Environmentally Sustainable Construction: knowledge and learning in London planning departments

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Abstract

Environmentally sustainable construction is now recognised as a significant element of the broader sustainable development agenda and planners are being called upon to play a role in delivering more sustainable patterns of construction and development. This puts particular demands on the knowledge resources of planners since knowledge is implicated in the power relations between planners and developers. This paper examines the interrelationship between knowledge of environmentally sustainable construction and practice in planning departments. Drawing on a survey of and interviews with planners in London, it discusses the construction of knowledge within the dynamics of planning organisations and the potential for learning to promote a more sustainable built environment. Wenger's concept of communities of practice frames the analysis, alongside consideration of the translation of knowledge into bureaucratic and usable forms and the role of knowledge brokers in this process.

Keywords: sustainable construction; planning practice; communities of practice; knowledge; knowledge brokers.

The challenge of environmentally sustainable construction

It is increasingly argued that the planning system in the UK has a role to play in delivering sustainable development: "Sustainable development is the core principle underpinning planning" (ODMP, 2004, p. 6). In England, this role is set out in

legislation (Planning and Compulsory Purchase Act, 2004) and policy guidance (Planning Policy Statement 1; ODPM, 2005, hereafter PPS1). However, sustainable development is a complex composite policy goal and, in practice, breaks down into many inter-related but more specific goals. While economic and social dimensions are key elements of this broader goal, much of the drive towards sustainable construction has focused on the environmental impacts of construction processes and the resulting physical development. Hence this paper concentrates on environmentally sustainable construction (ESC), ~~or the promotion of patterns of construction that contribute to the broader sustainable development goal~~. ESC covers resource use and pollution associated with construction, the impacts of intermediate products used in construction, and the implications of dwelling and site design for the environment. Thus an ESC approach can be defined as one that will seek to minimise on-site and off-site adverse environmental impacts of a development project, as well as maximising the potential for occupiers and users of that development to reduce their own adverse environmental impacts over the life of the development.

While there have been flagship ESC projects such as the Swiss Re building in the City of London (www.30stmaryaxe.com) and the BedZed housing development for the Peabody Trust (www.bedzed.org.uk), these tend to be the exception rather than the rule. The challenge remains: how can the lessons of such examples be mainstreamed so as to enhance the sustainability of the built environment? Current government policy in the Britain is seeking to steer the construction industry towards more environmentally sustainable paths and it is worthwhile briefly reviewing this policy in order to establish the nature of the challenge facing the planning system with regard to ESC.

At the national level in Britain, policy responsibility on ESC is split between the Department of Trade and Industry (DTI) and the Department of Communities and Local Government (DCLG). The DTI is coming at this issue from a construction industry perspective and has developed a sector-based strategy on ESC (2001, 2006). Their strategy document is wide-ranging, identifying six areas for improvement (essentially on a voluntary basis), and meshing with the DTI's broader aim of modernising construction. There is also some overlap with the more general conclusions of the Egan Review (2004), which looked at the skills needed for achieving the government's *Sustainable Communities Plan* (ODPM, 2003). The DTI is also sponsoring a micro-generation and low carbon buildings initiative (DTI, 2005). Funding under the Low Carbon Buildings Programme will be available for 6 years from 2006 and will enable a limited number of large scale projects to act as demonstration projects with the aim of building market capacity for ESC within the industry. This British sector-based policy on ESC fits within a European framework encompassing the 2002 Directive on the energy performance of buildings (with its minimum energy efficiency requirements for buildings and binding targets for energy certification on completion, sale or lease; CEC, 2002) and the standardisation of methods for assessing the environmental performance of buildings through life-cycle analysis (CEC, 2004b).

The DCLG focus is on the planning and regulation of new development, seeking to promote ESC as part of an aim to create more sustainable communities and built environments. Although ESC as such does not get a specific mention in PPS1 (ODPM, 2005), there are references to aspects of ESC, such as the promotion of

'resource and energy efficient buildings' (S.21-22), technologies such as combined heat and power schemes (CHP), sustainable urban drainage measures (SUDs), small scale renewable and low carbon energy schemes and the sustainable use of water resources. There is also mention of the need to ensure that developments are 'sustainable, durable and adaptable' (S.36) with the main emphasis on designing for quality, security and accessibility. However the consultation draft of the supplement to PPS1 on climate change (DCLG, 2006a) considerably strengthens the focus on mitigating climate change through planning measures, with particular emphasis on the incorporation of low carbon energy measures within developments.

Encouragement of ESC through planning powers is supported by a combination of regulations, best practice and codes. The Sustainable and Secure Buildings Act 2004 altered the statutory purpose of the Building Regulations (which control the construction methods used in development) to include a number of specific sustainability concerns, including energy efficiency, waste reduction and environmental protection, as well as the general goal of 'facilitating sustainable development' (S.1.1.e). The Regulations have recently been upgraded; with effect from 6th April 2006, all new buildings will have to comply with revised regulations contained in Part L that increase energy efficiency by at least 20%, a cumulative increase of 40% since 2002. The government's draft policy *A Green Future: Towards Zero Carbon Development* (DCLG, 2006b) proposes further phased upgrading of the Regulations, as least for new housing, with a view to ensuring that all new buildings are carbon neutral by 2016.

