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Incorporating Principles of
Sustainable Development within the
Design and Delivery of Major
Projects: An international study with
particular reference to Mega Urban
Transport Projects
for
the Institution of Civil Engineers
and the Actuarial Profession

Working Paper 6

The Perspective of the Social Planner

Dr. Claire Colomb,
Lecturer in Urban Sociology and European Spatial
Planning, University College London

Omega centre
Centre for Mega Projects in Transport and Development

Dr Claire Colomb, *University College London,* is a sociologist and urban planner with a BA(Hons) in Politics and Sociology from the *Institut d'Etudes Politiques de Paris* and a PhD in Town Planning from *University College London, the Bartlett School of Planning*. She is currently a lecturer at the Bartlett School of Planning, UCL. Prior to this, she worked as a Project Developer for the EU Programme INTERREG IIIB North-West Europe which funds trans-national co-operation projects in spatial planning across eight European countries. Her research interests cover urban and regional governance in Europe; urban sociology and urban policies; EU policies and European spatial planning.

Introduction: mega urban transport projects and 'social sustainability'

This contribution looks at the challenges arising from mega urban transport projects (MUTPs) in terms of 'social sustainability', and the extent to which the social impacts of MUTPs are taken into account in appraisal methods commonly used prior to large-scale transport investments. The paper takes the point of view of the sociologist involved in policy-oriented research and of the social and community planner, i.e. a planner working on behalf, or in support of, specific disadvantaged or vulnerable social groups. MUTPs are defined, in line with the terms of reference for the study, as large-scale (typically complex) land-based transport infrastructure link projects (and any services they may incorporate), including: bridges, tunnels, highways, rail links and their related transport terminals plus combinations of such projects, with construction costs in excess of US$ 0.5 billion at 1999 price (excluding major airports and seaports).

In line with the *Shared UK principles of Sustainable Development* (referred to in the Research Proposal as the normative basis for the present study), the contribution is based on the assumption that MUTPs should respect the following principles: living within environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; using sound science responsibly; and promoting good governance. The focus of the present contribution is on the 'social sustainability', 'social cohesion', 'social justice' and 'social equity' aspects of these principles (these terms will be discussed and defined in the first part of the paper). Traditional ex-ante appraisal methods used for the planning of MUTPs (and other forms of public intervention more generally) have focused on financial and transport engineering related criteria and aspects ofefficiency, economic growth and environmental sustainability, with issues of social equity and social benefits often not given much consideration. It has often been argued, in particular, that Cost-Benefit Analysis (CBA), the most widely used appraisal method for MUTPs across the globe, neglects the issue of social impacts and benefits and leaves 'little room for consideration of distributional issues that are central to the concerns of social welfare analysts, and are likely to figure more prominently in the calculations of sociologists and political scientists than in those of the economists' (Meyer 1995: 90).

The present contribution is structured in five parts. First, the tensions between the three conventionally acknowledged elements of the concept of 'sustainability' (the economic, the environmental and the social) are discussed, followed by an introduction to the definitions of concepts of 'social justice', 'social equity', 'social cohesion' (and its corollary 'social exclusion') and finally 'social sustainability'. These terms are often used interchangeably and with a lack of precision in discussions surrounding the 'social' aspect of sustainable development, and it is necessary to clarify what is meant by them in relation to the social impact of MUTPs. The second section offers a very brief summary of the role of MUTPs in

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social equity and social inclusion, reviewing the most common types of negative and positive social impacts which have been discussed in the recent literature on the subject. It concludes with a simple definition of what a 'socially sustainable' MUTP would be. In the third section the weaknesses and shortcomings of conventional MUTP appraisal methods (CBA and MCA) with regard to social and distributive impacts are briefly discussed. In the two final sections, examples of improvements which can be made to existing appraisal frameworks are briefly discussed, and an alternative approach for 'social impact assessment' (SIA) is introduced[1].

1. The challenge of defining 'social sustainability'

1.1 The three elements of sustainable development: complementarity or conflict?

Sustainable development is an elusive concept which has been defined in many different ways which will not be discussed here. The conventional framing of the concept (as reflected in the *Shared UK principles of Sustainable Development* which form the basis of this study) emphasises that it has three main dimensions – an economic, an environmental and a social one. At the heart of the official discourse on sustainable development endorsed by most national governments and international organisations lies the idea that the three dimensions (or objectives) of sustainability can be reached or fulfilled jointly, i.e. that we can have economic growth which does not irreversibly damage the environment and human health, and is equitably distributed. This is reflected in the conventional policy discourse on 'sustainable transport'. The five objectives of the current UK transport strategy (Department for Transport 2008), for example, match the three elements of the sustainability triangle: economic growth, tackling climate change, better safety, security and health, 'greater equality of opportunity' for all citizens, with the desired outcome of achieving 'a fairer society', and improvements in quality of life and a healthy natural environment.

Critics of the concept of sustainable development (or at least of its practical applicability), however, stress that inevitable trade-offs have to be made between the three objectives/components of sustainable development – in effect, that in order to fully reach one of the three objectives, concessions have to be made with regard to the other two. Both positions are illustrated and discussed by Campbell (1996) in what he calls the 'triangle of conflicting goals for planning' (Figure 1).

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[1] This contribution was written on the basis of a desk-based review of the relevant academic and policy literature (in English). The literature was identified by using a combination of keywords including "transport" (or "transport projects") and: "social impact assessment", "social equity", "social justice", "social sustainability", "social inclusion", "social cohesion", "social exclusion" in the UCL MetaLib system which searches the largest databases of academic publications as well as online sources.

Figure 1. The triangle of conflicting goals for planning and the three associated conflicts [source: Campbell 1996: 298]
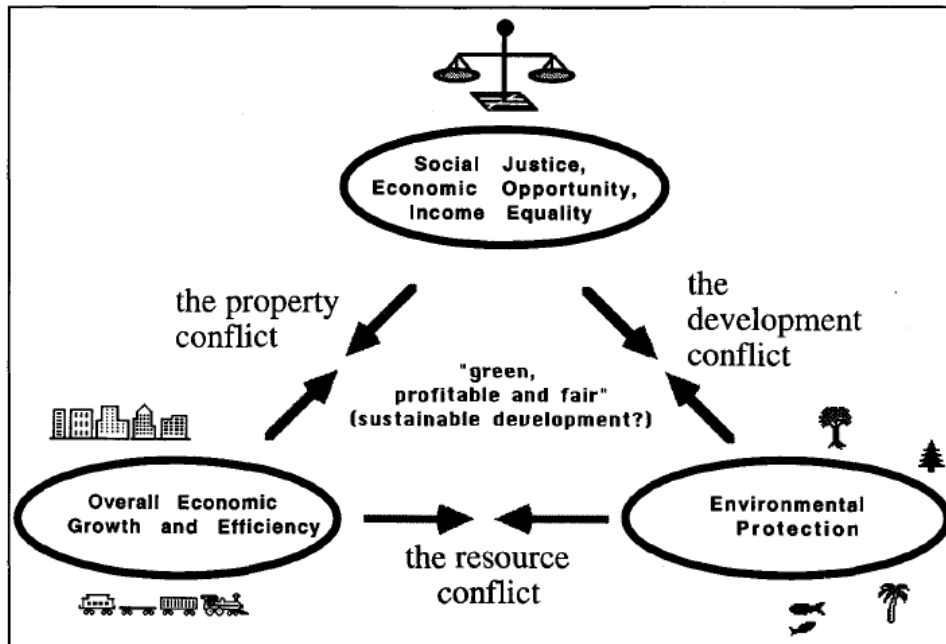

FIGURE 1. The triangle of conflicting goals for planning, and the three associated conflicts. Planners define themselves, implicitly, by where they stand on the triangle. The elusive ideal of sustainable development leads one to the center.

The tension between the objective of economic growth and that of social equity – which Campbell calls the **'property conflict'** - is well-known. It is expressed through struggles surrounding the (re)distribution of resources generated by growth and the role of the state and public actors in the process. The conflict is materialised by competing claims on the use of resources and property (land, in the present case, or the increase in value which land acquires as a result of an MUTP). Infrastructure planning, in particular, is shaped by a permanent tension 'between the drive to assist market forces to generate economic growth by providing infrastructure, information and other enabling functions and the need to legitimate planning to the general public by acting in the public interest, encouraging public participation, establishing social objectives and generally assisting to create social harmony' (Simmie 1993). The second conflict, between economic growth and the environment (called the **'resource conflict'**), reflects the tension between the economic utility of natural resources in industrial society in the process of economic growth, and their ecological utility in the natural environment (Campbell 1996: 298-299).

The third conflict in the triangle is more elusive and often less discussed in debates on the practical implementation of the principle of sustainability in decision-making: the **'development conflict'** refers to the tension between social equity and environmental preservation. At a global scale, this conflict is illustrated by the debates on the kind of development which should be favoured

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in countries of the global South: 'efforts to protect the environment might lead to slowed economic growth in many countries, exacerbating the inequalities between rich and poor nations. In effect, the developed nations would be asking the poorer nations to forgo rapid development to save the world from the greenhouse effect and other global emergencies' (Campbell 1996: 299). But the tension between social equity and environmental preservation also plays out at the national, regional or local level: 'how could those at the bottom of society find greater economic opportunity if environmental protection mandates diminished economic growth?' (Campbell 1996: 299)[2]. Campbell illustrates this 'development conflict' with an MUTP-related example:

> Norman Krumholz, as the planning director in Cleveland, faced the choice of either building regional rail lines or improving local bus lines (Krumholz et al. 1982). Regional rail lines would encourage the suburban middle class to switch from cars to mass transit; better local bus service would help the inner-city poor by reducing their travel and waiting time. One implication of this choice was the tension between reducing pollution and making transportation access more equitable, an example of how bias toward social inequity may be embedded in seemingly objective transit proposals (Campbell 1996: 300).

The 'development conflict' referred to by Campbell is particularly relevant for the present study because it throws light on the fact that different MUTP choices, which potentially all contribute to the objective of environmental protection and CO^2 emission reduction, can actually have very different and ambiguous impacts in terms of social equity. In the current UK context, Lucas (2006) has argued that there is a serious policy conflict between the agenda to deliver social equity through transport programmes which aim at improving mobility, and the climate change agenda with its identified need to significantly reduce traffic levels on UK roads.

The conventional position adopted in official documents on sustainable development (by national governments and international organisations such as the UN, the EU or the World Bank) is that in order to distribute wealth more fairly (i.e. to resolve the 'property conflict'), the size of the economy has to be increased through economic growth so that society will have more to redistribute; additionally, that to improve environmental quality (i.e. to resolve the 'resource conflict') the size of the economy also has to be increased to have more money to invest in environmental protection (Campbell 1996). This position is reflected in current debates and discourses on the possible ways out of the global economic recession (e.g. US President Obama's and UK Prime Minister Brown's vision of job creation and renewed growth through the shift to a low carbon economy).

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[2] This particular question is related to debates about 'environmental justice' (or injustice) which have emerged in the USA in the 1980s, focusing on the links between poverty, ethnicity, discrimination and exposure to poor environmental conditions and pollution. The 'environmental justice' movement has called for increasing links and cooperation between community activists fighting for traditional civil rights and environmental activists fighting for a better environment and a greener world. See Agyeman 2005, Ageyman and Evans 2003, 2004, Agyeman et al 2002, 2003, for a full overview of these debates in various national contexts, notably the USA and the UK; and Schweitzer and Valenzuela 2004 in relation to transportation.

This position is based on the assumption that 'trickle-down' processes work ('trickle-down economics' and 'trickle-down environmentalism', as phrased by Campbell 1996) – assumption which has been questioned by critical (not only Marxist) economists and ecological economists. The criticisms (both on theoretical and empirical grounds) of the assumption that growth leads to redistribution and social equity and to better environmental protection cannot be discussed here. For the purpose of this paper, the idea that 'economic growth' associated, for example, with an MUTP, does not automatically 'trickle down' and benefit surrounding regions and communities, is a fundamental one which will be discussed again in Section 2.

