

Surfing the Landscape of Barriers and Incentives to Sustainability Assessment in an Urban Development Context

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ABSTRACT

Assessment of urban sustainability can be considered as a means to an end as it is often intended to guide decision-making in a way that contributes to sustainable urban development. The contribution of assessment mechanisms towards the achievement of this goal depends to a large extent on the level of use and adoption of sustainability assessment tools amongst the diversity of users. Since the development of a Sustainable Development Strategy in 1998, the UK Government has given sustainable development prominence on the policy agenda, with similar emphasis being reflected at EU legislation level. Investigation of the barriers and incentives to sustainability assessment can supplement this increasing prominence of sustainability in decision-making processes and the equally increasing need for sustainability assessment. A review of the literature on the subject suggests that although much has been written on barriers and incentives to sustainability, very little work has been done on factors that hinder or encourage uptake of sustainability assessment tools. Against this background, the aim of this paper is to investigate and identify the barriers and incentives to sustainability assessment and the adoption of assessment tools. This should provide a starting point for assessing the potential impact of various approaches and incentives to overcome the barriers to sustainability assessment. Four broad sets of barriers and incentives are identified as perceptual, institutional; economic; and technological factors. The paper further discusses some of the enablers associated with the various policies and legislative instruments at the political hierarchies of: the EU; the UK (including the devolved governments); and local government levels. The paper concludes by suggesting that the identified barriers and incentives should be given due consideration during the development of any sustainability assessment tool.

Keywords: Barriers, incentives, sustainability assessment

1. Introduction

At the heart of the quest for sustainable urban development is the need for measurement, assessment and monitoring systems that ensure development decisions are informed by appropriate tools and metrics. Numerous mechanisms already exist for assessing the sustainability of different aspects of the built urban environment. The contribution of these assessment mechanisms towards sustainable development is influenced by the degree of utilisation of assessment tools. Investigation of the factors that encourage or hinder sustainability assessment and the adoption of tools can also supplement the increasing prominence of sustainability in the planning process. Against this background, this paper aims to investigate and identify the main barriers and incentives to sustainability assessment and the adoption of assessment tools. This is intended to provide a starting point for assessing the potential impact of various approaches and incentives to overcome the barriers to sustainability assessment. The paper comprises four key parts: the first is a synoptic introductory note on sustainable development; the second discusses the perceived barriers to sustainability assessment, grouped under the four themes of perceptual, institutional, economic, and technological factors; the third discusses incentives arising from EU and UK (including the devolved administrative) policy and legislative levels as they relate to the use of sustainability assessment tools; and the fourth is the conclusion that emphasises the need to tap into the identified barriers and incentives in order to inform developers of future sustainability assessment tools.

2. The challenge of sustainability and its assessment

It has almost become customary for many scholars on sustainable development to start with the WCED report of 1987 that envisions sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Since the publication of this report, more than seventy definitions of sustainable development have been put forward and used or interpreted by different entities to suit their own needs (Lanston and Ding, 2001). This is largely because development is a value word, embodied in personal ideals, aspiration and conceptions of what constitutes good for society (Moobela, et al, 2006). However, a number of themes common to all definitions of sustainable development have emerged over the years, such as: a change in the quality of growth (Schaller, 1989); the conservation and minimisation of the depletion of non-renewable resources (Sayer and Campbell, 2003); and a merging of economic decisions with those of the environment (WCED, 1987).

There are a number of challenges that practitioners and policy-makers face in the quest for sustainable development, particularly within the urban context. These mainly revolve around the multidimensional nature of the concept. Because of their importance as places to live and work, urban areas around the world are under increasing pressure from many sources, including rapid population growth, shortage of decent housing, clean water, traffic congestion, depletion of the green belt, poverty, pollution, crime and other social vices (Carley, et al, 2001). The sheer volume of these issues, the multiplicity of stakeholders and their varying values, and

the diversity of viewpoints all contribute towards making urban sustainability and its assessment an intellectually challenging task. The issues that work together to divert the urban environment from its sustainable self-organising state are a subject of complex processes that are of a multidisciplinary nature (Moobela, et al, 2006).

3. General barriers and incentives to sustainability assessment

In the pursuit of sustainable urban development, it is important to track the factors that inhibit the adoption and use of sustainability assessment tools. Available literature on the subject seems to focus on barriers to sustainability in general without reference to assessment and adoption of tools. This paper attempts to focus on the latter by considering the limited available evidence. Most analytical frameworks adopt approaches that examine sustainability at three levels: individuals; organisations; and culture or system in which the organisation is embedded (Weiss, 1972; Robinson, 1993; Moore, 1994). Along these lines, barriers in this paper have been classified into four categories: perceptual/behavioural; institutional; economic; and technological factors associated with the tools. This categorisation framework is in perfect tune with those found in most literature (Castells, 1983; Moore, 1994). The approach taken in this paper is that each category of barriers can be mitigated by a corresponding set of incentives. Just as barriers to change exist, so too do conditions that facilitate change (Moore, 1994). The incentives (apart from the policy-related ones) are therefore discussed alongside each of the identified and associated barriers. Figure 1 below pools together a taxonomy of all the four types of barriers to sustainability assessment.

