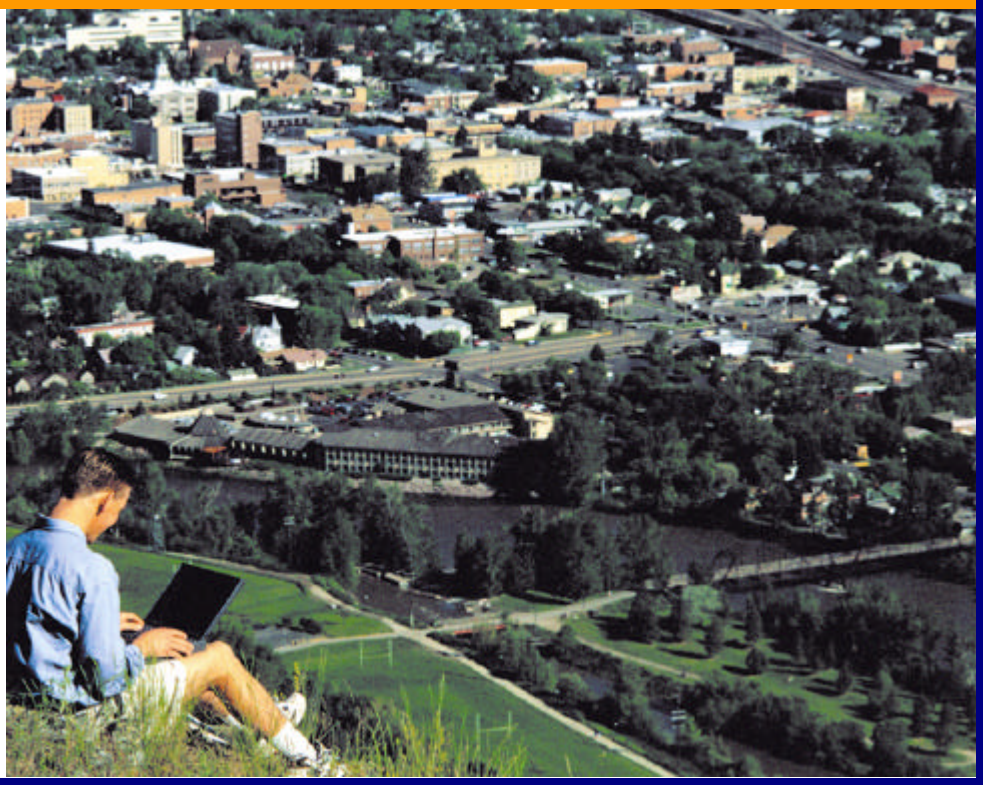
TRANSPORT & SOCIETY

Transport sustainability's poor cousin



T&E

Europe's voice for sustainable transport

Transport and society: Sustainability's poor cousin, T&E 02/5

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This publication launches T&E's work on socially sustainable transport. It is therefore a broad conceptual paper, designed to provide an overview of the issues and set out T&E's vision. It will be followed by a range of more detailed scientific work, containing more specific policy recommendations.

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Introduction

Motorised travel is often said to have brought freedom and a better life to people and societies across the world.

Much less emphasised, however, are the costs. Ever since the publication of the 'Brundtland report' in 1987 there has been a broad consensus that sustainable development rests upon three pillars: environment, economy and society. The economic pillar is thoroughly discussed in arguments for and against particular European transport policies; and environmental issues are well-publicised. The nature of transport's environmental and economic costs is well-known and generally agreed. But the social pillar of sustainability is often neglected: the social ramifications are unclear and the social/psychological factors supporting unsustainable transport are often forgotten. It is as if the social pillar has become sustainability's poor cousin.

All types of motorised transport leave their mark on the environment to a greater or lesser extent. The challenge is to find the right balance and mix of policies that can lead to the best possible outcome for society as a whole, both now and in the future. This cannot be undertaken without an understanding of the social issues involved.

Opponents of road building schemes increasingly argue that transport does not equitably meet the needs of the present generation and is unlikely to serve society better in the future. Their call is often that policy-makers should incorporate the social pillar into their policies. Effectively they are saying European transport is socially unjust. It is now time that these arguments are investigated and that all three pillars of sustainability be fully present in discussions on European transport policy.

What this publication *will* discuss

This publication provides an overview of the main issues in transport and society. First, it starts to develop a policy-relevant vision for socially sustainable transport in Europe. Then it shows how Europe's transport systems are not socially sustainable; thereby augmenting economic and environmental arguments for a changed European transport system. Finally, it looks at ways forward, exploring policy implications for Europe.