This approach is supported by the Code for Sustainable Homes (DCLG, 2006c). Originally intended to cover all buildings, this Code is now limited to the residential sector. Rather than requiring certain features of a development, the Code sets performance levels. Buildings are rated at one of six levels from the basic entry level (which still exceeds current energy efficiency requirements by 10%) to the carbon-neutral 'six star' status. Within this system, there is a mix of minimum standards (for energy and water usage, building materials, surface water run-off and waste management) and optional tradeable elements (for pollution, health and well-being and ecology).

Outside the residential sector, the adoption of an ESC approach is recognised by various accreditation schemes, notably the Building Research Establishment's BREEAM award. BREEAM (BRE Environmental Assessment Method) was first launched in 1990. According to BRE, some 600 major office schemes have been assessed since then, but there are versions of the award for different types of buildings. The general method is that BREEAM assesses the performance of a building under: management, energy use, health and well being, pollution, transport, land use, ecology, materials and water. The scores achieved under the different headings are then weighted and aggregated using BRE's Ecopoints system. The use of BREEAM is voluntary and intended to encourage developers as well as purchasers and occupiers to favour ESC options.

This brief review highlights the way that the push towards ESC is to be achieved through a mix of voluntary action by the construction industry, subsidy of specific low carbon energy measures, standardised assessment of building materials, enhanced

regulation of new development, accreditation of good practice and encouragement through the planning system. However, this policy mix still leaves the planning system with an important role to play. Direct regulation is neither comprehensive in its coverage of the different facets of ESC nor, as yet, very ambitious with regard to sustainability goals. While the proposed changes to the Building Regulations raise the bar where new house-building is concerned, elsewhere, the application of the Regulations will fall well short of ESC best practice. Furthermore, even where the Regulations apply, they simply set performance targets (as does BREEAM), leaving ~~constructors~~ builders with a degree of discretion as to how these will be achieved. The government would like to see a clear division of labour between the Building Regulations and the planning system, but, in practice, ESC requires the discussion of different sustainability options at the scale of the development site and the ~~implementation of~~ building ~~scales~~, supported by plan~~ning~~ policies, during development control .

Therefore, the planning system is an important arena for ensuring that ESC methods are adopted and used to shape the future built environment. This means that discussion of ESC and specific development proposals will become implicated in the power play between developers and planners, becoming a potential source of conflict. Through the planning system, there is public sector control over valuable development rights. ESC often involves additional costs and will continue to do so until markets achieve significant economies of scales in new sustainability technologies. ESC also involves change in construction and development routines, which companies may resist due to lack of skills or organisational inertia. Therefore

developers will often oppose ESC unless they are sure there is a market premium to be paid for such buildings.

Planners are placed in the position of using their control over development rights to achieve ESC as a form of planning gain. This, in turn, requires of local planning authorities the will to promote ESC. But even where the will is present, achieving ESC is also a matter of knowledge: knowledge of what ESC comprises, how it can be implemented, and what the consequences would be. The challenge of ESC, therefore, essentially concerns the knowledge resources of local planners. Knowledge about ESC is implicated in the power relations of developers and planners and without such knowledge planners will be in a weaker position when it comes to bargaining with developers for the inclusion of ESC features in new developments. The next section discusses the conceptual relationship between knowledge and planning practice, before going on to report the results of an exploratory study into ESC knowledge and local planning departments in London.

Knowledge, learning and planning departments

Planning theory has been critical of the assumption that planners should be associated with control over knowledge resources, whether of a procedural or substantive kind (Forester, 1989). The association of planners with knowledge exemplified the modernist approach to planning with all its attendant assumptions (Sandercock, 1988). In response, there has been an overwhelming emphasis on elevating the standing of local, lay and experiential knowledges within planning. Planners' control over procedural knowledge has been seen as something that disempowers local

communities and limits their access to decision-making arenas. Uncritical reliance on expert substantive knowledge has also been criticized as a way of justifying particular policies and decisions by removing them from public scrutiny and comment.

Important though this is, it is limiting to see the issue of knowledge and power solely in terms of the relationship between communities and planners. There are other key actors within the urban environment, within the development sector, and planners need resources to engage with these powerful groups. Knowledge can be an important aspect of the relationship between planners and the development sector, just as it is between planners and local communities. Put simply, if there is to be a shift towards more sustainable modes of construction, then planners will need to be knowledgeable in order to promote this shift. Otherwise, if this knowledge is confined to the development industry, the planning system will be able to do little beyond accepting the industry's assurances that they are promoting sustainability. Hence this paper focuses on the way in which knowledge about ESC can become embedded in planning practice, and studies how planners and planning organisations learn.

The category of knowledge is sometimes taken as unproblematic. Knowledge is seen as an accumulation of facts and causal relationships, an object or a thing that can be held, used, and inputted into policy (Busenberg, 2001). This approach is prevalent within policy bureaucracies and encapsulated in the discourse of procedural rationality (Rydin, 2003; Dryzek, 1997). However, sociological studies of science and technology have problematised this view of knowledge showing it to be socially constructed and inherently relational (Collins and Evans, 2002; Latour, 1999; Wynne,

2002). Knowledge is embedded in networks of relationships between actors, in associated organizational practices and processes, and within the hard and soft infrastructure of organisational cultures (Black, Crump and McDonald, 1999). The emphasis in this paper is therefore on processes of learning that involve dynamic relationships between people and organisations, processes during which knowledge claims become recognised and through which knowledge is constructed.

