and evidence specialists is changing the pattern of evidence use and the sources from which government is prepared to take evidence. In particular, it is increasingly interested in evidence that comes from outside the government labs and the 'usual suspects' among Finnish-based consultants, so government has used a greater number of independent committees to investigate policy questions in recent years.

While civil servants generally believe that they can identify selective use of evidence by lobbyists, they felt that on occasion their political masters were not above using this tactic themselves

Our interviewees feel that ministries' increasing ability to identify and use policy-relevant evidence meant that they were becoming harder for people presenting one-sided evidence to fool. But they can also point to instances where politicians had effectively decided upon certain policy measures without reference to evidence, leaving policymakers with the task of compiling 'policy-based evidence' after the

event. The political level is on some rare occasions also capable of entirely disregarding evidence unfavourable to its preferred policy options.

But generally, the more robust the evidence the greater its chances of forming a basis for policy

Whilst policymakers largely accept that politicians need to take into account considerations other than the evidence base, a strong evidence base can nevertheless help override such considerations better than a weak evidence base. In order to ensure consistently strong evidence bases, a certain degree of autonomy of the policy sphere is important: undue political influence over the evidence process can place limits on the quality of evidence.

Interviewees' reflections on examples of successful and unsuccessful uses of evidence in policymaking confirm this view.[1] Examples of unsuccessful use of evidence in policymaking include using poor evidence as a starting point as well as disregard for strong evidence. Sometimes, the poor quality of available evidence was a result of the need to act quickly based on limited information – at the time of the interviews, the Charlie Hebdo shooting and the Ebola crisis in West Africa were among the examples given. Successful examples of evidence-based policymaking fairly consistently involved devoting due time and attention to producing an evidence base, evidence that was judged to be of a particularly high standard and that was available in accessible form. When evidence had these characteristics it was judged to be sufficiently robust decisively to influence political decisions.

Broadly, it is clear that there is widespread understanding that politics cannot blindly follow the recommendations of evidence, and also that real world events sometimes trigger short-term evidence needs, to which the policy sphere must respond. However, excessive political influence on evidence use in ministries risks undermining the capacity to produce the best possible evidence base, which in turn can undermine the capacity of evidence to influence political decisions.

[1] As interviewees were given assurance of aggregated reporting, we cannot disclose individual examples given, as these would inevitably connect directly back to the specific interviewees.

2.1.3 Cross-ministry issues

A growing number of policy issues cross the boundaries between ministries and their sector responsibilities

Division into sectoral ministries is an established organisational feature of government yet a growing number of policy issues cross the boundaries between them, notably in relation to the so-called grand challenges: ageing populations, climate change, sustainable energy, security and so on. As with wider strategic and foresight evidence, the growing importance of cross-ministry work does not fit easily with the structure-driven approach of New Public Management, where clear delineation of responsibility and separation of functions are key organising principles. The nature of many policy issues forces compartmentalised government into deeper integration, including and understanding of how policies in one sector might well have impacts and trigger new policy needs in others. Boundaries between ministries have been additionally blurred through growing interest in impact assessment. Especially where wider impacts (rather than direct outcomes) of policy are to be measured or assessed, they often cross over into the remit of other ministries, eg a policy in transport might have impacts on the environment, health and jobs.

Cross-ministry cooperation in evidence collection is fairly easy where few ministries are involved, but wider issues need new external structures

The cross-sectoral nature of many issues requiring policy attention has gone some way to breaking down the divisions between ministries, with most interviewees noting at least some level of cross-ministry activity, including notably the joint collection of evidence. In small-scale collaborations, involving for instance two or three ministries, ministries are generally able to commission, conduct and publish studies together without any significant problems.