What this publication will *not* discuss

When talking of social issues in relation to transport, many speak of such factors as driving times and other working conditions. This publication does *not* deal with these social issues. Although they are extremely important, they are essentially internal to the transport sector and therefore limited in their applicability to broader society. They are also well-publicised.

1. Defining socially sustainable transport

Socially sustainable policies help to reduce unfair or systemic discrepancies within society, and at worst do not increase inequity. At the very least, socially sustainable transport policies should be in line with this principle.

People adopt different roles over time: parent, teacher, student, shopper, tourist. These roles have different requirements and so people have a range of different mobility needs, often in the same day. Consequently, people see the world differently depending on the role they fulfil and the identity they therefore take on. For example, a parent putting their young child to bed will curse the number of aeroplanes flying overhead, but as a tourist wanting to take a holiday in far-off place that same person will be delighted to find plentiful, cheap flights. Transport systems need to reflect this reality in a socially just way, and to serve citizens in all roles, making life easier, rather than focus on them only in their capacity as transport users.

Adams (1999), writing for the Organisation for Economic Cooperation and Development's Environmentally Sustainable Transport project, lists the following social costs under a business as usual scenario for the transport sector:

- More polarisation, with greater disparity between rich and poor
- More dispersal, meaning more sprawl
- More anonymous and less convivial, meaning fewer people know their neighbours
- Less child-friendly; parental fears leading to less child freedom
- Less culturally distinctive
- More dangerous for those not in cars
- Fatter people who are less fit
- More crime-ridden; including greater fear of crime
- Subject to a more Orwellian style of policing; greater use of CCTV [security camera] surveillance
- Less democratic, the majority having less influence over decisions governing them

These are all symptoms of what Adams calls *hypermobility*, getting 'too much of a good thing'[1]. To an extent, we can label the antithesis of this list as 'socially sustainable transport.'

[1] National expert participants in the OECD workshop agreed that most of these social costs were likely, although there was less agreement on loss of safety (life becoming more dangerous for non-motorists) and almost no support for the proposition that law enforcement would become Orwellian. No participants agreed that democracy would be threatened, though all agreed that the significance of the individual voter would decrease (OECD, 1999).

Good transport means higher quality of life. It enables people to have more time to spend doing what they want to do rather than getting there; and in so doing making their destinations, homes and neighbourhoods more liveable – less pollution and illness, people having the chance to know their neighbours better, less paranoia. Better transport systems enable better social cohesion. Better transport means fewer environmental problems and a more efficient economy, which in turn means greater overall well-being and reduced health problems.

So, what would this "better transport" look like? It is difficult to produce an exact set of specifications, and the picture will become clearer as society moves towards sustainability. Nevertheless, the following elements are essential[2].

1.1 Maximise the "Goods", fairly

Transport's "goods", its benefits, should be maximised and fairly distributed, ideally contributing to reducing social inequality. This means that transport policies must respect people's needs for access to goods and services – like employment, education, health services and leisure activities. This in turn means catering for a wide range of diverse needs and circumstances. Transport professionals should consider the needs of the least mobile and the least affluent when developing transport and land-use policies. The private motorised vehicle should be unnecessary for daily access to goods and services, and walking, cycling and public transport should be easy options.

Distribution of access to goods and services should be made available to all. This means that land-use developments should provide as big a range of goods and services as possible within walking distance and access to public transport should be one of the first priorities wherever needed. In addition, the cost of reaching goods and services should be reasonable.

Public transport systems should be designed to serve public need and be seen as an affordable, desirable and obvious means of transport for all of the public to use when motorised transport is necessary. The inherent costs associated with the private motor car, as detailed below, make it an unsuitable mode of first choice, and public transport's benefits are well-documented[3].

[2] Technology will play an important role in sustainable transport. Nevertheless, "Even if the harmful environmental consequences of current and projected levels of mobility could be eliminated by technological advances, significant social problems would remain" (Adams, 1999, pp95-96).

[3] For example, Laconte (1999, p8) cites French research indicating that public transport in urban areas generates more than twice as many jobs per billion passenger kilometres than does the private car (2740 for the car and 5600 for public transport). He also indicates that, measured by number of jobs per billion grams of petroleum used, the ratio of public transport to the car is 4.5:1 in town.

1.2 Minimise the "Bads", fairly

Transport's external costs – its unaccounted-for negative effects on society as a whole – must be internalised. Making polluters pay for the damage they cause through their actions is a prerequisite for ensuring that transport's negative effects are fairly distributed in society.

Internalising external costs means applying the polluter pays principle to ensure that people causing pollution carry the full financial responsibility of their actions. Any revenue gained from internalising transport's external costs should be used in socially beneficial ways and not be reserved specifically for transport projects. This is one way of redressing injustices associated with transport. The use of revenues gained from pricing is crucial to the public acceptability of any transport pricing initiative[4].

