



When Rhetoric Meets Reality - Implementing Policies Based On Market Failure

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When Rhetoric Meets Reality - Implementing Policies Based On Market Failure: Some Observations From The Development And Delivery Of The UK's Energy Efficiency Best Practice Programme

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When Rhetoric Meets Reality - Implementing Policies Based On Market Failure – Some Observations From The Development And Delivery Of The UK's Energy Efficiency Best Practice Programme

John Rigby

Abstract

The UK's major energy efficiency programme of the last decade, the EEBPp, has been widely regarded as the canonical example of an approach which addresses market failures that result when insufficient or inappropriate information impedes the diffusion of energy efficiency technologies and techniques to all those who have an economic interest in using such information. OECD publication on energy efficiency policy cites the UK as a leading example of such an information programme, giving as the reason for its need the low level and poor quality of information about energy efficiency technologies. However, the development and delivery of this Programme has seen considerable attention given by the civil servants required to implement it to the skills, abilities and resources that individual firms require to install, configure and operate energy efficiency technologies and techniques. While therefore "dealing with market failure" has been a popular shorthand for the model of Programme operation, in practice, the Programme managers have relied upon broadening and deepening capacities of firms and also modifying the practices of those supplying firms with technologies and techniques. Information shortages for firms appear often not to be so important for technology choice and implementation as the resources of the firms themselves. A key theoretical distinction which is made between firms' specific and common information costs also proves to be difficult to observe in practice. The operationalization of this major piece of the UK's energy efficiency policy therefore suggests that the notion of market failure based on informational problems of the market, while a useful construct, is problematic. The empirical work reported here on the implementation of Energy Efficiency Best Practice programme suggests that programme managers evaded the rhetorical requirements of policy and were able to deal with the capabilities of firms. (Consequently, energy efficiency information provided by government is not a pure public good.)

Introduction

This paper begins by giving a review of the literature that explores the reasons why organisations fail to acquire cost-effective energy efficiency technologies. The paper then focuses upon the political and economic context in which the UK adopted the EEBPp. The paper then outlines the implementation of the Programme itself and notes differences between the principles used to justify the Programme and the way in which the Programme was enacted. The paper ends with a number of conclusions about the way in which theoretical principles guide programme implementation.

Review of Literature

Discussion of the role of information is a perennial theme in the study of the diffusion of technology and economics. Rogers' (1974) analysis, which focused centrally upon information and the social channels through which the information passed has been extensively applied in the context of energy efficiency policy. A growing interest on the part of economists in the key role of information has also taken place, with a close focus upon four related questions: - a) How and why do problems with the level and quality of information provision and use come about? - b) What is the empirical evidence that such problems do in fact exist? - c) What other theoretical resources can be immediately and constructively applied to explain investment decisions in this context? - d) What action can government take to deal with such problems and what are the characteristics of the information required?

How do Information Problems Arise?

That firms require information in order to undertake efficient exchange is a principle which is widely accepted across economic schools and literatures. The transactions costs model and its development by Williamson (1985) have provided a strong impetus to problems of entering into transactions, although the Williamson position, that bounded rationality, asset specificity and opportunistic behaviour lead to high costs that may ultimately prevent efficient exchange relationship, makes no specific link to the character and quality of information.

Rather the need for information and the consequences of its lack have been discussed within the literatures of public goods and information economics, areas of theory linked more and more closely together within the general field of market failure. Within the earlier development of public goods theory under Samuelson (1954), it is argued that when firms are unable to exclude consumers from the consumption of a good, such a good will not be produced, even if consumption of such a good would be beneficial. Such a condition is one of market failure. Given the difficulties of excluding consumers or firms from the use of information, it is information, such as weather forecasts, which is often given as an example of a non-excludable good, although other examples, such as lighthouses have been given.

The economics of information approach developed by Arrow (1985) and the insurance literature developed by Akerlof (1970) focus more specifically upon how transactions may be affected by problems of information. Differences in the amount of information possessed by buyers and sellers of energy efficient technologies, so called information asymmetries, leads to inefficient exchange within both organisational and market contexts. Howarth and Andersson (1993) argue that the market for energy efficiency technologies and techniques fails to operate in the same way as the market for second hand cars, the example given by Akerlof. Because purchasers are unable to observe the characteristics of the products they intend to buy because the technologies are to be used in complex environments where no applicable performance data can be generated. The use of warranties on equipment or trials may help to ensure that prospective purchasers are able to observe the performance of equipment. However, in relatively new markets and where the performance of technology is highly dependent upon external factors, adverse selection may continue to be a significant problem. Such conditions would seem clearly to apply to the market for energy efficiency products and dependent technologies.

