

Evidence Based Policy and the Politics of Expertise: A Case Study of Bovine Tuberculosis

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Summary

This paper examines the ways in which the evidence based policy making model is put into practice in the Department of Environment, Food and Rural Affairs. Using the management of bovine Tuberculosis as a case study, it comments on the problems that arise in areas of contested science, conflicting sources of expertise and minimal public consensus. In particular, the tension between evidence based policy and workable policy provides an insight into the iterative process of framing both policy problems and the expertise needed to solve them. Scientists, veterinarians, industry representatives and wildlife groups have participated in the formation of a policy to bring the disease under control. As these actors frequently make competing truth claims, Defra occupies an arbitral role. A commitment to action, however, means that a decision must eventually be reached. In order to do so, Defra has discredited or ignored actors previously portrayed as experts and created opportunities for others to assert their own claims to knowledge. In this way, expertise becomes politicised as the framework for both providing and using advice is constructed to serve a Government-defined end.

Introduction

One of the primary goals of the British core executive¹ is to exercise control over the policy processes of government departments. While the motivation for control may change – from curbing spending to preventing policy catastrophes or redirecting a policy focus – the external pressure to account for every action taken in the name of the Government ensures the continuing pursuit of this goal. The formation and administration of agriculture policy has proven a particular source of anxiety for the core executive over the last twenty five years. Before merging with other components of government in 2001, the Ministry for Agriculture, Fisheries and Food (MAFF) was associated with closed policy communities and bureaucratic inertia, a product of its history as a ministry of which the first priority was to protect domestic agriculture. It was an inevitable target for New Labour reformers seeking ‘joined-up’ and modernised government and many commentators saw its 2001 reincarnation as the Department for Environment, Food and Rural Affairs (Defra) as an opportunity for central government to dismantle longstanding administrative structures which were seen as inefficient and a political liability (Donaldson et al 2002, 2006). A series of policy disasters (most notably BSE and Foot and Mouth Disease), high levels of expenditure in an age of cost- and responsibility-sharing (through, for example, compensation for disease outbreaks and subsidies), and the continuing dominance of industry representatives despite calls for transparency in Whitehall, have increased the desire for centrally-imposed regulation of this Department.

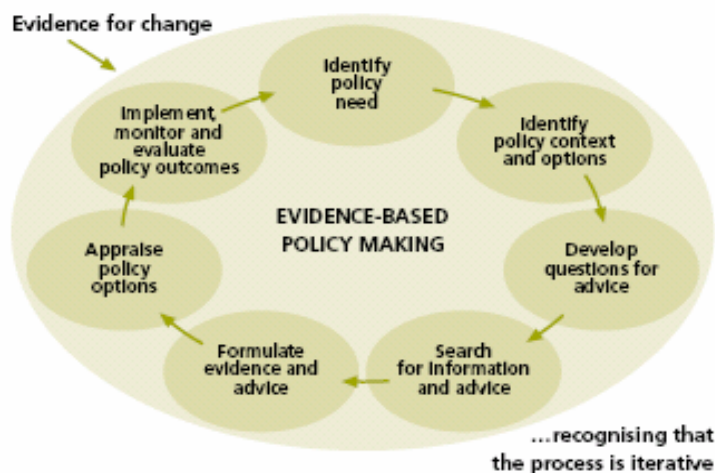
As the remit of Defra is so broad, the paper deals with one policy problem as a case study: the control of bovine Tuberculosis (bTB). The spread of bTB has been described as “foot and mouth in slow motion” (EFRA 2006), but unlike the outbreak of foot and mouth disease in 2001 it is not considered a crisis worthy of drastic intervention by central government. Nevertheless, public spending on research and compensation to farmers has now reached £90 million p.a. and a recent consultation on the problem attracted over 47,000 submissions, reflecting growing public interest. From 1997 onwards there has been a renewed determination to tackle the disease, resulting in a raft of measures to control cattle-to-cattle transmission. However, the more controversial debate around badger culling remains unresolved, and the scientific evidence gathered by Defra is heavily contested. Most recently, veterinary expertise has been brought into conflict with science as ministers seek a policy which is both workable and evidence based. It is a complex and sensitive issue which allows great insight into the practicalities of implementing the evidence based policy agenda.

¹ The core executive is defined by Rhodes (1995: 12) as the Prime Minister, Cabinet, Cabinet and Official Committees, the Co-ordinating departments (Foreign Office, Cabinet Office and Treasury), Law Officers, Security and Intelligence Services.