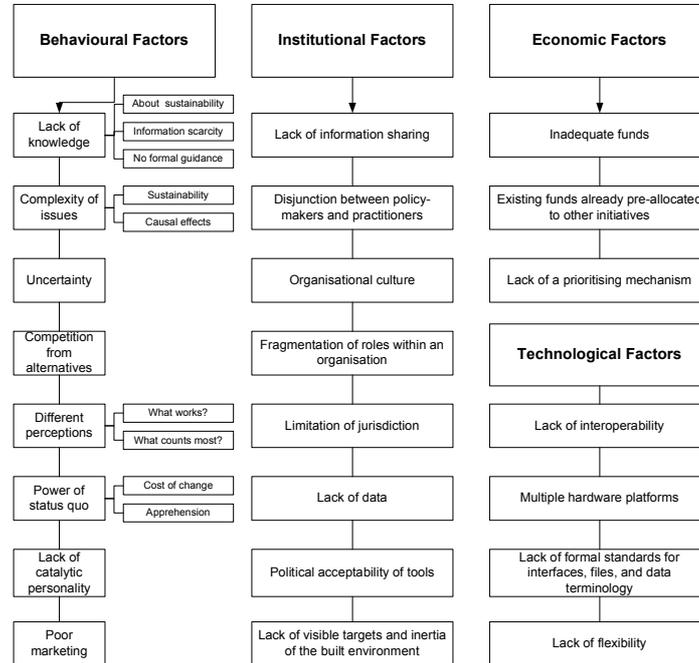


Figure 1: Taxonomy of barriers to sustainability assessment

The above barriers and incentives to the adoption and use of sustainability assessment tools are heavily interrelated. The discussion below aims to put them into perspective.

3.1 Perceptual and behavioural factors

The barriers that fall under this category are many and relate more to individuals and groups, such as lack of knowledge and understanding about the issues, apprehension, inertia of change and uncertainty.

3.1.1 Lack of knowledge and understanding

Lack of knowledge about and understanding of sustainability and the assessment tools within decision-making organisations is an important barrier to the adoption and use of such tools. In some instances, users are unaware of the full implications of their inability to use sustainability assessment tools (EU, 2005). Lack of information about available tools can also lead to non-usage of the tools. This barrier can manifest itself in a variety of ways, such as in relation to sustainable development, best practice and new tools. The sheer plethora of definitions of sustainability gives rise to debate and division, even amongst those who claim to champion sustainability principles, about exactly what should be achieved and how (Donovan, et al, 2005). Moreover, sustainability is an exceptionally difficult concept to define precisely. While the Brundtlandt definition is a good starting point, it is said to be far too general to be practicable. Its very generality has probably been the reason for its wide acceptance (Bebbington and Gray, 1996).

The lack of knowledge about and understanding of sustainability is compounded by the inherent complexity of the subject matter. An issue that attracts many cause and effect factors often becomes very difficult to understand and therefore difficult to address in terms of decision-making (Van Rees, 1991). If a sustainability assessment issue is complex, users will tend to avoid dealing with it, due to a lack of technical competence within the organisation. One can think of complexity as either: multiple causes with a single effect, such as in the many factors that contribute to global warming; or single cause with multiple effects, as is the case with the many consequences of using CFCs such as stratospheric ozone depletion, and enhanced green-house effect (Rosell and Furth, 2006).

Related to the issue of information sharing is the problem of lack of data to feed into specific sustainability assessment tools. Tool users will tend to select those sustainability assessment tools for which data is accessible. In the absence of this, sustainability assessment tools will be shunned even if they appeared attractive in the light of the organisation's sustainability aims and objectives. This increases the difficulty in differentiating between good performance and bad performance in terms of sustainability (Davis Langdon Consulting, 2003).

3.1.2 Uncertainty and power of the status quo

One of the undesirable consequences of complexity is that it breeds uncertainty. When there is uncertainty about how to deal with an issue, the standard practice is often to accept the status quo (Rees, 1994), or to move ahead at a very slow pace taking only small actions. In such cases, a high appetite for maintenance of the status quo takes precedence over rational judgement. When two interests compete directly, those of local concern and immediate results win more often than not. As certain tools become assimilated into the operations of organisations overtime, the users of the tools tend to become so complacent that any new ideas are received with apprehension. Thus, the inertia to embrace new ideas and the acceptance of the status quo become a barrier to the adoption and use of new tools that might be based on, for example, holistic perspectives rather than the much simpler check-list type of tools that certain organisations have become accustomed to over the years. Sometimes scientific data can be commandeered by political interests. As sustainability issues become more pronounced, the question of what is fair analysis and what is industry-generated propaganda is likely to become increasingly difficult for policy makers to determine (Bush, 1990). Uncertainty about the real benefits or implications of using a particular sustainability assessment tool can lead to its non-usage and adoption. Equally important is the issue of competition from the many existing assessment tools on the market.