This challenges the common view that the problem of integrating ESC into planning is one of access to and availability of knowledge. In fact, there is a mass of available information and resources about environmentally sustainable construction. For example, the London Sustainable Construction Project's scoping study found 207 websites with information relevant to building a code of practice on sustainable construction (Pank, 2004). The issue is rather how knowledge about ESC is constructed, recognised and embedded in relationships between actors (particularly developers and planners) and how this relates to other dimensions of planning practice. The process at work can be described as the co-construction or co-generation of knowledge (Jasanoff, 1990) because policy networks and the networks generating knowledge claims mutually influence each other. In other words, recognised knowledge frames the policy problem and the possible solutions, while policy dynamics influence what counts as knowledge (Hunt and Shackley, 1999).

Much of the research on technical/scientific knowledge and planning has focused on the emergence and development of policy agendas rather than the shaping of everyday planning practice. With regard to the latter, it is useful to engage with management studies literature on learning, and Wenger's concept of 'communities of practice'

(2000) is particularly relevant here. A community of practice (CoP) is designed to connect knowledge to practice, emphasising how learning occurs in situated contexts. Wenger (1998, p. 45) defines a community of practice in terms of a network created over time by the sustained pursuit of a shared enterprise. The coherence of a CoP is based on the mutual engagement of the members in that joint enterprise, together with a shared 'repertoire' that the community has produced or adopted in the course of its existence and which has become part of its practice, consisting of routines, words, tools, ways of doing, stories, gestures, symbols, genres, actions, concepts (op. cit., p. 72). The key dynamics of the CoP are associated with learning through joint practice and the shaping of actors' identities by the pursuit of competence: Wenger sees socially defined competence developing in the repeated interplay between knowledge and actors' mutual experience. Actors closest to the centre of the CoP have a stronger relationship between their experience and competence; those at the periphery can be drawn further into the community through learning.

At least in Wenger's early exposition of the concept (1998), newcomers to a CoP engage in craft-like learning of practice from more experienced practitioners. They thus develop an identity associated with their learning because they have a stake in their future, a desire to become a skilled practitioner. They seek to belong to 'their' organization and adopt a variety of modes of belonging: engagement involves interaction with others; imagination involves creatively constructing identities (of the practitioner and of others); and alignment involves bringing practices into congruence with each other (Wenger, 2000). All such activities are constitutive of these actors' identities.

The strength of the CoP concept lies in the way that it sees learning and the engagement with knowledge as an ongoing cultural process embedded in everyday practices. It emphasises that learning is 'a fragile, experiential and uncertain process' involving formal and informal practices (Amin and Cohendet, p. 110), 'shared histories of learning' (Wenger, 1998, p. 86) and the 'locally negotiated regime of competence' (ibid. p. 137). As Contu and Willmott emphasise:

> learning occurs in the practice of storytelling through which context-sensitive understandings of the world of work and of working selves, as well as tasks performed, are acquired, shared and elaborated (p. 284)

Within a community, 'it is a demonstrated ability to "read" the local context and act in ways that are recognized and valued by other members of the immediate CoP that is all important' (p. 285).

In the ESC context, a CoP could comprise planning actors working alongside those more directly engaged with the technical details of ESC on the shared enterprise of developing planning practice oriented towards sustainable urban development. However, there are other specific dynamics of knowledge networks that enable CoPs to become effective, that also need to be considered. These include processes of translation and transformation of knowledge and the role played by knowledge brokers.

Translation is important because it enables communicative interaction between members of a network or networks over a knowledge claim. In particular, it enables co-construction both within networks involving heterogeneous actors and at the boundaries between different networks. The process of translating knowledge ensures

that it is understandable in different contexts. But such translation is not neutral; it actively transforms knowledge. From the perspective of policy actors and everyday policy practice, the important transformation is that from expert knowledge to usable or bureaucratic knowledge. Such knowledge enables policy practice to operate on the basis of the newly embedded knowledge.

Usable knowledge is a category coined by Haas (2004) to denote knowledge that is considered accurate and therefore a warrantable knowledge claim, but is also attuned to the needs of the policy world. This means that it fits with the political timetable in terms of being available at politically determined deadlines. But it is also characterised as credible, salient and legitimate by policy makers, and may therefore filter out other apparently accurate knowledge claims. Clark and Majone (1985) also describe usable knowledge in terms of its legitimacy, but add that it also needs to be adequate (to the requirements of policy makers), effective (in policy terms) and fitting with the prevailing political values. This means that knowledge may not be usable if it does not meet these criteria from the perspective of the practitioner. Transformation into usable knowledge seeks to take account of the practitioner's perspective while retaining the specific characteristics of knowledge as a set of claims to represent reality that can be tested.

Hunt and Shackley's concept of 'bureaucratic knowledge' and its relationship to fiduciary and academic knowledge is also helpful here (1999). Bureaucratic knowledge is created by public policy actors and is a mix of processual and contextual knowledge. It is shaped by overarching bureaucratic criteria: orderly and due process; organisational convenience; the allocation of duties and responsibilities; values of

open and transparent procedures; and, increasingly, commitment to stakeholder participation. Under the influence of such cultural norms, bureaucracies 'reproduce, translate and synthesise knowledge from external sources, creating new forms of knowledge that are strongly heuristic' (p. 144). That is, they are fit for purpose as shaped by perceptions of political feasibility and the structures of institutional processes. The creation of bureaucratic knowledge involves filtering and there are often strong path dependencies in recognising knowledge. Hunt and Shackley identify existing practice and context, insider knowledge, elite stakeholder knowledge and elite fiduciary knowledge (i.e. knowledge for regulation) as important influences. The essence of bureaucratic knowledge, though, is that it is a way of 'simplifying complexity to produce order and enable management' (p. 144). As such, the criteria of bureaucratic knowledge are: useability, doability, reliability and status.