New Labour and the new tools of governance

When New Labour took office in 1997, the civil service was perceived by Ministers to be in need of reform. Prior to the election, members of the Labour party had expressed disappointment that civil servants under the Conservatives appeared to be cowed by years of political interference, and argued that relearning “how to give honest, objective policy advice to Labour ministers and rediscovering their courage to speak up after years of keeping their heads down will be the chief challenge for many of them” (Mandelson and Liddle 1996: 248). The BSE crisis was seen to be a result of a weak policy making process in which Ministers were given the advice which concurred with their predisposition to avoid regulation and market disruption where possible, and made judgements based on expedience over evidence. New Labour were keen to dissociate themselves from this and other policy failures but felt that civil servants presented “constrained options” rather than “serious analytical possibilities” (Mulgan 2006: 152). Outsiders were brought into the policy process through the creation of units such as the Centre for Management and Policy Studies under Roy Amann (formerly of the Economic and Social Research Council) and the Performance and Innovation Unit under Geoff Mulgan from Demos. Although they helped to bypass the risk-averse civil service to some extent, changing bureaucratic culture offered a less contentious route for a Government which was attracting public criticism for its reliance on political aides and advisers.

In 1999 the White Paper *Modernising Government* addressed the traditional reliance on generalist administrative skills and bureaucratic operational procedures. It argued that “government must be willing constantly to re-evaluate what it is doing so as to produce policies that really deal with problems; that are forward-looking and shaped by evidence rather than a response to short term pressures; that tackle causes not symptoms; that are measured by results not activity; that are flexible and innovative rather than closed and bureaucratic; and that promote compliance rather than avoidance or fraud” (Cabinet Office 1999: 15). Government demanded “more new ideas, more willingness to question inherited ways of doing things, better use of evidence and research in policy making and better focus on policies that will deliver long term goals” (Cabinet Office 1999). Evidence based policy, as this approach is known, describes an iterative process of selecting and synthesising advice and opinion, using this information as the basis for solutions to policy problems, implementing and later re-evaluating the resultant policy. This approach is summarised in the diagram below:



Source: Defra 2003: 6

Modernising Government blamed the disunity of sub-central government on the over-usage of narrowly defined outcome-based targets, as “the work of Departments, their agencies and other bodies has been fragmented and the focus of scrutiny has been on their individual achievements rather than on their contribution to the Government’s overall strategic purpose” (Cabinet Office 1999: 16). Too little attention had been paid to the policy process itself and the ways in which it affects government’s ability to deliver objectives. As one departmental report expressed, “quality cannot be assured simply by checking outputs. Robust systems are required to ensure that the selection of methods takes into account all relevant factors, that methods are properly applied, documented and reviewed throughout the research process and appropriate records kept” (Risk Solutions 2002:4).

It has been suggested that owing to its origins in medicine, evidence based policy making (EBPM) shares some of the methodological assumptions associated with this field; policy-making is a diagnostic task, and policy makers seek information on the efficacy of different “treatments” for the problems they identify (Pawson 2002). The approach implicitly accepts that objective information (that is, free from the biases of political agendas) is readily accessible through observation, if only the right questions are asked (Townley 2002). This creates an impression of objectivity; ministers become ‘experts’ through the process of data gathering. The transfer of functions to independent bodies (whether Non-Departmental Public Bodies (NDPBs) or ad hoc advisory groups) has a similar effect, removing issues from the political domain and placing them in the hands of visibly independent experts (Flinders 2004). Not only does depoliticisation bring the advantage of shielding the government from the consequences of unpopular policies, it also “seeks to change market expectations regarding the effectiveness and credibility of policy-making”; government must appear competent in order to win market confidence, building political credit that will allow them

to pursue other less popular policies (Burnham 2001: 129). The legitimacy of a policy is, in effect, judged by the process of decision-making as well as any tangible outcomes. This requires a much greater degree of transparency in both the evidence base and the way information is used to inform policy. Sources of advice are presented through departmental websites, consultation documents and press briefings. Furthermore, freely available reports like the recent end-to-end review of science into policy (Science Advisory Council 2006) make the stages of decision making visible and help both auditors within government and interested parties outside government to hold ministers to account over their use of evidence.

