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Abstract

In the last decade there has been an upsurge of governmental interest in evidence-based policy, coupled with an emphasis on a utilitarian view of research. This emphasis on research for the sake of policy has contributed to a highly selective nature of the construction of knowledge on urban environments, with those areas that have not been considered as a policy problem failing to attract investment in research. Strategic waste planning has been a striking example of such policy areas. The first part of this paper provides an overview of the disjuncture between policy and evidence and argues that the lack of research has contributed to the under-development of intellectual capital in this field. This overview will set the context for the second and third parts of the paper which draw on a case study of recent attempts at the regional level to improve the evidence base for urban waste policy. These aim to examine the interface between the technical and the social dimensions of knowledge production and knowledge transfer as was experienced in the work of the Regional Technical Advisory Body (RTAB) in the North West (NW) of England. By drawing on five basic tenets of technical rationality, the paper provides a critical analysis of how the NWRTAB's adoption of a predominantly technical-rational approach affected the dynamics of knowledge-policy interplay. It is argued that technical rationality proved to be inadequate in satisfying some of the rhetorical expectations that are often associated with it, and that help perpetuate its continuing popularity among professionals and policy-makers.

Introduction

There has been a growing governmental emphasis on more evidence-informed policy and user-relevant research particularly since the publication of the White Paper on *Modernising Government* (Cabinet Office, 1999). This stressed that: "this Government expects more of policy makers. More new ideas…, better use of evidence and research in policy making…" (para. 6). Since then, there has been a proliferation of research and consultancy work at all levels of government. As pointed out by Solesbury (2001), some consider this as a sign of the New Labour's emphasis on pragmatic rather than ideological stance and the shift in the nature of politics, while others see it as a manifestation of the knowledge-power relationships, with the coming into office of the New Labour creating a renewed demand for knowledge to empower politicians to challenge the established influences, particularly within the civil service, on policy making.

Whatever the interpretation, contrary to what the rhetoric of evidence-based policy agenda suggests, the interface between evidence and policy is far from being unproblematic, linear and direct (Weiss, 2001; Petts et al, 2004). Portraying the complex and contested nature of the role of evidence in policy processes, John Maynard Keynes is said to have suggested that, "… there is nothing a government hates more than to be well-informed; for it makes the process of arriving at decisions much more complicated and difficult" (Skidelsky, 1992:630). Furthermore, the enthusiasm for evidence-based policy has been coupled with a growing pressure on research funding bodies to adopt an instrumental or utilitarian view of research, and support research which is not just useful but useable (Solesbury, 2001) within the short time cycle of policy making. So, it can be argued that much of the current interest in evidence is driven by the demand for what may be called 'near-policy' research. One of the implications of a demand-led approach to research is that it is inevitably selective, if not

opportunistic, focusing on those areas of policy which are perceived as having more political leverage. Historically, strategic waste policy has failed to occupy such a high ground and consequently has attracted little investment in research. More recently, attempts to improve its evidence-base have lagged behind the rapid changes in policy direction. The increasing pressure to respond to legislative and regulatory drivers (including stringent targets) has been at such a pace that has left little room for research inputs. This in turn has led to a degree of pragmatism in this area where policy has often been made in an evidence vacuum.

The first part of this paper offers an overview of this disjuncture between policy and evidence in the management of urban waste[1]. This will set the context for the second and third parts which, by drawing on some of the findings of an ESRC-funded research[2], examine a recent episode of practice aimed at improving the evidence base for urban waste policy making. The research, undertaken between December 2001 and October 2004, investigated the formation of the Regional Technical Advisory Bodies (RTABs) in all nine English regions (including London) and their role in strategic planning of urban waste. In addition to extensive documentary analyses and non-participant observations, 62 interviews were conducted with key actors from different sectors and at different spatial scales (see Davoudi, et al, 2005). RTABs are voluntary groupings of waste officers from multiple sectors. Following government's guidance (DETR, 1999a) they were set up in 1999 as part of the wider regionalisation process to coordinate waste policy, provide an arena for consensus seeking, and help resolve sub-regional conflicts. In addition, a specific task of RTABs was to provide technical inputs and expert advice into the formulation of the regional waste strategy. Despite variations across the regions, the approach adopted by RTABs was predominantly a technical-rational one. As will be discussed in the second part of the paper, this was particularly true in the case of North West (NW) RTAB. By drawing on five basic tenets which distinguish technical rationality from the post-positivists models, the paper will examine the interface between the technical and the social dimensions of knowledge production and knowledge transfer in urban waste policy area. While the analyses are situated in the regional context of North West, emphasis is placed on the particular problems of waste management in its densely populated urban core, including the city-regions of Manchester and Liverpool.

The policy-evidence interface

There are not many other public policy areas in the UK that have been subject to the same level of changes that have confronted the regulation, planning and management of waste in the last fifteen years (Davoudi, 2000). The rapidly changing policy directions can be seen as a way of compensating for decades of policy neglect and a catching up with the standards practiced elsewhere in many parts of Europe and other developed countries. These fluctuations have had major implications for the process of learning and the development of knowledge base in this area. They have led to two distinctive phases in the recent history of waste management in the UK. The first one is characterised by a long period of 'no policy - no evidence' and the second one by a relatively shorter period of 'policy without evidence'. The legacy of this historical context has undermined the development of intellectual capital within the waste policy community. Intellectual capital refers to all forms of knowledge resources -formal and informal- that are socially constructed and flow among the members of a policy community. It is considered as an essential ingredient of effective governance relations (Innes et

[1] Urban waste is used to refer to what is formally known as municipal solid waste.
[2] 'Regionalisation and the New Politics of Waste', Award number R000239519.Further details: www.leedsmet.ac.uk/as/cudem/esrc/htm

al, 1994). Whilst the inadequacy of statistical information on waste, and particularly industrial and commercial waste, is well documented and widely acknowledged (see for example HCEFRAC, 2005), the wider issue of building intellectual capital within the waste policy community has not attracted much debate; a point to which this paper will return in conclusion.