People's perceptions change with time and across different settings. Depending on how society perceives and values things, some issues will continue to take precedence over others (Moore, 1994). Similarly, it can be argued that users' perceptions will influence their preferences for certain sustainability assessment tools. The resources dedicated to addressing a particular issue are in constant competition with alternatives and the newly evolving issues which are not always successful in securing adequate support. Thus, competing tools can create conflicting goals within a user institution, adding to the difficulty of adopting and using a specific tool. This is especially the case if there are differences in perception about sustainable development and its assessment. Differences in the perceptions of what works can equally have similar effects. That is because different perceptions cause people to respond differently to the same incoming information. Differences in perception about which issues count most can inhibit consensus on adoption and use of sustainability assessment tools.

3.1.3 Lack of a catalytic personality

The impetus for maintenance of the status quo can be cemented by the absence of a catalytic personality, i.e. an influential individual or individuals who can facilitate change within an institutional structure (Argyris, 1993). Catalytic personalities are key to the effectiveness of an organisation and can influence the adoption and use of certain sustainability assessment tools. Through their actions they are often able to motivate others in pursuing such a particular course. If such personalities, however, do

not believe in the value of adopting or using particular tools, such tools are less likely to be adopted and used by the organisation.

3.1.4 Incentives for dealing with perceptual and behavioural barriers

The multi-dimensioned impediments of knowledge and data requirements can sometimes be mitigated by marketing strategies to promote adoption and usage of tools through increased awareness. However, some tool developers market their products much more aggressively than others. Like in any other market situation, tools that are not publicised proactively are less likely to be adopted and used than those that are well advertised. An emerging strategy among tool developers is to supplement their marketing strategies with offers of ongoing support and training to the user organisations (Glazer, 1991).

The issue of uncertainty and the desire to maintain the status quo as barriers to adoption of sustainability assessment tools can be countered in many ways. The presence of a catalytic personality capable of promoting the adoption of certain tools can be said to be an incentive. The apprehension and inertia to embrace change can also be altered by in-house training to staff to enable them appreciate the benefits of adopting new tools and how these actually work. In broad terms, these incentives are essentially a trade-off between perceived risk on one hand and incentives on the other (Prendergast, 2002).

3.2 Institutional factors

The term 'institutional' pertains to organised societies and denotes an organisation or an establishment devoted to the promotion of a particular objective, usually of public concern (Moore, 1994). They are mechanisms of social structure, governing the behaviour of two or more individuals and are identified with a social purpose and permanence, transcending individual human lives and intentions, and with the making and enforcing of rules governing human behaviour (North, 1990). In this paper, the focus is on those institutions/organisations involved in decision-making processes in sustainability assessment, such as policy-makers (all levels of governance structures) and practitioners (all users of urban sustainability assessment tools). The barriers and incentives that fall under this category consequently relate to operational constraints with regard to the adoption and use of sustainability assessment tools in these organisations. It will be recognised that although most of the barriers discussed in the previous section relate more to individuals and groups, some of them are heavily interwoven within the broader institutional perspective.

3.2.1 Lack of cooperation and information sharing

Lack of cooperation and information sharing among tool users can create barriers to urban sustainability assessment. As noted earlier in the paper, these users mainly comprise local authorities, developers, consultants and quasi-non-governmental organisations (quangos). In the absence of co-operation and information sharing among these tool users, the use of certain tools will remain uncoordinated and

thereby reducing the potential effectiveness of such tools. Lack of information sharing can be a direct result of operating in a competitive environment rather than working for a common goal. Similarly, a weak link between the government (as policy-makers) and practitioners (the tool users) can create a barrier as it hampers effective translation of the policies into specific tool usage. At times, the policies are so broad that their translation into specific sustainability assessment mechanisms remains at the whim of the individual tool users with their own cultural inclinations. Studies have demonstrated that cultures of organisations can operate as barriers to adoption of innovative sustainability assessment solutions. In a study of Hackney Borough Council in the United Kingdom, for example, Jones (1996) found that an entrenched 'culture of blame' within the organisation meant that officers were unwilling to set targets for fear of retribution if the targets were not achieved. In such cases, the more ambitious sustainability assessment tools might be shunned by potential users for fear of setting standards that are perceived as unachievable.

3.2.2 Compatibility with organisational objectives

Another key barrier to not only the adoption of tools but achieving sustainability itself is the requirement to integrate organisational objectives and activities between and within institutions. The majority of public and private sector institutions have been established to undertake a discrete function rather than to support inter-linkages between functions (Moore, 1994; Mittler, 1999). It is therefore notoriously difficult to achieve inter-departmental, let alone interorganisational, cooperation in order to implement urban sustainability assessments. In a study of implementation of sustainability policies in the City of Edinburgh, for example, it was discovered that different departments within the local authority had diverging agenda (Mittler, 1999). This problem has also been examined in terms of the capacity of institutions to cooperate and learn from one another (de Magalhaes *et al.*, 2004), and in terms of the governance of organisations that may facilitate or hinder cross-institutional working in urban regeneration (Davies, 2004). Thus, this barrier manifests itself in situations where the structural framework of the institution is ill suited to the task at hand. The fragmented structure of an organisation's departments may not match the highly interconnected nature of sustainability and its assessment. The social, economic and environmental concerns that are said to be the cornerstones of sustainability are often scattered across an organisation's structure such that their reflection into a single sustainability assessment tool becomes problematic.