Kempton and Wayne's (1994) work on the capability of domestic energy consumers to analyze their energy usage and to develop efficiency strategies shows that the users of power – in this case electricity – are limited in their capacity to understand how they use energy. Utilities, by contrast are far more able to work out how energy is used. This gives rise to an information inequality, which they argue, policy makers should address. Such imbalances in information could easily arise in commercial markets also.

What is the Empirical Evidence of Market Failure?

The evidence that cost-efficient technologies do exist but are not used either because there is insufficient information available in the market or that there are information asymmetries comes from studies of the rates of discount which firms routinely apply as their criteria for investments in energy efficiency technologies and techniques. These studies show that many firms could make investments in energy efficiency, but choose not to do so. Their decision not to acquire and implement is given to imply that they face

costs of identifying and testing technology that count against the savings which might be made from implementation.

The use of rate of return studies of energy efficiency technology adoption provides the main evidence for arguments that justify government intervention. The apparent divergence between a firm's cost of capital and the rate of return on energy efficiency investment – the so-called efficiency paradox upon which Jaffe and Stavins (1994) focus – provides the main evidence of market failure. A long series of studies examining the evidence is well documented in DeCanio (1998). Some though, such as Sutherland, (1991) have denied the existence of the paradox, arguing that because firms profit maximise (by definition), high discount rates simply reflect firms' actual costs of implementation and provide no empirical support for the existence of market failure.

Other commentators are quite prepared to accept the existence of market failures, but believe that the presence of market failures in the market for energy efficiency technologies is no worse than in other markets. Nichols (1995) for example, states that market barriers, which are routinely cited by supporters of demand-side-management to provide the basis for policy intervention, are far from unique to the electricity market and that virtually none qualify as market failures. For him, information is imperfect in energy markets but the problems do not appear to be more significant than in most other markets.

Measurement of such costs is though difficult in practice: Buckley and Chapman (1997) assert that the area of transactions costs research is one where there has been very little actual measurement. "... We have come across not one case whatsoever in which a manager involved in decisions had access to or had personally generated for their own purposes, anything like a numerically justified assessment of transaction cost issues." (Buckley and Chapman 1997, page 138). The difficulties of measurement and the fact that in practice, firms and managers take decisions based on perceptions which are grounded in experience and language entails a limit to what a transactions costs perspective can give to the study of organisations.

Other Theoretical Approaches

While the market based approaches favoured by neoclassical economics focus on the use of information within a market context made of up atomistic buyers and sellers and quanta of information, later approaches in institutional economics literature examine the relationship between the user of information and the information itself. Within the institutional tradition of economics, both resource based views which are most closely associated with Penrose (1959) and which consider firms as “collections of resources” and the evolutionary theories of the firm, developed by Nelson and Winter (1978) (1982) focusing on “routines” as an analogue to the concept of biological “genes”, emphasise heterogeneity within the population of firms in respect of their capacities and capabilities to achieve a competitive advantage.

Within this framework, the costs which different firms face depend mainly upon their routines and the interaction between them and an external environment. Howarth and Sanstad (1995) using a transactions costs framework also observe the importance of firms’ own characteristics: “transactions costs are contingent on institutional context” (page 106). The capabilities approach considers that differences in the firm’s own characteristics define the limits of its interaction with the outside world. Differences between firms are not, in this view readily quantifiable and are not reducible to numerical measurement of costs, profitability and the like.

What is the Role of Government – What Information Is Required?

The conventional textbook response of governments to the belief that market failures are preventing the production public goods, or that information asymmetries and the absence of markets and or property rights forestalls rational action and a lower than socially optimal level of consumption has been to enter the market to raise both the level and the quality of public goods.

In practice though, this course of action is not always easy. Where empirical studies are carried out to identify the nature of the information required (a public good), complex interactions between technology and the specific context of its use and the absence of metering systems to establish reliably whether savings will and have occurred make the

identification of benefits difficult. Variety in how firms are constituted with respect to their ability to search for and test new energy efficiency measures also makes it difficult to assess the search and observation costs which firms face and where the government support should begin and end. The public policy response needs to attend to the distinction noted by Jaffe and Stavins (1994) that “although the pure information–creation part of this cost has public-good aspects and therefore fits into the market failure category there is also a purely private part of the cost that relates to information acquisition and absorption”.