However, at a larger scale, where an area of investigation becomes relevant to a large number of ministries, a coordinated approach becomes difficult and mechanisms are required to ensure results can be better achieved beyond the traditional ministerial structure, without competing ministerial interests or paradigms endangering success. In the UK, the Cabinet Office has therefore started several ‘What Works Centres’ as evidence gathering facilities with cross-ministerial involvement, whilst the EC has a system of assembling cross-DG panels with representatives of each DG involved in order to lead activities. Whilst our data do not allow clear conclusions on what an ideal approach should look like, some degree of identification of issues relevant to several ministries, and an available system to ensure coordination of evidence collection above the ministry-level appears to be an important emerging practice.

2.2 Supply and suppliers of evidence

Ministries use informal as well as formal ways to access evidence

Reduced research budgets mean that ministries have to become more embedded in networks with evidence producers, notably universities, in order to access longer-term developments in research. The ability to do this depends upon civil servants being well educated and to some degree research trained, so that their absorptive capacity is high. A corollary is that they tend to interact with a limited number of (chiefly national) sources of evidence and this involves a risk that they obtain only a partial view of the evidence base.

In the absence of captive evidence infrastructures, we see a particularly profound transition in the UK towards much smaller ministries that are trying to become more embedded in the national and international research landscape, as an intelligent customer, sharer and provider of evidence, both through formal channels (eg comprehensive publication portals), as well as informally through closer ties between analysts and policy makers inside the ministry and evidence providers outside of it. In the presence of evidence-providing agencies and captive institutes, this internal versus external divide, and consequent transition from large and closed to open and embedded ministries is not as clearly evident in Finland or the Netherlands. But despite these differences in overall context, the ways in which ministries aim to respond to the dual pressure on evidence use are comparable, or at least offer useful observations where approaches do diverge.

There is a broad trend from using captive evidence sources towards 'marketisation'

The UK has had few government labs since the 1980s. At the other extreme, the EC has access to the JRC for all purposes. In Finland and The Netherlands, some ministries have labs or captive institutes while others do not. As a result, few if any ministries have external evidence suppliers at the boundary between research and evidence production that are fully captive. All make use of universities, consultancies and where relevant research institutes as sources of evidence. In the UK, universities are seen as much more legitimate and credible than other sources; elsewhere there appears not to be a status hierarchy.

Broadly, our interviewees indicated that while all research and study budgets were under some pressure, reductions were most severe in the area of long term, proactive work – presumably because the effects of reduced funding (in terms of ministries' declining ability to identify and tackle longer term policy issues) were not visible in the short term. The pressure appeared to be lower where there were relevant government labs – presumably because their established positions in the state budget makes their budgets defensible, while budgets for long term, external research or studies have fewer defenders inside the budgeting process.

A corollary of marketisation is that no-one takes responsibility for the health and sustainability of the supply side. Norway is outside the scope of this study, but it is noteworthy that Norwegian ministries are required to take account of the continued availability of supply, given the small size of the Norwegian market.

However, the possible relationships with evidence suppliers have various imperfections

Relations with 'captive' labs or institutes enjoy the benefits of long term planning but risk 'capture' of the research agenda by the institute. There is a similar risk where policymakers become embedded in academic networks, even if they then do not pay for the evidence they obtain. Our interviewees did not discuss risks associated with consultancies except in the case of Finland, where the small size of the domestic market means that the same small number of good firms tend to win most of the contracts, again leading to a risk that ideas are not refreshed. Framework contracts are increasingly used to simplify and speed up procurement. Again, while our interviewees did not discuss the disadvantages of such arrangements, it is worth pointing out that they can involve the same problem of lack of renewal of ideas and that they inherently involve a trade-off for the ministry: easier procurement against access to a more limited set of suppliers. In the Finnish case, government has deliberately sought 'different' sources of advice from a range of external committees in recent years.

Technical councils and standing committees tend not to be central to evidence collection – rather they are more important for legitimation

Standing scientific councils or committees of experts are used to a degree in the UK and the EC, less so in the Netherlands and Finland. Their main uses are quality control and legitimation, rather than the provision of evidence. The EC more often uses *ad hoc* expert groups to provide evidence and advice.