The extent to which departments have successfully embraced the evidence based policy agenda has varied considerably, and Defra provides an interesting case study of the difficulties posed by this style of policy making. In its utilization of advisory sources, Defra is a leader in its field: together with its 5 science agencies (Central Science Laboratory; Centre for Environment, Fisheries and Aquaculture Science; Pesticides Safety Directorate; Veterinary Laboratories Agency; and the Veterinary Medicines Directorate) the Department employs around 2800 professional scientists, economists, and veterinarians. More than 7000 other professional scientists and economists work in Defra's executive NDPBs. However, policy catastrophes occurring in this department, particularly concerning disease management, have been a significant driver of EBPM for precisely the reason that evidence is not always used in the most appropriate or rigorous way. A proliferation of scientific advisory committees on BSE, for example, was not sufficient to prevent the misuse – or disregard – of evidence in policy making. Although the impact of BSE on New Labour's thinking should not be overestimated, it is reasonable to concur with Alan Greer that *Modernising Government* "could have been written with BSE in mind" (1999: 613). The episode is also cited in the PIU report, *Better Policy Delivery and Design* (Mulgan and Lee 2001) and the National Audit Office report, *Getting the Evidence* (2003), as a paradigm of policy failure. To understand how the EBPM agenda has changed Defra's policy process in response to these failures, this paper considers the case of bovine tuberculosis: a disease which the government has failed to control for over half a century, despite numerous research programmes and high-profile reviews.

Case Study: Bovine Tuberculosis

Bovine Tuberculosis (bTB) remains a relatively uncommon disease in Great Britain, and for many years was largely confined to the South West of England, where new cases occur in more than 1% of herds each year. However, since 1988 the level of bTB has been increasing, and the long term trend has been an incidence rate increase of 18% p.a. (Defra, undated: 6). In addition, the disease has spread geographically to Wales and the West Midlands, and sporadic cases occur throughout Britain. The TB surveillance programme has shown that there is an "overall, sustained and continuing increase in the number, duration, severity and geographical distribution of bovine TB incidents in Great Britain" (Defra 2005a: 15).

From the farmers' perspective, a bTB breakdown (the term given to a herd when an animal from that herd tests positive for bTB) has many consequences. The disease causes reduced productivity and premature death in animals, thus affecting both animal welfare and the economic output of affected farms (Krebs 1997: 13). A survey by the University of Reading in 2004 found that 79% of dairy farmers and 65% of beef farmers suffered net losses from a TB breakdown of up to £17,000 per farm (Defra 2005a: 26). In addition to the costs borne by taxpayers, Defra estimates that the net costs to farmers will be £20m p.a. if the disease continues at its present levels. This figure includes £13m in costs of TB breakdown plus £7m in costs to cover cattle handling and vets (Defra, 2005a: 17).

The disease is equally problematic for government. The average cost of a breakdown is currently £22,500 per incident divided roughly 70:30 between taxpayers and farmers respectively (Defra 2005a: 16). Total Government expenditure on tackling TB in cattle has risen from £38.2m in 1999/2000 to £90.5m in 2004/05. By far the largest proportion of spending went on cattle testing and compensation; in 1999/2000 this amounted to £71.4m or 79% of the total expenditure on the disease (Defra 2005a: 16). The number of cattle compulsorily slaughtered in connection with bTB has risen from 638 in 1986 to 5884 in 1998 and 22,571 in 2004 (Defra 2005a: 15). Until December 2005, animals slaughtered in this way were valued individually and compensation awarded accordingly. As a result, many overpayments were made, with some farms making a net *profit* following a breakdown. The compensation scheme has been recently reformed, but long term financial burdens can only be prevented by stopping the spread of the disease.

History of disease management

In the 1950s, when the disease reached significant levels in the UK cattle population, a compulsory eradication programme began, which involved slaughtering herds in order to facilitate subsequent restocking in the worst affected areas. (Defra, undated: 15). However, it became evident in the 1960s and 70s that the prevalence of bTB remained high in South West England despite the slaughter programme, and MAFF began to seek other sources of the bacteria which could account for the continuing spread of infection of cattle. A link between badgers and the spread of bovine TB was first suspected in 1971 when a dead badger infected with TB was found on a Gloucestershire farm which had recently suffered a bTB outbreak (Enticott 2001: 154). Although no firm conclusions could be drawn about the mode of transmission, experiments in which badgers and cattle were housed together to ascertain whether badgers could pass the disease to cattle led MAFF to conclude that they were the single most significant source of the problem, and in 1973 MAFF resolved to deal with badgers where they posed a threat to the health of cattle. Farmers were permitted to kill badgers on their own land under the provision of the Badgers Act 1973, and did so primarily by shooting or trapping until welfare concerns prompted MAFF to reassess the

situation, and badgers were subsequently culled by gassing with hydrogen cyanide (Krebs 1997: 14).