Campbell argues that the role of the planner in resolving the conflict between the three elements of sustainability should include both a procedural and a substantive role: first to manage and resolve conflict by acting as a mediator and translator between conflicting interests and languages; second to promote creative technical, architectural and institutional solutions. What Campbell does not clarify is the position which an individual planner should take in a given conflict: whether he/she should 'stand in the middle' and try to secure a compromise between conflicting interests, or whether he/she should 'identify their specific loyalties and roles in these conflicts' (p. 309), take side and work for a particular set of interests, in our case the 'local community' or the disadvantaged, vulnerable groups affected by an MUTP. The latter corresponds to the positioning of 'advocacy' or 'equity planners' in the US context. Advocacy planning emerged in the 1960s in the US (Davidoff 1965) as a critique of planning as practised in the 1950s - a rational-comprehensive technocratic approach focused on physical and land use issues. Advocacy planning 'questions the existence of a single, consensual public interest and instead calls for the promotion of the particular interests of the disadvantaged' (Campbell and Fainstein 2003: 170) by the planner. In the 1980s 'equity planning' (Krumholz et al. 1982, Krumholz 1999) continued to challenge the ability of traditional planning to get at the roots of poverty and inequality and argued that redistribution should become the principal goal of planners (Campbell and Fainstein 2003: 170).

For the purpose of this paper, the point of view of the sociologist involved in policy-oriented research and that of the 'community planner' (or 'advocacy planner') as a professional planner or a voluntary activist who prioritizes the 'social' objective of the sustainability triangle, will now be adopted. Before we discuss the extent to which the 'social' dimension of sustainability has been addressed in conventional appraisal methods used for MUTPs, it is necessary to reflect on the use and definition of the concepts which permeate discussions and debates on the social impacts of MUTPs: 'social equity', 'social justice', 'social cohesion' or 'exclusion' and 'social sustainability'.

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1.2 Defining 'social justice', 'social equity', 'social exclusion' and 'cohesion' in relation to MUTPs

For a long time theoretical debates about 'social justice' and 'social equity' belonged to the realm of political philosophy and were scarcely translated into other disciplines, let alone into the practical realms of public policy and urban and regional planning decision-making (Fainstein 2006). Lefebvre (1968, 1996) and Harvey (1973, 1992, 1996) were the first to attempt at bridging the gap between abstract concepts of 'social justice' and notions of space, territory and spatial policy, and a number of geographers and planning theorists have followed (Laws 1994, Smith 1994, Hay 1995, Hobson 1999, Merrifield and Swyngedouw 1997, Sandercock 1998, Burton 2000, Fainstein 2006). Three schools of political thought on social justice have influenced urban studies and planning theorists (Laws 1994, Hobson 1999):

- the liberal approach based on Rawls (1971) which defines social justice as a question of distribution, and is drawn on by Harvey (1973: Part 1) and Smith (1994);
- the Marxist approach which focuses on inherent inequalities in capitalist society (Harvey 1973: Part 2);
- The post-structuralist approach, based on Young (1990), which broadens the conception of justice beyond questions of material distribution to encompass non-material goals such as the elimination of domination and oppression.

Following the work of John Rawls in *A Theory of Justice* (1971), one of the dominant understandings of 'social justice' has been in terms of 'distributive justice'. This concept, when applied to planning and public policies, can be defined as a set of principles which are used to deal with the competing claims and conflicts for the distribution and allocation of 'the benefits and burdens of development, in the form of material and nonmaterial resources' (Hobson 1999: 6, based on Harvey 1973 and Smith 1994). The principles governing the allocation of resources will vary depending on the political and economic system in place. In a capitalist system, theoretically

> the market - operating according to criteria of efficiency - is the main allocation principle for the distribution of resources in society and over territory. In relation to the category of space, capital flows with no relation to the conditions of need of the least advantaged groups, but the allocation of resources follows the criterion of the maximisation of the rate of return; since the rates of return normally do not correspond with the most depressed areas, there arises a paradox of capital withdrawing from the areas of greatest need (Corubolo 1998: 5).

So the state, through redistributive policies based on need, entitlement or merit, or through forms of regional policy, land use and infrastructural planning and area-based urban interventions, seeks to redress some of these 'market failures'. Any form of public urban or infrastructural planning is therefore 'crucial in social justice, because planning involves allocational decisions with distributional effects on the real income of urban dwellers' (Hobson 1999: 6), materialised

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through the changing distribution of material resources (e.g. access to transport service), adequate employment opportunities, or reinvestment of surplus value in the community. Governments (central/local) and state agencies thus act as a secondary mechanism in the distribution of resources through their policies on transport, education and the provision of public amenities. These policies can *mitigate* or *reinforce* the inequalities arising from the primary distribution of income in the labour market, and thus play a role in sharpening, decreasing or mediating patterns and processes of socio-spatial divisions (Marcuse and Van Kempen 2002)[3]. So do individual planners and other professionals in the exercise of their work, through their control over decisions on land use, housing and service provision in which they act as 'urban gatekeepers' (Pahl 1975, Badcock 1984) trying to 'mediate' between public and private interests (e.g. through the use of planning conditions and obligations to obtain 'community' benefits). The work of planners, however, is bounded by the principles of a free-market economy and liberal-democratic system characterized by the private ownership of land and means and production.

The concept of 'social equity' applies to the fairness with which benefits and costs are distributed in a society. It is highly subjective and varies with the individual concerned (Levinson 2002: 179). It has different dimensions:

- *Horizontal equity* refers to 'the equivalent or impartial treatment of individuals with regard to the allocation of the benefits and costs among individuals and groups who are similar in terms of wealth and ability', whilst *vertical equity* refers to 'the distribution of benefits and costs among different income groups' or groups with dissimilar characteristics (such as physical disability) (Levinson 2002: 179). Current infrastructure planning practices contain biases and distortions that tend to be both horizontally inequitable (they favour one mode or user over others), and vertically inequitable (they tend to harm disadvantaged people) (Litman 2007: 24).
- *Equity of opportunity (process equity)* versus *equity of outcome* (*result equity)*: Equity of opportunity means that disadvantaged people should have adequate access to education and employment opportunities, or in the case of MUTPs, equal access to the planning and decision-making process (Levinson 2002: 179). There is less agreement, however, concerning equity of outcome, meaning that 'society insures that disadvantaged people actually succeed in these activities. Transportation affects equity of opportunity. Without adequate transport it is difficult to access education and employment. It therefore meets the most "conservative" test of equity' (Litman 2007: 5).

The 'utilitarian' perspective on equity (reflected in Cost-benefit Analysis as a method of appraisal, see section 3) favours the maximization of the total welfare, whilst an egalitarian view would maximize the welfare (or opportunities) of the

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[3] For Harvey, the spatial structure of the city tends to reproduce existing inequalities through 'the distributive effects of activities arranged in a given spatial form and the redistributive effects of changes in that spatial form' (Harvey 1973: 72).

least advantaged member of society (Levinson 2002: 179). In the case of MUTPs this is justified by the fact that 'compared with the wealthy, the poor spend a larger portion of their income on transportation (as well as a variety of other goods). Furthermore, the poor and disadvantaged have historically borne the burden of transportation investments and improvements, which are often sited in their neighborhoods' (Levinson 2002: 179). In this perspective, in any given spatial intervention the prospects of the least advantaged would have to be prioritised[4]. Transport policies would be equitable if they favour economically and socially disadvantaged groups, therefore compensating for overall inequity (Litman, 2007: 3).

Harvey extends the concept of equity to 'territories', not only to people. Applying Rawl's concept of distributive justice to *spatial decision-making* (to which MUTP planning belongs), Harvey (1973: 116-117) defines two criteria for a form of 'spatial justice':

> (1) The distribution of income should be such that (a) the needs of the population within each territory are met, (b) resources are so allocated to maximize interterritorial multiplier effects, and (c) extra resources are allocated to help overcome special difficulties stemming from the physical and social environment.
> (2) The mechanisms (institutional, organizational, political, and economic) should be such that the prospects of the least advantaged territory are as great as they possibly can be.

An MUTP would contribute to improve distributive justice if it leads to reductions in inequality (in terms of improved access to certain goods, here transport, and indirectly to the services and opportunities which mobility allows) and benefits least advantaged social groups the most. According to Rawls' concept of 'equality of opportunities' and the so-called 'difference principle', an 'unequal distribution' of resources is justified if it is to the greatest benefit of the least advantaged. . In terms of MUTP appraisal, such an approach implies that the benefits to disadvantaged groups have to be valued more highly than the benefits to more 'advantaged' ones (Kaparos and Skayannis 2008), which current CBA appraisals do not do (see section 3).

Social justice understood in this way is not only a question of equitably distributed outcomes, but also of the *process* through which this is achieved: as phrased by Harvey, 'a *just* distribution <u>justly</u> arrived at' (1973: 116-117). This *procedural* vision of social justice emphasizes that people should be treated fairly, i.e. given a chance to voice their concern, to participate and ideally to influence the final outcome in the decision-making process. One group should not be excluded disproportionately to other groups from the decision-making process. This approach is reflected in the 'Social Impact Assessment' approach discussed in Section 5. Yet it should stressed that in terms of urban and infrastructural planning, 'just planning processes' (i.e. involving comprehensive forms of public participation) do not necessarily lead to 'just planning outcomes'

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[4] The concept of sustainable development ads an extra dimension to the form of distributive social equity discussed here: inter-generational equity (i.e. the need to preserve the future well-being of future generations).

(Fainstein 2006). A planning process characterized by extensive public participation may not lead to an equitable outcome if the final decision-makers ignore the key concerns of important groups, or if one particularly vocal group dominates the participation process at the expense of others.

Other political thinkers and philosophers have broadened the scope of the concept of social justice beyond questions of equity, distribution and allocation of resources to encompass non-material aspects, in particular 'the elimination of institutionalised domination and oppression' (Young 1990: 15) or the right to recognition, personal expression and development (Fraser and Honneth 2003). Young includes five elements in her definition of the concept of oppression: exploitation, marginalisation, powerlessness, cultural imperialism and violence, which are expressed, embedded or manifested in social structures and decision-making processes. Building on Young and Harvey (1992: 598-600), Hobson (1999) defines what a 'socially just' form of planning should be. It should:

> 1. confront exploitation by creating systems of production and consumption which minimise exploitation of labour in the living place and the workplace;
> 2. confront marginalisation so as to liberate marginalised groups in a non-paternalistic way (sub-criteria of poverty, homelessness and unemployment);
> 3. confront powerlessness by ensuring access to political power and the ability to engage in self-expression (participation in decision-making, socio-economic integration, and diversification and protest);
> 4. be sensitive to cultural imperialism and eliminate it from the design of projects;
> 5. attempt to minimise violence (public crime and perceptions of safety);
> 6. recognise the impact of projects on future generations and distant peoples and mitigate against damaging ecological consequences.

The terms of 'social justice' and 'social equity' are rarely used in official policy documents. In the European context, the terms of 'social cohesion', and its corollary 'social exclusion', have gained currency in policy discourses (e.g. in France and the UK) in the 1990s. The term 'social exclusion', initially developed in France in relation to issues of racial inequality and new forms of poverty and 'advanced marginality' (Wacquant 2007), was first used by the European Commission in 1989. The New Labour government in the UK, with the setting up of the Social Exclusion Unit in 1998, took the concept on board in debates on social and urban policies, as have other European governments. One of the reasons why the term of 'social exclusion' has gained currency in policy discourses, as opposed to traditional notions of poverty or deprivation, is the fact that new processes are at play in contemporary forms and processes of urban deprivation, which go beyond income deprivation and lack of work[5]. The use of the term 'social exclusion' corresponds to the recognition that poverty is

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[5] The choice of words and concepts used in discussions about 'poverty' is crucial: conceptualizations of urban poverty and labels are not neutral – they reveal opposed visions of the individual and of society, of the role of the economy and the role of the State. The use of words, for example the pejorative concept of the 'underclass', has major implications for policies targeting the urban poor – the way a problem is conceptualised will determine what sort of policies are designed to address it (planning, urban, housing policies, welfare and employment policies, or 'laissez-faire'). Different political ideologies in the UK, for example, assign different causes to the plea of the urban poor: to oversimplify, either the excluded are perceived as 'having no money', or 'having no work', or 'having no morals' (Levitas 1998: 27), which leads different politicians to call for different policy solutions.