Phase 1: no policy – no evidence

The economic downturn which followed the oil crisis of the early 1970s marked a major shift in waste policy in the UK from the previous attempt to embark on a 'War on Waste' (DoE and DoI, 1974) through reuse and recycling activities (Gandy, 1994) to a twenty-year period of neglecting sustainable management of waste. Underlying this policy vacuum was a perception that waste was not a major *problem.* The reasons for this lie in the attitudes to waste. At some risk of simplification, it can be argued that, for the growing consumer society the attitude towards waste was shaped by the 'out of sight out of mind' mentality. For the central government, waste was a minor adjunct to the minerals policy. For the local authorities, *managing* waste was no more than *disposing* of it to landfill with minimum costs. For the waste industry, which consisted of small and often local operators, the perception of waste disposal as a natural extension to mineral extraction meant that investment in research and technology remained limited to producing more efficient collection trucks and improved engineering for landfill sites. Even the latter was not high on the agenda due to the natural clay lining of many sites in the UK and hence a lack of urgency for developing more sophisticated and resource-hungry engineering practices. For spatial planners, an ample supply of quarries, which were seen as 'technically' suitable for landfill, meant that there was little need for identifying alternative sites, justifying their spatial distribution, or developing alternative waste management policies. Finally, for the waste regulators, the concept of 'best practicable means' (BPM) helped create "a system of comfortable negotiation between government technicians and industry" (Cullingworth and Nadin, 1994:138) which, according to the House of Commons Environment Committee "encouraged contractors who had no regards for the potential dangers to the environment" (HCEC, 1989).

In summary, waste was not considered as a policy priority and consequently did not attract sufficient investments in research and innovation. As a result, little attempts were made by the government to collate even basic data and information on: different waste streams, their amounts and types, and the methods and locations of their disposal. Independent research findings on the environmental and health impacts of for example landfill gas emissions were not followed up and were largely overlooked. Although the concept of BPM was later replaced with BPEO: 'Best Practicable Environmental Option' (RCEP, 1988), by the 1990s it became evident that, "the cheapest tolerable option was too often deployed instead of the best practicable environmental option" (EPA, 1990, Part II). Thus, the combination of a dominant economic imperative and a negotiated regulatory system resulted in a growing number of landfill sites and incinerators which were operating to what today is considered as poor standards, and the end of 1996 those incinerators that could not be upgraded had to be closed down (DETR, 1999b, 2000).

Phase 2: Policy without evidence

> "There is so much misinformation, misunderstanding ... about waste, about its costs, a lot of it is almost folklore. We all have our story to tell about recycling, don't we? There is a whole folklore there, that doesn't necessarily help us move forward" (interview, 2002).

The second phase in the history of waste management in the UK started in the early 1990s when a sea change in policy agenda, induced by the EU regulatory requirements with an emphasis on sustainability, began to make its mark. The

policy shift was captured in the metaphor of the 'waste hierarchy' in which reduction, reuse and recovery of waste are promoted as preferable options compared to its disposal. Therefore, waste could no longer be simply disposed of but had to be reduced and managed in a sustainable way. Furthermore, the spatial distribution of waste facilities had to be based on the twin principles of regional-self-sufficiency and proximity to encourage waste to be managed as close to the place of its production as possible. As far as urban waste is concerned, another key development came through the EU Landfill Directive (CEC, 1999) which, among other things, introduced stringent targets for the reduction in landfilling of biodegradable waste. During the last decade, these developments have gradually pushed waste up the political agenda, creating a growing demand for comprehensive and reliable data and information as well as knowledge and expertise.

However, the legacy of decades of neglect coupled with the rapid change in policy goals has led to a major gap between evidence and policy. It is widely acknowledged that the waste policy sector suffers from patchy, inadequate and unreliable information particularly with regard to commercial and industrial waste. The first relatively comprehensive survey of urban waste was conducted as late as 1995/6. Since then, despite efforts by various government agencies[3] to provide better statistical information on waste, a recent House of Commons' Report[4] concluded that, "the lack of high-quality data is a significant obstacle to the formulation and implementation of public policy" (HCEFRA, 2005:8). Referring to hazardous waste flows, the Report pointed out that, "no-one seems to have a clue what is going where, compositionally, geographically or by industry sector" (op cit, p. 7). A clear manifestation of 'policy-without-evidence' is the government's approach to the EU Directives. According to the House of Commons' Report, "…the Government had signed up to the Landfill Directive before the technical details of how it would operate in practice were agreed" (HCEFRA, 2005:10).

Added to the problem of limited evidence is the shortage of human resources with expertise in strategic waste planning, due to both historical and educational reasons. As mentioned above, for several decades the role of land use planning in waste management was a marginal one. As Davoudi (1999) argues, for a long time the strongly-held and persistent discourse of 'filling holes in the ground' discouraged the planning system from any attempt to search for other spatial-ordering concepts, and reduced its task to the reiteration of standard regulatory criteria. The low profile of waste planning has therefore dampened the demand and enthusiasm for accumulating knowledge and practical experience. It has also discouraged the provision of specialist training and education in planning curricula. There is now "a sever shortage nationally of planning officers in the waste planning area" (HCEFRA, 2005:29).

Building evidence to inform policy: a technical-rational approach

Against this background, the formation of RTABs in the late 1990s was *partly* a response to the growing demand for improving the evidence base for waste policy at the regional level. RTABs, which consist of voluntary, regional groupings of officers from various sectors in waste management[5], are the latest addition to the complex institutional landscape of waste which has been constantly unsettled by the reconfigurations of its policy networks (Davoudi, 2000; Davoudi, et al, 2005). One of RTABs' primary responsibilities was to collect data, provide technical advice on waste issues for the Regional Assemblies, and produce Technical

[3] Notably the Environment Agency (EA, 2000) and the Department of Environment, Food and Rural Affairs (DEFRA)

[4] House of Commons Environment, Food and Rural Affairs Committee

[5] including representatives from local authorities, the waste industry, the Environment Agency, regional Government Offices, regional planning bodies and other 'statutory consultees'

Reports to inform the Regional Waste Strategies (DETR, 1999a). In short, central to the remit of RTABs was to play a key role in evidence-based policy making at the regional scale.

Although there has been a degree of variations between different RTABs[6], overall their perception of and approach to their task, particularly with regard to their understanding of the interface between the 'technical' and 'social' dimensions of knowledge production and knowledge transfer, has been largely grounded in the technical-rational tradition. This has been particularly evident in the approach taken by the NWRTAB in tackling the region's waste management controversies which mainly relate to its urban core. Schon (1999:31) describes technical rationality as,

> "the heritage of Positivism, the powerful philosophical doctrine that grew up in the nineteenth century as an account of the rise of science and technology and as a social movement aimed at applying the achievements of science and technology to the well-being of mankind. Technical Rationality is the Positivist epistemology of practice".