The role of badgers in spreading the disease has always been highly contested. Badger welfare groups (now affiliated as the Badger Trust) questioned MAFF's readiness to blame badgers without considering other reservoirs of the disease, particularly deer. Badgers, the Trust argue, are "a more convenient scapegoat", having no easily defined economic value and being, in comparison with other sources of the disease, easier to locate, trap, and kill (NFBG 2004: 4). MAFF commissioned a review by Sir Solly Zuckerman in 1979 and a further report by George Dunnet in 1986 as a response to mounting scepticism of the culling policy. Both concurred with previous findings that it was clear, on scientific grounds, that badgers were a significant reservoir of bTB, and as the disease had spread in South West England following the suspension of control measures, some form of continuing badger control was unavoidable. The latter review was surrounded by controversy after a leaked memo to *Farming News*. A draft version of the report concluded that "it is not justifiable to continue with the current policy" of trapping and killing badgers. A memo from Ken Wilkes, head of the TB unit, apparently argued that "this is the sentence to be changed at all costs" as it "would be a gift to our critics" (Guardian 3.6.1986). This fuelled the suspicion amongst critics of the cull that MAFF was acting under pressure from the NFU to continue focussing on badgers rather than the farming industry's responsibility to tackle the cattle-to-cattle transmission of the disease.

The Krebs Review and its consequences for policy

In 1996, Professor John Krebs was asked by MAFF to review the existing scientific evidence on the subject. His report made explicit the flaws of previous experiments and acknowledged that evidence for badgers being the source of TB in cattle is primarily indirect. Krebs also highlighted the need for a more proactive response from farmers, particularly improved husbandry methods to separate badgers and cattle, as MAFF guidelines were "not widely heeded" by farmers (Krebs 1997: 7). A cattle vaccine was recommended as a long term strategic priority, but as this was likely to take over ten years to achieve, establishing once and for all the link between badgers and bTB was essential. As the lack of proper scientific experiments rendered the findings of previous MAFF investigations impossible to compare, Krebs proposed a new approach, involving systematic culling, known as the Randomised Badger Culling Trials (RBCT) or 'Krebs Trials'.

The incoming Labour administration thus arrived at a juncture in bTB control policy which would, in theory, permit a radically new approach to the issue. In a pre-manifesto leaflet entitled "Badgers – Who Cares?", the Labour Party had declared itself to be "against the killing of badgers and the destruction of their setts" and promised to "conduct a full review of the question of badgers and bovine TB" (personal communication 26.07.2006). The Independent Scientific Group on Cattle TB (ISG) was set up to design the RBCT, under the Government's objectives of identifying "a

sustainable policy to control bovine tuberculosis, based on sound science” and to clarify any link between badgers and bTB using scientific evidence rather than “folklore and guesswork” (Agriculture Select Committee 1999 para. 2). The RBCT began in 1998 and was the first ever attempt to allow the comparison of culling options with one of not culling, to assess the impact of each in reducing herd breakdowns. To do this, the RBCT investigated 10 matched triplets each consisting of three trial areas of approximately 100 square kilometres located in areas of the highest TB incidence in cattle in England. Within each triplet, trial areas were randomly allocated to one of three experimental treatments: proactive culling; localised reactive culling in response to TB being confirmed in a cattle herd; or no badger culling (this being the scientific control against which the findings of the other two treatments are measured). The badger culling programme ended in 2005 and the final trial surveys are currently in progress (ISG 1998, 2006b).

Although the ISG attempted to implement the RBCT in the most scientifically rigorous manner, minor modifications were considered politically expedient. From the outset, the group made clear its belief that “the widespread elimination of badgers from large tracts of the countryside would not be politically or socially acceptable, hence we have sought to explore a much wider consideration of the problem and its possible solution(s)” (ISG 1999 para. 12.0.3). The validity of the experiment depended as much on gaining public and political support as it did on meeting any scientific criteria. The ISG decided to take likely public opposition into account when designing the trial, and thus chose not to use snares or gassing, or to kill lactating sows (leaving cubs to starve in their setts) as the Krebs report had originally recommended (Defra, undated: 16-17). The RBCT suffered many setbacks; disruption by animal rights protesters, farmers unwilling to host the trials, and the outbreak of FMD which took SVS staff away from the project. Tension was created between the scientists, who were dealing with the complexities of “real world” research, and consequently emphasising the limitations of their findings, and Defra officials seeking concrete results. As the Government acknowledged, there was “some slippage compared with the original aspirations” arising from “unrealistic expectations of the speed with which the details of so large a programme could be worked out and carried into practice” (MAFF 1999).