Translation into usable/bureaucratic knowledge forms is a demanding process. It takes time and requires relationships between different actors to shift, to be renegotiated and invested with new meaning (p. 149). As Fox points out, 'network learning is not automatic because it requires actors to exercise force upon themselves to change practices' (2000 p. 860). What is involved here is an alignment of knowledge produced in other contexts with prevailing policy practice. Following Dekker and Hansén, Nilsson identifies three aspects of learning (2005b):

- knowledge acquisition involving assimilation of experience as well as new ideas and concepts from other actors;
- lesson-drawing concerning the interpretation of knowledge, a new understanding of the cause-effect relations of policy problems and methods of resolving them,

and the creation of lessons in relation to an actors' own goals, strategies and

activities

- institutionalisation or the incorporation into procedures, rules, policies and other

  tangible outputs for implementation.

In all these aspects knowledge needs to be translated into usable formats to be 'learnt'

by policy practitioners, i.e. 'assimilated', 'interpreted' and 'incorporated'.

Another aspect of the translation involved in creating usable or bureaucratic

knowledge is the interaction between tacit and explicit, formal and informal forms of

knowledge. Nonaka has shown that these interactions are an essential element of the

way that knowledge fuels innovation by creating a 'knowledge spiral' (1994, p. 19).

In this spiral, socialisation, externalisation, internalisation and combination occur,

each describing a different transformation between explicit and tacit forms of

knowledge. This model can be applied to the translation of academic or fiduciary ESC

knowledge into usable/bureaucratic knowledge for the purpose of changing planning

practice. For example, generating a ESC best practice example involves, first of all,

creating the construct of best practice through the combination of explicit knowledge.

In its original location it also involves the externalisation of existing tacit knowledge.

Embedding that best practice knowledge in a new location then involves actors

internalising knowledge so that explicit knowledge is rendered tacit. Regular use of

that knowledge as a reference point then ensures that it is socialized. The complexity

of these stages suggests why the transfer of best practice is not as straightforward as

exponents sometimes suggest.

Finally, it is important to acknowledge that all these processes benefit from the existence of specific knowledge workers. Such workers are variously termed 'knowledge entrepreneurs', 'brokers', 'managers' or 'spanners'. The term 'knowledge entrepreneur' is closely related to that of 'policy entrepreneur' or 'policy champion' (Bartlett and Dibden, 2002). Roberts and King (1991, p. 149) state that the 'innovative function of the entrepreneur provides a learning and adaptive capacity for the policy system'. 'Knowledge brokers' or 'managers' (Stone and Maxwell, 2005) are more specifically concerned with the handling and circulation of knowledge within circumscribed contexts, while 'knowledge spanners' range across different networks, taking knowledge with them and transforming it in the process. The importance of these individuals lies in their status as trusted sources of knowledge, information and guidance. This favours transmission, since knowledge is seen as coming from someone whom an actor knows and who is considered reliable and trustworthy.

The paper now explores the empirical work of London planning departments engaging with ESC knowledge, in terms of the conceptual framework outlined above.

Planning and environmentally sustainable construction in London: introduction and methodology

London provides a strong case study for the ESC agenda. The Mayor of London (who heads up the Greater London Authority or GLA) established a London Sustainable Development Commission in 2002 to advise him on sustainability issues. One of the first initiatives they undertook was a London Sustainable Construction Project,

designed to prioritise this issue. Under the auspices of the London Renewables
Steering Group, a renewable energy toolkit was developed to guide and train
developers, planners and consultants on the incorporation of renewable energy
infrastructure into developments (2004). The London Energy Partnership now takes
this work forward.

The Mayor's spatial development strategy *The London Plan* (GLA, 2004) is based on
sustainable development as an "overarching policy" and sets out general sustainability
criteria in Policy 2A.1 and specific support for ESC in Policy 4B.6. This applies
directly to the strategic applications that the Mayor determines; it also encourages
borough councils (the lower tier of local government in London) to adopt similar
policies in their own planning documents. Additional guidance to London developers
and planners has been provided in the form of *Sustainable Design and Construction
Supplementary Planning Guidance*, currently in draft form (GLA, 2005). Extending
to some 81 pages, the Supplementary Planning Guidance covers issues such as: re-use
of land and buildings, energy, material, and water; local natural systems; pollution,
flooding, microclimate effects and recycling. A checklist, for development control
purposes, is currently being developed to aid the implementation of the supplementary
planning guidance at the borough level (see below). The policies in the London Plan
are also undergoing revision with a set of amendments specifically aimed at
strengthening the Plan in relation to climate change; the revisions are expected to go
to a public examination in May 2007.

There are specific difficulties in implementing the London-wide policies developed
by the Mayor and the GLA, since the Mayor only has control over decisions about

planning permission for strategic (i.e. larger and more significant) developments. In addition, to date, the Mayor only has the ability to refuse, not to grant, permission. This has resulted in the rejection of developments exhibiting many sustainability features at the borough level. However, the Mayor has successfully sought enhanced planning powers to be able to grant permission on strategic developments. Nevertheless, most planning decisions are and will continue to be, taken at the borough level. The engagement of local planners at this level with ESC knowledge is therefore important in shaping planning practice in the city.