As Owens et al (2004) point out, the technical-rational model has had significant leverage in legislation, policy rhetoric and appraisal techniques despite the extensive critique by commentators such as Weston (2000). While there are a number of generic reasons for the resilience, and indeed popularity, of this model among professionals and policy makers, its influence on the process of urban waste strategy-making was further justified and indeed encouraged by a number of specific factors. For example, the government's narrow definition of RTABs as a *technical* body (DETR, 1999a) reinforced a perceived separation of powers and responsibilities between RTABs as the experts and the regional assemblies as the policy makers. Similarly, the emphasis on the production of a *technical* report confined the scope of their task within the tight boundaries of what was perceived as an *objective* assessment of alternative waste management options.

The NWRTAB endorsed these defining concepts more rigorously than some other RTABs largely, and paradoxically, because they had set themselves a highly political agenda aimed at changing the existing regional waste flows, as discussed later in the paper. Hence, the emphasis on objectivity and technicality was seen as a "pragmatic resolution of the controversies in which they (were) embroiled" (Schon and Rein, 1994:37). It also gave them the impression of being sheltered from what Gandy calls, the "intrusion of the messy ambiguities of political debate" (Gandy, 1999:63).

Among the various principles which distinguish the technical-rational model from the post-positivist approaches, notably the deliberative processes of decision-making, the one emerged more clearly from the analysis of NWRTAB's experience is its underlying assumption that there is a clear dividing line between:

1. Problem setting and problem solving
2. Knowledge and power
3. Experts and policy makers
4. Technical and social dimensions
5. Objective and subjective knowledge

The paper will examine each of these in turn in the context of their particular manifestation in the work of the NWRTAB. The aim is twofold: firstly, to explore the ways in which the technical rationality's perceived dualism drove the agenda, shaped the process, affected the balance of power relations and influenced both the quality of knowledge resources and the mobilisation of such resources to inform policy; and secondly, to highlight, the shortcomings of the technical

[6] For an account of individual RTABs, see the 9 *Regional Reports* that are posted on the project website mentioned above

rational model in fulfilling the rhetorical expectations that are often associated with it and help perpetuate its popularity among professionals and policy makers. Here, emphasis will be placed on issues of: legitimisation and rationalisation, political ownership and policy leverage, and intellectual capital and power resources.

1) Problem setting and problem solving

One of the basic creeds of technical rationality is its fixation on problem solving to the extent that it neglects problem setting. Yet, problems hardly present themselves as given; they are *constructed* out of problematic situations. To convert a problematic situation to a problem there is a need to make sense of it through a process which Schon (1999:40) calls 'problem setting'. This is "a process in which interactively we *name* the things to which we will attend and *frame* the context in which we will attend to them" (ibid, original emphasis). In doing so, participants draw, although not always self-consciously, on their belief systems, interests and values as well as their knowledge and skills. Therefore, "although problem setting is a necessary condition for technical problem solving, it is not itself a technical problem" (ibid).

However, in framing the waste problem in the NW the shadow-RTAB, which was established even prior to the government guidance, approached the process as a mere technical problem rather than an opportunity for social learning. The footprint of this approach can be traced in the RTAB's incessant attempts to depoliticise what was clearly known to them as a political controversy. In order to stay clear from the political sensitivity of the issues at stake, they sought an "independent view which wasn't coming from any officers which were associated with certain shire councils or conurbation authorities" (Collin, 1998:138). Hence, they commissioned a consultant to quantify and analyse the NW waste problems. The outcome of this technical study was a milestone in the framing of the problem which became known as the 'Mersey Belt problem'. Mersey Belt is the relatively small but densely populated urban core of the NW which links the two main metropolitan areas of Merseyside and Greater (G.) Manchester. To the north of the area lie Lancashire and further north the rural county of Cumbria. To the south is the Cheshire County (Figure 1).

The consultant's Report (Coopers and Lybrand, 1997) showed that the area has a concentration of the highest levels of waste arising[7], the lowest level of recycling and composting[8], and the most acute shortage of landfill sites, typical of many other large urban areas at the time. Contrary to the Mersey Belt, the fringes of the region were shown to be mostly self-sufficient with adequate long term landfill capacity and much better recycling rates (Davoudi and Evans, 2004). The Study also revealed that the proximity of landfill sites within the shire counties has led to the large-scale movement of waste, predominantly by road, from the conurbations to the shires (Figure 1). This is particularly evident in the amount of waste that is exported from G. Manchester and Merseyside for disposal in landfill sites in Warrington which until recently was part of Cheshire Shire County. In 1998/99, the total waste exported to the area was more than ten times the amount of urban waste that Warrington itself disposed to landfill (EA, 2000). Warrington's infamous reputation as the 'dustbin of the North West' (interview, 2002) sums up the existence of a sense of environmental injustice among local politicians and the public alike.

Given such a strong normative undercurrent, it was not surprising that the Study sharpened the focus of the 'Mersey Belt problem' towards the problem of the conurbations[9] by highlighting their reluctance to reduce, recycle or otherwise take responsibility for the disposal of their own waste within their own

[7] About 60% of the total in 2000/01
[8] 4.5% in Merseyside and 8.6% in G. Manchester in 2000/01, well below the regional average
[9] Particularly the city-regions of Manchester and Liverpool

administrative borders. Such problem framing was clearly a controversial one which could potentially lead to intractable policy solutions, as acknowledged by a key member of the shadow-RTAB stating that, "cracking the solution to the Mersey Belt problem was also seen as being difficult from a political point of view" (Collin, 1998:138). However, the shadow-RTAB's reaction to this realisation was to depoliticise the political controversies by keeping the politician at a distance until the formal stages of the consultation.

Technical rationality is often about means, not ends. When the ends are agreed the question of 'how' is reduced to the instrumental question about the means best suited to achieve the ends. If there are any disagreements about means this is then resolved by reference to the facts concerning the possible means (Schon, 1999). The consultant, directed by the shadow-RTAB, followed this approach closely, though not self-consciously. The framing of the regional waste issues as the problem of waste flows from the conurbations led directly to the agreement on ends, which was to be a radical reduction in such flows. It then followed that the search for the solution should begin with the conurbations. And, as landfill sites were not available in urban areas, incineration was seen as a practical means to achieve the ends for, as argued by a shire member of the RTAB,

> "there is really no reason why new-built facilities cannot be provided within a conurbation area. And, bringing about the change that's needed by managing waste in a different way [including] EfW facilities, those can as easily be sited in a conurbation area as they can in any other area" (interview, 2002).