The Godfray review, an audit instigated by Defra in 2004, did little to improve the relationship as it raised doubts about the independence of the ISG, arguing that they had “become very close to the experiment itself which may have hindered their ability, or stakeholders’ perceptions of their ability, to give strategic advice to Defra on the progress of the RBCT” (Godfray et al 2004: 62). Further investigations into the bTB research programmes criticised the number of bodies involved in doing the research, describing a “piecemeal approach, with groups being created to fill gaps as they are identified and with some *ad-hoc* committees having been established without a clear mechanism for winding them down” (SAC 2005:7) and suggesting that the research agenda was out of policy control and not focussed on the policy customers’ needs (Taig 2004: 10). A sense that scientists were undertaking (costly) research for its own sake rather than to contribute directly to the

bTB evidence base sat uneasily with the prevailing value for money agenda. Debates over who should provide the funding for knowledge base maintenance (as opposed to new research) are emerging across Defra, in part triggered by the bTB experience, as the Department looks at ways of reducing financial waste (SAC 2006).

RBCT results and Defra's response

On the 14th December 2005, the ISG published the latest findings of the RBCT in *Nature*. The key conclusion reached was that "culling reduces cattle TB incidence in the areas that are culled, but increases incidence in adjoining areas", thought to be a result of badgers ranging more widely when their densities are artificially reduced. Unless culling takes place on an extremely large scale, the effects will be counter-productive (Donnelly et al 2005: 1). The following day, Defra announced a new set of measures to tackle bTB: the introduction of pre-movement testing, aimed at reducing cattle-to-cattle transmission of the disease, and a new valuation and compensation scheme following findings that the current scheme was making serious overpayments to farmers (valuations were between 50 and 100% higher than prices on the open market, particularly for pedigree herds). The pre-movement tests are accompanied by a cost sharing agreement under which the government pays for routine herd surveillance tests and the costs of any further tests are paid for by the animals' owner, in line with the Strategic Framework for the Sustainable Control of Bovine TB which stated that the farming industry should be made to bear the financial burdens of the disease more fully, with the aim to "improve stakeholder buy-in, encourage a shared vision and ownership of the problems" as "all parties need to accept that they have a role in tackling this disease" (Defra 2005b: 15;19). Likewise, the Animal Health and Welfare Strategy argued that "if the industry is to achieve a sustainable future it will need to alter its practices and culture. Taxpayers cannot be expected to foot the bill when the industry's own practices lay it open to disease threats" (Defra 2004: 11).

The third, and most controversial, announcement was a public consultation on the principle and method of badger culling, which ran until March 2006 and generated over 47, 000 submissions. Public and stakeholder interest was provoked by the claims made in the consultation document about the scientific evidence base and the counter claims published by the ISG. Defra stated clearly that "the scientific evidence shows that intensive culling of large areas can be effective in helping to prevent the spread of bovine TB in cattle and vets advise that without badger culling satisfactory control and reduction of the disease in cattle is unlikely to be achieved" (Defra 2005a: 5). Preferences were accordingly sought for three culling options: individual licensing, a general cull over large areas, and targeted culling linked to herd incidence. The ISG wrote to stakeholders in January 2006 to raise awareness of what they felt was a misrepresentation of their findings, and in their official submission to the consultation decried the scientific basis for badger culling as "neither accurately portrayed nor carefully explored in the consultation document". Moreover, they argued

that it “does not provide stakeholders or the wider public with an appropriately balanced view of the scientific background to the issues they are asked to consider, and furthermore appears to have led Defra to ignore relevant scientific evidence in forming the badger culling strategies proposed in the consultation document” (ISG 2006a: 1). Most importantly, the ISG argued that there is compelling scientific evidence to show that two of the three culling options proposed in the consultation (individual licensing and targeted culling) will *increase* rather than decrease cattle TB incidence (ISG 2006a: 4).