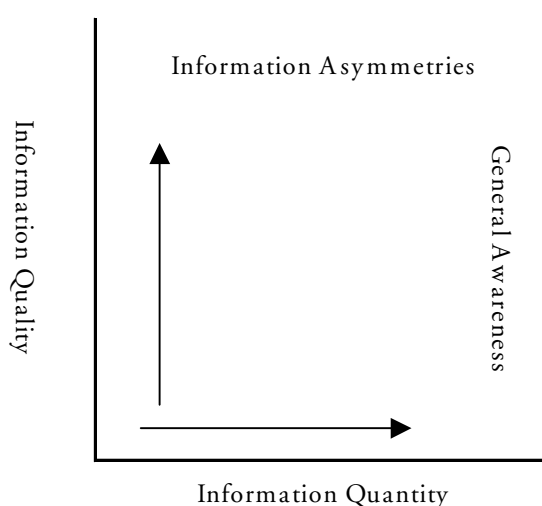
At one level therefore, government should consider producing information of a general nature concerning the performance of energy efficiency measures (technologies and techniques). This need arises because suppliers would, rationally, choose not to provide this kind of information, as its use would be neither excludable nor rivalrous. Government should then leave firms to generate their own information, incurring their own “private costs”, either as the result of solving the problem with their own resources or from using consultancy. In practice however, the absence of strong empirical studies which show what type of information and how much of it is required to correct specific market failures, government action can only be led by the general principle that information should only be provided where it takes the form of general awareness and by financial efficiency targets that relate the costs of providing information on energy efficiency to the savings induced by firms which act upon this advice in the broadest sense.

If deciding the level or quantity of information which government is required to produce presents a significant problem, then the possible market failure that arises from information asymmetries when suppliers make exaggerated claims for the energy efficiency (and thereby the profitability) of the measures they sell introduces a second dimension of difficulty to the task of identifying what information government should provide. This task is particularly difficult as the level of expertise within firms clearly differs, and the extent to which information is asymmetric depends upon the unique knowledge within a particular firm.

The scope of government action then is twofold, providing sufficient information to create general awareness of the profitability of measures, but also taking steps to remove misleading information that enters the market.

The following figure describes the two major aspects of information provision undertaken by government. A horizontal axis identifies the task of providing general awareness while a vertical axis identifies the task of providing higher quality information to deal with information asymmetries.

Figure 1. Policy Action for Information and Its Aims



Quite apart from these two major difficulties of policy implementation – deciding the level and the quality of different forms of goods, there is a further problem for policy makers concerning the effectiveness of government information in encouraging the take up of measures. It is normally assumed that little effort is required to obtain benefit from publicly produced goods, once they have been put into the hands of those who will use them. However, where the implementation of energy efficiency measures are concerned, private information costs, which are specific to the firm, may be very high. It is likely that in some cases, no amount of public information or efforts on the part of government to reduce information asymmetries will, if private information costs are high, lead to the take up of measures.

The existence of such high private costs is a permanent barrier to the take up of energy efficiency measures. The continual introduction of new types of measures with different efficiencies ensures that the need identify the costs and benefits of measures is perpetual. The restriction on action which firms face would only be removed if the balance of costs and benefits were to change. Higher energy prices would increase the benefits while private costs might be reduced through increases in the level of skills available to firms either internally or within the market for consultancy. Until this occurs, it is doubtful whether such programmes can encourage substantial up-take of measures. Until the hurdle of high private costs is raised, much government produced information would be unusable.

Political and Economic Contexts

This section of the paper is a case study of the development and implementation of the Energy Efficiency Best Practice Programme. The case study uncovers the immediate political, social and economic contexts in which the programme was introduced. It shows how programme managers constructed the knowledge entailed by the programme's central principles, the problems programme managers encountered in delivering the programme and the steps which were taken to deal with problems as programme managers and technical experts perceived them.

Programme Implementation – Enacting Policy

During the 1970s, the UK saw a large number of policy initiatives to promote energy efficiency technology to solve what was perceived for a few years as an energy crisis with significant implications for the health of the UK and the world economies. Within the UK, the major initiatives to support the diffusion of technology within industry was the Energy Efficiency Demonstration Scheme (EEEDS). EEEDS was operated by the Energy Technology Support Unit, part of the Atomic Energy Authority and was directed at industry rather than at commerce, which did not have a major energy efficiency scheme.