Surprisingly, high-level councils that potentially could provide policy coordination across government as a whole appeared to have little effect on policymaking at individual ministry level

There is a second and higher level of policy council such as the Finnish Research and Innovation Council or the Dutch WRR that answers to government at a high level – usually the Prime Minister. The UK maintains the UK Council for Science and Technology, which answers *ad hoc* questions from government about science and its implications for policy. Curiously, these organisations' impact was barely visible to our interviewees.

International sources of evidence tend to be used for benchmarking and background understanding of the international context, rather than for generating specific policy-focused evidence.

The sources of international evidence mentioned by interviewees are almost only international organisations such as the OECD, European Commission, World Health Organisation and so on. These tend to collate statistics and to examine practices rather than to provide end-users with custom studies relating to specific policy initiatives. Policymakers in one country tended not to use research institutes or consultants from another. The EC is not an exception, in the sense that it regards the EU as its 'home' country and buys little evidence from outside the Union.

2.3 Absorptive capacity and the enlightenment model

In general, ministries are moving towards an 'enlightenment model'[2], in which they have high internal capacity to acquire and generate evidence, in part by engaging in the wider evidence community in an open way

Ministries' absorptive capacity has been increasing, partly in response to shrinking ministry size and research budgets

Pressures to reduce staffing in ministries result in a need for remaining staff to be more capable. In relation to evidence acquisition, further pressure on budgets mean that policymakers have to do more with less money. An additional pressure in the EC is the longer-term process of agencification, in which operative tasks are being moved out to executive agencies leaving directorates general to be more exclusively focused on policy. As a result, within ministries, the 'distance' between individuals charged with analysis and evidence collection on one hand and formulation and implementation of policy on the other has decreased in recent years.

These changes mean that ministries make efforts to ensure that staffs are generally literate in relevant areas of science and evidence collection. This does not equate to ministries staffed by scientists but instead to ensuring some degree of knowledge of both the policymaking world and the research and science world. It affects recruitment criteria to some extent – with increased willingness to take on non-generalists and to value research capability. Some ministries ensure they have direct access to scientific literature and evidence bases more generally, as well as tools to conduct reviews of evidence internally and at short notice.

[2] We discuss various models of the relationship between research-based evidence and policymaking in Chapter 4. In the 'enlightenment model' policymakers are well versed in both research and the policy process, and are able to make good use of existing knowledge as well as to commission new studies where they can see knowledge gaps

In the UK, the long-standing model of the Government Chief Scientific Advisor has been expanded to create additional Scientific Advisors for each ministry, who can offer rapid advice and 'know-who' when required. We view this as a particular extension to the absorptive capacity of the ministries.

Systems with strong government labs or close relations with institutes (Finland and The Netherlands) appear to have a lower density of research-capable people in the ministries than those who have to collect evidence primarily through external organisations.

Increased absorptive capacity and integration of policymakers into the wider research community goes hand in hand with greater transparency – especially in terms of publishing the evidence used by government

Open publication of studies and evidence conducted or commissioned by ministries is not only viewed as part of government's accountability but also viewed as necessary if the civil servants are to involved in the wider pattern of knowledge exchange within the research community. Open and user-friendly access to data and reports also reduces the risk of duplication of effort. I the context of a wider policy of making government data available to citizens, the UK is creating a government-wide Web portal for all relevant evidence while The Netherlands is in the process of developing a protocol to specify what evidence should be put into the public domain.

2.4 Quality and credibility

For the most part, ministries are more interested in the quality of evidence than in who produced it

The policymakers we consulted are confident in their own ability and that of their colleagues to assess the quality of evidence, no matter what its origins. For their own purposes, therefore, they were happy to use whatever evidence they could acquire. In the UK however, there was a clear preference for using evidence from universities in public discussion. The universities have higher status than others and are believed to be more independent and objective so the UK ministries tend to believe that academic evidence is inherently more persuasive than evidence from other sources.