The ISG subsequently confirmed that they had played no part in the development of the consultation document, and only saw a draft version the day before it was published (EFRA 2006: Q51). As Michael Jack MP commented, “given that the people who are on the Independent Science [sic] Group are amongst the most knowledgeable people over a very long period of time on all matters scientific connected with badgers and the control of bovine TB, you would have thought that when such a crucial decision was being made by the Government that the ISG might well have been rather more involved in the process of defining the terms of the consultation exercise than they appear to have been” (*Farming Today*, Radio 4, 08.02.06). The EFRA Select Committee launched an inquiry into the consultation in January 2006 and their report noted Defra’s apparent disregard for the findings of the RBCCT when designing the consultation. John Bourne, the chair of the ISG, told the inquiry that the Group found it “very difficult to understand” why the CVO and Ben Bradshaw have said that they are able to develop policy without waiting for the end of the RBCCT, in direct contradiction to Defra’s commitment to gathering sound scientific evidence (EFRA 2006: Q41).

Only 4% of the total number of responses received were in support of using a cull of badgers as part of the strategy to control bTB, with 95.6% opposed and 0.4% neutral (PKF/Defra 2006). In response to the overwhelming opposition to badger culling, Defra responded by stating that “Ministers have said that they will base a decision on badger culling on a sound scientific and practical foundation and are not yet in a position to do this” (Defra 2006c). The final report of the ISG is expected in Spring 2007, but the group has already commented that “it is extremely unlikely that any major change will occur [...] The results are highly consistent across trial areas and there is no basis for suggesting that they should be regarded as in any way provisional or uncertain” (ISG 2006a:1-2).

Contested science, unusable evidence: The challenge for Defra

Since the consultation ended, Defra have returned to the intended outcomes of the Strategic Framework and subsequently renewed their attentions to the creation of a bTB stakeholder body which will be granted NDPB status. On 20th July, the appointment of Peter Jinman, ex-president of the British Veterinary Association (BVA), as chair of a TB Advisory Group was announced. The focus of the Group is to be the practical aspects of disease control policy, and the small membership (3

or 4 people) will consist of those with experience of working with the disease, rather than a representative selection of interested organisations (Defra 2006a). The group is not intended to provide another forum for the usual debates over badger culling to be rehearsed by farming and wildlife organisations, but to use field-level experts to find workable solutions. Although members will be acting in their capacities as experts, rather than as representatives of any organisation, the preference for veterinary expertise opens up an important component of the evidence base which has until now been marginalised in favour of the ISG's trials. The use of veterinary advice is likely to cause further controversy, however, as their approach to disease control is frequently at odds with other forms of scientific expertise. In the FMD outbreak, for example, vets and epidemiologists clashed over their approaches to controlling the disease, with vets drawing on their local knowledge to challenge the legitimacy of the scientists' models (Bickerstaff and Simmons 2004).

Veterinary knowledge and the politics of expertise

The uneasy relationship between Defra and the State Veterinary Service has raised concerns in a number of reports, primarily due to the independence of SVS staff and their perceived unwillingness to co-operate with the Department when 'under orders'. In the wake of the foot and mouth outbreak, the Anderson Inquiry suggested that the rapid escalation of the disease was in part due to the reluctance of the SVS to admit that it couldn't cope with the scale of the workload (Lessons to be Learned Inquiry 2002: 68-71). Likewise, a recent report on Defra's use of science suggested that the nature of SVS vets as "very highly qualified professionals who are used to doing their own diagnosis and prescriptions of their solutions" leads them to "undermine Defra policy by letting people know that their views are different or that they are doing something reluctantly" (Taig 2004: 13). However, the central role of the vets both in terms of the expertise they bring and their practical contribution to disease outbreaks (under-funding of the SVS and consequent under-staffing was blamed for the failure to bring FMD under control more quickly) is also noted. "Vets are our greatest asset and greatest liability" is a commonly held view within the Department (Taig 2004: 13). In the context of bTB, the role of vets has come under scrutiny recently by a report which claims that there is evidence of "widespread divergence" from the instructions for tuberculin testing of cattle by SVS vets, due to either operational errors (e.g. pressure to get the job done quickly) or situational errors such as farm conditions (DNV 2006:1-2). As cattle testing is currently the primary tool for controlling the spread of bTB, the SVS have come under pressure to tighten their management of both staff and privately contracted vets (Defra 2006b).