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multidimensional, is a process, is not only material but is characterised by a wider exclusion from the worlds of work, education, consumption, political life, sociability and mobility. The notion of poverty 'is primarily focused upon distributional issues: the lack of resources at the disposal of an individual or a household. In contrast, notions such as social exclusion focus primarily on relational issues, in other words, inadequate social participation, lack of social integration and lack of power' (Room 1995: 5). 'Exclusion' implies that something is done by some people to other people (Byrne 1999: 1). Social exclusion is thus a dynamic term (exclusion as an ongoing process) and a systemic concept (about the character of the social system).

Related notions of 'social inclusion' and 'social cohesion' will not be reviewed here (see Kaparos and Skayannis 2008 for a review of 'social cohesion' in relation to MUTPs). What matters for the purpose of this paper is that the multidimensional phenomenon of social exclusion

> 'finds spatial manifestation, in its acute forms in deprived inner or peripheral urban areas. This spatiality of social exclusion is constructed through the physical organisation of space as well as through the social control of space (…) At the scale of local space, spatialization of social exclusion takes place through land and property markets' (Madanipour 1998: 86-87).

This has led to controversial debates, in urban sociology and urban economics, about so-called 'area effects' or 'neighbourhood effects': i.e. whether spatial concentrations of deprivation have reinforcing effects on patterns of deprivation and life chances. In relation to MUTPs, there has been increasing empirical evidence about the linkages between transport, mobility and forms of social exclusion, and about the role of transport policy interventions and infrastructure provision in positively or negatively affecting patterns of social exclusion.

2. Transport and social exclusion. The impact of MUTPs on 'social sustainability'

For a long time the sociological and social policy literature on social exclusion has ignored the 'mobility' related aspects of social exclusion (Cass 2005). Conversely, transport researchers in various disciplines (economics, geography, planning, public policy, civil engineering etc…) have long neglected to address the potentially positive and negative impacts of transport and mobility on patterns of social exclusion. This has changed dramatically over the past decade. In the Anglophone academic literature there has been a growing interest in the links between transport and social exclusion and between transport policy measures and social inclusion (Levinson 2002, Hine and Mitchell 2003, Rajé 2003, Lucas 2004, 2006, Preston and Rajé 2007). In the US, the debate has centered around notions of 'environmental justice' and 'just transportation' (Centre for Transport Studies et al. 2006: 18-20). In the context of the UK, the 'social exclusion' agenda promoted by the New Labour government after 1997, gave explicit recognition and attention to the role of 'transport' in social exclusion and inclusion

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processes, as acknowledged by the1998 and the 2004 Transport White Papers (DETR 1998, Department for Transport 2004). This recognition was based on the findings of three government-commissioned research reports on *social exclusion and transport* (DETR/TraC 2000, Polak et al. 2002), Social Exclusion Unit 2003). As a result, policy guidance to local transport authorities was modified to explicitly require them to address social exclusion in local transport provision through so-called 'accessibility planning' (Lucas 2006). The UK Department for Transport now has a dedicated section of its website on 'transport and social cohesion' (see websites of interest in the final list of references).

The link between transport and social cohesion (or exclusion) is twofold:

> Inadequacies in transport provision (either in terms of access to the system itself or the level of service provided by the system) may create barriers limiting certain individuals and groups from fully participating in the normal range of activities, including key activities such as employment, education, health care and shopping. This concern focuses attention on the link between transport provision and activity participation and the role of accessibility, issues that have long been the focus of activity-based transport analysis.

> The transport system itself may generate disbenefits (in the form of environmental and social externalities) that bear disproportionately on certain individuals and groups. This concern focuses attention on the partial and socio-economic disaggregation of transport system externalities (Centre for Transport Studies et al. 2006)

The DETR/TRaC report (2000) defines four ways in which transport can be 'socially excluding' to individuals or social groups:
- *Spatially:* people cannot get to where they want/need to go at all (lack of physical availability of transport within a reasonable distance);
- *Temporally*: people cannot get there at the appropriate time (lack of temporal availability of transport when needed);
- *Financially:* people cannot afford to get there (lack of affordability);
- *Personally:* people lack the mental or physical capabilities to use the available means of mobility (lack of physical accessibility, poor communication on the offer of transport).

Another study by Church et al. 2000 identifies **seven dimensions of transport-related exclusion**, some of which match the four 'barriers' identified by the DETR/TRaC report:
- Physical exclusion (physical, cognitive or linguistic barriers);
- Geographical exclusion (shortcomings in spatial coverage of transport provision);
- Exclusion from facilities (location and/or nature of the facilities themselves);
- Economic exclusion (cost of transport services);
- Time-based exclusion (scheduling conflicts and incompatibilities with the schedules of transport services);
- Fear-based exclusion (concerns regarding personal safety and security associated with the use of transport services);

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- Space exclusion (inappropriate design of transport interchanges and related public spaces).

The term 'transport poverty' has sometimes been used to refer to the 'cumulative effect of poor public transport services, poor provision for walking and cycling (including access to public transport) and low levels of car ownership, particularly affecting women, the poor, the disabled, dwellers in rural areas and other classically disadvantaged groups' (Centre for Transport Studies et al 2006: 17). The SEU report (2003) highlights how poor access to transport is both a *contributing cause* and a *result* of social exclusion:

> People may not be able to access services as a **result** of social exclusion. For example, they may be restricted in their use of transport by low incomes, or because bus routes do not run to the right places. Age and disability can also stop people driving and using public transport. Problems with transport provision and the location of services can **reinforce** social exclusion. They prevent people from accessing key local services or activities, such as jobs, learning, healthcare, food shopping or leisure. Problems can vary by type of area (for example urban or rural) and for different groups of people, such as disabled people, older people or families with children.
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> The effects of road traffic also **disproportionately impact on socially excluded areas and individuals** through pedestrian accidents, air pollution, noise and the effect on local communities of busy roads cutting through residential areas (SEU 2003: 1).

The central argument of both reports, and of the subsequent strategies and policy guidance developed by the UK government, is that transport provision contributes to social inclusion by providing access to work, education, healthcare, shops, social, cultural and sporting activities, family and kinship networks and 'social capital'. A service or activity is defined as being *accessible* if it can be accessed 'at reasonable cost, in reasonable time and with reasonable ease' (SEU 2003: 2) – a definition which is context-specific. The SEU report concentrates on the issue of accessibility of services and activities through public transport (for a summary of the SEU report from a civil engineering point of view, see Simpson 2003). A number of measures to improve 'accessibility' were put forward by the SEU report, as highlighted in Figure 2.

Academic research in disciplines such as geography, sociology, planning, anthropology and development studies has long shown that mega-projects such as MUTPs, if not carefully planned and thought through, can have a variety of *negative* impacts on social equity and reinforce social exclusion, which outweigh the positive impacts that may be generated by increased access to jobs and services. The wealth of research produced on the social impacts of mega-projects of all kinds (transport or otherwise) cannot be done justice to in the framework of this paper. Table 1 summarises the main types of impacts of MUTPs on social equity and social exclusion. The table is based on a distinction between two types of impacts - direct and indirect. Direct impacts relate to the immediate changes in the availability, accessibility and affordability of transport which a given MUTP will bring to a defined area and its population. Over the past two decades the extent to which an MUTP can lead to positive direct social

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impacts has been heavily influenced by major changes in the modes of delivery,

Figure 2. Potential menu of solutions for accessibility planning [source: SEU 2003]

Barriers to accessibility	Solutions
Physical access	• Accessible vehicles and stations • Driver training • Improvement to pedestrian environment
Transport availability	• Denser network and direct routes • Bus priority measures and enforcement • Early morning and evening services • Shared taxis and demand-responsive services • Car clubs • Wheels to Work schemes • Community transport schemes
Punctuality and reliability	• Bus priority measures • Performance incentives relating to punctuality
Cost	Promote awareness and use of schemes such as: • concessionary fares or travel vouchers • help with travel-to-interview costs • help with first month of travel-to-work costs • grants or loans for driving lessons or road tax
Information and travel horizons	• Simpler travel maps • *Traveline* and *Transport Direct* • Neighbourhood transport co-ordinators • *Travelsmart* – individualised marketing • Audio-visual information
Crime and fear of crime	• Better lighting or CCTV cameras • Graffiti removal • Improving the security of connecting walkways to transport facilities • Neighbourhood wardens • Travel wardens or police presence on buses or at transport hubs • Safe pedestrian routes
Safety from traffic	• Traffic calming • Safe play areas • Improved pedestrian crossings
Location and scheduling of services	• More accessible location of new services • Scheduling of health appointments to coincide with transport network • Staggered school start times • Use of information and communication technology and home delivery • Outreach to remote communities

financing and management of MUTPs. Trends such as the decrease in public funding for transport infrastructure, the increasing importance of public-private partnerships in infrastructure delivery, the liberalization and privatization of transport services and the predominance of commercial viability considerations at the expense of 'territorial'/'social cohesion' considerations or universal service provision objectives, to name but a few, have negatively affected the potential for positive social impacts of MUTPs. With the general decline in public expenditure as a proportion of the overall GDP in many Western countries, the ability to cover the costs of transport infrastructure from sources other than governmental tax revenue is of growing importance. This raises the question of 'the extent to which the costs of individual schemes can be recovered through user charges and the consequences for society as a whole of any significant shift towards this form of financing' (Grant-Muller et al 2001: 256-7).

The second category of impacts corresponds to the indirect transformations of urban and regional space and economies which are generated by new MUTPs: how these transformations influence individuals and social groups in different ways, positive and negative. MUTPs can have an impact on the welfare of a territory and its population through the attraction of investment and job creation. The economic growth potential of MUTPs has been the subject of a lot of research in order to expand the scope of CBA to include job creation, inter alia (see Section 3). MUTPs can also have an impact on existing patterns of spatial differentiation and segregation in the city between different income, ethnic or otherwise defined social groups. This can happen in two ways:

- either directly through the improved integration, or on the contrary the 'severance', of physical space and social communities,
- or indirectly via the urban restructuring processes which are generated as a result of a new MUTP: e.g. eviction through compulsory purchase, displacement to make way for associated commercial development, increase in real-estate prices resulting in long-term displacement etc…

MUTPs are often planned and carried out as part of, or in association with, larger property-led urban redevelopment schemes (for example the urban regeneration of neighbourhoods around railway stations on the back of the creation of a new rail link, e.g. King's Cross-St Pancras and the CTRL in London). The conclusion of many critical studies carried out in the early 1990s on the social impacts of such large-scale urban redevelopment projects (MUTP-led or otherwise) is that property-led regeneration may improve the face of the urban fabric, but often bring few benefits to disadvantaged urban residents because the economic benefits of regeneration do not 'trickle-down' to poorer residents, especially ethnic minority groups or long-term unemployed. In some cases, social and spatial inequalities have even been strengthened by regeneration, for example when the gradual displacement of the local population has occurred through the process of gentrification (a process of socio-spatial change whereby 'the rehabilitation of residential property in a working-class neighbourhood by relatively affluent incomers leads to the displacement of former residents unable to afford the increased costs of housing that accompany regeneration', Pacione 2001: 2000). Long term increases in real estate prices generated by a new transport link may force displacement in the long term, thereby offsetting the short-term positive social impacts which may have arisen for disadvantaged groups (Edwards 1998). Although MUTPs do not single-handedly cause such processes, they often contribute to them, because they are increasingly planned as part of larger urban and regional regeneration schemes in which the costs of transport infrastructure are recouped or cross-subsidized by the proceeds of the sale (or lease) of land for private development purposes.