Following discussions with the project steering committee, comprised of London stakeholders, and a shadowing exercise within one local authority, an online questionnaire was devised, targeted at planners in London boroughs. The design of the survey was based on a literature review on knowledge management, and was piloted and revised over several drafts. All thirty-three London local planning authorities were contacted via the most senior planning officer and twenty-four departmental heads agreed to distribute the online survey by way of an internal email with an embedded web link to the questionnaire site; the link managed by the BIOS system at Bristol University. The survey was launched in April 2005 and was live for one month. The survey closed with a 54% response rate (81 respondents from a maximum of 150[i]); 54% of respondents identified themselves as working in development control, 22% in strategic planning. A degree of respondent bias may be expected with this kind of sampling. However, since this bias is likely to result from those with an interest in ESC replying, the picture given below is more likely to be an underestimate than an overestimate of the problematic situation regarding planners and ESC knowledge. Eight follow-up interviews with nine planners took place

immediately afterwards. A further fifteen interviews with 22 planners were undertaken one year later to update the research, confirming which patterns were persisting and exploring issues arising from the survey analysis. In addition, three meetings with WWF-UK were held to discuss the emerging London development control checklist in relation to ESC.

When asked in general terms, survey participants agreed[ii] that their local planning authorities researched effectively (69%) and used (79%) new knowledge, and also that their local planning authorities were building on current planning knowledge (72% agreed) and using past learning (60% agreed). Both the survey and interviews confirmed that most planning authorities provided opportunities to learn about new areas of planning practice and 94% of survey respondents agreed that they shared knowledge and information with their colleagues. This was a rather positive picture. However, when asked specifically about ESC knowledge, the answers were less encouraging. Only 5% of respondents felt very knowledgeable about the subject; 19% said they were 'not at all' knowledgeable. 27% of all survey participants stated that they were 'not at all' able to advise applicants on ESC and 35% did not know whether they had any access to ESC experts, either inside or outside of their local planning authority. Only half of the survey respondents said they had access to ESC best practice and a substantial 36% did not know if they had any such access. This particularly affected those in development control. Such staff were less likely to regard their department as up-to-date on ESC expertise; 32% said their department was below average or not at all up-to-date, compared to 22% for strategic planning. 22% said they did not have access to ESC sustainable construction best practice, twice as many as the number of strategic planners who offered a similar response.   41% of

development control respondents did not know if they had access to an expert to attend meetings with applicants, while 36% of development control planners replied that they did not have access to such an expert. The rest of the paper analyses the results of the survey and interviews to understand the dynamics behind these patterns and to understand how knowledge about ESC can become better embedded in planning practice.

Planning departments as communities of practice

According to Wenger's situated learning theory, knowledge becomes embedded through learning by doing; a fact noted by one of our interviewees who actually used this very phrase. But for a CoP to exist, this has to occur in the context of a shared enterprise, a common repertoire in which it is possible for individuals to identify with more competent practice. Interactions within the network of the CoP are central. Our research suggests that many of these features are missing where ESC knowledge is concerned. This is not to suggest that there is no learning occurring within planning departments. Indeed London local planning authorities do hold learning sessions, including sessions on ESC; only 9% of respondents said their authority was unlikely to do so and over 90% said there was a budget for learning and training. There are other features of everyday life in planning departments that inhibit learning about ESC.

[insert Figure 1 near here]

The key finding in this respect is that there is a lack of discussion within planners'

networks about ESC (see Figure 1). 58% of respondents to the survey answered that

they 'never' or 'rarely' discuss ESC with others inside their local authority and 65%

'never' or 'rarely' discuss such information and practices with others outside of their

local authority; figures for development control planners were slightly higher where

internal discussion was concerned. The knowledge management literature sees

discussion within local authorities, between local authorities and with outside

organisations on knowledge as an important element in learning (Roper and Pettit,

2002; Brunsson, 2002). It creates the CoP. Stone (2000) argues that organisations

need an active rather than passive approach to information, but points out that it is

often a resource-intensive exercise to marry the available external expertise with

internal needs. For this reason, the creation of networks of discussion is often resisted

by the organisation and individual actors, or presented as unnecessary (Dolowitz,

2003; Busenberg, 2001).

Our research identified organisational features that constrain both internal and

external contacts from discussing ESC. Internal discussion may be limited by the

perception of a lack of incentives to take up such training and learning opportunities.

Overall, about a half of all respondents agreed that there were incentives to learn at

work but over a quarter said that there were not. While development control planners

were most likely to see opportunities to learn about new areas of planning practice

(57% agreed on this), only 48% agreed there were incentives to learn compared to

56% for the strategic planners; (the 'other' category saw the fewest incentives). And,

while central government recommends using external expertise when local authorities

are confronted with a lack of in-house expertise (ODPM, 2001), our interviews suggested that a number of factors inhibited such external consultation:

- departmental pride – the view that the local authority should be competent to solve its own problems;

- competition with other local governments - not wishing to pass on knowledge and increase the standing of competing planning departments; and

- lack of time and the generalized nature of advice often given by external consultants.

In line with the CoP concept, the interviews emphasised that the pattern of everyday practice and its organisational context underpinned these attitudes.