Based on this line of argument, the consultant produced a number of scenarios, most of which were regarded as impractical and based on unrealistic assumptions. Although they were reluctant to produce a preferred option, the shadow-RTAB "managed to *squeeze out of them that… scenario 2* – recycling, aerobic composting and mass burn incineration - *best fitted*" the objectives of the study (Collin, 1998:150, emphasis added).

Although questions were raised about the validity of the assumptions behind the various scenarios, according to the shadow-RTAB time and financial constraints ruled out any further research and, "the study was accepted in principle as the basis for a regional waste strategy" (ibid.). The consultants also looked at the location of potential sites but, the shadow-RTAB "were keen that no specific sites were mentioned as that was going to lead to [political] disaster" (ibid.). This insistence on keeping the process apparently free from political controversies cost them the loss of legitimacy and political support for the outcome. Their apparently independent, non-political and technical study was largely ignored by "the vast majority of the local authorities in the North West [who] did not respond" to the consultation (ibid). As discussed later in the paper, this approach was repeated by the RTAB in the production of the Technical Report.

2) Knowledge and power

One of the key tenets of the Enlightenment is that 'knowledge is power', as suggested by Francis Bacon's famous dictum. Whilst this is true in many respects, it implies that the relationship between rationality and power is a linear one. Furthermore, it neglects a related dictum which suggests that, "power is knowledge", as demonstrated by Flyvjberg (1998) in his account of transport planning in the Danish City of Aalborg. Flyvjberg points out that, "power determines what counts as knowledge, what kind of interpretation attains authority as the dominant interpretation" (op cit:226). He also suggests that, "power defines what counts as rationality and knowledge and thereby what counts as reality" (op cit:227).

The experience of the NWRTAB presents a clear example of the dynamic interplay between 'rationality as power' and 'power as rationality' during the course of the preparation of the regional waste strategy. In terms of the former, it demonstrates the *strategic use of knowledge,* or *rationalisation of rationality,* by the shire members of the NWRTAB in order to change the power relations within the regional waste planning arenas. In terms of the latter, it shows the *strategic use of power,* or the *denial of rationality,* by the conurbations in order to retain the existing power relations. In the NW regional planning arena these relations are characterised by the dominance of the large urban areas as pointed out by a member of the RTAB, stating that, "the political power within the Assembly is with the… conurbation authorities. The district shires would see themselves as incredibly distant...." (interview, 2002). The dominant position of the conurbations and their fear of the consequences of having to deal with, rather than simply export, their waste partly explain the persistent apathy of the NW regional planning institutions to waste policy. Although this has parallels elsewhere in the UK (for other examples see Davoudi et al, 2005), it is particularly out of context in the NW where "waste has always been a big regional issue" (interview, 2002). Although a councillor working group on waste existed within the former Regional Association, "…the conurbation authorities were often noticeable by their absence… They were not bothering because the power was elsewhere" (Collins, 1998:151). In the words of Flyvbjerg (1998:31), "the closer one sits to political power, the less use one apparently has for technical documentation, and the less rational one is in this sense".

In the last ten years, the shire counties' pressures on G. Manchester and Merseyside to move towards greater *sub-regional* self-sufficiency[10] have been strongly resisted by the conurbations[11]. These have grounded their argument in the unavailability of landfill sites within the urban areas; a line of argument which had been successfully pursued in planning arenas for many years. For example, previous research has shown that in the mid-1990s, Lancashire's attempt to use the planning system to resist the import of waste from the conurbations by applying the principle of self-sufficiency at the county level failed, and the County Structure Plan's policy aimed at reduction of landfill sites had to be modified to provide for waste generated in G. Manchester (see Davoudi, 2000). Indeed, within the region it is widely perceived that throughout this long-standing conflict "G. Manchester has used its financial muscle simply to transfer its problems somewhere else" (interview, 2002). It can be argued that the Mersey Belt Study was commissioned to substantiate this assertion by quantifying the flows and legitimising the call for sub-regional self sufficiency. The power of rationality was employed to challenge the rationality of power.

It was because of these deep-seated conflicts and the need to resolve them that the North West became one of the first English regions to establish a shadow-RTAB which, following the publication of formal advice from the government (DETR, 1999a), swiftly evolved into the RTAB in 1999. When the prospect of a major policy shift at the EU and national levels appeared on the horizon, the shire counties- which stood to make the larger gain from it- used the arena of RTAB and its newly elevated technical authority to pursue their long standing aspiration for changing the status quo (Davoudi and Evans, 2004). In contrast to their relatively marginal position on the Regional Assembly, the shires became the founding members of the NWRTAB and dominated its agenda and composition; having five out of seven representatives from the Waste Planning Authorities in the region (op cit). Warrington nominated two members, one of whom a senior officer who became the Chair of the RTAB. The RTAB's Secretary was also a well-established senior officer from Cheshire County Council (op cit).

[10] This for the conurbations would entail managing more of their waste within their own boundaries.

[11] The challenge of sub-regional self-sufficiency applies to other major urban areas notably London which exports most of its waste to other parts of the South East Region and to the East of England.

By contrast, the unitary authorities of the two conurbations "were simply not interested" in taking part in the RTAB (interview, 2002). Evidence from the interviews and minutes of the NWRTAB meetings suggest (Davoudi and Evans, 2004) that, the attendance of the representatives from G. Manchester and Merseyside was very patchy and irregular. Given the voluntary nature of the RTABs, the non-statutory weight of the regional waste strategy, and the conurbations' dominant position in the Assembly (i.e. the decision making body), they could afford simply not to take the process seriously particularly because the outcome was unlikely to be in their interests. As Flyvbjerg (1998:37) reminds us, their "unwillingness to present rational argument or documentation may quite simply indicate their freedom to define reality;… one of the privileges of power, and an integral part of its rationality". This point will be followed through later in the paper when an account of the process of regional waste strategy making is presented.

3) Experts and policy makers

The technical-rational conception of knowledge-producers and knowledge-users assumes the existence of a separation of roles and powers between the neutral, value-free expert advisors and the political, value-laden decision-makers. In this model, expert professionals are not supposed to be concerned about power and politics (Booher and Innes, 2002). The NWRATB was determined to draw a clear dividing line between their role and that of the politicians by reiterating that, "the assembly is the regional decision maker, not the RTAB. The RTAB is an officer group; decisions will have to be made by the politicians" (interview, 2002). While the formal hierarchical procedures of government perpetuate this illusive separation of powers, in practice the technical processes are packed with hidden normative presuppositions and intricate interweaving of facts and values (Owens and Cowell, 2002), as was the case in the framing of the regional waste problem and the solutions offered thereafter.