The demonstration scheme was well regarded but evaluation of its activities revealed problems. Work on the cost-effectiveness of EEEDS by ETSU and the Building Research Energy Conservation Support Unit (BRECSU), which was responsible for the buildings

related projects, showed a high cost of monitoring. (BRECSU Review of EEDS & ETSU Review of EEDS). BRECSU found that the costs of monitoring a single demonstration project were between £50,000 and £100,000 (BRECSU and ETSU Review, 1989).

When the demonstration scheme was extended to buildings, for which the Building Research Establishment's Energy Conservation Support Unit took responsibility, it was difficult, especially in the area of housing to generate interest for demonstration projects. It was said by BRECSU that replicators did not find the projects relevant to them; and that when they did form the intention to invest in projects, limited capabilities restricted their success. BRECSU also felt that the incentives offered by EEDS were inappropriate to the character of the buildings sector, where the costs of the energy efficient technologies were a small part of the total investment.

ETSU reported that 80% of the savings from the scheme came from a small proportion of the demonstrated technologies, about 20% of demonstrations. ETSU also reported that 25% of the projects failed, and although ETSU thought this acceptable, it implied that demonstration schemes carried a commercial risk of which the Government bore the brunt.

Post 1979 and Energy Efficiency Policy

In 1979, therefore a new government committed to liberalisation of markets (and eventually privatization) began to change the basis of government policy, and this change was nowhere less complete than in the area of energy efficiency policy. A new rhetoric of free markets was beginning to appear in a range of government policies for the energy industry, see for example Nigel Lawson's speech in Cambridge (Department of Energy, 1982). 1982 also saw the publication of the Armitage Norton Report for the Department of Energy. The report introduced the concept of barriers to energy efficiency and enshrined information and awareness programmes as the central modes of policy for energy efficiency. The work of the consultants was also used in a turf war to undermine the old energy policy making committee the Advisory Committee on Energy Conservation (the ACEC) which was not enamoured of the Government's near-obsession with market forces:

"Leaving the matter to energy pricing signals and market forces alone is unlikely to have the impact desired because there are too many other constraints - institutional, political, financial and behavioural that prevent adequate operation of market forces"

(Department of Energy, 1983)

Implementation - Programme Design and Delivery

By the end of the 1980s, the demonstration programme had been stopped and another programme was being developed: The Energy Efficiency Best Practice Programme. This was to be seen as the best available method of dealing with the information barriers to action, and the chosen path for the Programme to achieve its impact was to issue information to the right groups in a timely fashion. Dissemination of the information became the basic function of the Programme although the subject of the information and those the Programme sought to influence grew as BRECSU refined its approach and attempted to use its unrivalled knowledge of the buildings and construction sector.

Setting the Standard – Defining Best Practice

While the purpose of the Programme was to overcome problems with the transfer of information, the Programme itself needed clearly to identify and to articulate a concept of what was good or best practice in energy efficiency. Central to this strategy was the development by the BRE of a series of comprehensive records and models of energy use for the different sub-sectors of the service economy. Around halfway through the Programme's initial ten-year phase, a new project to subsume the models under the Non Domestic Energy and Emissions Model (N-DEEM) took place.

Based on over 100 databases of energy use in buildings, N-DEEM provided a means to identify the cost-effectiveness and, just as importantly, the effect on emissions of 25 main energy-using technologies used in buildings. Changes to such technologies and their effect on costs could be modelled with N-DEEM, giving an assessment of the costs and benefits and the interactions between the different technologies and the overall impact of

measures. The model was a highly comprehensive resource built up from observations of the energy efficiency performance of a wide variety of measures in a wide range of contexts. The main sources of data included the following major sources of information about the buildings of the United Kingdom and their energy use:

Firstly, the Rating Valuation Office's Ratings List of properties in the United Kingdom was used. In addition to the RVO Rating list, the Valuation Support Application (VSA) which is also generated by the Rating Valuation Office was also used. This database includes more detailed information, including rateable floor area, of the majority of the properties of the Ratings List database (1.4 million compared to 1.7 million for the Ratings List). The N-DEEM also made use of the Sheffield Hallam University (SHU) Energy Audits, which consist of detailed energy audits for 535 properties. Accuracy of the database was ensured by reconciling the energy consumption data with the fuel bills of the properties. The Open University 4 Towns Database was also analysed as a means of attempting to ensure a balanced coverage of building types that reflect the national stock. A further set of data was collected by BRE itself from a variety of sources. This information was less detailed than that provided by the Sheffield Hallam data but contained the information of around 15,000 non-domestic buildings.