In particular, the research showed how the rule-bound and routinised nature of much of the work, the intense time pressures that planners are under, and the departmentalisation of local authorities all inhibit learning about a new issue such as ESC. 62% of survey participants agreed that their work was rule-bound with 43% commenting it was sometimes routine on a daily basis and 25% that it was often or always routine. In this area, there is a clear difference between development control and strategic planning staff. Development control planners are more likely to see their work as rule-bound (82% compared to 33% of strategic planners) and routinised (36% compared to 11%). The rule-bound nature of much planning work was not necessarily a problem for the planners themselves – the survey indicated that the majority of respondents felt valued, considered their role to be of medium-high responsibility and agreed that they had autonomy in their work – but this pattern of work influences how planners respond to new knowledge. Huysman (1999) argues that path dependencies build up in such circumstances and this can inhibit reflection and the response to new

knowledge sources. Of the 50% who responded that they had access to best practice on ESC, 55% use such knowledge 'often' or 'whenever possible', but over a third (37%) only use it when they are obliged to. Only one respondent used it 'all the time'. One of our interviewees highlighted that just remembering to think about ESC among other planning factors was often difficult.

The time pressures on planners have an overwhelming influence on everyday planning practice. The framework established by the Local Government Act 1999 requires local authority compliance with government-imposed best value targets. In the case of planning, one of the most prominent targets is the timeframe of eight weeks for deciding planning applications. Rankings are prepared and published by central government based on the speed of decision-making. Local planning authorities are therefore under considerable pressure to increase the percentage of applications decided within the eight-week time frame. 70% of individuals surveyed agreed that they were pressured by the time targets; 43% thought that they still had time for reflection on their work but 37% disagreed. This regime, of course, mainly affects development control planners. Compared to the strategic planners, they felt relatively more time pressured (82% compared to 44%) and had less time for reflection (32% agreed they had such time compared to 56% for the strategic planners).

In such a context, any knowledge recognised as appropriate to everyday practice will have to be seen as helping planners to meet these targets (Martin, 1999; Busenberg, 2003) or, at least, not undermining their ability to do so. There is also the prospect that, provided targets are met, local planning authorities will not perceive a need to take decisions differently. Stone (2000) argues that new knowledge is often only

perceived as necessary when existing procedures are failing to fulfil set goals and targets; if lack of sustainable outcomes is a subsidiary goal, then there is no impetus to use ESC knowledge.

Another important aspect of the context in planning departments repeatedly mentioned by interviewees, is the highly departmentalised nature of local authorities (see Figure 2). 64% of all survey respondents said that they operate in very departmentalised authorities, that were also 'somewhat' (62%) or 'very' (38%) hierarchical. There is an inverse relationship between perceptions of the local authority as departmentalised and the tendency to discuss ESC best practice with others inside and outside the local authority. Of those who saw their authority as 'very departmentalised', 63% rarely or never engaged in such discussions internally, a figure that rises to 71% externally. The comparable figures for those who saw their authority as 'somewhat departmentalised' (while still absolutely high) were relatively lower at 48% and 55%. A small group (10%) within the 'very' departmentalised camp had 'frequent' resort to external discussions, while none in this camp had 'frequent' internal discussions; it is tempting to suggest that these respondents were responding to the lack of internal discussion.

[insert Figure 2 near here]

Very departmentalised respondents were also less likely to have access to experts for meeting with applicants; 23% compared to 45%. It is clear that access to such experts boosted planners' confidence in their ability to advise applicants on ESC; 32% of those who knew they had such access felt they were 'well' or 'very well' able to

advise applicants, compared to 4% of those without such access or 7% of those who did not know if they had such access. While not all those in very departmentalised contexts felt isolated from other departments, there was a group of 37% who did (compared to 7% if those in 'somewhat' departmentalised settings). And it seems that such a sense of departmental isolation is related to the routinised nature of daily work. 45% of those who responded that their work was always or often routine, agreed that they were isolated from other departments, while 62% of those with 'rarely' or 'never' routinised work disagreed with this statement.

The knowledge literature is highly critical of departmentalised and hierarchical organisational structures (Blackler, Crump and McDonald, 1999; Easterby-Smith, 1997). Such organisations are identified with a resistance to change and defensive mindsets, which protect and perpetuate 'business as usual' (Argyris, 2004). The constraints on the spread of knowledge across departmental boundaries can be strong (Roper and Pettit, 2002). Bounded roles, where workers execute the tasks assigned to them, are a typical outcome in such organisations and these are seen as working against learning and the application of new knowledge. Where an individual does acquire new knowledge and learns to apply it in her everyday practice, she may hoard such knowledge rather than enabling others to access it. One interviewee commented that departmental boundaries can confuse common effort and, by implication, the pursuit of the common enterprise central to a CoP. Several interviewees suggested that the departmental boundary between planning and building control (responsible for Building Regulations) is especially important where ESC is concerned. In some cases links are explicitly facilitated by a dedicated officer but in others this divide was cited as a failing and even a source of conflict.

Thus the findings suggest that, while planning departments may encourage learning in general, it does not seem that CoPs are emerging around ESC. The organisational constraints associated with routinised and rule-bound work, time pressures and departmentalisation inhibit the internal and external discussions around such knowledge that would be needed to embed it into everyday practice. Planners' identities are associated with this organisational culture and not primarily with developing new competences in relation to ESC. However, the interviews revealed that there was interest in this issue and a sense of needing to know more. Although learning within a CoP-type network was limited, there was a search for a common repertoire.