The veterinary profession has consistently favoured badger culling as a method of controlling the spread of bTB. In February 2005, an open letter signed by 322 vets called for badger culling to recommence. Although the BVA has supported the moves to increase cattle testing, they insist that "the culling of badgers is the most viable option we have" (BVA 2006). They contend that there is still insufficient scientific evidence to rule out culling as an option, and argue that "In a situation

where the control of an animal-based disease is critical, yet absolute science is absent, the application of first principles of disease control by the veterinary profession is essential" (BVA 2006: para. 8). An association is made between 'practical policy' and badger culling which, if it is carried over into the TB Advisory Group, gives Defra an opportunity to resurrect culling as an evidence-based policy option. This is certainly a fear for wildlife groups, who have alleged in the past that vets "regard themselves as demi-gods whose experience 'on the ground' counts for more than any amount of scientific research" and that they "have the minister by the ear" (Lawson 2006: 38).

Following trial results which suggest any but the most extreme form of badger culling may increase the prevalence of bTB, and a public consultation which has demonstrated widespread opposition to badger killing, Defra ministers have found themselves in a rather vulnerable position. Badger culling was the only workable policy option available; the likelihood of developing a vaccine in the near future remains very small. Culling on a large scale – the only option likely to bring significant benefits – will undoubtedly create widespread public opposition. As the Strategic Framework states, "to do nothing is not an option", and Defra now has a PSA target of reducing the spread of the disease by 2008, increasing the sense of urgency to find a solution. There is an evident clash between finding "what works" and developing a policy on the basis of the most rigorous scientific evidence. As such, Defra's ministers are faced with developing a policy which disregards the ISG's findings, or seeking alternative evidence which will lead them to a practicable policy.

The evidence based policy agenda has had a substantial effect on Defra's approach to the control of bovine Tuberculosis. Since 1997, the Department has funded a high profile research programme, and ministers have gone to great lengths to consult stakeholder groups, vets and the public in order to develop a well-informed policy. However, implementing an evidence-based decision making process has proved a challenge as the scientific evidence is inconclusive, veterinary advice contradictory to the scientific findings, and stakeholder opinion lacks any real consensus. As Defra becomes increasingly desperate to find a workable solution, evidence has been brought into conflict with expediency; consequently, the scrutiny of ministers is intense.

Setting targets, structuring debates

Concrete targets, such as Defra's PSA on reducing the spread of the bTB, are a means for central government to make explicit means-ends relations, by "making processes and consequences unambiguous, establishing a set of causal relationship[s] between inputs and outputs, monetary expenditure and accomplishments" (Townley 2002: 564). The process of defining results effectively structures the way in which evidence is gathered, as a method (in this case, an effective culling strategy) is sought for a pre-defined aim (preventing the disease spreading). In any organisation, "power accrues to the person who is able to structure attention to issues in a way that in effect defines the reality of the decision-making process" (Morgan 1997: 179). By negotiating targets in

advance, the core executive determines the way in which Defra approaches the policy problem. The scientific research agenda was put in place with the predetermined aim of testing the efficacy of culling options, and had the ISG's results supported a cull, it is unlikely that other control strategies would have been considered.

Defining evidence, measuring competence

Competence, as defined by EBPM, is measured in terms of the ability to gather and analyse information, and come to a decision which is clearly derived from this knowledge base. When the evidence base is contested, or decisions are taken which seem to diverge from the information available to government, ministers are held to account. Interested parties are able to scrutinise the scientific research and draw their own conclusions from ministers' use of it, as occurred during the ISG's dispute with Defra over the consultation document. While Defra finds itself at something of a crossroads in bTB policy-making, the direction they choose to take will be interpreted as both a sign of their political inclinations and their capability as policy makers. As Trevor Lawson of the Badger Trust comments, "the Government's decision is about more than badgers alone. The decision will be a litmus test of Defra's ability to use science in a robust way to make sound decisions. If a cull goes ahead, the Government's commitment to sound science will be wrecked" (Lawson 2006: 39). Of course, any decision taken on such a sensitive topic will receive criticism from some parties who feel their views have not been taken into consideration, and it is the task of ministers to justify their choices. In the case of bTB, however, the conflicting expertise of scientists and vets means that no decision can be said to be based on incontrovertible evidence. The divisive use of science in the consultation document (in addition to the fact that Defra is currently spending around £7 million per annum on the RBCT) has also attracted scrutiny from other parts of government. The EFRA Select Committee have stated that in their view, "if the line the UK Government proposes to take differs from the position adopted by the ISG on what constitutes an effective culling strategy, Defra should publish details of the science underpinning its conclusions on the consultation" (EFRA 2006: para 6).