Table 1. MUTPs, social equity and social exclusion [source: author's own conceptualisation]

The direct impacts of MUTPs on social equity and exclusion	
Affordability	- Fare levels and fare structure can have regressive or progressive distributional effects (in relation to the primary distribution of income through the labour market and/or the state) in a given society/territory. - Share of transport costs in household budget can increase or decrease as a result of an MUTP. - Compensatory measures: concessionary fares etc...
Accessibility	- Scheduling can favour certain social groups (or not). - Physical accessibility (for disabled individuals). - Safety (for women, older people, children etc...). - Signage and availability of information (cognitive aspects).
Availability	- Siting and spatial coverage (defining minimum standards?). - Relation to land use planning and the location of housing and economic activity. - Direct physical displacement of communities: through CPO and expropriation. - direct effects of the MUTP on patterns of in-migration or out-migration in a given area: can be positive or negative. - Health impacts: pollution, risks of accidents…
The indirect impacts of MUTPs on social equity and exclusion	
The economic impact (job creation and/or improvement of access to jobs) of an MUTP	- A limited trickle-down effect? An MUTP could generate growth and jobs - however, the public sector always has to ensure that 'social' regeneration follows – i.e. getting disadvantaged people into jobs. Many barriers to employment exist… mobility is just one of them.
Indirect transformations of urban and regional space triggered by, or accompanying, an MUTP	- Transformations of urban spaces and urban economies as a result of MUTPs can have unfair, unequal impacts 'distributing benefits and costs in a disproportional way among privileged and unprivileged social groups' (Kaparos and Skayannis 2008) - Physical severance: leading to a reduction in pedestrian mobility or increased crime - Long-term physical displacement of communities: altered land values and gentrification.
'Opportunity cost' involved in the use of public resources for MUTPs	- 'Opportunity cost' if public resources which could have been used for key services such as education and housing are diverted towards flagship MUTPs with little benefits for disadvantaged social groups.

What would a 'socially sustainable' form of MUTP be?

Bringing together the main arguments exposed in our discussion of 'social equity' (section 1.2) and of the role of transport in social inclusion/exclusion (section 1.3), it is worth concluding by reflecting about what a 'socially sustainable' form of MUTP would be. An MUTP would have a *negative* impact on social sustainability if:

    (i) it *makes things worse* with regard to any of the aspects defined in Table 1 (direct or indirect social impacts) in comparison to the existing situation, or

    (ii) if it *fails to improve* the inequalities which exist as defined in Table 1 (direct or indirect social impact), i.e. if it does *not* improve the situation of vulnerable social groups and individuals in an area with high needs.

Option (ii) is more ambitious than option (i) because it assumes that an MUTP *should* positively contribute to reducing pre-existing inequalities in an area, which is often *not* the primary aim assigned to an MUTP by its inceptors. Option (i) should be the minimum approach taken for an MUTP to be 'socially sustainable'. An MUTP would be socially sustainable or *equitable* if it balances 'costs and benefits across all parties concerned by appropriately distributing benefits and/or letting beneficiaries pay an adequate share of [social] costs' (Zylicz 1995). An *equitable* distribution of impacts, as we have seen in section 1.2, is not synonymous with an *equal* distribution of impacts. In practice this would involve minimizing the negative impacts generated by an MUTP (pollution, noise, physical division) so that they do not fall unfairly on already disadvantaged communities.

Beyond this 'negative' definition (i.e. *avoiding* adverse impacts), a more positive contribution of MUTPs to social equity could be to enhance the material and immaterial welfare and opportunities of disadvantaged groups (Option (ii)), an objective often present in discussions on transport and poverty alleviation in developing countries. In such an approach decision-makers should opt for the MUTP alternative that benefits the least well off, although the definition of 'the least well off' is subjective and variable according to context. It could be broadly defined as the group(s) most lacking in political and financial power (Fainstein 2006: 18-9). Such an approach implies the need to define benchmarks, indicators and minimum standards for transport provision, mobility opportunities and accessibility in each specific context. In the UK context,

> the standard indicator for "poverty" (income) is normally defined as an income below half the national average. There are no adequate indicators of transport poverty, except car ownership and distance from a bus stop. Without indicators or a base for comparison it is not possible to be objective about transport "deficits". In order to have a basis for assessment of transport poverty, work needs to be undertaken to try to provide a benchmark against which mobility and access provision can be evaluated. There is likely to be more than once benchmark; no single one would cover all individuals and groups' (DETR/TRaC 2000: 96)[6].

Such an approach also has implication in terms of appraisal methods used (see Section 5 on SIA), which should 'go beyond the prevention of negative impacts' to include issues of 'building social capital, capacity building, good governance, community engagement and social inclusion' (Vanclay 2006: 3).

In relation to the indirect impacts of MUTPs, an equitable form of *territorial development* arising as a result of an MUTP could be defined as 'the creation and maintenance of economically and socially diverse communities that are stable over the long term, through means that generate a minimum of transition costs that fall unfairly on lower income residents' (Kennedy and Leonard 2001: 4) or vulnerable social groups. These vulnerable groups cannot be defined ex ante and are specific to each local, regional and national context (e.g. the unemployed, ethnic minorities, disabled, the aged, women…). Identifying them is

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[6] The DETR/TRaC report (2000) additionally suggests that there is a need to define how much travel an individual should be prepared to undertake, e.g. to access work.

the very first step of the type of social impact assessment discussed in more detail in Section 5.

Although the attention paid to the social impacts of transport, and the transport- and mobility-related dimensions of social exclusion, has increased in policy discourses (at least in the UK) over the past decade, it is still rarely or insufficiently translated into the conventional appraisal methods used for MUTP planning. On the website of the UK Department for Transport, for example, the objectives and principles listed in the 'social cohesion' section of the website are not visibly cross-referenced in the NATA guidelines on appraisal, which do not give very precise and practical guidance as to how social inclusion objectives should be included in appraisal frameworks (see Section 4 for more on this point). So there is a discrepancy between policy discourses and the reality of appraisal practices on the basis of which policies are made, as discussed in the next section.

3. To what extent, and how, are the social equity impacts of MUTPs taken into account in mainstream appraisal practices?

Transportation engineers are taught to provide for the safe and efficient movement of people and goods. They are not taught to ensure that transportation systems are equitable, in part because of the ambiguity associated with equity. Transportation textbooks seldom broach the subject, which is considered political rather than technical (Levinson (2002: 179)

Since the late 1960s and early 1970s the method conventionally used for the appraisal of MUTPs is Cost-Benefit Analysis (CBA), which is based on the valuation in monetary terms of the direct transport benefits arising from a given project: 'both the potential costs and benefits of a particular project are estimated across a set of impacts and converted into monetary terms by multiplying impact units by prices per unit. Calculating the difference between the sum of the monetized benefits and the sum of the monetized costs derives the overall or net benefit of the project', which is often reported in terms of a discounted net present value, although other summary values may also be produced (Grant-Muller et al. 2001: 239-40).

The crucial question, in relation to the focus of the present paper, is what type of impacts are considered, and monetized, in CBA. Direct transport impacts (e.g. in terms of time travel and cost savings or safety improvements) are always included. But the scope of impacts and benefits considered in CBA has gradually been expanded in many countries and international organisations to include other types of impacts beyond direct transport impacts (for early attempts see Kageson 1993, OECD 1994). There are various contextual factors explaining

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why this has been the case, discussed in detail by Grant-Muller et al (2001). CBA frameworks have in particular been expanded to include:

- **environmental impacts**. In the European Union (EU) context, the 1985 Directive on Environmental Impact Assessment (EIA) was transposed in all EU member states and requires a formal EIA for large projects including highways, ports and airports (i.e. most MUTPs). In some countries the results of the EIA are included in the overall MUTP appraisal in qualitative terms, in others the identified environmental impacts are monetized and included in the CBA (Grant-Muller et al 2001). Incorporating environmental impacts poses formidable measurement and valuation problems which will not be discussed here (Mackie and Preston 1998), since the focus of the paper is on social impacts. It should just be noted that EIA statements often include a small section on 'social impacts'.

- **secondary (or indirect) impacts in relation to urban and regional development objectives** (e.g. employment impacts, job creation and impact on the economic regeneration of an area) (Grant-Muller et al 2001, Kaparos and Skayannis 2008, López et al 2008). The wider policy impacts most often mentioned within transport appraisals are improving accessibility, promoting economic regeneration and/or economic competitiveness, reducing peripherality, promoting social cohesion, eliminating or reducing barriers such as border crossing costs and promoting interoperability (Grant-Muller et al 2001: 238). 'Social cohesion' is a relatively minor aspect, often subsumed (or assumed to trickle down from) economic regeneration.

In rare cases, a number of specific **social impacts** (in particular distributional impacts on different categories of users or social groups) have also been included (Grant-Muller et al 2001, Hayashi and Morisugi 2000, Geurs et al 2009), although this remains an underdeveloped practice. Geurs et al (2009), in their review of national practices of transport project appraisal in the Netherlands and the United Kingdom, conclude that the social impacts of transport have been underexposed in ex-ante appraisals. Although the UK transport appraisal guidance includes a spectrum of social impacts which is broader than the Dutch appraisal guidance, it still does not cover the wide range of social impacts identified in the literature (see section 5 below), in particular health impacts, or the distribution and accumulation of impacts across population groups**.** The UK SEU report acknowledged that 'before the Government introduced a new approach in 2000, the social costs of poor transport were not given any real weight in transport project appraisal. So the distribution of transport funding has tended to benefit those on higher incomes' (SEU 2003: 3).

There are technical, practical and political reasons for the lack of inclusion of social impacts in CBA. When 'moving from the direct transport and environmental

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impacts of infrastructure projects to the wider policy impacts, one enters an arena that is both fraught with technical and theoretical difficulties and highly politicized' (Grant-Muller et al 2001: 250). A lot of work has been done by economists to develop methodologies for the valuation of outputs perceived as non-monetary to expand the range of aspects included in CBA, including social and environmental criteria. Yet there are still unsolved theoretical, methodological and technical difficulties which arise in relation to 'operationalizing the concepts, creating appropriate indicators of change in, for example, peripherality or social cohesion, that can be described, measured, modelled and predicted in an appraisal context' (Grant-Muller et al 2001: 250). These challenges include (Grant-Muller et al 2001):

- identifying the broad group of impacts that should be included in a CBA and can be monetized;
- specifying how each of the impacts included should be formally defined and measured (in many cases the impacts have not been specified sufficiently clearly to be capable of measurement at the project level);
- modelling or otherwise estimating the size of the impact in terms of the measured units. Kaparos and Skayannis (2008) argue that land use and transport interaction modelling supported by GIS platforms, micro-simulation engines and other computing-intensive tools, although reflecting an attempt to better incorporate wider socioeconomic impacts and distributional effects, are still at the research and development phase with limited use at present;
- arriving at a set of prices per measured unit for each impact based on social market valuation or willingness to pay principles;
- defining appropriate time horizons and geographical scale over which costs and benefits are measured and a suitable discount rate (Grant-Muller et al 2001: 240). This can have a crucial impact on the result of the appraisal: 'the appraisal of a large highway based on CBA, may give a positive value, given the substantial journey time savings. However, the cumulative effect of developing highways that save (initially) substantial time to car-users would be a car-dependent pattern of urbanization with substantial adverse social sustainability impacts' (Kaparos and Skayannis 2008).

Because of all these challenges, mainstream appraisal methods based on CBA 'are not good at handling indirect effects from transport interventions despite the fact that these effects comprise the prime rhetoric accompanying MUTPs' (Kaparos and Skayannis 2008). There are also political reasons for the lack of inclusion of social aspects in CBA. With the new orientations of 'entrepreneurial urban governance' and the impact of the neoliberal ideology on government and public service delivery in many Western countries from the 1980s onwards, decision criteria in the public sphere have moved away from a universalist conception of welfare provision to a concern with the achievement of measurable monetary outputs, economic efficiency and 'value for money' (Davoudi and Healey 1995).

Beyond the challenges highlighted above, more fundamental criticisms have been made against CBA in relation to its capacity to deal with social equity considerations. The basic principle underlying CBA is that the objective, for the decision-maker, is to maximize the net socio-economic benefit arising from the project. In other words, there is an underlying assumption that social decisions can and should be founded on the aggregation of individuals' willingness to pay (Grant-Muller et al 2001: 240). This very assumption has been criticised on two grounds. First, CBA tends to have a systematic bias of a regressive kind, so that benefits (and costs) enjoyed by high-spending groups are over-emphasized compared to those of lower-spending groups (Edwards 1998, Flyvbjerg et al 2003, Altshuler and Luberoff 2003, Kaparos and Skayannis 2008). This is in direct contradiction with the 'social equity' approach described in Section 1.2:

> By valuing highly time savings of rich populations, CBA favours projects that save those people a lot of time, at the expense of poor people who can afford to pay little to defend their environments. In order for an MUTP to be justified, it has to create significant benefits in terms of time savings value (the major quantified benefit in CBA) given its huge construction and operation costs. The value of time savings is high when a project saves a lot of work-trips time of high wage populations. As such, it is very probable that a large transport link connecting an international airport with the business district of a city will outperform an option that links low-income areas. This contradicts with the inclusionary thrust of cohesion and sustainable development (Kaparos and Skayannis 2008).