Policymakers generally make their own judgements about the quality of evidence available to them. In some cases they may use a committee for legitimation

Quality control of evidence is rarely formalised and most often relies on the expertise of people in the ministry. It is generally done *ad hoc*, if it is done separately from examining the evidence itself at all. In such cases an official might ask a colleague or an independent (often academic) peer to look at the evidence. Generally, the final defence against poor quality is publication: evidence used must be able to withstand public scrutiny. Only in a small number of cases would evidence be subject to formal

scrutiny, primarily in health ministries where there are standing committees that consider various scientific and policy areas or agencies like the UK's National Institute for Health and Care Excellence, which produces clinical guidelines for the healthcare system.

Policymakers want to experiment with new types of evidence though so far this is at an early stage

Several of the ministries we contacted identified a trend towards experimentation as an aid to designing and evaluating policy instruments. There is a particularly strong interest in randomised control trials. However, only the UK's Department of Education said it is actually conducting or sponsoring such trials. A number of ministries referred to the desirability of setting up cross-government policy laboratories and mentioned the Danish MindLab as a model.

The rise of 'big data' presents an opportunity to generate significantly improved capacity for monitoring and analysis. This is also at an embryonic stage, with policymakers beginning to explore the possibilities that this might entail. Most often, the intention is to combine ministries' existing programme and policy data with other larger data sets, eg on the life course of programme participants (be they individuals, families, groups or companies). The hope is that this can lead to more robust evidence about policy needs and effectiveness while also being 'minimally invasive' in the sense of avoiding the need to contact people or companies. While there is policy interest in big data there are also substantial issues regarding data protection law and the amount of experience with using big data for policy or evaluation remains limited.

2.5 Evidence and the policy cycle

Only the European Commission consistently ties evidence collection to a formal policy cycle. At the national level, ministries vary greatly in the extent to which they use such a cycle

Policymakers disagree about the usefulness of a formalised policymaking process, or a policy cycle, as a framework for triggering the collection and use of different types of evidence. The EC is the only case where consistent use is made of a policy cycle, from road mapping and options assessment, to ex ante impact assessment, policy monitoring, interim and ex post evaluation, with foresight additionally being increasingly systematised, and expert panels used to support parts of these processes.

Outside the EC, this type of formalisation was highly variable, with no clear patterns between countries or ministries. Some ministries make frequent use of the policy cycle and see it as a helpful reference point, whilst other show low awareness of it. The most common argument against formalisation at this level is that policymaking is more complex and less predictable than standardised models imply and that it is

therefore more important to build capacity in ministries to be responsive to a wide range of different evidence triggers and needs that do not necessarily follow a formula.

Guidelines for individual evidence-related activities are available to most policymakers and appear most influential where they are used system-wide rather than being specific to a ministry. But policymakers caution against their heavy-handed application

There are significant differences between and within countries in the extent to which they formalise and codify guidelines for individual evidence-related processes. The EC has overall the most stringent and comprehensive frameworks for commissioning, conducting, analysing, overseeing and implementing evidence for policymaking, and additionally a high level of consensus that these frameworks should be followed most of the time. At several individual national ministries, there is a lower presence of handbooks, guidelines and other codified procedures; these are not always viewed as being especially helpful. System-wide guidelines such as those produce by the UK Treasury and the EC tend to be used.