It is sometimes argued that it would be socially unjust to price motorised transport, as this would further disadvantage the already-disadvantaged. This is over-simplistic for two reasons. First, motorised mobility is not an absolute right (see section 2.3.2), meaning it is not *a priori* discriminatory against the already-disadvantaged to raise the price. Second, the socially excluded already subsidise the transport sector disproportionately through taxation: in other words, they pay too much anyway in comparison with the benefits they receive from the transport sector. They also carry a disproportionately large share of the external environmental costs, such as air pollution, which (is also unfair and) contributes to inequity. The real question therefore is of society choosing where to spend its limited resources. Doing so on a utility which is used most intensively by society's better-off is not a fair distribution of resources. Far from being unjust, pricing transport is overall the fairest approach to equitably sharing transport's costs; and a political decision on the use of revenues should then directly address persistent inequalities.

Some argue that prices should be lower, to allow more people to use transport infrastructure. This is also too simplistic. There will always be a segment of society for whom any price is too high – so lowering the price will merely decrease the percentage of society which is excluded, not eliminate unfairness. The objective should be to lower inequity, not to increase subsidies to transport. In addition, reducing transport's price will encourage its use. This would be irresponsible from both an environmental and an economic perspective, as it would generate significant additional external costs. These costs would be disproportionately borne by the already-marginalised and the effect of lowering transport prices would therefore be to increase inequity.

[4] For example, the Swiss government has limited volatile organic compound (VOC) pollution based on health criteria. VOC polluters are subject to a fine (affecting particularly the paint and dye business). As the general public suffers from VOC pollution, the government decided that the fairest use of the revenue would be to give the money collected from these fines directly to the Swiss people. In 2001 this meant reimbursing each Swiss citizen an equal amount on their annual health insurance payments (20 CHF, or €14, per person). The fines will continue until the VOC limit is no longer exceeded (source: Dr Jürg Tschopp, *Verkehrsclub der Schweiz*, personal communication).

Transport policies must also be future-oriented: the risk of unforeseen side-effects of present and planned transport policies should be fairly spread so as to avoid disproportionately affecting the socially disadvantaged. As Beck (1999, p5) eloquently puts it, "The first law of environmental risks is: *pollution follows the poor*" (emphasis in original).

1.3 From 'motorisation' to 'modernisation'

The car is widely considered to be the obvious and desirable choice of transport. The reasons can be broadly divided into facts and perceptions. A socially sustainable transport policy would work towards breaking this link on both counts.

Transport systems rely on individual people to create and maintain them. The perceptions of these people therefore determine the nature of the transport system. The barriers which exist in people's minds to sustainable transport need to be overcome. If sustainable transport is to become a reality, the dominant mindset must change. Identifying the social consequences of people's actions – and charging them accordingly – is one way to ensure that this happens.

1.4 Total sustainability is the goal

The three pillars of sustainability are complementary: transport policies can only be socially sustainable if they are also environmentally sound and economically sensible. For example, it is no good introducing a brilliant new transport policy to improve the local economy if the result will be environmental and social damage[5]. These other two sustainability pillars must therefore be respected.

As a result, each transport policy or project should be the subject of an overall, formal, sustainability test before being proposed. This test should form part of a strategic plan which has a series of targets; progress being checked against indicators.

For example, transport infrastructure carries a high opportunity cost: the money spent could have bought a lot of other goods and services, such as improved health or education services. Could that money have been better spent elsewhere? Not only do the direct effects of an infrastructure project need to be evaluated – socially, economically and environmentally – but the project also needs to be weighed against the benefits which would have accrued had the money been used for different purposes. Perhaps this would reveal that the disadvantaged are in danger of losing out twice: that they suffer the negative effects of a poor transport system and fail to get the benefits of money spent on (for example) better social services. The concerns of vested interests should be considered in such decisions, as they have the most to lose directly; but they should not be permitted to outweigh the overall public good.

[5] In any case, it is now generally accepted that economically efficient transport systems are also more environmentally sound, and vice versa. See, for example, the European Commission's 1999 White Paper, "Fair Payment for Infrastructure Use."

2. How transport is socially unsustainable

2.1 Unjust distribution

Transport systems have significant distributional consequences. In the progress report on its sustainable mobility project, the World Business Council on Sustainable Development (WBCSD)[6] says that, in addition to serious environmental and economic consequences, mobility systems can "perpetuate social inequities by offering a very limited range of choices to the vulnerable sections of society, such as the poor and the elderly." (WBCSD 2002, p9). It gives the specific example of older people: over the next 20 years in the US, Europe and Japan, there will be a "significant pool" of older people. The transport systems which have developed in these areas – particularly suburbanisation and lower density developments based on car ownership – are now threatening to exclude an increasingly large proportion of the population by preventing them from being auto-mobile (mobile through the motor vehicle) and consequently making access to goods and services far more difficult. And as their friends are in a similar position, they are more socially isolated also. Providing public transport to low-density housing is expensive and the resulting service quality is often low. Society is left in the ridiculous situation that socially-minded civil society groups go from house to house offering food and companionship to the isolated elderly.