Second, it has been argued that the objective of social equity (i.e. the equitable distribution of costs and benefits) *cannot* be addressed properly by CBA, because CBA relies on aggregates, i.e. 'counts the sum of benefits against the sum of costs; no matter *who or how few people* get the benefits and who or how many people suffer the costs' (Kaparos and Skayannis 2008). This reflects the utilitarian approach on which CBA is based, rooted in the idea of the 'greatest good of the greatest number' and in the concept of 'pareto efficiency' (a situation in which there is no way to make all agents better off, i.e. where one cannot improve the welfare of one person without worsening that of another person) (Levinson 2002). This means that CBA approaches inherently neglect the fact that the very existence of an MUTP may be totally opposed or strongly contested by specific groups which may have very little power to influence the decision-making process. Different groups have different perceptions of what a positive and what a negative impact is, of what makes a successful or a failed project: those conflicting perceptions cannot be grasped through CBA approaches. CBA 'mirrors the interests of the powerful and masks the losses faced by constituencies that lack voice and political clout' (Srinivasan and Mehta 2003: 175). Sen (1999: Chapter 3) criticizes the utilitarian approach which underpins CBA for those very reasons. CBA cannot replace the role of political decision-making in deciding about a choice of MUTP if non-utilitarian objectives are to be prioritized.

This has led some researchers and practitioners to try and develop more 'pluralistic' forms of appraisal and evaluation which openly address who benefits and to what extent, which recognize the different perceptions and criteria of

success/failure held by different social groups and the different interpretations which will be attached to the same outcome (Hambleton and Thomas 1995, Meyer 1995). By examining outcomes in relation to groups 'we avoid utilitarian cost-benefit analyses that focus on aggregates and we also have a better handle on power relations and social structures' (Fainstein 2006: 17). The use of an appraisal scheme 'that explicitly distinguishes the impacts on all groups does not solve the choice problem, but it forces it into the open' (Meyer 1995: 97). Appraisal and evaluation should be viewed, in that sense, 'less as a methodological task and more as a way of community learning, self-reflection and a basis of understanding the distributional effects of programme implementation' (Murtagh and McKay 2003: 196). This is the approach taken by Social Impact Assessment (see Section 5).

Some social impacts can be of a very intangible nature (e.g. community cohesion and identity) and are very subjective: no matter what amount of scientific efforts goes into creating quantified indicators for them, they cannot be adequately grasped by traditional CBA appraisal. Strong distortions and simplifications might be introduced by the attempt to 'convert all kinds of costs and benefits including ones based on personal beliefs, values and upbringing, into a common currency, which will then be aggregated' (Hambleton and Thomas, 1995: 12). For such non-quantifiable impacts, alternative approaches have been developed to help decision-makers assess their relative importance vis-à-vis quantifiable impacts, in particular various types of Multi-Criteria Analysis (MCA) frameworks. MCA is used as an alternative or a complement to CBA which enables the incorporation of impacts that are difficult to monetize. MCA is objectives led, which means that the goal of maximizing is set with respect to *a set of socially or politically based objectives* rather than market values (Grant-Muller et al 2001: 240). This, therefore, opens the possibility for a prioritization of social equity objectives which is not possible under CBA.

Under the broad label of MCA fall a number of different techniques which will not be discussed here. The general principle of MCA is as follows:

> Based on the objectives of the responsible decision-makers, a group of impacts is defined which between them capture the performance level of each alternative project in achieving the set objectives. Unlike CBA, achievement of objectives can be assessed in a number of ways, such as a measured quantity, qualitative assessment or rating. These assessments are then transformed onto a scale (typically 0-100) giving a score for each impact for each project. The overall performance of the project can then be estimated by producing an overall project score, calculated by multiplying each impact score by a relative weight for that impact (reflecting its importance with respect to the other impacts) and then summing over all impacts (Grant-Muller et al 2001: 240).

In an MCA framework, the result of the CBA (net present value or rate of return) can make up *one* of the scoring criteria (usually the most significant) (Hayashi and Morisugi 2005). As with CBA, however, a number of technical and methodological issues arise when attempting to include a wide range of social impacts in MCA (Grant-Muller et al 2001: 240), in particular:

- identifying and defining the impacts to be included;

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- specifying the measurement method and how each impact will subsequently be assigned a score;
- deciding upon the use of weights and how these might be obtained in practice;
- dealing with variations in how the scores and weights are combined to give an overall project score.

Some governments use descriptive frameworks incorporating a wide range of project impacts within which the criteria are neither weighted nor valued (for example a goal or objective achievement matrix/table that serves for the comparison and ranking of projects) (Hayashi and Morisugi 2005, Kaparos and Skayannis 2008). In the UK, in spite of the strong emphasis given by the New Labour government on the role of transport in fighting social exclusion, there is no specific appraisal method to directly evaluate impacts on social exclusion (see Section 4), but several existing assessment tools cover social exclusion issues including rural proofing, regulatory impact assessment, sustainable development, risk, public health and safety, consumer impact assessment and policy appraisal for equal treatment (Titheridge 2004). A thorough review of various practices of impact assessment in the UK conducted for Friends of the Earth equally concluded that current impact assessment methods and their implementation in the UK are failing to provide an effective analysis of environmental justice (equity) issues in policy making and project approval (Walker et al. 2005).

In this section we have very briefly reviewed the shortcomings of conventional CBA and MCA appraisal frameworks with regard to the appraisal of 'social impacts'. It is beyond the scope of this paper to review in details the similarities and differences between the appraisal approaches used by different countries (and for different transport modes) and the extent to which they deal with social impacts (see Grant-Muller et al 2001, Hayashi and Morisugi 2005). Most countries rely primarily on CBA for MUTP appraisal, but more holistic forms of appraisal not solely based on CBA have been developed (Grant-Muller et al 2001, Hayashi and Morisugi 2005, Kaparos and Skayannis 2008). Grant-Muller et al (2001) concluded their review of European appraisal practices by noting that all national appraisal frameworks contain a mixture of monetized impacts and impacts measured in qualitative terms. Although the direct transport impacts tend to have monetary values, and the environmental and socio-economic impacts tend not to be monetized, there is variation between countries. The general trend observed in most countries is that the scope of impacts considered in CBA and MCA have been expended to include environmental impacts (in most cases), economic development and social impacts (to a much lesser extent).

In conclusion, there is still a long way to go in terms of the importance assigned to social impacts in existing appraisal methods, and of the development of 'a convincing framework for dealing with them which is both logical and practical' (Grant-Muller et al 2001: 252). Summarizing the main arguments made in the previous section, there are three main reasons why the assessment of social

impacts (beyond direct transport benefits and environmental impacts) remains underdeveloped in conventional MUTP appraisal approaches:

- Technical and methodological difficulties (i.e. the challenge of creating indicators that can be measured and modelled, of valuing certain types of social impacts, of defining the spatial and time scale at which impacts may play out);
- The very philosophy of CBA, which is unable to grasp equity issues;
- The political importance given (or not) to social equity issues, which often do *not* feature prominently on the agenda of decision-makers and lie behind economic growth and environmental concerns. The prioritization of equity issues in transport policy and decision-making obviously depends on national, regional and local context and on the political ideology of the decision-makers, which will define what aspect of the 'sustainability triangle' is given more weight in the ultimate decision[7].

Any improvement of the ways in which social equity impacts and 'social sustainability' objectives are taken into account in MUTP appraisal will therefore have to be sought in three directions:

   i.   improving existing CBA/MCA approaches;
  ii.   replacing or supplementing them with new appraisal methods based on a different appraisal philosophy;
 iii.   giving a stronger political weight to the social element of 'sustainability' in relation to the economic and environmental elements.

Proposal (iii) depends on political decisions backed by shifts in public opinion and will not be discussed here. In the next final two sections of this paper, attention will be paid to options (i) and (ii).

4. Improving existing CBA-MCA based appraisal frameworks to include 'social equity' considerations: examples from recent research

It is beyond the scope of this paper to make a detailed set of recommendations on how CBA and MCA frameworks can be improved to account for social equity impacts. However the result of recent research carried out in the US and in the UK is briefly introduced here, to illustrate how improvements can be made both to existing CBA and MCA appraisal frameworks to better include social equity considerations in the appraisal, in particular by providing *disaggregated* impacts

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[7] A well known example is that of the Channel Tunnel rail link, where conventional CBA favoured the south London route, but where the East London route was ultimately chosen on environmental, economic developmental and political grounds.

of a planned MUTP on different categories of population variously defined according to age, gender, ethnicity, income etc...

CBA and social equity considerations

Litman (2007) provides practical guidance on how to incorporate equity impacts into transportation planning and appraisal. Within CBA approaches, a possibility for improvement lies with the *choice of reference unit* used in the analysis. Litman evaluated the equity implications of different reference units used in CBA (like costs recovery or vehicle miles travelled) (2007: 10), showing that such units have equity implications (Figure 3) which, once brought into light, can be taken into account by those conducting (and those using) the appraisal.

Figure 3. The equity implications of different reference units used in CBA [Sourse: Litman 2007]

Unit	Description	Equity Implications
Cost Recovery	Transport expenditures are evaluated according to whether users pay their costs.	Favors wealthier travelers because they tend to spend more and deserve the least equity-justified subsidies.
Congestion (V/C Ratio, roadway LOS)	Transport investments are evaluated according to most cost-effective roadway capacity expansion.	Favors people who most often drive on congested roads over people who seldom or never use such facilities.
Vehicle Miles Traveled (VMT)	Transport investments are evaluated according to which route or mode can increase vehicle travel at the least cost.	Favors people who drive their automobile more mileage than average.
Passenger Miles Traveled (PMT)	Transport investments are evaluated according to the most cost-effective way of increasing personal mobility.	Favors people who travel more than average. Tends to favor motor vehicle travel.
Passenger Trips	Transport investments are evaluated according to the costs of each trip.	Provides more support for transit and nonmotorized travel.
Access	Transport investments are evaluated according to where improved access can be accommodated at the lowest cost.	Depends on how access is measured.
Mobility Need	Transport investments are evaluated according to which provides the greatest benefits to disadvantaged people.	Favors disadvantaged people.
Affordability	Transport user fees are evaluated with respect to users' ability to pay.	Favors lower-income people.

Equity analysis is affected by the units used for comparison. Some units only reflect motor vehicle travel and so undervalue alternative modes and the people who rely on such modes.

Levinson argues that within the practice of CBA, there are possible 'ways of grouping the population to determine the fairness of the distribution of gains and losses to specific subpopulations', and stresses that different groupings of the population 'will result in different assessments of a project's fairness' (2002: 183). Levinson argues that 'the distribution of opportunities to participate in decisions and the outcomes of those decisions (in terms of mobility, economic, environmental, and health effects) that different strata (spatial, temporal, modal, generational, gender, racial, cultural, and income) of the population receive' (2002: 179) should form a major part of the appraisal process. The distribution of opportunities arising from a potential MUTP would have to be considered across different stratas of the population (Levinson 2002: 184), which can defined in different ways:
- spatial (or jurisdictional) stratification, i.e. how different areas (from small areas like census blocks or traffic zones to larger areas like census tracts, jurisdictions, or metropolitan areas) are affected by the project;

- temporal stratification: the benefits and losses to current residents in comparison with those of (potential) future residents;
- Modal equity: whether users of different modes (e.g., drivers, pedestrians, transit riders) receive different gains or losses from a project;
- Generational equity, which differentiates individuals by age: do the elderly or middle-aged benefit at the expense of the young?
- Gender equity, which contrasts men and women. Because there are known differences in the transportation use patterns by sex, distinguishing the effects on the two groups is important.
- Ability compares the fairness accorded to those without any physical or mental disability with the fairness to those facing such challenges;
- Racial and cultural equity consider the effects on different races, ethnic groups, religions, and cultures;
- Income equity: some investments that serve certain vehicle types and certain areas will inevitably favour the rich over the poor.