Codified procedures are generally considered to be either useful or essential

- For policy and programme evaluations, they effectively augment the legitimacy-granting function of evaluations themselves: to a large extent, evaluations are designed to ensure accountability and to demonstrate that ministries' actions are justified and effective. Adding a set of rules to ensure these evaluation follow a commonly agreed standard, and ensuring that standard is adhered to enhances evaluations' perceived function to do so

- For procurement: the selection process for an external provider of a particular research or evaluation project needs to be codified, in order to instil confidence that the most capable providers are involved in evidence provision

There is in some cases a formal guideline for impact assessment. This is welcomed where a standardised tool or process is in place that is felt to make the impact assessment procedure easier. In other cases, the need consistently to demonstrate and forecast impacts is viewed as a burden, at times to the point of discouraging interaction with analysts or further pursuing ideas

Beyond these points, there is considerable variation in the use of formalisation. Our interviewees tended to argue that there is a need for a balance to be struck between formalisation where this is helpful and a light-touch approach where formalisation would create unnecessary administrative steps.

3. National and sectoral specificities

This chapter describes some of the influences of culture on the different ways evidence and policy are connected. We point out special and interesting features of the countries considered. Next we identify the extent to which ministries in different countries that work in the same sector also behave in the same way, with respect to generating and using evidence.

3.1 Specific aspects of national behaviour

Culture makes a difference to how people behave and the transportability of evidence practices. It seems to have particular importance in relation to trust

Each country studied has its own specific context, with structures, systems and attitudes rooted in culture, history and country-specific developments of the policy landscape. We therefore find many key differences to be attributable to known divisions between national organisational cultures (see eg Hofstede 2001), with interviewees in the UK often attributing significant importance to key individuals, both in the form of the Chief Scientific Advisors, but also in terms of particular individuals in particular ministries bringing about changes due to their personal interest. Moreover, in the UK we find more openly confrontational relationships between policy and politics, as well as between policy makers and scientists. In Finland and the Netherlands we find less of these features, and instead still comparatively significant captive labs and research institutes, with much reliance on public agencies and higher levels of trust, emphasised by fewer concerns about quality or politically driven bias of evidence. The EC, due to its position in relation to member states, exhibits caution around the subsidiarity principle and the need to demonstrate European added value for all activities, which decisively shapes its endeavours. This is at least one factor that has led to an especially sophisticated policy cycle and high levels of formalisation.

UK evidence use is influenced by the presence of Chief Scientific Advisers and an increasing focus in government on demonstrating the societal impacts of policy

The UK has had a long-standing tradition of employing a Chief Scientific Adviser, with direct access to the Prime Minister. Today this General Chief Scientific Adviser heads the 80-strong Government Office for Science while each ministry has a specific adviser (supported by a deputy, an official and a personal assistant). Each ministry therefore has two channels for evidence: the scientific adviser who addresses short-term needs and contributes to the overall strategy; and other analysts who – as in continental ministries – commission and collect studies and research. Most CSAs are professors, providing links into the relevant academic communities.

The government's so-called 'impact agenda' has significantly increased the research community's desire to work with policy-relevant questions. Research Councils that provide external research grants to universities now require that proposals explain the societal relevance and value of research and the national performance-based research funding system that allocates institutional research funding to the universities ('the 'Research Excellence Framework' or REF) allocates funding partly on the basis of universities' claims about the societal impact of past research. The academic community sees policy influence as a key demonstration of relevance and is therefore well motivated to engage with ministries' evidence needs, even when they are not paid to do so.

Dutch ministries have a uniform long-term and strategic approach to collecting evidence for policy

All Dutch ministries have a 'department for knowledge' (or 'strategy') within the Office of the Secretary General as well as a 'knowledge coordinator' whose job it is to link the central department to the evidence needs of the other parts of the ministry. This means that in principle the ministry benefits from having strategic intelligence distributed to the relevant parts of the ministry while also maintaining a central, strategic view on research and evidence.

Each ministry is required to produce a research strategy. Most have long-standing links to institutes or government labs, which themselves have medium-term research strategies so there is strong potential for coordinating the system of principals and agents. There is also a risk that this causes a degree of inbreeding and lock-in – but it should be noted that the ministries obtain evidence from a wider range of sources than just the labs and institutes.