Notwithstanding these, during its transition into the RTAB, the shadow-RTAB broadly maintained its composition as a "committee of expert… a [more] scientific body, with the ability to co-opt scientific advisors on specialist subjects…." (interview, 2002). This was seen as a key strength of the Group as reflected below,

> "One of [our] strengths is that we don't have a political agenda. We are entirely addressing the technical aspects, because we are ostensibly outside the political framework, because we don't strictly represent anybody. We are a committee of experts, so we are only looking at the technical not the political, not susceptible to political pressures" (interview, 2002).

Hence, the NWRTAB was formed as a technical expert group of officers with its membership being kept to the minimum required by the government's advice (DETR, 1999a), making it the smallest RTAB in England with 13 members[12]. Such a small, expert–based RTAB represented one end of a continuum whose other end was represented by a large, stakeholder-based RTAB in the Yorkshire and Humber Region (Davoudi and Evans, 2003). The latter had 31 members and saw its role as being more closely linked to the regional waste decision making processes. As regards the NW, the expert-driven perception of the RTAB had two major implications. Firstly, it influenced its "understanding of relationship between the Assembly and itself" which had "to be crystal clear, who has got what roles…." (interview, 2002). It was considered that if any blurring or overlapping of roles and powers emerge, it would lead to "bad crossover into the

[12] This at mid-2003 included: seven members from six Waste Planning Authorities, two from Waste disposal Authorities in G. Manchester and Merseyside; two from the major waste industries, one from the Environment Agency and one from the Assembly. The Countryside Agency's representative left early on.

wrong territory, really" (ibid). The second implication was that along with the division of tasks between the two camps the timing and the arena of the technical and social discussions were also kept apart. This will be discussed further under subsection 4.

Thirdly, this approach justified the exclusion of those who were seen as having no specific 'expertise' particularly given the dominant perception that the RTAB was "not intended to be representative" (interview, 2002)[13]. Hence, while the secondment of an officer from the Environment Agency was considered as, "a big boon, having a technical person…who could pull everything together … bringing in technical expertise…" (interview, 2002), the inclusion of the 'non-experts' seemed irrelevant. Furthermore, the emphasis on experts gave them the ticket to exclude those whose frame of reference was in conflict with theirs. As Hajer (1995) suggests, 'frame conflict' is not about a conflict over actions and impacts amongst antagonists with contrasting interests, but rather over definitions and meanings of the problem, over the problem setting, among actors who may even share an underlying interest, such as a more sustainable management of waste.

Within the waste policy area such conflicting frames have emerged over the question of 'to have' or 'not to have' energy from waste (EfW) incineration, with two opposing views expressed by some environmental groups on the one hand, and the waste industry and some local authorities on the other. The former has long campaigned for a 'zero-waste' strategy and promoted a moratorium on new EfW incineration, while the latter considers it as a pragmatic solution to reduce the amount of landfilled waste. One view stresses the need to change the patterns of production and consumption to *reduce waste from being produced*, the other focuses on how to *manage* waste whose production is seen as inevitable. As Saarikoski (2003) demonstrates in a study of waste management in Helsinki, these policy positions are diametrically opposed; each embedded in a fundamentally different belief-systems and different understanding of sustainability. Such debates about incineration represent a clear example of a frame conflict where opposing groups are drawing on diverging and often incompatible models, storylines, metaphors and reasoning to make sense of a contentious policy issue (Schon and Rein, 1994; Hajer, 1995; van Eeten, 1999; Saarikoski, 2003). This is reflected in the following extract from the RTAB's report on the responses to the comments made by the environmental group during the consultation on the draft RWS.

> "'Zero waste' is an entirely different concept to incremental decrease in the growth rate for municipal waste to 0%… It relies on an overhaul of society's view about items that we throw away in order that all waste is seen as resource…. The concept is in its infancy and requires significant additional research before it could be assessed as a Strategy for the North West" (Director of PTS, 2003, para. 3.8).

Thus, many RTABs, including the NW, decided to use their 'expert ticket' to avoid such frame conflicts by leaving out those who were seen as their culprits, i.e. the environmental groups. Their inclusion was seen by the RTABs as a recipe for delays, as stated below,

> "It would have meant that even the timescale we took to do what we do would have been even longer…. we may not have been able to maintain a consensus, and we may have always had a minority report coming out" (interview, 2002).

[13] The government guidance was not prescriptive about who should be included in the RTAB membership apart from mentioning the key actors such as local authorities

Hence, despite several attempts by the North West Waste Forum (NWWF)[14] to obtain representation their application was turned down by the RTAB. This was irrespective of the fact that, NWWF "tried so hard to work within the structure"; "put an awful lot of work in"; and, "even hired [their] own consultants to…beef up the technical side of what [they] were looking at…"(interview, 2004). They therefore came to the conclusion that, "the people on the RTAB who were forming the policy … really did not want to know and …they tried to keep [them] out" (op cit), because "somehow they found [them] a bit threatening because of what [they] were saying" (interview, 2002).

The NWRTAB took the view that no amount of deliberation would lead to a negotiated agreement with the environmental groups because, they were seen as, "definitely have[ing] an agenda. And they are very clear what that agenda is and they will not be shoved off it. So… you could not get consensus" (interview, 2002). In practice, the RTAB implicitly signed up to van Eeten's view which compares the deliberation over frame conflicts with "a dialogue of the deaf" (van Eeten, 1999:3).

4) Technical and social dimensions

Within the positivist tradition, propositions which are neither analytically nor empirically testable are often held to have no meaning at all; "they are dismissed as 'emotive utterance'" (Schon, 1999:32). Although the NWRTAB was not of the view that the socio-political concerns were irrelevant to the strategic waste planning, they did believe that such concerns were irrelevant to the perceived technical work of RTABs. Thus, addressing the technical and the social concerns was split into two tasks, to be accomplished by two bodies and within two processes which were to be sequenced over time. The technical issues were to be addressed first and by the experts (the RTAB) in the process of preparing the Technical Report. The social issues were to be tackled next by the decision-makers (the Assembly) during the preparation of the Regional Waste Strategy (RWS). This is clearly spelled out below,

> "… What the RTAB is not doing … it is not setting itself up saying 'we will write the regional waste strategy'…. because, actually, regional waste strategy becomes a political issue" (interview, 2002).

Despite NWRTAB's repeated statements that the Technical Report was not intended as a regional waste strategy but rather as a 'technical' input into the process of its production, "a lot of people seem[ed] to think" that, "the technical report that was produced … [was] fundamentally what [was] going to be the waste strategy" (interview, 2002).