The need for usable knowledge

The development of a common repertoire for learning is closely allied to the creation of usable or bureaucratic knowledge, appropriate for everyday practice. The planners interviewed and surveyed stated that they were in need of this. Due to the lack of organisational interactions concerning learning, planners tended to engage in learning as an individual activity and to use Internet search engines. The websites most commonly cited in the survey were: the Building Research Establishment (an expert agency), the Department of Environment, Food and Rural Affairs (the ministry which hosts the Government's sustainable development responsibilities) and the London Development Agency (a functional body of the Greater London Authority which has led on renewable energy work as part of the London Energy Partnership). But this

often produced information that was not considered appropriate for the specific needs of the planner.

The general complaint of planners was that much available information was too technical, too long, too tedious to review, too generalized and too disjointed from other existing knowledge on ESC. In interviews, planners complained that there was not enough translation of information to ensure that it fits with everyday planning work. Development control officers confessed to often not reading the longer policy documentation, including best practice guidance, produced by the DCLG, LDA, RTPI and other planning organizations. In addition to time constraints, the reasons given included: the number of such documents, the density of information contained therein, the use of jargon and the lack of connection between documents. In short, these documents were not perceived as user-friendly or appropriate to planning practice; they were not providing usable knowledge.

The same problem arose with local authority training sessions. Interviewees commented that, in such sessions, little of the information presented translated into applicable knowledge. Much was too general for the specific work-related needs of planners. Sustainable drainage systems (SUDs) were mentioned as a topic of potential interest to development control officers where the presentation provided could not be applied directly to their evaluation of planning applications. As a result there was a tendency to delegate responsibility for expert assessment, either to the Greater London Authority itself where major development schemes fell within its remit or to the external consultants hired by developers. The latter does not provide a strong basis for the planners to negotiate sustainability gains with developers,

The current 'solution' that is being adopted is the use of green building guides, supplementary planning guidance (SPG) and increasingly development control checklists to translate ESC knowledge into a usable form, authoritative in terms of accurate information but appropriate in terms of the time-pressures on planners. During our project, we identified 12 of the 33 London planning authorities as having such as checklist or equivalent; 9 were in advanced stages of working towards such forms of usable knowledge while another 7 were in the initial stages. Action is also occurring at the metro-level with the GLA seeking to ease the implementation of their *Sustainable Design And Construction* SPG through the creation of an interactive checklist to planners and developers. This checklist is currently being developed by the Building Research Establishment and the environmental NGO, WWF-UK.

Such a checklist on ESC for development control is seen as appropriate because it reduces complex knowledge to a clear and time-efficient format that prioritises the information needed for the task at hand. Time-efficiency was particularly emphasised in interviews; as one development control planner said, to be effective the checklist needs to be: "brief and to the point in how it gets the information across". What a checklist does not do is provide economic knowledge regarding ESC. The cost implications remain in the domain of the developer and this can inhibit negotiation even when the technical information is provided in the bureaucratic form of a checklist. There is also a tension between those who favour a pan-London (or even national) checklist and those who want one contextualised to their local conditions. The former is seen as setting a level playing field for developers and providing clarity

and certainty – "uncertainty is a killer for [developers]"; the latter may be more finely tuned to local planning practice needs.

But such knowledge forms must do more than just simplify. They also need to be salient and legitimate. For this to be the case, our interviews highlighted that two prerequisites have to be in place. First, there needs to be political support (usually expressed through local politicians, the councillors) and second, there needs to be a link to the statutory basis for planning decision making. In the interviews, concern was repeatedly expressed that a decision based on the individual planner's knowledge of ESC methods might not be robust in the face of an appeal by the developers. The transparency of the link between a statutory plan and the ability to require changes to a development was seen as essential. Otherwise the planners would not feel confident enough to negotiate on or reject an application. Clear links with statutory Building Regulations are also essential.

The role of knowledge workers

The literature emphasises that a key element in a dynamic set of relationships oriented towards embedding knowledge is the presence of a knowledge worker. Our research reinforced this point. Some local authorities are creating a knowledge node or knowledge champion within the planning department or the local authority more broadly (Bartlett and Dibden, 2002). Such a sustainability officer may research and consult as required for others, and advise on policy development or planning applications. They can act as a link between departments and may provide essential knowledge of where to go for advice in addition to substantive information on ESC.

This procedural knowledge can be particularly important in the context of a fairly mobile workforce. The turnover in, and lack of experience of, the planning workforce has been a particular concern in London (Tim Edmundson Planning Research, 2004). In the survey, only 21% of all the respondents had worked in their local authorities for less than one year although respondent bias may underestimate this figure. However, 32% of all respondents expected to leave their positions within one year and a substantial 62% expected to leave their local authority planning position within five years. As might be expected, work experience brings benefits in terms of knowledge and learning. Of those with less than 5 years' experience, over half do not know if they have access to ESC best practice; for those with more experience, the figure is 23%. The most experienced planners (with 10 or more years experience) are also more likely to engage in discussion inside and outside the local authority: 48% of these experienced planners 'sometimes' or 'frequently' engaged in such discussion inside their local authority and 42% outside, compared to 38% and 30% respectively for less experienced staff. New staff with less that one year's experience rely heavily on formal settings for such discussions compared to their more experienced colleagues. Knowledge workers offer not just substantive knowledge about ESC but also offer procedural and contact knowledge to younger and incoming workers.