In order to structure and present the analysis of the distribution of opportunities across these different strata in the appraisal process, Levinson proposes that transportation CBA should include an 'equity impact statement' (Figure 4). This document would specifically consider the winners and losers of a project by taking into account the inputs (the opportunity to participate in decision making) as well as the outcomes (mobility, economic, environmental, health, and other):

> 'A set of specified subgroups would be identified. Then the outcomes of the project (e.g., travel time and delay, accessibility, consumer's surplus, air pollution, noise pollution, accidents) would be assessed for each of the population groups. Although inequity across some dimensions is almost inevitable, it is crucial both for fairness and for political expediency, given the growing environmental justice movement, to acknowledge the inequity and its relative magnitude before a project is implemented' (Levinson: 183-184).

Such an 'equity impact statement' can help to clarify the impacts of an infrastructure proposal and to test alternative strategies.

In the US the Federal government has pushed for the explicit consideration of distributional impacts during the development of transport plans and strategies, in particular with regard to low-income and minority persons. Morton (2006) provides a precise and detailed survey of the measures and indicators of transport equity that are being used, or have been proposed for use, in regional transport planning and corridor planning, in a number of US metropolitan authorities.

MCA: example of suggested improvements to the UK NATA framework

In spite of the fact that improvements can be made to CBA in order to better analyse equity impacts on different categories of social groups, Section 3 has shown that there are inherent limitations of CBA with regard social equity considerations – in particular in relation to the utilitarian approach on which CBA is based. It may therefore seem more fruitful to explore avenues for

Figure 4. Checklist for an 'equity impact statement' [Source: Levinson 2002]

Table 9   **Transportation Equity Indicators and Categories**

Types of Equity	Categories of People	Impacts	Measurement
Horizontal Equal treatment. Equal allocation of funds and other resources. Equal use of public facilities. Cost recovery. **Vertical With-Respect-To Income And Social Class** Transport affordability. Housing affordability. Discounts for low-income travelers. Impacts on low-income communities. Employment opportunities. Quality of services for lower-income travelers. **Vertical With-Respect-To Need And Ability** Universal design. Special mobility services. Disabled parking policies. Quality of services for non-drivers.	**Demographics** Age Gender Race Ethnic group Family status Lifecycle stage **Income class** Quintiles. Below poverty line. Lower-income community residents. **Geographic location** Jurisdictions Residents of impacted neighborhoods/streets. Urban/suburban/rural. **Ability** People with disabilities. Licensed drivers. **Mode** Walkers Cyclists Motorists Public transit users. **Vehicle Type** Cars/SUVs/motorcycles Trucks (light and heavy) Bus Rail **Industry** Freight (trucks, rail, etc.). Personal transport. Vehicle manufactures. **Trip Type and Value** Emergency Commute Commercial/freight Recreational/tourist	**Public Facilities and Services** Funding for facilities and services. Parking requirements. Subsidies and tax exemptions. Planning and design of facilities. Public involvement. **User Costs and Benefits** Mobility and accessibility. Vehicle expenses. Taxes and government fees. Road tolls and parking fees. Public transportation fares. Fitness (use of active modes) **Service Quality** Number of modes available. Road and parking facility quality. Public transport service quality. Land use accessibility. Universal design. **External Impacts** Traffic congestion and crash risk. Pollution emissions. Barrier effect. Hazardous material and waste. Aesthetic impacts. Land use impacts. Community cohesion. **Economic Impacts** Access to economic opportunities. Impacts on economic development. Expenditures and employment. **Regulation and Enforcement** Regulation of transport industries. Traffic and parking regulation. Regulation of special risks	**Per capita** Per adult. Per commuter. Per student. Per disabled person. Per low-income household. **Per vehicle-mile or kilometer** **Per passenger-mile or kilometer** **Per trip** Per commute trip. Per "basic mobility" trip. Per peak-period trip. **Per dollar** Per dollar of user fees paid. Per dollar of total taxes paid. Per dollar of subsidy.

This table lists various types of equity, categories of people, impacts and measurement units. Major categories are bold, and many have subcategories. These can be selected to reflect the issues considered most important in a particular transportation equity evaluation.

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improvements in MCA approaches which have the potential to give more importance to social equity objectives:

> What is important is that some sort of coherent, consistent, auditable method assesses these [social] impacts, and that they should be presented in ways that facilitate the assessment process rather than obscuring it. A good, well-judged description of the likely impact within an overall multicriteria assessment framework is infinitely preferable to a poorly based numerical value in a cost-benefit table (Grant-Muller et al 2001: 252)

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Here an example of relevance to the UK context, but with potential applicability elsewhere, will be briefly introduced. The UK Department of Transport commissioned a project to identify ways in which social inclusion might be better integrated into the Department's transport modelling and appraisal techniques, with a particular focus on potential modifications to the *New Approach to Appraisal* (NATA) framework. The results and recommendations of the study (Centre for Transport Studies et al. 2006) are summarized here.

The *New Approach to Appraisal* (NATA), introduced by the then DETR in 1998, is a multi-criteria decision analysis based tool used in the UK as a method to summarise information and data contained in the CBA and EIA of proposed transport schemes. In 2003 the DoT launched a web based Transport Analysis Guidance (WebTAG) based on NATA principles (http://www.dft.gov.uk/webtag/). The final step in NATA is an Appraisal Summary Table (AST), displayed in a simple worksheet format, which 'does not make any judgements about the relative weighting of the values presented. In theory, and hopefully in practice, the idea is to allow the decision maker to balance the various trade-offs presented within the AST' (Centre for Transport Studies et al. 2006: 32). Within the currently used NATA framework, the impacts of transport projects are categorised according to five objectives (economy, safety, environment, accessibility and integration), each divided into a number of sub-criteria (see the standard AST reproduced in Figure 5).

Several of these touch on issues related to social exclusion/inclusion policy objectives, but none are explicitly focused on it. A quick glance at the worksheets for sub-objectives currently used in the NATA system shows that they do not give a prominent place to social inclusion and equity objectives (http://www.dft.gov.uk/webtag/sitepages/worksheets.htm). Additionally, in the AST the analyses of the sub-objectives currently tends to focus on aggregate impacts which neglect specific impacts on specific vulnerable groups (Centre for Transport Studies et al. 2006). For example, the current method used to assess Local Transport Plans based on the NATA methodology has three very simple measures of accessibility (namely option-value, severance and an index of access to the public transport system), but is still lacking a comprehensive and robust methods of social exclusion appraisal and monitoring (Titheridge 2004)[8]. In spite of the increasing importance assigned to 'social inclusion' objectives in transport policy, however, limited progress has been made on the definition of useful measurable indicators: the current UK definition of social exclusion based on the Index of Local Deprivation 'is largely immune to influence by transport policy interventions'(Centre for Transport Studies et al 2006).

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[8] The SEU report (2003) included recommendations to build a new framework for 'accessibility planning' into the future round of Local Transport Plans on the basis of 'local audits' identifying disadvantaged groups and areas with poor access to key services (using public consultation and GIS based methods) (Titheridge 2004). From 2006 onwards, Local Transport Authorities have had to submit accessibility planning strategies within their Local Transport Plans on the basis of such audits.

The report (Centre for Transport Studies et al 2006) identified two broad types of modelling requirement which would help to improve the ways in which social equity and social cohesion impacts are considered in NATA:

(i) tools to predict the effects of changes in transport provision on individuals' ability to participate to different activities;

(ii) tools to predict the fine-grained spatial and socio-economic distribution of transport system externalities.

With regard to (i), the report argues that the transport modelling techniques commonly used by British local authorities do not in general deal well with this issue, because:

- they offer only very limited scope for socio-demographic and spatial disaggregation of the impacts of transport policy measures on different social groups;

- they do not provide an explicit treatment of the activities in which individuals take part and which are served by the trips individuals' make;

- they use partial and overly simplified concepts of accessibility, focusing principally on access to public transport stops and ignoring the access to ultimate destinations, the characteristics of these destinations and temporal constraints on access (p. 30).

With regard to (ii), the report argues that 'conventional transport models offer only limited opportunities for socio-demographic and spatial disaggregation. The former is usually limited to, at best, crude unidimensional classifications and the latter to the level of traffic zones' which makes the 'identification of the differential impact of policy interventions on particular groups extremely difficult' (pp. 2-3).

After discussing these shortcomings in the modelling systems currently used, the report makes concrete recommendations for short and medium-term improvements to these systems, advocating a dual modelling emphasis on more detailed and refined treatments of (i) activity participation and accessibility and (ii) spatial and socio-economics disaggregation. The idea of disaggregation is in line with Levinson's (2002) arguments referred to above – i.e. the need to move away from a traditional utilitarian cost-benefit approach simply assessing the net impacts on society. The report suggests, in particular, to strengthen the use of alternative modelling traditions such as activity-based approaches and microsimulation models. The use of these modelling approaches is illustrated by an application study undertaken in the West Midlands using readily available data sources and modelling technology.

The authors of the report conclude their work as follows:

Our review of modelling issues to account for social exclusion showed that there are both existing methods and some methods under development that will be able to assess the impacts of transport policies and schemes on socially excluded groups. These methods are inherently disaggregate, either at the individual level or spatially, such that the analyst can identify the impacts on disaggregate population groups or neighbourhoods. Given the lack of a clear definition for which population groups are socially excluded, our focus is on the

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ability to analyse different population sub-groups or neighbourhoods. This allows the decision maker to define socially excluded groups in the context of any specific assessment. The analyses of disaggregate impacts will generally provide information on whether the transport scheme helps or hinders the access of various population groups to economic and social activities. In addition, it should determine whether there are various adverse environmental impacts that disproportionately affect any specific sub-group. For example, are lower income communities more impacted compared to more affluent populations? (Centre for Transport Studies et al 2006: 34-35).

The report suggests revising the NATA framework to display this type of analyses within the AST, either by adding extra lines to the AST or by including additional AST sheets, one for each distinct dimension of socio-economics dissagregation. Figure 5 shows a proposed draft AST which includes the type of summary information that can be displayed for assessing the impacts on disaggregate groups. Finally, the report ends with two recommendations for medium-term improvements: that first, more work needs to be done on defining appropriate measurable indicators of social exclusion (or the lack of social inclusion), in particular measures that are sensitive to the effect of transport policy interventions; and second, that new activity-based modelling techniques need to be developed (Centre for Transport Studies et al 2006: 51).

Figure 5. Proposed amendment to the NATA Appraisal Summary Table for multi-modal schemes: including disaggregate impacts to better grasp 'social inclusion' objectives [Source: Centre for Transport Studies et al. 2006: 36-37].