3.2.3 Jurisdiction limitations

Limitation of jurisdiction often tends to act as a barrier. As Moore (1994) observed, the range of competing issues faced within organisations, and the limitations of their jurisdiction, often serves to limit the extent to which innovation and change can occur in order to allow more sustainable solutions. Organisations which are best suited, and in some cases even mandated, to address an issue may not do so because of limited authority, especially in local authority institutions where political support for change and innovation is crucial (Jones, 1996; Brugman, 1996). In these and other public organisations, adoption of decision support tools is usually subject to approval

by elected members. Thus, assessment tools may not be adopted by an organisation if they are not sanctioned by the political hierarchies within which the organisation is embedded. Lack of visible targets associated with a sustainability assessment tool can be a serious barrier as users do not get a chance to see the benefits of using the tool. This is further compounded by the relative insensitivity of the built environment to initial conditions. The results of changes to an urban development project as a result of an impact assessment, for example, can take several decades to emerge.

3.2.4 Incentives for dealing with institutional barriers

With the increasing prominence of the equity agenda on many policy and legislative instruments, political acceptability is becoming a crucial aspect in the adoption and use of decision support systems. A direct incentive to this would perhaps be the adoption of proactive approaches that demonstrate at an early stage the utility of embracing change. That is why 'early wins' in any project are regarded as an important precursor in winning the support of society.

Another incentive that can be regarded as crucial to tackling institutional barriers is enshrined within the desire for image building that characterises many organisations. The quest for corporate identity, channelled through such emerging concepts and practices as Corporate Social Responsibility (CSR) and Business Community Relations (BCR), can indubitably lead to the adoption of decision support tools that add value to the sustainable development agenda.

3.3 Economic barriers

Economic barriers constitute some of the most tangible impediments to the adoption and use of sustainability assessment tools. In business language, it can be argued that sustainability assessment tools will only be adopted and used to the extent that these do not, or marginally, affect the economic soundness of the business (Bebbington, and Gray, 1996). Barriers under this category therefore revolve around monetary or resource constraints that prevent or limit the adoption and use of sustainability assessment tools. The desire for financial gains (and cost minimisation) can be a barrier to the adoption of tools (Ley, 1983). Inadequate funds to support the adoption and use of sustainability assessment tools can equally be a crucial barrier. In the private sector, especially, perceptions about the higher cost of sustainability assessment options is often weighed against the organisation's decisions, such that more conventional cheaper tools might be preferred. This often implies delivering enhanced sustainable construction that requires alterations to the mandatory regulatory mechanisms (planning and building regulations) that are wrapped around the development process (Bebbington and Gray, 1996). Moreover, in many organisations, once funds are committed to certain courses, their re-allocation becomes difficult (Altman et al., 1985). The cost of shifting to a different assessment tool, for example, may not easily be justified in terms of cost even when the new system may be more appealing and appropriate. There is also the confused perception whereby decision-makers feel the pressure to preserve income-

generating activities more strongly than the pressure to engage in sustainable development activities. This lack of prioritisation mechanisms and its consequent pressures on decision-makers to protect short-term economic interests over long-term sustainability interests represents a major barrier to the adoption of the more robust sustainability assessment tools and actions (Rees and Wackernagel, 1992).

Market Based Instruments (MBIs) and Economic Incentives (EIs) are generally perceived as the default mechanisms for tackling economic barriers to sustainability and its assessment. These are said to have a number of advantages over traditional command and control (CAC) methods for working towards sustainability (NCEE, 2004). Technological improvements and innovation can be stimulated by MBIs and EIs, resulting in greater opportunities to engage in sustainable development at low cost. EIs come in a variety of forms, such as fees, charges and taxes, charges on polluting inputs and outputs, tradable permits, subsidies, deposit-refund systems, as well as reporting requirements, and liability for harms (ibid). Although the instruments are for achieving sustainable development, they indirectly influence the adoption and use of those sustainability assessment tools and metrics that promise achievement of the stated sustainability goals.

3.4 Technological factors

There are also other barriers to sustainability assessment and adoption of tools that can be said to be neo-economic as they relate more to the technological platforms upon which the tools are supported. These are barriers that are concerned with the difficulties of integration of tools, systems and data. The incompatibility of different software tools and hardware systems is viewed by some as an inevitable predicament due to the ever increasing competition among tool developers. Commercial software developers have a tendency of operating in closed environments to protect their proprietary interests (National Research Council, 2000). Moreover, many tools are developed in order to address specific sustainability problems with maximum efficiency and cannot be easily integrated with the emerging, more generic tools for application to a broad range of sustainability assessment issues that have come with the increasing prominence of the Triple Bottom Line approach (Pope, et al, 2004). The same integration problems seem to extend to hardware systems as well (Ray, 2002; Strahl, 2001). Systems provided by different developers are sometimes incompatible, and software written for hardware systems from one developer may be incompatible with systems from other developers (National Research Council, 2000). The sum total of these difficulties is to inhibit flexibility of sustainability assessment tools. Flexibility in the scope and applicability of assessment tools is essential in determining their acceptability and subsequent usage. Flexibility also ensures compatibility with the often dynamic and divergent policies and procedures of organisations.