Finland has radically centralised the collection and funding of at least some of the evidence needed for policymaking

Finland has traditionally been respected for the ability of the Research and Innovation Council to coordinate policy across government. The Council has recently been strengthened by moving its administration to the Prime Minister's Office. The office also administers a new fund (TEA) which finances evidence for policy. It works by prioritising topics suggested by the various ministries and then launching a competitive call for research proposals.

A second Finnish innovation has been to cut some of the government labs' institutional funding and to channel it through a new division of the Academy of Finland (STN). Its role is to fund longer-term policy relevant research anticipating the demand for research-based evidence and supporting longer-term policymaking. Both TEA and STN are said to be responses to overall reductions in ministry research budgets.

The European Commission leans more heavily on formalised processes and the use of expert panels in evidence collection than is the case at national level

Formal requirements for generating evidence to support the policy cycle have increasingly been imposed at the EC since the administrative reforms of the late 1990s. Officials tend to describe these requirements as a response to constant scrutiny of the Commission by the Member States. Different units within the EC often handle different aspects of evidence collection, so foresight tends to be separate from evaluation, which in turn is separate from strategy and the programme design. It may be that a strong policy cycle has the additional benefit of counteracting this fragmentation. The EC is also able to make use of expert panels to supervise studies and to give policy advice to the Commission than is the case at the national level. These mechanisms provide legitimation but may only be affordable at the EC's considerable scale.

3.2 Sector-specific aspects of evidence use

Sector ministries are strongly influenced by the national administrative tradition within which they operate. There are nonetheless similarities that result from the characteristics of the sectors themselves.

As a broad conclusion, our findings show that each type of ministry is influenced in its concerns and activities around evidence use by the academic disciplines most closely aligned to its remit. By this we mean that for instance, we find a higher presence of natural scientists and concern about collecting natural scientific evidence in those types of ministries whose activities relate to those disciplines, notably Environment, and to a lesser extent Health and Transport. Findings on these sectoral differences can most often be viewed in this context. Key observations in this regard are

- Environment ministries have a stronger presence of natural scientists internally. They tend to make more use of captive laboratories for monitoring of environmental data. Given the resources necessary to monitor the natural environment, they tend also to have comparatively high budgets for research and evidence collection.

- Foreign ministries tend to have smaller budgets. They also draw heavily on country experts and personal connections, as well as think tanks and other sources outside their own country. More generally, 'evidence' in foreign affairs ministries more often approximates to 'intelligence'.

- Given the clear differences between foreign and domestic policy, foreign affairs ministries present somewhat of a special case: time constraints in the context of immediate policy decisions are less common here, with longer term goals and eventual persuasion and achievement of multilateral agreements and policies the focus – the meaning of 'policymaking' often differs for these ministries, making

comparison especially problematic. Foreign affairs ministries also have a relatively low level of formalised guidance for the collection and analysis of evidence.

- Innovation ministries, typically charged with economic growth and development, tend to have a higher presence of economists and statisticians, and evidence procured and used by these ministries is more focused on these areas. Calls for greater understanding and use of Big Data most often came from these.
- Health ministries tend to have high budgets for research and evidence, though significant amounts of this are not directly for policy-purposes: these budgets also finance a lot of R&D, clinical trials, etc. Sometimes developments in care and treatment practices influence policy, so the lines between policy and non-policy research are less clear than elsewhere. Systematic reviews – a technique prominent in medical research – have a high prevalence in health ministries. But given responsibilities for public health and health outcomes more generally, we find a broad inter-disciplinary mix of expertise and techniques in this sector.

4. How do our findings compare with existing knowledge?

The use of research-based evidence in policy formulation has been much studied over the years – mostly from the perspective of researchers wanting to understand how to increase the policy impact of their work[3]. The focus of this study is the opposite of that: it aims to understand how demand for evidence arises and is satisfied, in relation to policymaking. This section summarises key discussions in the literature on evidence-based policy and indicates how our study findings compare with them.