Existing AST

TABLE 4.2   APPRAISAL SUMMARY TABLE FOR MULTI-MODAL SCHEMES

Option		Description	Problems	Present Value Cost to Government (£m)
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE MEASURE**	**ASSESSMENT**
ENVIRONMENT	Noise			Net properties win/lose with scheme
	Local air quality			Concentrations weighted for exposure
	Greenhouse gases			Tonnes of CO_2
	Landscape			Score
	Townscape			Score
	Heritage of Historic Resources			Score
	Biodiversity			Score
	Water Environment			Score
	Physical Fitness			Score
	Journey Ambience			Score
SAFETY	Accidents			PVB £m
	Security			Score
ECONOMY	Transport Economic Efficiency			Users: NPV £m Private providers: NPV £m Public providers: NPV £m Other government: NPV £m
	Reliability			Score
	Wider Economic Impacts			Score
ACCESSIBILITY	Option values			Score
	Severance			Score
	Access to the Transport System			Score
INTEGRATION	Transport Interchange			Score
	Land-Use Policy			Score
	Other Government Policies			Score

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Proposed AST

TABLE 4.3   PROPOSED APPRAISAL SUMMARY TABLE INCLUDING DISAGGREGATE IMPACTS

Option		Description	Problems	Present Value Cost to Government (£m)
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE WITH DISAGGREGATE IMPACTS CONSIDERED	ASSESSMENT
ENVIRONMENT	Noise		Number of residences affected by population groups.	
	Local air quality		Number of residences affected by population groups.	
	Greenhouse gases		NA	
	Landscape		Population groups most affected by landscape changes	
	Townscape		Population groups most affected by townscape changes	
	Heritage of Historic Resources		Are there unique heritage resources of any socially excluded populations?	
	Biodiversity		NA	
	Water Environment		Any disproportionate impact on socially excluded?	
	Physical Fitness		Any negative impacts on socially excluded?	
	Journey Ambience		What population groups experience a benefit?	
SAFETY	Accidents		Number of people by population groups / by mode	
	Security		Number of people by population groups / by mode	
ECONOMY	Transport Economic Efficiency		Disaggregate costs for users by population groups, and by mode, including direct income and welfare effects.	
	Reliability		Changes in reliability assessed by mode and likely users	
	Wider Economic Impacts		Economic effects on various population groups and neighbourhoods.	
ACCESSIBILITY	Option values		Changes in option value by population groups	
	Severance / Cohesion		Are impacted neighbourhoods socially excluded or will this contribute to isolation? What is measure of cohesion for different neighbourhoods?	
	Access to the Transport System		Disaggregate spatial analyses of access by population groups, modes and neighbourhoods	
	Access within the Transport System		Analyses of how scheme may make use of transport system more or less feasible for some population groups and modes.	
INTEGRATION	Transport Interchange		NA	
	Land-Use Policy		NA	
	Other Government Policies		NA	

5. Integrating and promoting the social dimension of sustainability in MUTP appraisal: the potential of 'Social Impact Assessment' (SIA)

This section introduces an alternative approach to appraisal which explicitly focuses on social sustainability and equity issues: Social Impact Assessment (SIA). SIA could be used as an alternative, or complement, to existing MUTP appraisal frameworks. Practices of 'impact assessment' have been dominated by environmental impact assessment, with the social aspects sometimes forming a sub-part of EIA. Social impact assessment (SIA), at present, is the only relatively developed framework which systematically attempts at appraising 'social' impacts in a wide sense[9]. It is also a 'philosophy' of appraisal which encourages public involvement in the appraisal process and more bottom-up and pluralistic forms of appraisal. SIA emerged in the USA as a formal concept following the 1969 *National Environmental Policy Act* (Vanclay 2003) in relation to the impacts of the Trans-Alaska pipeline on the Inuit people (Burdge 2002). Interest in SIA grew in North America in the 1970s and 1980s, with institutions such as the US Federal Highways Administration and the US Army Corps of Engineers developing SIA for infrastructure appraisal (Barrow 1997). SIA then began to be

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[9] Other terms are used (social impact analysis, socio-economic impact assessment, community impact assessment etc...), which are not discussed here.

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applied and developed in various fields of policy and decision making in Europe from the early 1980s onward. For an overview of SIA, see handbooks by Burdge and Vanclay 1995, Becker 1997, Barrow, 2000, Becker and Vanclay 2003, Burdge 2004, Burdge et al 2004, Taylor et al 2004, and for similar social appraisal frameworks, see Walker et al 2005 ('Environmental Justice Impact Assessment'), the World Bank's guidelines (2003) on 'Social Analysis in Transport Projects', or the practical Guidelines on 'Community Impact Assessment' in transportation projects by the US Department of Transportation/Federal Highway Administration (1996).

SIA are usually carried out by professional SIA practitioners and social scientists. Major consultancy firms offer SIA expertise. The academic background of SIA practitioners is diverse, but may include applied sociology, anthropology, geography, development studies and planning. Academic sociologists or anthropologists are often asked to participate in SIA appraisal teams (this can raise various ethical issues for the experts involved, see Fisher 2008). In parallel to, and closely linked with practice, a substantial body of academic literature and social research has developed around the techniques and application of SIA (Becker 1997, 2001).

There is no single definition of SIA and each textbook on the subject provide its own conceptualization of the approach. In simple terms SIA is a methodology for the ex-ante evaluation of the consequences of interventions in complex social systems. Becker (2001: 312) defines SIA as 'the process of identifying the future consequences of current or proposed actions, which are related to individuals, organizations and social macro-systems'. A more normative definition is provided by Vanclay:

> 'SIA is the process of analyzing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions *so as to bring about a more sustainable and equitable biophysical and human environment*' (Vanclay 2002b: 388, our emphasis).

Additionally SIA helps identify mitigation measures and/or ways of internalizing social costs, similarly to EIA with regard to environmental pollution costs. Too often these social costs (externalities)

> 'are not adequately taken into account by decision-makers, regulatory authorities and developers, partly because they are not easily identifiable, quantifiable and measurable. By identifying impacts in advance, better decision can be made about which interventions should proceed and how they should proceed. Mitigation measures can be implemented, and redesign can occur, to minimize the harm and maximize the benefits' (Vanclay 2003a: 1).

There is no uniform definition, standard or procedural guidance for SIA, although attempts have been made in that direction - for example the 2003 *Principles and Guidelines for Social Impact Assessment (SIA) in the USA* (summarized in Figure 6 below), which provide guidance for the conduct of SIA within the context of the US National Environmental Policy Act of 1970 (Interorganizational Committee on Guidelines and Principles for SIA 2003) and the *International*

Principles for Social Impact Assessment developed under the auspices of the International Association for Impact Assessment (IAIA 2003, reproduced in Vanclay 2003b, available online). These guidelines were compared by Vanclay (2006), who concludes that the *US Principles and Guidelines* are more positivist/technocratic while the *International Principles* are identified as being democratic, participatory and constructivist.

Figure 6. Summary of US principles and guidelines for SIA [source: Interorganizational Committee on Guidelines and Principles for SIA 2003: 233]

SIA is often described as more than just an appraisal and planning tool because it is also a means of public involvement (Barrow 1997) which opens up the appraisal process to a wide range of stakeholders. More than a technique, SIA is a 'philosophy about development and democracy ... [which considers the] pathologies of development (i.e. harmful impacts), goals of development (such as poverty alleviation), and processes of development (e.g. participation, capacity building)' (Vanclay 2002b: 388). SIA is thus rooted in a strong ethic related to social justice objectives (Finsterbusch 1995):

> Whilst all impact assessment practitioners should have a commitment to sustainability and scientific integrity, they should also uphold an ethic that advocates openness and accountability, fairness and equity, and defends human rights. The role of SIA goes far beyond the ex-ante prediction of adverse impacts and the determination of who wins and who loses: SIA also encompasses empowerment of local people; enhancement of the position of women, minority groups and other disadvantaged members of society; development of capacity building; alleviation of all forms of dependency; increase in equity; and a focus on poverty reduction (Vanclay 2003: 3).

SIA integrates other internationally agreed principles of sustainable development: precautionary principle, uncertainty principle, intra- and intergenerational equity, recognition and preservation of diversity; internalisation of costs; Polluter-Pay principle; prevention principle, protection of health and safety, principle of multi-

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sectoral integration, and subsidiarity (Vanclay 2003a: 5-6). SIA, consequently, goes beyond issues of technical feasibility (the engineer's perspective), of economic and financial viability, and of legal and political permissibility (Barrow 1997: 5).

The various SIA handbooks define the main steps in an SIA procedure in different ways, but the broad framework comprises the following stages (Figure 7):

Figure 7. Steps in a large-scale SIA [source: Becker 2001: 313]

THE INITIAL PHASE IN AN SOCIAL IMPACT ASSESSMENT PROJECT
1. Problem analysis and communication strategy
2. System analysis
3. Baseline analysis
4. Trend analysis and monitoring design
5. Project design

THE MAIN PHASE IN AN SOCIAL IMPACT ASSESSMENT PROJECT
1. Scenario design
2. Design of strategies
3. Assessment of impacts
4. Ranking of strategies
5. Mitigation of negative impacts
6. Reporting
7. Stimulation of implementation
8. Auditing and ex-post evaluation

The two crucial elements which have to be identified at the beginning of an SIA process are the *stakeholders and socials groups* to consider in the appraisal, and the *types of social impacts* which have to be appraised. Social impacts can encompass a very broad set of phenomena: 'all social and cultural consequences to human populations that alter the ways in which people live, work, play, relate to one another, organize to meet their needs and generally cope as members of society' (Burdge and Vanclay 1996: 59). In order to operationalize this rather broad definition, various SIA handbooks and guidelines have sought to list the types of issues which should be dealt with by SIA, e.g. social equity and distributional effects (who benefits and who suffers), impacts on vulnerable groups (access, structures), changing social behaviours, demographic impacts, impact on employment opportunities, health impacts, gender impacts etc[10]... Van Schooten et al (2003) and Vanclay (2002) provide a good overview of the variety of social impacts which can be included in an SIA. Many of the existing publications on SIA, however, do not provide readily identifiable indicators for these social impacts (indicators such as the UN Human Development Index). Additionally the geographical and time scale(s) at which social impacts will be appraised have to be clarified and can vary enormously –

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[10] SIA is an umbrella framework for the evaluation of all human impacts. It is not always easy to demarcate between SIA and other forms of impact assessment such as health, cultural, heritage, aesthetic or gender impact assessments (Vanclay 2003a).

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from the individual, the family, the urban community, to the regional, national or international scale.

Van Schooten et al (2003) stress the need to distinguish between 'social change' and 'social impacts' – two terms often used interchangeably in the SIA literature: SIA involves *first* the appraisal and measurement of patterns of social change which may result of a project, second the identification of impacts. An increase in ethnic mix or evidence of relocation of certain groups, for example, are indicators of social change[11], but are not in themselves *impacts*:

> Under certain circumstances they may result in social impacts such as loss of community cohesion, fear and uncertainty amongst residents, fluctuating real estate (property) values, shortage of housing and so on, but, if properly managed, these demographic changes may not create impacts. Whether impacts are caused will depend on the characteristics and history of the host community, and the extent of mitigation measures that are put in place (Van Schooten et al 2003: 77).

The list of social change *processes* and social *impacts* identified by Van Schooten et al 2003 is summarized in Table 2.

Table 2. A list of social change processes and social impacts [Source: compiled from Van Schooten et al 2003: 80-89].

SOCIAL CHANGE PROCESSES	
Types	*Examples*
Demographic processes	Natural birth and death rate, in-migration, out-migration, displacement
Economic processes	Changes in the number of jobs, diversification of economic activity
Geographic processes	Diversification of land use, gentrification, physical splintering
Institutional and legal processes	Decentralization, privatization
Emancipatory and empowerment processes	Democratization, capacity building
Sociocultural processes	Segregation, deviant social behaviour
SOCIAL IMPACTS	
Types	*Examples*
Health and social wellbeing	Death in the community, nutrition, physical health
Quality of the living environment (liveability)	Leisure and recreation opportunities, housing facilities; access to social infrastructure, personal safety
Economic impacts and material well-being	Standards of living, income, employment
Cultural impacts	Cultural integrity of local traditions, language, heritage
Family and community impacts	Alterations in family structures, domestic violence
Institutional, legal, political and equity impacts	Tenure and legal rights, human rights
Gender relations	Women's integrity, autonomy, role in the division of labour and access to resources

The methods and techniques used in the conduct of an SIA are those of the social sciences, both quantitative and qualitative methods: social surveys, questionnaires, interviews, use of census data and other available statistics on various social and economic trends, market research, observation, Delphi technique etc... An SIA needs to be based on some baseline data and a

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[11] The challenge of monitoring social change is made more complex in societies facing rapid social change through geopolitical events, migration or other phenomena.

baseline review of social conditions (what is sometimes called in the US a 'Community Profile', see US Department of Transportation/Federal Highway Administration 1996). Becker and Vanclay (2003) provide a good illustration of how new qualitative and quantitative methods and techniques can be used to support SIA. The choice of relevant methods and techniques is context-specific. SIA can be combined with decision support system built on a list of social impact variables. What sets SIA apart from other conventional forms of MUTP appraisal, however, is that public involvement and participation in the appraisal process is absolutely inherent to its philosophy and approach (Vanclay 2002, 2003). The individual and social groups who are likely to be affected by the MUTP are supposed to be brought into the appraisal process at a very early stage to define *themselves* what their perceptions of a positive and a negative impact are, and thus shape the appraisal criteria. For SIA supporters, this is the precondition for more social equity in MUTP appraisal:

> 'Social equity can be realized only when the needs of all groups are adequately represented. This argument calls for an inclusion of *opportunity to participate* as a key criterion in an equity impact statement. For each group, identification of whether that group had equal opportunity to affect the project would be made. Questions would be raised such as "Was the group included among the analysts and decision makers in proportion to its share of the affected population?"' (Levinson 2002: 184).