4. Policy incentives to sustainability assessment

The bulk of incentives to sustainability assessment and the adoption of tools are essentially embedded within a cocktail of legislative instruments at various levels of governance and channelled through the agency of different users. To identify and put these incentives into perspective, it is therefore important to begin with a synoptic overview of the tool users as these are the agents through whom the incentives are mediated. Identifying the users of sustainability assessment tools implies, first, identifying the key decision-making points in the entire lifecycle of an urban development. There are basically three axes that can be used in locating the decision points: the type of sector; the project lifecycle; and the spatial scale of an urban development.

There are various sectors that are involved in the delivery of the built environment assets, with the main ones being, the manufacturing, the construction, urban planning, transport and utilities sectors. The project lifecycle includes such stages as manufacturing, design, construction (as a process), operation / maintenance, and decommissioning. The spatial scale differs according to individual analysts though it is common to categorise urban development in terms of building element (materials), project scheme, neighbourhood, city, regional, national and global levels. Through these different classifications of urban development, it is possible to identify the various stakeholders, including the key decision-makers or the users of sustainability assessment tools. In its scoping study, the UK EPSRC's SUE-MoT (Metrics, Models and Toolkits for whole Life Sustainable Urban Developments) programme (El-Haram, et al, 2006) suggested a four-type categorisation of stakeholders in sustainability assessment as shown in Table 1.

Table 1: Types of stakeholders in sustainability assessment

Category	Description	Examples
Stakeholder Type 1	Those involved in delivery of the physical built environment asset	<ul style="list-style-type: none"> • Investors / Developers • Manufacturers • Urban Planners • Engineers • Builders • Architects / Designers • Decommissioners
Stakeholder Type 2	Those who use the physical asset or those physically affected by it	<ul style="list-style-type: none"> • Occupier / User • Local Community • Public in General
Stakeholder Type 3	Those involved in relevant policy and regulation	<ul style="list-style-type: none"> • UN • EU • Central Government • Regional Governments • NDGBs / QUANGOs • Local Authorities
Stakeholder Type 4	Other interested parties	<ul style="list-style-type: none"> • NGOs / Pressure Groups • Trade Unions • Insurance companies • Researchers / Academics

Source: Adapted from El-Haram, et al, 2006

It can be discerned from the table that the key decisions in sustainability assessment rest within the membership of Stakeholder Type 1, as these respond to the dictations of the sustainability agendas prescribed by Type 3 Stakeholders. Often, although policy is developed at several hierarchies of governance, such as global, EU, national and regional, it is at local levels that decisions are made and actions taken that lead to sustainable development. For example, although Regional Spatial Strategies (RSS), introduced by the UK's Planning and Compulsory Purchase Act 2004 (HSMO, 2004) set the context for spatial development in regions, within those contexts the individual planning development decisions still rest with local authorities. Thus, local authorities have a central role in delivering measures that contribute towards sustainable development. A closer look at some of the sustainable development policies in general should enable an analysis of how these can be perceived as incentives to sustainability assessment. It is important to stress that while many of the policies may offer direct incentives to sustainability, their influence on sustainability assessment and adoption of assessment tools is by and large an indirect one that has to be discerned by critical analysis at each level.

4.1 Sustainable development and the EU

Sustainable development is said to be at the heart of the European Union encompassing issues of great importance to citizens, whether it be maintaining and increasing long-term prosperity, addressing climate change or working towards a safe, healthy and socially inclusive society (EU, 2006). The commitment to sustainable development is expressed in the organisation's numerous policies that

have been developed over the years. These come in a variety of forms such as green papers, white papers, directives, decision papers, communication instruments, etc. A summary of some of these is presented in the table below.

Table 2: Chronology of selected EU legislation on sustainable development

Date	Name of Instrument	Type of Instrument	Set of Tools influenced
2005	Energy Efficiency or Doing More With Less	Green Paper	Environmental (energy)
2004	Mechanism for monitoring greenhouse gas emissions	Decision	Environmental
2004	Strategic Environmental Assessment	Directive	Environmental
2004	Towards a thematic strategy on the urban environment	Communication	Environmental, Social, economic
2003	Providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment	Directive	Social, environmental
2002	Energy performance of buildings	Directive	Environmental (energy)
2002	Environmental indicators	Report	Environmental
2002	Kyoto Protocol on climate change	Decision	Environmental
2002	Management of noise at Community airports	Directive	Environmental (noise)
2001	EU Strategy for Sustainable Development (SDS)	White Paper	Environmental, Social, Economic
2001	Assessment of the effects of certain plans and programmes on the environment	Directive	Environmental
2001	Energy for the Future: Renewable Sources of Energy	Green paper	Environmental (energy)
2001	Implementation of the European Climate Change Programme (ECCP)	Communication	Environmental
2001	Promotion of electricity from renewable energy sources in the internal electricity market	Directive	Environmental (energy)
2001	Sustainable urban development in the European Union: a framework for action	Decision	Economic, Environmental, Social
2000	Energy efficiency: Action Plan	Communication	Environmental (energy)
2000	Framework Directive in the field of water policy	Directive	Environmental
1999	Landfill of waste	Directive	Environmental (waste)
1998	Towards Sustainability	Decision	Environmental
1998	Energy efficiency	Resolution	Environmental (energy)
1998	Integrating the environment into Community energy policy	Communication	Environmental (energy)
1988	The Construction product Directive	Directive	Environmental, Economic
1997	Community heat and power	Resolution	Environmental (energy)
1997	Environmental Impact Assessment	Directive	Environmental
1997	The energy dimension of climate change	Communication	Environmental (energy)
1996	Integrated pollution prevention and control	Directive	Environmental
1995	Energy Policy for the European Union	White paper	Environmental (Energy)
1994	Incineration of hazardous waste	Directive	Environmental
1993	For a European Union Energy Policy	Green paper	Environmental (energy)
1993	The Rio de Janeiro Convention on biological diversity	Council decision	Environmental
1993	Water, energy, transport and telecommunications sectors	Directive	Environmental, Social, economic
1991	Controlled management of hazardous waste	Directive	Environmental (waste)
1990	The Urban Environment	Green Paper	Environmental, Social, economic
1989	Prevention of air pollution from new municipal waste incineration plants.	Directive	Environmental
1985	The assessment of the effects of certain public and private projects on the environment (EIA) as amended	Directive	Environmental, Economic, Social