Regulation outside government: ordering interaction

Intra-governmental regulation also has implications for external relationships between Defra and the bTB policy network. The transparency of the policy process means that access for pressure groups is contingent upon them possessing compelling evidence and reducing the opportunities for groups to interact with government. The evidence base also gives Defra purchase over pressure groups by providing support for measures which would otherwise have attracted great opposition. Faced with a cost-benefit analysis of the various policy options and scientific evidence which confirms the importance of cattle-to-cattle transmission, the NFU, BVA and other farming organisations have been forced to accept the necessity of cattle based control measures

(personal communication 17.8.2006). While the NFU may contest the extent to which farmers should bear the financial burden of the disease, there is no longer a question as to the central role which livestock owners must play in biosecurity and husbandry measures. Likewise, since the ISG began its work, despite the inconclusive findings regarding the efficacy of badger culling, the Badger Trust have had to acknowledge that badgers do play some part in the spread of bTB. Although they have grounds to challenge the *extent* to which government deals with the wildlife reservoirs of the disease, the scientific confirmation that badgers are involved gives Defra the platform from which to continue pursuing its investigation into culling.

A vehicle is created for bypassing the traditional 'capture' of Defra by pressure groups, imposing the trust which has been lost by past policy catastrophes and removing the unpredictability in policy making associated with enigmatic policy networks. As Williams argues, "the long-term significance of the government's latest reforms may lie less in their attempt to strengthen the strategic policy-making capability of the centre, than in the extent to which they represent an initial step in establishing an approach to policy-making within which the role of those with a particular interest in policy-making in a particular area, both inside and outside of government, can be better defined and regulated" (Williams 2000: 421). It is almost impossible for Defra to introduce a culling policy – which would inevitably be seen as a concession to the NFU – without constructing an unassailable evidence base to support the decision. Accordingly, vets are being recast as sources of alternative expertise; their role in the policy process is formalised (and regulated) through mechanisms such as the TB Advisory Group. EBPM is a mechanism for ordering the ways in which departments interact with agents outside government.

Conclusion

Evidence based policy introduces new criteria by which departmental performance can be judged and legitimacy conferred. Under New Labour, legitimacy is based upon the claims of rationality and objectivity in policy making, the achievement of targets and the effective implementation of government objectives. Rather than simply meeting a set of objectives, policy-makers must account for their decisions and demonstrate that their judgements are based on objective evidence rather than precedent or ideological preference. Defra's attempts to apply EBPM to a disease control policy for bovine Tuberculosis demonstrates the consequences of scrutiny which focuses on the policy process rather than its outcomes. Scientific research agendas, decision making processes and even policy networks are indirectly regulated by the centrally-driven demand for evidence based policy.

Following decades of inaction and reliance on a policy devised by a small group of experts from the farming and veterinary industries, the period since 1997 has seen a radically altered approach to the disease. Throughout New Labour's time in office, Defra has sought to construct an evidence

base, primarily through the creation of an independent group of scientists. While the intention was to devise a rigorous research programme which could not be accused of partiality, the results have been highly contentious and many alternative truth claims have been made. The findings of the badger culling trials, though scientifically defensible, do not lead to an obvious workable policy option. Defra is now charged with finding evidence to support some kind of action, as they have a PSA target of reducing the spread of the disease within the next two years. Although the possibility exists that the disease will be restructured as a veterinary problem and the TB Advisory Group will be used to circumvent the problematic science, any deviation from the findings of the RBCT will have to be comprehensively justified, and Defra can no longer rely on creating a 'black box' to hide its decision making process.

Nevertheless, the use of a veterinary-based advisory group as an alternative to the Independent Scientific Group's findings illustrates the politicisation of expertise which can occur when a particular policy outcome is desired but evidence must be produced to justify it. The creation of an advisory body, even when composed of independent scientists and institutionally independent of the Government, is necessarily a political act insofar as it is undertaken on the orders of a Minister. The decision that action must be taken to control the disease immediately influences the way in which evidence is sought, as reflected in the ISG's unwillingness to trial a culling scenario which would never be socially acceptable. In this regard, EBPM has no significant impact on the existing policy process: Ministers identify a problem and in doing so, structure the advisory system so as to receive information on appropriate solutions. EBPM makes transparent the progression of decision making after the reason for intervention has been settled, but does nothing to address the assumptions and prejudices of policy makers in the question-setting phase of the process. Controversial decisions can no longer be taken in secret, but the potential for opacity in the framing of policy problems and the subsequent selection of advisory sources persists.

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