The danger of relying on knowledge brokers is that it can limit learning for others. In a sense, these sustainability officers with their in-house expertise create an internal knowledge market. Davenport and Prusak (1998) see knowledge markets as the operation of knowledge sellers, brokers and buyers who interact within organizations. Some actors within these markets may hoard rather than share knowledge if it is in

their interest to introduce knowledge scarcities and therefore increase their personal value. Bartlett and Dibden (2002) argue that any such champion needs secondary champions to disseminate the knowledge. While participants in the survey and interviews never commented on knowledge hoarding, planners within local authorities with sustainability officers overwhelmingly relied on these individuals to advise on ESC and subsequently engaged in limited learning themselves. Such sustainability officers were respected and even deferred to in respect of their specialized expertise. This may have long-term impacts on the embedding of sustainable knowledge within planning practice. The key factor is the extent to which the knowledge worker's impact on facilitating networks and links for planners outweighs any monopoly over substantive knowledge that they may exercise.

In the London context, there are calls for the Greater London Authority to play a role as a metro-level knowledge brokers. Several of our interviewees expressed this hope, seeing the GLA as more likely to have the necessary expertise, resources and contacts, plus the support of their statutory planning role and the London Plan itself. Some knowledge brokers we interviewed themselves suggested this, noting that they had some concerns over their ability to handle the demands of brokering ESC knowledge.

Conclusions

Current policy regarding ESC places the planning system in a key position of negotiating with developers on the inclusion of construction and design features in their development proposals that will contribute to sustainable development. Since

this knowledge will influence the power relations between planners and developers, and thus the extent to which ESC features are included in new developments, and given that there are also likely to be economic and institutional barriers to their incorporation by developers and construction companies themselves, this places a premium on planners' knowledge of ESC,.

The review of the theoretical literature highlighted that consideration of planners' ESC knowledge was not a matter of filling a knowledge gap or providing more training or knowledge resources for planners. Rather, embedding ESC knowledge in planning practice would require discussion and debate between actors, possibly taking the form of a community of practice in which a common purpose of pursuing ESC would generate dialogue between actors, shaping understandings and promoting learning while at the same time bringing actors' identities into line with the pursuit of ESC. The review also highlighted the importance of translating knowledge into forms that are congruent with planning practice and of identifying knowledge brokers who could manage the networks developing around ESC knowledge.

 The research presented here suggests that, at least in London at the borough-level, there is limited evidence for a CoP developing in local planning authorities around ESC knowledge, with a view to raising planners' competence regarding this issue. Time pressures, the rule-bound nature of much planning work and departmentalism all inhibit this. This links into one limitation of the CoP concept that, because of their emphasis on belonging and alignment, CoPs are most conducive to enrolling actors in established ways of doing things rather than promoting innovation and thereby changing practices. Indeed Wenger himself, while wishing to emphasise the positive

dimensions of learning through CoPs, has said that 'They are the cradles of the human spirit but they can also be its cages' (Wenger, 2000, p. 230).

However, we have found considerable effort going into an engagement with ESC knowledge through the creation of usable knowledge in the form of Supplementary Planning Guidance and checklists. If the increasingly popular checklists are to be effective, it seems that they need not only to simplify a complex knowledge field but also to emphasise links to statutory planning documents and legitimate bases of planning decisions. Political support is also important; indeed, in its absence, ESC is unlikely to be prioritised in planning decisions. However, recent government policy statements on ESC may foster such prioritisation and Bartlett and Dibden (2002) have also pointed to this potential role of local politicians as policy champions. It is interesting in our survey that while over a third of strategic planners saw local politicians as often or very interested in ESC and planning, only 18% of development control planners did.

Investment in knowledge workers to promote ESC in some local authorities also needs to be considered. Such brokers can be important in disseminating substantive knowledge on ESC but the research has pointed to their equivalent importance in terms of procedural knowledge. They can help generate links and contacts within and beyond the local authority, creating the networks that currently seem to be missing. In London, with its young and mobile workforce, this can be a particularly important role. However, many local authorities are now looking to the GLA to take on some of the burden of knowledge brokering.

Thus, while the evidence for ESC knowledge being embedded in planning practice at the current time is limited, there are prospects for this situation to change with the generation of time-efficient, salient and legitimate forms of usable knowledge and the support of local politicians and dedicated knowledge brokers. This will be important if the development industry is to be pressured into making the necessary changes to deliver ESC, thus moving away from an overly voluntary approach, which leaves much of the power with the development sector and may not produce change sufficiently quickly.

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[i] The response rate on web-based surveys in acknowledged usually to be lower than that for postal surveys, but this is usually compensated for by more complete responses (Cole, 2005; Tress et al., 2005). Tress et al. (op. cit.) cites response rates of 7-44% and a scan of other recently published web-based surveys of professionals (the target group) found examples of response rates of 36% (Khan et al., 2005) and 45% (Parker and Skitmore, 2005), together with examples of freely solicited survey responses, where it was not possible to calculate a response rate (De Graft Johnson et al., 2005; Wheaton et al., 2006). The response rate of this survey, therefore, compares favourably.

ii The survey used a Lickert Scale ranging from strongly agreed to strongly disagreed; when a figure is reported here for the percentage of respondents agreeing (or disagreeing) this includes those who answered 'agreed' and 'strongly agreed' (or the equivalents for disagreed).