Source: Various EU Publications: <http://europa.eu/scadplus/>

It is neither practical nor necessary to go into the minute details of each of these documents to discover how they may influence the selection of particular sustainability assessment tools. This paper is thus limited to a discussion of two examples of policy instruments perceived to be of particular relevance to the wider context of urban development sustainability. The first is the EU Sustainable Development Strategy and the second is the Construction Products Directive.

Despite the diversity of instruments on sustainable development, it would appear that the key aims of the EU in this regard are embedded within the Sustainable Development Strategy (SDS) whose aim is to bring about a high level of environmental protection, social equity and cohesion, economic prosperity and active promotion of sustainable development the world over. The first Sustainable Development Strategy (SDS) was produced in 2001. Following the review of the strategy launched in 2004, the European Council adopted in June 2006 an ambitious and comprehensive renewed Sustainable Development Strategy. Under the EU Sustainable Development Strategy (SDS), all EU institutions are encouraged to ensure that major policy decisions are based on proposals that have undergone high quality Impact Assessment (IA), assessing in a balanced way the social, environmental and economic dimensions of sustainable development and taking into account the external dimension of sustainable development and the costs of inaction (Smith and Sheate, 2001). All EU institutions are encouraged to ensure that proposals for targets, objectives and measures are feasible and, where needed, accompanied by the necessary instruments at EU level (EU, 2006).

IA is a procedure that must be followed for certain types of development before they are granted development consent. The requirement for EIA comes from a European Directive (85/33/EEC as amended by 2003/35/EC). The procedure requires the developer to compile an Environmental Statement (ES) describing the likely significant effects of the development on the environment and proposed mitigation measures (ibid). The ES must be circulated to statutory consultation bodies and made available to the public for comment. Its contents, together with any comments, must be taken into account by the competent authority (e.g. local planning authority) before it may grant consent.

Environmental assessment is usually mandatory for plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning, or land use (Barker and Wood, 2001). Outside this core scope, environmental assessment is also required for any plans and programmes which set the framework for development consent of projects and which are likely to have significant environmental effects. Minor modifications to plans and programmes, and those for small areas at local level, are subject to assessment only where they are likely to have significant environmental effects (EU, 2006). The information to be contained in the IA is summarised in Table 3.

Table 3: Summary structure of the Environmental Statement

Key Theme	Description
Main objectives	An outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes.
State of the environment	The relevant aspects of the current state of the environment and the likely evolution in the absence of implementation of the plan or programme.
Spatial extent of impact	The environmental characteristics of areas likely to be significantly affected.
Existing environmental problems	Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance.
Wider environmental protection objectives	The environmental protection objectives, established at a higher level, such as international, community or national, which are relevant to the plan or programme and the way they have been taken into account during preparation.
Environmental impact	The likely significant effects on the environment, including on such issues as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interconnections between these.
Preventative measures	The measures envisaged to mitigate any significant adverse effects on the environment arising from the implementation of the plan or programme.
Options analysis	An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.
Monitoring	A description of the measures that will be put in place for monitoring progress or adherence
Summary	A non-technical summary of the information provided under each of the themes.

Source: Adapted from the EU SDS (EU, 2006)

A growing number of tools for management and monitoring of sustainable development have gained worldwide acceptance over the past few years, alongside the increasing prominence of the concept itself. This diversity has led to some confusion regarding the qualities, differences and linkages between various tools (Robert, et al, 2002). What is obvious though is that not all of these tools will cover the concerns of the Environmental Statement as prescribed in the table. In this regard, the requirement for an ES with regard to particular projects and proposals can be said to be an incentive to the adoption and use of those sustainability assessment tools that meet the IA criteria.