The New Public Management movement has been an important force encouraging greater use of research-based evidence in policymaking. The movement has been influential in many countries but especially in the Anglo-Saxon ones: UK, USA, Australia and New Zealand. Both the Blair and the Obama administrations have been particularly influential in promoting the idea that policy should more strongly be based on 'what works' rather than purely on ideology, and this has provided an important impetus towards increased use of evidence during the past two decades.

A very clear effect of the New Public Management has been growing use of evaluation in making and implementing policy and an increased emphasis on integrating evaluation with a 'policy cycle', in which policymakers follow an orderly process of researching societal problems, designing interventions to correct these problems, monitoring progress and evaluating outcomes. A growing number of administrations have also published handbooks or guidelines that specify how the policy cycle works and in many cases also guidance about preferred types of evaluation methods, generally emphasising economic or econometric ones.

This study suggests that, under the influence of austerity and declining research budgets, interest in the policy cycle has diminished compared with the peak of interest, which was about ten years ago. While a strong focus on evaluation remains, use of evidence for other policy purposes is becoming more *ad hoc*. At the same time, ministry staff is becoming more capable in relation to using research.

Weiss (1979) produced a typology of evidence use that remains influential in studies to this day. It shares several features with accounts of the use of research results in industrial innovation. Her types are

[3] This section of the report summarises key issues we identified in the literature. See Appendix G for the full literature review and Appendix G for the bibliography

- The **knowledge-driven mode**l, where research uncovers opportunities for better policies and these are adopted by policymakers (similar to the 'supply push' or 'linear' model in innovation)
- The **problem-solving model**, where societal problems trigger research about ways to find solutions, and these results are then transferred from research to practice (similar to the 'demand pull' model in innovation)
- The **interactive model,** where research-based evidence is used if and when societal needs and research-based policy opportunities coincide (similar to the 'coupling' or 'chain link' model in innovation)
- The **tactical model**, where government and stakeholders make opportunistic use of evidence that supports their pre-existing positions. This is sometimes jokingly referred to as policy-based evidence
- The **enlightenment model**, in which policymakers are well versed in both research and the policy process, and are able to make good use of existing knowledge as well as to commission new studies where they can see knowledge gaps
- The **intellectual enterprise of society**, where policymaking and evidence production interact, often led by fads or fashions, and where social scientists are able to exploit interaction with policy to focus on generating research funds

These models are probably all in use in various places but we saw no evidence that any one of them is dominant. However, there is a trend towards the enlightenment model with ministries and policymakers becoming more embedded within the wider process of generating knowledge in society.

Policymakers are supported outside their ministries by a range of different 'boundary organisations' that generate evidence at the boundary between the scientific and policymaking systems. Traditionally, government laboratories (labs) have played this role but the literature implies that more or less independent 'think tanks', research institutes and university groups are increasingly important.

Our study suggests that there is a trade-off between using government labs and other external sources. The labs can be rich sources of evidence but risk taking over the research agenda, often focusing on longer-term knowledge needs and potentially under-supplying short-term knowledge needed for more immediate policymaking. Administrations that make little use of government labs need stronger internal capabilities to generate and use knowledge in order to operate wise knowledge acquisition strategies. But even those that use labs have to maintain enough internal capability to make sure the people in the labs serve the overall policymaking interest rather than their own, internal research interests.

Innovation researchers have long emphasised the need for firms to have 'absorptive capacity' (the ability to identify, acquire and exploit relevant external knowledge) in

order to innovate. Students of policymaking make a similar observation. In the face of declining external research budgets and the need not to rely too much on boundary organisations, ministries are driven to increase their absorptive capacity and therefore to move towards the enlightenment model. Our study suggests that most ministries see absorptive capacity as increasingly important and try to strengthen it, often in the face of budget pressure for reduced staffing levels. As a result, ministry staff tend to become fewer but better qualified.