The N-DEEM model and its precursors therefore provided a detailed model of the way in which energy was used in the UK building stock. The model also provided a way of assessing how new technologies might affect the costs of energy use (and emissions). From N-DEEM and other surveys, a variety of information was prepared about energy consumption and cost per unit of floor area that defined best practice. Energy consumption guides produced by the Programme contained comparisons of typical energy consumption with those defined as good or best practice (see for example Energy Consumption Guide No 19, Energy Efficiency in Offices). Case Studies of energy efficient building types also contained such information. Good practice energy consumption was normally in the range of 30% to 50 % below average values. To achieve such reductions of around half to a third of the energy consumption, organisations were expected to use technology that was commonly available and not necessarily the very latest and therefore unproven technology.

Three general categories of technology choice were developed from an analysis carried out by the EEO in its projections for energy saving in 1988 and published within its Energy Efficiency Series. The analysis adopted by the EEO in 1988 identified two categories of technology choice: a technical, which equates with a technological limit of effectiveness; and a cost-effective level, which is what firms would be expected to purchase, given the assumption of pay back periods of between three and six years in the case of major projects and new plant, and pay backs of three years in the case of minor changes to plant and equipment. Under such estimates, BRE and ETSU estimates were broadly similar in predicting between 35% and 55% energy savings for buildings related technologies by 2000.

Such general categories remained in general use in scenario planning for energy efficiency and emissions reduction during the 1990s with a division of the cost-effective category into two and the introduction of discount rates to assess profitability of savings rather than payback systems. The new categories comprised: technical potential savings; economic potential savings; and market potential, what is also referred to as business as usual (BAU). Technical potential savings accrue from technologies which are those at the forefront of efficient operation. The actual costs of changing to the technical optimum were ignored, and the case was therefore highly idealized. Economic potential technologies comprised those which were profitable if a broad range of costs were included, although management costs were omitted. The market potential level of technology adoption relied upon expert judgements by BRECSU and other industry experts of how individual firms in specific service sectors were likely to act in practice.

Setting Standards and Assessing Profitability of Measures

The level of profitability was based on an assessment of likely energy savings and a higher discount rate than was used to value future benefit streams in either of the other two categories. The higher discount rate employed reflected the higher perceived risks and costs incurred in making technological change. Best Practice technologies consisted of those with economic potential rather than those at the forefront of technology. The concept of best practice was therefore not some remote idealized condition but was worked out with reference to what organisations could achieve in practice: i.e. it was

empirically based or inductive. Consequently, the best practice standard reflected what individual energy managers and their organisations were able to achieve.

In some cases therefore, according to one member of BRECSU's technical staff [Interview with CA, 2 10 98], the standards were set lower than what was actually achievable. This setting of an artificially low standard arose because the data set – the selection of buildings used to define the standard – included many buildings without effective control systems. The energy consumption of this set of buildings could be higher than it might be, had controls been present. Secondly, the poor commissioning practices could lead to many of the buildings which are apparently running better than the average to be still too high. The resulting standard could therefore under-represent the possible gains from best practice.

Where the Programme outlines the contribution which could be made by the introduction of single technologies to an existing building, the BRECSU interviewee argued that while the component level savings could be high, in fact, when the technologies were combined with other equipment, the overall level of savings was often likely to be less than the amount implied by the assessment of the component level. In this instance, the level of savings defined as best practice could exceed, sometimes significantly, what was practically achievable. While the difficulties of establishing a best practice standard had, in the view of the interviewee, led to some loss of credibility in the best practice concept, they had not undermined the Programme's central purpose of establishing realisable goals for energy saving.

Within months of the start of the Programme, BRECSU had commissioned two market research exercises from the energy consulting company, Eclipse Consultants. These studies investigated the performance of over 150 staff who took principal responsibility for the selection, installation and operation of energy using equipment in larger industrial and commercial firms where the annual energy bills were in excess of £1 million. The results of the surveys showed that many of the staff were not fully aware of the ways in which they should have performed their roles.