An inevitable outcome of the separation of tasks was that the scientific-technical analyses were also spatially segregated and temporally sequenced from the socio-political debates. This plus the reluctance from the Assembly to become more closely involved[15] meant that the preparation of the Report was undertaken by the RTAB with little input from other stakeholders including the elected members of the Assembly. The perceived distinction between the 'technical' and the 'social' acted as a barrier to the inclusion of different forms of knowledge and its free flows from one arena to another. This in turn hampered the development of intellectual capital within the NW regional waste policy community. It also limited the political ownership of the findings and recommendations of the Report. As with all artificial separations, the sequencing of the tasks did not work as neatly as it was planned, according to the following statement by a key member of the NWRTAB,

[14] An umbrella group of regional environmental groups whose focus is on waste management

[15] While the Assembly's representative on the RTAB was to play "a strong liaison role" (interview, 2002), during the preparation of Technical Report different people were representing the Assembly in different meetings and sometime there was no representative at all (ibid).

> "The RTAB had done [its] bit and thrown it [the technical report] at the Assembly", and expected the Assembly to "do this little bit of publish and consult", but "things tended to go off on tangents…, and Members getting on high horses about little things that they like to spout about…" (interview, 2002).

These presumably 'little things' included the concerns over the framing of the problem which had been established by the Mersey Belt Study (MBS). Although the Technical Report (NWRTAB, 2001) statistically updated and expanded the MBS to include the new policy vocabularies of the National Waste Strategy (DETR, 2000); and although the scenario building process and the assessment of potential options were based on new, and arguably, more sophisticated methodologies, the two central planks of the MBS, i.e. the inclusion of EfW incineration and the call for sub-regional self-sufficiency, shone through the Report, as highlighted by a member of NWWF below,

> "What they call the 'Mersey Corridor' … had been almost tagged as 'oh, that's a great area for energy from waste', and it …came out in the first report [MBS]….It featured such a strong part of the RTAB in the NW from the beginning" (interview, 2004).

The sub-regional self-sufficiency agenda, which by then had become a familiar storyline, questioned 'old' practices, challenged the inter-regional flows of waste and threatened the balance of power relations in the regional planning fora. The subsequent policy controversies of this agenda, which the RTAB had tried so hard to avoid, eventually caught up with them. It took three years to turn their technically sound report, which was praised as an example of 'best practice' (GHA, 2001:12), to a politically acceptable strategy. The difficulties of advancing the agreed options from the 'technical' to the 'political' arenas were highlighted in a study commissioned by the NW Regional Assembly. This suggested that,

> "the RTAB [technical] report represents a lot of hard work but will require significantly more hard work to build a strategy that has an influence and a consensus of support (op cit:9). It added that, "if progress is to be made… a political and public consensus will have to form" (op cit:15).

This shows that a fragile consensus built among a small group of like-minded experts over a series of apparently technical issues is unlikely to be upheld among a larger group of multiple stakeholders for whom the socio-political dimensions of the outcome is at least as important as the technical rigour of the methodology, which itself, as discussed later, was disputed. Whilst experts often complain about the institutional and political barriers to knowledge transfer, little attention is paid to the potential of penetrating such barriers by conceiving the scientific and technical as part of a social world. This is to say that Knowledge transfer may become easier if the social and political were acknowledged as frameworks from the outset (Nutley et al, 2003).

The manifestation of such power-knowledge relations in the work of the RTAB was that the central message of their report, i.e. the call for sub-regional self-sufficiency, had contradictory receptions. On the one hand, it was welcomed by the waste-importing authorities as an evidence-based policy. On the other hand, it was disregarded by the waste-exporting authorities as an unlikely, impractical scenario.

5) Objective and subjective knowledge

One of the principal doctrines of positivism, as laid down by Auguste Comte, considers "empirical science as not just a form of knowledge but the only source of positive knowledge of the world" (Schon, 1999:32). From a technical-rational perspective, reliable knowledge is seen as knowledge which is objectively proven, scientific and based on positivist epistemology (Chalmers, 1982). Hence, by

subscribing to the view that 'facts are facts', technical rationality underplays the ways in which facts are interpreted and given meanings by our underlying conceptions and 'frames of reference' (de Magalhaes et al, 2002:55). Furthermore, a sharp division is deemed to exist between knowledge which is scientific, objective, systematic and explicit and the one which is considered as experiential, subjective, implicit and tacit. Whilst the unacceptability of such a conception of knowledge is so widespread that Star (1992) refers to it as 'an invisible college' and 'an intellectual movement that as yet has no name' (quoted in Blackler, 1995:1034); it still features strongly in research and policy alike. It certainly dominated the NWRTAB's approach to knowledge production[16]. Their attempt to draw a line between experts and decision-makers and between technical and social was closely linked to their perception of what constitutes knowledge, and their bias towards 'technical' knowledge. They undervalued other forms of knowledge, the ones offered by 'non-experts', who could "bring local knowledge to the Committee [the RTAB]…; bring a sort of reality check to whatever is being drawn up" (interview, 2002).

In producing the Technical Report, the NWRTAB welcomed the opportunity offered by the Environment Agency to test out their new computer software programme –WISARD- to identify the BPEO for the region. However, it is well-rehearsed that since their heyday in the 1960s computer models and toolkits are unlikely to be able to deal with complex and poorly-defined problems such as identifying the BPEO. The concept of BPEO itself proved to be so vague that the recent government guidance on waste planning (ODPM, 2004) has urged local and regional authorities to abandon it. The naïve assumptions behind the effectiveness of WISARD was admitted by one of the RTAB members, stating that,

> "Everybody thought WISARD was going to do it [identify the BPEO], until we tried to use it at the regional level. Everybody thought it was going to give them the answer they wanted. Well, it hasn't, it is now a bit of a pariah" (interview, 2002).

Despite this, the RTAB used WISARD to model eight scenarios against the EU and national targets in order to identify the preferred options as the basis for the RWS. Although the scenario with increased recycling was scored higher in the sustainability assessment of the options, the two scenarios which "considered a *sub-regional* approach to meeting the Landfill Directive diversion targets" and included *EfW incineration in urban areas* (NWRTAB, 2001:5-6, emphasis added) emerged as the preferred options. As reflected in the following statements, the RTAB had to go out of its way to convince the opponents that although the outcome was unpalatable for some, it was technically justified.