The type and degree of public involvement varies hugely from one SIA framework to another. The key issue to consider is the degree of influence of those who participate in the process over the final decision-making and its outcome. In line with the widely cited 'ladder of public participation' defined by Arnstein (1969), forms of public participation can range from 'manipulation' to full 'citizen control' (Figure 5), with the forms of public participation most commonly used in planning and MUTP decision-making usually situated somewhere in the middle.

Figure 8: A ladder of public participation [source: Arnstein 1969]

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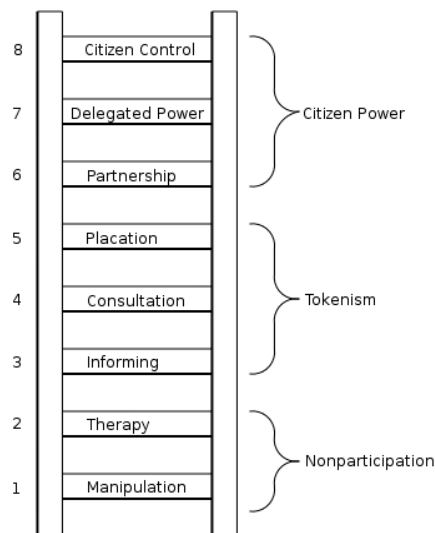
The second, more innovative but more challenging *participatory* approach, allows stakeholders to participate in the project decision-making much more directly. Participation, in this case, is not only reactive but aims at 'determining and assessing the *nature of the costs and benefits* and their effects on (…) lives, livelihoods and environment' (Srinivasan and Mehta 2003: 175). Roberts (2003) proposes a framework for such a form of participatory SIA, which involves identifying participants, organizing public scoping sessions, forming working groups, coordinating working group meetings leading to a final hearing.

There are a number of practical problems and difficulties associated with practices of public involvement (or community participation) in SIA, which are extensively discussed in thirty years of sociological literature on public participation. Some of the challenges include: is there such thing as an identifiable 'community' to consult in a diverse, multi-cultural area with transient populations? Can some form of consensus between divergent viewpoints emerge in the process of participation? Are participatory opportunities facing the risk of being 'highjacked' by well-organised, vocal groups for the articulation of agendas which can be reactionary, protective and defensive? Is 'community participation' instrumentalized by powerful stakeholders who have the final say in decision-making? Requirements for public participation can be, at best, a tick-boxing exercise in which participants do not really have the potential to influence final outcomes.

In that sense the shift to a truly participatory form of appraisal in SIA (as defined by Roberts 2003) is not easy because it requires 'a shift in values which allows for a more open, honest and transparent relationship to develop among all parties, and shift *in the way power is shared*', as well as time, resources, and commitment by all parties (Roberts 2003: 265-6). Additionally there is a tension between the requirements of public involvement in the appraisal process and the increasing sophistication and complexity involved in CBA, MCA and modeling approaches used by professionals (Kaparos and Skayannis 2008). Yet from a practical point of view, early involvement of potentially affected social groups can act as a way of clearing contentious issues which would otherwise re-appear in the formal consultation stages (for a good practice example of this see the case of major oil sands project in Canada in Roberts 2003: 266). Participatory forms of SIA seem to have the potentially to lead to fruitful outcomes only if certain conditions are met:

> Sometimes conflicting demands express fundamental conflicts of interest. The either-or nature of the technology or ecology may preclude a win-win outcome, as in an all-or-nothing dispute over a proposed hydroelectric project (Reisner 1987) - you either build it or you don't. An overwhelming imbalance of power between the opposing groups also can thwart resolution (Crowfoot and Wondolleck 1990, 4). A powerful party can simply refuse to participate. It is also hard to negotiate a comprehensive resolution for a large number of parties.

> Planners are likely to have the best success in using conflict resolution when there is a specific, concise dispute (rather than an amorphous ideological clash); all interested parties agree to participate (and don't bypass the process through the courts); each party feels on

equal ground; there are a variety of possible compromises and innovative solutions; both parties prefer a solution to an impasse; and a skilled third-party negotiator facilitates. The best resolution strategies seem to include two areas of compromise and balance: the procedural (each party is represented and willing to compromise); and the substantive (the solution is a compromise, such as multiple land uses or a reduced development density) (Campbell 1996: 305).

What is the current state of affairs regarding the use of SIA as an alternative (or complementary) method of appraisal for large-scale projects, MUTPs or otherwise? A number of corporations and non-profit organizations have adopted social impact assessment as a standard requirement in policy formation. SIA has been used for the ex-ante appraisal of new transport infrastructure projects (separately from EIA) inter alia by the World Bank (World Bank 2003a, 2003b), which counts sociologists in its ranks since 1973. SIA takes different meaning and priorities in different international contexts: whilst in developing countries the main objectives might be poverty alleviation and the protection of indigenous communities, in a developed country context one of SIA's roles has been to protect individual property rights, with clear statements of adverse impacts required 'to ensure that individual rights are not transgressed' and proposals for mitigation or compensation measures (Vanclay 2003a: 2). Howitt and Jackson (2000) discuss one example of SIA applied in Australia to a 'linear transport project' ('where project configuration involves a narrow strip of land over a considerable distance', p. 257), arguing that linear transport projects pose specific social challenges different to those of single site projects – in particular with regard compensation and distribution of development benefits.

In the MUTP appraisal systems used in most countries SIA is, however, not statutory. The assessment of social impacts is generally incorporated as a minor aspect under the framework of EIA. Although distinct from one another, there are links between EIA and SIA because bio-physical impacts and socio-economic impacts are influencing each other (Barrow 1997: 228, Vanclay 2002a). There are various reasons which explain why SIA has not been adopted widely as a component of the formal assessment process for project or policy appraisal. Some of the reasons are intrinsic to SIA (Becker 2001, Burdge 2002), among others the time and resources involved, the lack of staff with social research training, the difficulties of defining indicators for a wide range of social impacts, and the lack of culture of public involvement. More fundamentally, SIA as a philosophy is potentially threatening and disruptive of the conventional cultures of appraisal and decision making in governmental (and other) agencies: 'when project planning is dealt with as a technical task, and negative social (or environmental, or localized economic) effects are seen as an inevitable cost of progress, the idea of changing a project to accommodate minority interests is difficult to accept' (Howitt and Jackson 2000: 285).

Critics of SIA have blamed it for being 'imprecise; too theoretical; too descriptive; rather than analytical and explanatory; weak at prediction; ad hoc; mainly applied at the local scale; likely to delay project, programmes or policies to which it is

applied (like environmental impact assessment, causing "paralysis by analysis"); and a waste of development resources (Barrow 1997: 230). SIA often uses qualitative data and focuses on 'intangible' aspects (sense of community cohesion and belonging, lifestyle, pride etc...) and is criticized for this very reason. Yet supporters of SIA argue it is a key tool in identifying ex-ante social problems, improve resource allocation and development decisions, systemize questions of justice in relation to policy decisions and their outcomes and impacts, reduce exploitative tendencies within decision-making systems, enhance accountability, transparency and democratization in decision making and project design (Finsterbusch 1995). Many authors have thus argued that SIA should be made a statutory requirement separately from EIA (Burdge 2002). There is, to conclude, a spectrum of attitudes toward SIA, ranging from 'the view that it just a required procedure – a "rubber stamping" activity to ensure that development meets government requirements – or that it determines optimal development, to the idea that it has vital role to play in improving environmental management and planning and in achieving sustainable development' (Barrow 1997: 5).

In practice, SIA could be included in the NATA framework, for example as one of the 'appraisal tools and procedures' listed in box 7 in the process chart below (Figure 9). Yet for the social equity and social sustainability element of the 'sustainability triangle' to be truly integrated in MUTP appraisal, this should be accompanied by improvements in all other steps and aspects of the appraisal process outlined in Figure 9, in particular:

- strengthening of the importance giving to the objective of 'social equity' in government policy (box 1),
- improvements in CBA along the lines discussed in Section 4 (box 7),
- development of truly participatory forms of appraisal (box 4)
- changes in the content of the AST as outlined in Section 4 (box 12).

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Figure 9. The study process underpinning NATA [Source: UK Department of Transport]
http://www.dft.gov.uk/webtag/webdocuments/1_Overview/1_Introduction_to_Transport_analysis/index.htm

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6. Conclusion

MUTPs have complex and ambiguous impacts in terms of social equity and social exclusion. The assessment of social impacts, beyond direct transport benefits and economic and environmental impacts, remains underdeveloped in conventional forms of MUTP appraisal – CBA and MCA. Improvements of the ways in which social impacts and goals of 'social sustainability' could be taken into account in MUTP appraisal have to be pursued in three directions:

i.   By improving existing CBA/MCA methods and appraisal/evaluation guidelines published by governments and international organisations to incorporate a broader scope of impacts and social concerns, with defined indicators. MCA approaches, rather than CBA, have the potential to give more importance to social equity objectives (see section 4);

ii. By complementing or replacing conventional appraisal approaches with new ones based on a different appraisal philosophy, such as SIA (see section 5). SIA must be integrated early enough in the MUTP planning process in order to be meaningful (Barrow 1997, Burdge 2004), and could be made a formal requirement of the appraisal process alongside EIA;

iii. By giving a stronger political weight to the overall social element of 'sustainability' in relation to the economic and environmental elements.

Changes in the practices of design, appraisal and decision-making for MUTPs should integrate a true and comprehensive form of public involvement which will, as such, improve the social sustainability of MUTPs (Kaparos and Skayannis 2008). Yet true forms of public involvement pose real challenges to organizations and political institutions. Changing the design and appraisal of MUTPs to give more weight to social equity impacts is not only a technical challenge, but primarily a political one which relates to the prioritization of one aspect of the 'sustainability triangle' over others, with the trade-offs and value choices that it implies which may alienate some of the stakeholders involved. Reaching 'sustainable development' cannot be done without such trade-offs. SIA in that sense is not a neutral, technical exercise, but is inherently political and ideological as it based on a set of normative assumptions with regard to what aspect of the 'sustainability triangle' should be prioritized (here, social equity), whose point of views should be taken into account and which stakeholders are invited to participate in the design of the project. So the decision to enhance the importance given to 'social equity' and 'social sustainability' objectives is a political, not a technical one. There are techniques, methods and approaches which are available to do that (e.g. under the umbrella of SIA) – none of them perfect in their own right, but nonetheless providing adequate tools to start giving more weight to usually under-represented social equity considerations and social groups in MUTP appraisal.

Key readings and useful websites

Improvements to CBA and MCA frameworks to include 'social equity' considerations:

Centre for Transport Studies, Imperial College London, Mott MacDonald and Institute for Transport Studies, University of Leeds (2006), *Social inclusion: transport aspects*. Final Report for the UK Department of Transport. Available online at: http://www.dft.gov.uk/pgr/inclusion/ [last accessed 15.05.2009].

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Textbooks and guides to SIA:

Barrow, C. J. (2000) *Social Impact Assessment: an introduction*, London, Arnold.

Becker, H. A. (1997) *Social impact assessment: method and experience in Europe, North America and the developing world*, London: UCL Press.

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handbook of social impact assessment: conceptual and methodological advances, Cheltenham: Edward Elgar, pp. 74-91.

World Bank (2003) *Social analysis sourcebook: incorporating social dimensions into bank-supported projects*, Washington, DC: World Bank, available online at: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTSOCIALANALYSIS/0,,contentMDK:20503047~menuPK:1230499~pagePK:148956~piPK:216618~theSitePK:281314,00.html [last accessed 15.04.2009].

Key websites of interest:

http://www.dft.gov.uk/pgr/inclusion/

UK Department of Transport: documents and guidance on transport and social inclusion/exclusion

http://www.ciatrans.net/

Community Impact Assessment: homepage of the US Federal Department of Transportation and the Florida Department of Transportation

http://www.socialimpactassessment.net/

SIA bibliography and resources maintained by R. Burdge, one of the leading academics involved in developing SIA

www.iaia.org

International Association for Impact Assessment (IAIA)

http://ec.europa.eu/regional_policy/sources/docgener/evaluation/evalsed/index_en.htm

Commission of the European Communities: Guide to evaluating socioeconomic development

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