The literature review also implies that there are limits to what can be known in a strong scientific sense about evidence-based policymaking. Nobody has been able empirically to tackle the most central and obvious question in the field: Does the use of research-based evidence produce better policy? That it does so is an article of faith, at best based on experience and anecdote. The question does not seem to be amenable to the kind of statistical treatment such as the use of econometrics or counterfactual analysis, which advocates of evidence-based policy tend to recommend.

In recent years, researchers have started to consider evidence-based policymaking in the context of complexity. Policymaking is done in complex social systems and one of the defining characteristics of complex systems is that some of their properties are 'emergent': namely, that they cannot necessarily be predicted by considering the inputs and processes in the system. Policymaking appears also to be heavily context-dependent. It may be the case that the context, in which policymakers try to use evidence can itself be an overwhelming determinant of success. Our interview partners are nonetheless unanimous in regarding a preference for research-based evidence over other inputs as a precondition for making good policy.

A recurring theme in the literature is 'dynamic inconsistency' between the needs and expectations of the political and short-term policymaking systems on the one hand and the long-term nature of research and knowledge generation on the other. Politicians need to win the next election. Policymakers have sometimes to help them to do this, often by making or proposing policies that can immediately be implemented in the face of short-term needs. Designing a headline-grabbing new policing policy or the national response to an epidemic has to be immediate and therefore based on existing knowledge. There is no time to wait for new research to be commissioned and performed. At the same time, the ministry has to secure the knowledge base it will need in order to address foreseeable future challenges. Evidence-based policymaking therefore depends upon the ability to juggle short- and longer-term needs that may actually be incompatible. This study suggests that in the face of austerity it is hard to fund the longer-term work (because reducing it does not produce effects that are visible in the short term). Some ministries try to compensate for this by doing more foresight or embedding themselves better in knowledge-producing networks, but many suggest that cutting longer-term work reduces their ability to handle new policy challenges and is therefore building up trouble for the future.

5. Good practice in the use of research-based evidence for policymaking

In this final chapter, we make ten simple points of good practice for policymakers in the use of research-based evidence for policymaking. The points are based on the practices we have observed in the course of doing this study and on what we understand as the general views of the policymakers interviewed. Together the points show both the directions in which policymakers focus their attention and what they consider are the most valuable practices in the use of research-based evidence in their own organisation and across government.

1. Be as evidence-based as possible – but no more. There is broad agreement that policy should be made on the basis of research-based evidence, wherever possible. Sometimes the needed evidence is not all there. Sometimes there are political or practical considerations that have to be taken into account. Policy still has to be made if government is to achieve anything but the more closely the policy is driven by the evidence, the better policymakers feel its chances are of reaching its objectives.

2. Use foresight and other techniques for thinking about the future as ways to anticipate coming policy needs – and therefore the kinds of evidence that will be needed to support them.

3. Devise and invest in research strategies that generate evidence that will be needed in the longer term as well as in the immediate future.

4. Ensure that ministries are staffed with a significant proportion of people who can specify the need for research as well as to make use of external inputs in order to generate evidence for policymaking

5. Have 'evidence champions' – they might look like Chief Scientific Advisors; they might look like 'departments for knowledge' or 'knowledge coordinators – to promote and coordinate the generation and use of evidence for policymaking

6. Create funded arrangements for generating and sharing evidence to address cross-ministry problems

7. Maintain long-term links with organisations like universities that work at the boundary between research and policy but do not let these become monopolies – you also need impulses for change from a wider set of institutions (including foreign ones) working in competition

8. Publish evidence so that policymaking is transparent and others can quality-assure as well as re-use the evidence you employ

9. Use a 'light touch' policy cycle, which suggests good practice guidelines for collecting and using evidence but which is rather more firm about the requirement to evaluate interventions both *ex ante* and *ex post*

10. Be prepared to experiment and learn about new intervention designs and ways to develop evidence