The sectoral strategy for Energy Management in March 1991 which reported the findings of the market research stated that: “The majority of energy management staff were found to have an activity profile that omitted one or more important areas.” The strategy observed that professional training was partly at fault, but the extent of energy managers’ shortcomings in their practical knowledge was of considerable concern to the author of the proposed strategy. The author of the report continued to diagnose the problems that arose more from the capabilities of staff than from the properties of energy efficient equipment:

“..in many cases, some of the more productive techniques were only known by a few energy staff. The objective of this proposal is therefore to provide wide-ranging guidance on the practical aspects of energy management, and thus increase the energy savings achieved.”
(BRECSU/ETSU Sectoral Strategy for Energy Management 1991)

Even senior staff with experience and qualifications were often unable to take advantage of the opportunities to increase the energy efficiency of their organisations. Undergoing professional training was no guarantee of acquiring the knowledge of how to improve the energy efficiency of the business in which you worked. At lower levels of expertise, the level of achievement was unlikely to be satisfactory.

“Many senior energy staff will be professionally qualified, unfortunately this does not imply the existence of comprehensive knowledge and experience relevant to energy efficiency. Indeed, professional training still omits the relevant knowledge, or promotes practices that conflict with energy efficient design and operation of buildings. Technician and clerical staff often work within the experience limits of the energy manager and have limited access to techniques in use by other energy teams. The end result is that the majority of organisations have significant gaps in their energy efficiency activity. Thus opportunities remain to be exploited.” (BRECSU/ETSU Sectoral Strategy for Energy Management 1991)

The strategy for energy management used the term “barriers” to describe what was perceived to be a shortage of technical and analytical skills in the area of identifying where opportunities for energy efficiency lay and what were the best means to achieve them. But the description of the problem in the BRECSU strategy document found the nature of the problem difficult to analyse: “This is a complex barrier, mainly composed of sequential actions where lack of knowledge in one small area inhibits the rational setting of energy efficient priorities”. (BRECSU, 1991, page 5.)

In addition to the problem that organisations did not know how to save energy, it was also shown by market research studies carried out for BRECSU that organisations did not know how to assess the economic potential of their investments in energy efficiency. The weaknesses in the financial methodologies used by energy managers and estates departments for estimating the profitability of energy efficient criteria principally included making errors in the estimate of the inflation rate and changes to future fuel prices. The result of these errors was to render “many investment appraisal analyses meaningless.” (BRECSU 1991, page 6.)

In common with all strategies, this first strategy to address the deficiencies in the skills and knowledge of energy managers outlined the benefits likely to result from the spending of government money. The strategy clearly indicated that money spent in this manner was likely to secure a very successful return for the government’s investment. For every pound which the government spent on the programme activities recommended by the strategy, BRECSU forecast that £43 would result in savings of energy.

Recognition of the role of energy managers in delivering energy efficiency in the economy was not new however. Throughout the 1980s, the Energy Efficiency Office had been aware of the potential role which energy managers might take in delivering energy efficiency. The Confederation of British Industry had testified to the Select Committee on Energy in 1984 about “a strong and identifiable energy manager movement” (CBI, 1984, quoted in House of Commons Select Committee, Eight Report, The Energy Efficiency Office, H87, page xii) and the EEO had established a presence at the National Energy Management Conference in November 1984. When appearing before the Select Committee, the Director General of the EEO in 1984, asserted his belief, based on a large

scale survey which the EEO was currently running, that the presence of an energy manager in a company significantly improved its energy efficiency, on average by a about ten per cent.

“I tend to see energy managers as an integral part of energy management, indeed the best way of looking at that is to say what is the evidence from monitoring and targeting their programme of cost-effective management. What we have seen is you get a 10 per cent improvement in the energy efficiency in a company directly as a result of instituting good energy management techniques.” (MacIntyre, 1985)

The impetus to the development of a specialization also came from the International Energy Agency. A pamphlet published in 1980 entitled ‘Energy Management Guide’ gave support from an international standpoint to the idea that energy managers were instrumental in controlling energy. The pamphlet outlined twelve specific responsibilities for energy managers, with suggestions about what types of steps might be appropriate. The guide recommended that energy managers be seen as of “sufficient status to report directly to the Board of Directors or Chief Executive Officer” [IEA, 1980 page 12]. The guide depicted a typical energy manager as a technical expert or scientist, donned in white coat, carrying a measuring device with which to meter energy use and control waste.

Broadening “Energy Management”

During the early 1990s, the attempts to broaden the skills and capabilities of those operating in the energy management area grew in number and sophistication. Five further strategy documents in 1992, 1993, 1995 and two in 1997 focused on how to raise the levels of skills of energy efficiency staff. The forecast cost of these five strategies was estimated at just less than four million pounds. The quest for energy efficiency through energy management became a major activity for BRECSU, building on its previous experience with buildings and the buildings sector. A significant literature of guides and case studies was produced which outlined both for the individual sectors and more

generally the techniques and skills required to identify where energy efficiency opportunities lay and what techniques might be appropriate to reach them.