> "Our modelling led us to the fact that you couldn't achieve the targets in the longer term without some element of energy from waste (interview 2002). "There is no reason *technically* to exclude it… (interview, 2002). However, "the environmental lobby have a fixed view about… what should be BPEO. And they criticise us for not coming to that conclusion" (interview, 2002).

During the formal consultation, the environmental groups challenged many of the assumptions behind the model (ENDS, 2001b:13). Their criticisms centred around allegations of bias in the way the weightings were calculated for the evaluation of the options and backed the inclusion of the EfW incineration in the preferred options. In challenging the objectivity of WISARD, they argued that,

> "if you set parameters to produce what you wanted to produce or to brush out what you wanted to brush out, …, producing results that were wanted

[16] Across the 9 regions, RTABs' approaches formed a continuum with NW at one end and Yorkshire and Humber at the other (see Davoudi and Evans, 2005)

> and, … that was turned into a grid of choices, it funnelled all choices, to …anybody who …come to it fresh …would go 'ooh yes, that is the best option'" (interview, 2004).

The observation that the model "had a certain amount of *subjectivity* built into it" was acknowledged by some members of the RTAB, too (interview, 2002, emphasis added). It was recognised that, "the determination of BPEO is a consultative decisions making process" (NWRA, 2001:6) and, "the choice of indicators, and the applied weightings that have been used … are based on the considered *judgement* of the RTAB" (ibid, emphasis added). This challenges the technical rationality in three ways. Firstly, it shows that even those techniques that are promoted as being purely technical often have an embedded tendency to support particular outcomes (Owens et al, 2004); and secondly that, technical and social, subjective and objective, and facts and values are intricately interlocked within the decision making processes. It also indicates how implicit political choices were wrapped up in technical judgements to achieve the ends, which were set up largely by the shire members of the RTAB. For them, the socio-political urgency of achieving what they considered as environmental justice outweighed any concerns over the means. Convincing the conurbations to incinerate their waste was seen as the only guaranteed and practical means to achieve that goal. Hence, the RTAB made it clear that,

> "It does not agree with the assertion of Friends of the Earth that there will be no need for traditional [EfW] incinerators in the region and advises the Assembly not to accept this point of view. The NWRTAB's advice is that at the present time, incineration remains the only large-scale, proven method… whatever the political and planning implications of new plants (Director of PTS, 2003, para. 3.16).

The inadequacies of technical rationality

The experience of the NWRTAB, as discussed above, confirms the point raised by Owens et al (2004) that technical rationality is inadequate theoretically, politically and practically. Focusing largely on the last two, the following account attempts to highlight their implications for the interface between knowledge production and knowledge transfer and between evidence and policy in the management of urban waste. It is suggested that the model, as adopted by the NWRTAB, failed to satisfy their expectations in terms of endowing them with: legitimisation and rationalisation, political ownership and policy leverage, and intellectual capital and power resources. Each of these will be elaborated in turn.

1) Legitimisation and rationalisation

The NWRTAB's implicit adoption of a technical-rational approach was an attempt to legitimise their position as experts, their action as technically-driven, and the outcome of their work as scientifically-based. However, all three were challenged in practice and the legitimacy that the RTAB had hoped to win from wider stakeholders was not fully realised.

Firstly, RTAB's position as 'a committee of experts' was defied by both those who were deliberately excluded from the process and those who chose to exclude themselves. Among the former, the most notable were the environment groups whose views on incineration represented a frame conflict; one which was deemed to create delays and disagreements. However, keeping them out of the process provoked scepticisms and raised doubts about the non-partisan position of the RTAB. They felt that, "there was some sort of alliances between industry and …the policy makers about what was going to happen…But [they] could not put [their] fingers on it" (interview, 2004). The RTAB's emphasis on incineration led them to suspect that, "things are more cock-up theory" (ibid). Questions were even raised about the scope and relevance of the RTAB's expertise. It was

suggested that, "they were not experts in for example composting and recycling systems"; and that, "they were sort of from the old predict and provide [era]" (ibid). The conurbations which chose not to become closely involved considered the RTAB as undemocratic, and disputed their legitimacy by distancing themselves from the process and simply ignoring their expert views. They argued that,

> "there is concern with regard to the sub-regional acceptance of a body which is not an elected body… and therefore anything that it is empowered to do is felt to be undemocratic" (interview 2004).

The RTAB's reliance on the power of rationality led them to underestimate the rationality of power which was being played out by the conurbations.

Secondly, RTAB's attempt to legitimise their action as technically-driven and apolitical had little success, too. Situated in the context of the embedded socio-political tensions over the cross-border movement of waste, their relentless endeavour to depoliticise their work by disengaging the elected members became moot. The political agenda crept up in the composition of the RTAB with an over-representation from the shire counties and an under-representation from and participation by the conurbations. It underpinned the framing of the problem and its emphasis on sub-regional self-sufficiency and the use of incineration to achieve it. The RTAB's aspiration to reduce the import of waste to the shires was as much socio-political as it was instrumentally rational. It enveloped their frame of reference to the extent that they saw it as the emblem of sustainable waste management in the NW. As a representative from Warrington pointed out, "one of the main drivers has been to try and cut back on the importation of waste … as a result,… anything to do with waste …, becomes very emotional" (interview, 2004).

Finally, the apparently scientific credibility of the Technical Report, and its predecessor, the Mersey Belt Study, was also questioned during the consultation process. Some criticised them as being paddled with inaccurate assumptions; others stressed that judgments which were inherently political had been disguised as technical by using the 'wizardry' of WISARD.

Overall, the technical rationality proved inadequate in enabling the RTAB to legitimise its position, its action and the outcome of its work in the eyes of the wider stakeholders. This is not to suggest that their objective to achieve what was considered as environmental justice for waste-importing areas was not a legitimate one. It is rather to suggest that the technical-rational path that they took to realize their objective proved to be a constricted cul-de-sac.

2) Political ownership and policy leverage

The RTAB's obsession with keeping the process free from political interference by using tactics such as non-disclosure of some of the findings of the MBS hampered the opportunity for developing a sense of ownership of the outcome among the policy makers. RTAB took the view that involving the elected members of the Assembly would turn the process into political battlefield, where the winners were likely to be those in the position of power, i.e. the conurbations. Hence, rather than integrating the technical debates with the socio-political ones, they spatially segregated and temporally sequenced them. Drawing a rigid line between the Technical Report and the Regional Waste Strategy confused the participants and created a vacuum which took three years to fill. Such separations affected their ability to mobilise their knowledge resources to bring about policy change. An important implication of the lost opportunities for amplifying policy leverage was that the evidence, ideas, and arguments that were generated by the RTAB had little effect on policy at the local level, where real difference can be made to the practice of urban waste management. In this context, the technical-rational model "ceased to function" revealing its "practical inadequacy", as noted by Owens et al (2004).