Another important EU policy with regard to sustainability is the Construction Products Directive (89/106/EEC) which requires that construction products bear the CE marking (DCLG, 2006c). The CE marking shows that the construction product meets the requirements of the relevant technical specification (standard or approval) and has properly gone through the product assessment and/or the attestation of conformity procedures (Sjöström, 2001). The CE marking is important for the process of placing construction products on the market and trading in them. The needs of member states concerning the performance of a product are covered by six essential requirements (ER). The essential requirement that directly relates to sustainability is

ER3 “hygiene, health and the environment” (European Commission, 2002). The requirement states that the construction work must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants or neighbours. The harmonised European standards provide clear guidance for test methods to prove the conformity of their products with the national performance requirements. Consequently, the Construction Products Directive (89/106/EEC) and the associated CE marking systems can be considered as an incentive to the adoption and use of those sustainability assessment tools that have one or more of the 6 Essential Requirements for a CE marking.

Many of these directives and policies have been translated into corresponding sustainable development strategies by individual EU member states, including the United Kingdom.

4.2 Sustainable development and the UK government

“Make the wrong choices now and future generations will live with a changed climate, depleted resources and without the green space and biodiversity that contribute both to our standard of living and our quality of life. Each of us needs to make the right choices to secure a future that is fairer, where we can all live within our environmental limits” (Tony Blair, Foreword to *Securing the Future*, The UK Government Sustainable Development Strategy, 2005).

The translation of the EU legislative instruments into the context of the United Kingdom is such that for almost every EU instrument, there is a corresponding set of UK policies and regulations. For example, the EU SDS is supported by the UK’s SDS, including those of the devolved administrations: Meeting the Needs...Priorities, Actions and Targets for sustainable development in Scotland; The Welsh Assembly’s Sustainable Development Action Plan; and Northern Ireland’s First Steps Towards Sustainability. The EU Directive on Landfill of Waste (1999) has been matched with, among others: the Contaminated Land (England) Regulations 2006; the Landfill Allowances Scheme (Wales) Regulations 2004; the Contaminated Land (Scotland) Regulations 2005; and the Landfill Regulations (Northern Ireland) 2003. Thus, a plethora of rules and regulations has been devised by the UK government in the pursuit of the broad sustainable development agenda and in response to the EU policies. Each of these legislative instruments has its own influence on the selection of sustainability assessment tools.

As with the EU, it can be argued that the UK government’s sustainable development agenda is squarely embedded within the Sustainable Development Strategy (SDS), “Securing the Future”, whose roots are traceable to 1999 (HMSO, 2005). In pursuing this agenda, each key Government department has identified some of their high level contributions to delivering the strategy. The various incentives to sustainability assessment and the adoption of assessment tools are expressed in these government departments and agencies through their policy and legislative instruments. The table below shows the action plans devised by key government departments as a response to “Securing the Future”.

Table 4: Sustainable development policies by selected (UK govt) departments

Department / Action plan	Key sustainability dimension
Department for Communities and Local Government - Sustainable Development Action Plan	Environmental, social and economic
DWP - Sustainable Development Action Plan	Economic, social
Department for Transport - Sustainable Development Action Plan	Environmental, economic, social
Department for Culture, Media and Sport - Sustainable Development Action Plan	Social
Department for Environment, Food and Rural Affairs – Sustainable Development Action Plan	Environmental, economic, social
Department of Trade and Industry - Sustainable Development Action Plan	Environmental, economic, social
HM Treasury - Sustainable Development Action Plan	Economic
Department for Education and Skills - Sustainable Development Action Plan	Environmental, economic, social
Department of Health - Sustainable Development Action Plan	Social, environmental
Home Office - Sustainable Development Action Plan	Social

Source: UK Government Sustainable Development: <http://www.sustainable-development.gov.uk>

At the centre of these key departments in delivering sustainable development is the Department for Communities and Local Government (DCLG), formerly the Office of the Deputy Prime Minister (ODPM). The contribution of the department to the sustainable development strategy is reflected in its six key objectives (DCLG, 2006d): creating sustainable communities that embody the principles of sustainable development at the local level; providing homes for all, while protecting and enhancing the environment; working to give communities more power and say in their decisions that affect them and working to improve governance at all levels; creating cleaner, safer public spaces and improving the quality of the built environment in deprived areas and across the country by 2008; promoting sustainable, high quality design and construction, to reduce waste and improve resource efficiency, and promoting more sustainable buildings; and putting sustainable development at the heart of the planning system, as set out in Planning Policy Statement (PPS)1 'Delivering Sustainable Development' (HMSO, 2004).

PPS1 is the starting point for locating policy incentives for sustainability and its assessment in planning legislation. The statement makes clear that sustainable development is at the heart of the planning system. The statement has also set out the Government's key principles on how the planning system in England should tackle the carbon mitigation aspects of responding to climate change. There is also a host of other provisions in the planning legislation with relevance on sustainable development. Planning Policy Statement 10 (PPS10), a policy on waste planning, for example, was published in July 2005 to help deliver the waste facilities needed for sustainable waste management. Planning Policy Statement 22 (PPS22), which promotes the development of renewable energy, requires regional and local planning authorities to set targets and criteria for achieving increased development of renewable energy. Under this provision, planning authorities may require a percentage of energy used in new developments to come from on-site renewable sources. In addition to PPS22, it is a requirement that key regional and local plans

undergo a full sustainability appraisal. This involves testing emerging policies against social, environmental and economic objectives to assess their sustainability.