The publications which resulted from these strategies were numerous. During the lifetime of the Programme, 32 guidance publications and 37 case study publications on energy management were created. The 37 case studies on energy management sought to drive home the important general points in relevant contexts. Some sectors were the subject of significant interest from the Programme. In the retail sector, for example, there were five separate case studies on energy management.

In the 1995 Energy Management Strategy, the results of a review of the programme's marketing activities for the EEO showed that the key to improved energy efficiency lay not with information but with the behaviour and attitudes of energy managers and related staff.

“The EEO has recently undertaken a review of its marketing activities. One important conclusion is that the EEO should “focus on behaviour, and motivations to change behaviour, rather than getting information out there; although dissemination of information will, of course, continue to be important.” (EEO/BRECSU, 1995)

Not long after the review took place, the decision was taken to close down the EEO and to re-locate its functions to the Department of the Environment.

Education for Energy Efficiency

The programme managers also sought to diffuse knowledge of energy efficiency techniques such as benchmarking and the relevant technologies through the educational system. Building industry representatives were asked to assist in devising suitable teaching material and coursework for the various educational bodies whose students would go on to work in some aspect of the industry.

To this end, BRECSU developed the BICEPS programme (Building Industry Coordinated Education Packages). The BICEPS initiative had the aim of ensuring that the Programme touched all the relevant fields of professional expertise to energy efficiency, including architects, engineers, surveyors, buildings and facilities managers. The close cooperation of the Royal Institution of British Architects (RIBA) and the Chartered Institute of Building Services Engineers (CIBSE) was sought in designing coursework and open learning modules.

A wide-ranging educational strategy was adopted on both sides of the Programme. National Standards for Managing Energy were developed under the Energy Management Training Strategy in 1991. Training information on energy efficiency was devised for a whole range of educational courses at different levels from National Vocational Qualifications up to MBA level, and including continuous professional development. The Programme drew from existing interest in energy efficiency management training which universities met by offering a range of courses, including post-graduate degrees.

In the BRECSU EEO Energy Management Strategy document of 1995, the authors were concerned to show that while they were trying to deal with the problem of a lack of energy management skills, their “workshops were not intended to train energy managers.” (EEO/BRECSU, 1995 page 14). However, on the same page, the tasks which the strategy document suggested were appropriate for the Programme gave the impression of significant training input:

“A second priority for this strategy is therefore to continue to help energy managers develop their skills. The skills that they need include the abilities to:

- Gain management support and resources for their work
- Monitor and control energy consumption
- Identify opportunities for saving energy, including no-cost measures, those requiring investment, and those which require changes in the behaviour of staff” (EEO/BRECSU, 1995 page 14)

The impacts of the energy management initiative were intended not to perfect some abstract market mechanism but as a means to change the way in which actors behaved:

“The impact of the work will therefore be “soft” in that it will bring about attitudinal and behavioural change rather than directly result in specific technical solutions being adopted.” (EEO/BRECSU, 1995, page 14)

Extending the Training Role of the Programme

The result of this approach was a gradually broadening array of publications emphasising the theme of training and development and the operation of a large number of seminars and road shows. The seminars conveyed basic energy management information and were aimed at drawing those unfamiliar with the issues of energy management into a closer appreciation of what was involved. The level of courses was low. One energy manager commented, “Once you have been to ten, you have been to them all”. A representative of one of the trade associations also commented on the level at which his seminars were directed, confirming the rationale of the Programme managers in designing their seminars for a relatively low skilled group of staff:

“We have been running the same series of regional seminars for the last 15 years – you can keep covering the same topics and it is as if you’ve never told anyone about them before and the main reason is such a rapid turnover of staff”. Generally those firms who keep their staff tend to do better. EE expertise is often picked up ad hoc. “You always seem to be educating so many people from scratch.”

“The times when we have taken the presentations to a higher level of sophistication, we find that there is nobody following us. You can put out the same old boring set of information and you can get mass audiences”.

(Trade Association Representative comment, August, 1998)

At the level of technical and trades education, the Programme's Energy Efficiency Primer publication broadened the approach further, offering information, advice and technical information to those not directly employed by the target sector organisations. Some of the initiatives to enhance the skills of those in maintenance and installation services businesses were extremely popular. Good Practice Guide 143 – Upgrading controls in domestic wet central heating systems – a guide for installers was highly regarded and heavily used.