Underlying government's initiative to establish RTABs was an assumption that by putting the emphasis on their technical and advisory nature, a neutral space would be created in which the growing intra-regional tensions would be resolved (Davoudi and Evans, 2005). However, while the formation of RTABs has helped rescale the site of conflicts from the local to the regional level, it has not depoliticised it. In the words of one local authority planner, "it [waste] is a bloody difficult area to deal with…So, those decisions are very hard for politicians to make, wherever they're made" (interview, 2002). Furthermore, it has been suggested that the work of the NWRTAB, particularly the inclusion of incineration in the RWS, might have exacerbated the tensions and created a feeling that EfW may be 'forced' upon waste local planning authorities even when they aspire to have higher recycling targets (interview, 2004).

The complexity of issues surrounding the management of waste suggest that incoherencies and tensions are inevitable; the issue is not how can they be eradicated but how they should be treated. As this account has demonstrated, technical rationality does not present itself as an effective framework for addressing them.

3) Intellectual capital

Given the legacy of decades of disinvestment in research within the waste policy area, RTABs across the country spent a lot of energy and time collecting regional data and information. Whilst these attempts improved some of the basic technical knowledge needed to inform decision making, their impact on development of intellectual capital was limited. Knowledge resources can lead to the development of intellectual capital only when they are used to shape the underlying conceptions of the actors and create shared meaning. Furthermore, they can only do so if knowledge is seen as all forms of knowledge and flows freely and transparently among the actors.

However, the only knowledge which was considered, by the NWRTAB, as useful and usable in informing regional waste policy was the technical knowledge, held exclusively by technical experts. The exclusion of a wider range of stakeholders deprived the RTAB from gaining access to other forms of knowledge particularly those which are unsystematic, un-codified and often localised and implicit. Separating the arenas of debates not only exacerbated the technical-social dualism, it also created obstacles for free flow of knowledge. It shrunk the space for dialogue and collective learning. Drawing on the social learning theory, Huberman (1993) emphasises that shared meaning will develop through processes of social interaction. These processes can facilitate testing and adapting expert-based knowledge in practice through 'tinkering', which bonds explicit and tacit knowledge and contributes to knowledge creation (Hargreaves, 1999).

A key strength of RTABs and a rich source for the development of intellectual capital lie in the diversity of their memberships, and in the fact that RTABs have "brought together parties that otherwise wouldn't have a chance to discuss these issues and formulate a way forward" (interview, 2002). However, NWRTAB remained reluctant to take advantage of this opportunity and continued to see knowledge as a set of data and "relationships among selected variables or facts in isolation or abstracted from their social context" (Innes, 1990:232). By doing so, they limited their chance of being engaged in what Blackler (1995: 1034) calls, "… the process of knowing".

Concluding remarks

In conclusion, four points are worth mentioning. Firstly, teasing out the inadequacies of technical-rational model does not mean dismissing its potential to provide a space, often by default, for long term social learning.

Secondly, it does not lead to an unqualified and uncritical acceptance of deliberative approaches to knowledge production and knowledge transfer. Indeed, post-positivist models have had their own fair share of criticisms on theoretical and practical grounds. The way forward for complex issues such as the management of urban waste where the technical and the social dimensions are intricately intertwined, may lie in a combination of both models as is elaborated by Owens et al (2005) and echoed in the words of an interviewee who suggested that,

> "there is always going to be the need for some technical expertise, but maybe it shouldn't be as 'away behind closed doors' as the RTAB is. May be [what is needed] is a larger group looking at the whole, bringing sustainability issues altogether, and resource use particularly" (interview, 2004)

Thirdly, although the shortcomings of positivist approaches have been repeatedly exposed, it seems that not only they are here to stay, but also their influence may be on the rise, if we happen to agree with Pagden who argues that,

> "As we move into a new century with its own share of conflicts, I sense that the fascination with language and insistence on the unreality of the world that has come to be called Post-modernism is fading. In its place *a new scienticism* is on the rise" (Pagden, 2005:.17, emphasis added).

Fourthly, as regards the interface between evidence and policy, the problem of 'little effect' (Weiss, 1975) which Owens et al (2004) attribute to not just "shortcomings in communication" but also "wilful neglect" of research findings, can also be seen as the manifestation of a lack of appreciation of the ways in which power contextualises this interface and determines the extent to which evidence can influence policy or can change behaviour. As pointed out by Flyvbjerg,

> "Knowledge about the phenomena which decide whether …knowledge gets to count as important is at least as important as that knowledge itself. If you are not knowledgeable about the former, you cannot be effective with the latter" (Flyvbjerg, 2001:142).

The case presented in this paper has shown that relying entirely on the technical rational approach to knowledge production and knowledge transfer help perpetuate the rhetoric that evidence, understood as scientific knowledge, is the only contender for influencing policy.

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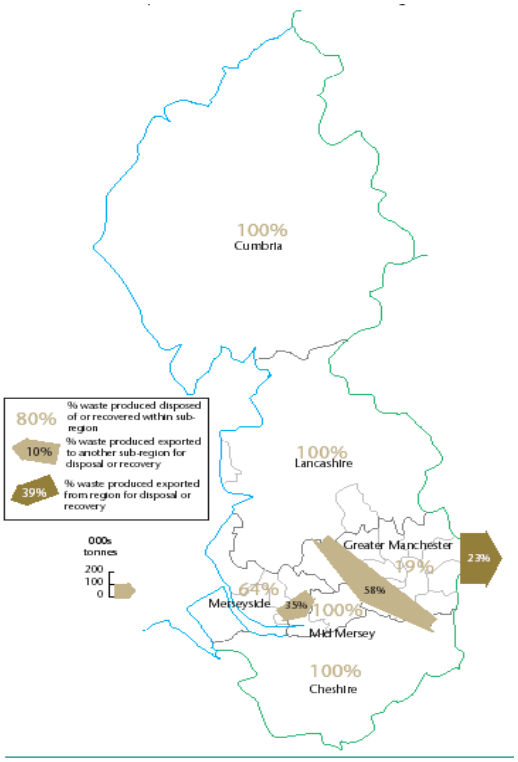

Figure 1: Movement of Urban Waste within the North West, 1998-99
Source: EA, 2000, Figure 2.3