The requirement by DCLG that key regional and local plans undergo a full sustainability appraisal against the social, environmental and economic objectives can be viewed as an incentive to local planning authorities to adopt and use those sustainability assessment tools that meet the DCLG standards, which are enforceable by appropriate action. This in a way is a direct derivative of the EU requirement for an Environmental Statement as discussed above. The rationale is that the Department for Communities and Local Government (DCLG) is responsible for European Directives on Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) in the United Kingdom. As noted above, IA is required for certain types of development before they are granted development consent. It can be argued therefore that the requirement for an Environmental Statement (enforced by DCLG) with regard to particular projects and proposals is an incentive to the adoption and use of sustainability assessment tools that meet the IA criteria.

Another key domain of DCLG is housing. The contribution of housing to sustainable development goes beyond the issues of demand and supply. It has been summarised by the UK's Housing Corporation (2003) into eight themes as detailed in the table.

Table 5: Importance of housing in achieving sustainable development

Theme	Details
Basic human need	The quality, cost and availability are crucial to individuals' quality of life.
Sense of community	Well-designed and maintained housing will help support a sense of community just as run-down housing will tend to erode it.
Social capital	The location, planning, layout and design of housing have impact on creation of community spirit and identity, which are significant components of the social dimension of sustainable development.
Health and well-being	The interrelationship between housing, health and well-being, educational access and attainment, and access to employment have all been well rehearsed by practitioners and researchers.
Environmental impact	The position of houses, the materials which they are made of, the uses their occupants make of such resources as energy and water, and the availability of public transport/alternative forms of transport all have major environmental implications.
Social exclusion	Many social housing sector residents suffer from social exclusion and are therefore a key target group for many of government policies including social inclusion, eliminating child poverty, decent homes, employment generation, addressing fuel poverty, health and education improvement.
Sustainability issues	70 of the 147 national sustainable development indicators, and many of the regional and local indicators, can be linked to housing and community issues.
Growth prospects	Continued projected growth of the social housing sector through building and stock transfer, implies that the sector will have a major role to play in helping achieve a sustainable future.

Source: The Housing Corporation, 2003

Sustainable communities require decent homes – that is, homes which are warm, weather proof, in a reasonable state of repair and have reasonably modern services

and facilities (Housing Corporation, 2003). The DCLG has a target to ensure that, by 2010, all social homes meet minimum standards of decency, and that 70 per cent of vulnerable households in the private sector have decent homes (DCLG, 2006a). The Decent Homes Standards (DHS) agenda has encouraged local authorities and other social housing providers to re-organise their asset management strategies and particularly look for community sustainability assessment tools that have a DHS assessment procedure in them.

Alongside the DHS, the Government has also introduced a range of measures to stimulate take up of energy efficiency measures in residential buildings (DEFRA, 2003). Two of the DCLG policies relevant to this are Part L of Building Regulations and the Code for Sustainable Homes (Barnes, 2006). Part L of Building Regulations relates to energy efficiency – for example, improving thermal insulation or improving the air tightness of buildings. These regulations encourage the use of low and zero carbon technologies to make properties more energy efficient. The Code for Sustainable Homes requires that publicly funded residential developments will meet the Code standards and that the Code will become the Government's preferred standard for sustainable homes (DCLG, 2006b). The Code is designed to be a simple way for homebuyers to measure the sustainability of their new homes and compare running costs. It is anticipated that a new home meeting the minimum standards of the Code will use around 20 per cent less energy and water per occupant than a home built to 2002 standards (ibid). All new homes receiving Government subsidy will need to meet the Code, which is a direct incentive to adoption of tools that assure compliance to the Code. An important component of the Code for Sustainable Homes is energy efficiency ratings, which will be made mandatory for new and existing homes (ibid). The Code, to take effect in April 2007, will form the basis for the next wave of improvements to building regulations. Thus, like the DHS, the Energy Efficiency rating system has and will continue to sensitise local authorities and other social housing providers to adopt sustainability assessment tools that incorporate the energy rating element in them.

Although the landscape of barriers and incentives to sustainability assessment can be said to be vast and dynamic, the review above allows us to draw some preliminary conclusions that will inform future research activities.

5. Conclusions

The rise in prominence of sustainable development as a key item on many human development agendas has been paralleled with an equally burgeoning quantity of tools and metrics for assessing progress towards the goal. The combination of the complex nature of sustainable development and the prevalence of a multifarious array of tools for its assessment calls for more robust and integrated toolkits to guide decision-makers in the selection of appropriate techniques. This is because the roadmap to decision-making in this regard is constrained by a series of barriers that need to be countered with an equal force of incentives. The barriers identified in this paper mainly revolve around the cultural, economic and institutional make-up of the

community that is involved in sustainability assessment. The paper concludes that these can be mitigated by, among other things, a cocktail of legislative incentives that trickle down from the highest to the lowest organs of government. Apart from supplementing the increasing prominence of sustainability and its assessment in decision-making processes, the utility of this kind of knowledge base on barriers and incentives is to inform both the quantum and quality content of an integrated urban sustainability assessment toolkit that should guide decision-makers in the assessment processes. This review will inform empirical testing of the identified barriers and incentives.

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