Discussion of the Case Study

Creating the Programme

Since its inception in 1989-1990, the Energy Efficiency Best Practice Programme grew and developed to assume a role of special significance amongst government policies to promote energy efficiency. The Programme was been widely cited as a successful example of an information programme.

During the late 1980s, the UK Government grew committed to the belief that markets, far better than governments, knew how to decide resource allocation issues. This was a period of increasing energy supplies and falling prices. Intervention in matters of energy policy took the form of the ending the state ownership of the energy supply businesses in oil, coal, gas and electricity generation. Energy efficiency was regarded as a natural outcome of a reorganisation of energy markets on “rational and competitive” lines. The wider adoption of energy efficient technologies through efficient markets would meet environmental goals and the needs of an economy increasingly open to global competitive pressures. Government intervention was to be restricted as much as possible.

The evolving model of policy action entailed an idealized technical standard – the best practice concept - and a series of reasons why the idealized standard could not be attained – the barriers. The notion of barriers was a theoretical construct of considerable plausibility for policy makers and Government. It was accepted as the key justification for action, despite a shortage of detailed studies of how such barriers actually operated in

practice in the UK context. Nevertheless, BRECSU (and ETSU) set about creating the best practice standard and identifying a whole range of barriers that prevented organisations from understanding and implementing the standard.

The characterisation of the barriers assumed they were absolute, permanent and external to organisations. The role assumed by the Programme was twofold: to identify all of the significant barriers and to create suitable instruments with which such barriers could be surmounted. The Programme therefore aimed to ensure that the users of buildings and designers were aware of the technical and economic limits of energy efficiency technologies and management techniques. As a corollary, if for any reason the Programme was removed from an area, it was implied that the barriers would again threaten “rational action”, and thwart the adoption of energy efficient technologies.

Delivery of the Programme

Through its close links to the Department of the Environment and occupying a central position within of the UK buildings and construction sector of which it had an almost unparalleled knowledge, BRECSU was well placed to develop the Programme and coordinate the activity of energy and buildings consultants who came partly to depend on the Programme for work. But in addition to its management role, BRECSU also created structures to ensure that sectoral organisations were represented within sectoral panels in the process of creating and delivering the Programme. Technical panels were also created. The resulting network of institutions comprised Ministers, government departments, agencies and consultants and manufacturers.

The Programme also preserved a broader function than assisting organisations with the identification of the suitable technologies and their respective costs and benefits. The theme of work on monitoring and targeting which had been developed before the Programme began was expanded to include a wide range of capacity building activities for energy managers, and later on, for building professionals, technical staff and tradespeople.

This new theme of work was eventually described “energy management” and soon became a major dimension of Programme activity. The training material, the courses and the events published to promote “energy management” sought to address deficiencies and weaknesses in the capabilities of organisations to identify, manage and operate energy efficiency technologies. However, the attempt to enhance the capabilities of organisations presented difficulties.

The skilling-up of staff was a form of support to business and industry rather than the more apparently “neutral” corrective to market failure. Providing support to organisations implied criticism of the model of external barriers. This view suggested that the barriers, far from being of the market and therefore external to organisations, were in fact of the organisations themselves. Consequently, the authors of strategy documents sought to avoid the word “training” as this implied government support for organisations and their staff and therefore policy based on subsidy.

Conclusions

Two major conclusions follow from the conceptual review and the research reported in the case study, the first concerning the level and type of information provided by firms, and the second concerning the delivery of programmes in practice.

Firstly, while neoclassical theories of market failure and efficiency provide a justification for both the creation of public goods and attempts to raise the quality of information, implementing policy based upon such concepts is highly problematic in practice. Indeed, to identify what kinds of information across a whole range of measures is task of immense difficulty in two senses. In the first place, it could be argued that, as individual firms are so different in the information that they already have, deciding the level at which government should produce information is impossible in practice. In the second place, as the private, internal costs which firms would bear in searching for and implementing energy efficiency measures may be very high, it is probable that much of the government effort to produce public or quasi-public goods will fail to make an

impact. The implications for the cost-effectiveness of policy in this and related areas should be more widely considered.

Secondly, the case study shows that, in the delivery of the programme, managers and their contractors adopted a tactical approach, evading the prevailing logic of “market failure” and supplementing the informational approach to energy efficiency with methods which built up skills and capabilities within firms, and more broadly across a range of relevant trades and professional and consulting organisations. Such an approach, which has been effective in practice, did though imply a negation of the central assumptions of the market failure paradigm.

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