One can identify two distinct distributional issues. The first is the distribution of *access* in society. The second involves distribution of *transport-generated problems*.

2.1.1 Unequal opportunity: Distribution of access

Developments in transport policy have led to a situation in which it seems that access to goods and services is increasingly guaranteed only to those with a car.

The already-privileged therefore derive greater benefits from the present transport system, as they are the ones most able to afford private cars and make full use of the opportunities they present. For the under-privileged, transport systems can be a real barrier. This is true of all sorts of travel: long-distance travel, but also local and regional.

Europe's contemporary transport systems therefore increase social exclusion by reducing access to goods and services for large swathes of the population[7]. How? It affects the following areas:

[6] The WBCSD is a coalition of 160 international companies from 30 countries and 20 major industrial sectors. It has become the pre-eminent business voice on sustainable development issues.

[7] There is a difference between access and mobility. See below for a brief discussion of this important distinction.

- Employment (developed below as a specific case study)
- Education/training
- Health
- Social, cultural and sporting activities.

… by the following mechanisms:

- Availability of public transport (poor, unreliable or too distant)[8]
- Cost (for example, low-income households with a car in the UK pay almost 25% of their expenditure on the car, and many cannot afford a car or public transport)
- Psychological distance (people with low incomes tend to be willing to travel less than broader society: in the UK they travel roughly one-third ($^3/_8$) of the distance to their work that the general population does)

(follows Social Exclusion Unit, 2002 and is generally accepted)

People's need for movement and mobility on a day-to-day basis has to a great degree been channelled through only one source in recent decades – the private car and the resulting road system. Land-use planners have typically made matters worse, assuming private car use, both now and in the future. Consequently, those who would prefer to use other means to gain access to goods and services – or who have no choice – often find it extremely difficult to do so. Increasing congestion has been one result and is now causing some head-scratching, but not a rethink of the role of the private car in public policy. Shopping centres, sports complexes and even new schools and other amenities have typically been developed with the private car in mind[9].

The UK government's Social Exclusion Unit (SEU, 2002, summary) reports that poor transport (and therefore access) is part of a vicious circle, being both a result of social exclusion and helping to maintain it: "Poor transport can be a **result** of social exclusion… Poor transport can also **reinforce** social exclusion." (emphases in original).

The SEU goes on to say that transport and social exclusion are not automatically linked and other factors, such as poor education, may be more important. Nevertheless, it says, poor transport can "undermine key government objectives on welfare to work, raising educational achievement and narrowing health inequalities, and has costs for individuals, businesses, communities and the state" (idem).

[8] Not to speak of being inaccessible to specific groups, such as those with a physical disability or pushing baby prams. The Social Exclusion Unit (2002) reports that only 20% of busses and 10% of trains in the UK meet accessibility regulations.

[9] There are clearly differences between transport in urban and rural areas. Many of the problems of hypermobility which Adams (1999) describes are particularly severe in cities. In addition, while access may for a city-dweller be better in absolute terms than someone in a rural area, the city poor live in close proximity to the more privileged and therefore suffer from relative deprivation (see Annex II), which makes the absolute, measurable access problems comparatively worse; particularly given that prices are often higher in cities. On the other hand, the problem of access is particularly severe in rural areas, where public transport is often sporadic if it exists at all and use of a private vehicle may be the only way of reliably getting any access to a range of goods and services. Through television and other media services the rural poor know exactly what they are missing out on.

Making cars cheaper is not a solution. There will always be those who are unable to afford a private vehicle, and those unable to drive, even in the adult population. In addition, making cars available to everyone would be environmentally unsound and the congestion generated would ensure gridlock. It seems more sensible to reduce demand for cars and move away from car-based planning.

Illustrative example: The two-way road

Transport has another notable access-related effect in specific circumstances: distortion of the local social and economic fabric through the effect of the two-way road.

It is well known that building infrastructure damages the environment. It is also well understood that it often does not bring the expected economic benefits to the economy as a whole, and that (even when it does) it can in fact make economic conditions in peripheral areas even worse. Measures taken to improve transport in an effort to stimulate the economy and thus boost jobs may in fact harm the economy as a whole; or benefit the overall economy but harm the local economy of the area initially targeted for improvement under the transport project (see SACTRA, 1999).

For example, Londoners often like to move out of town when they can afford it. They are looking increasingly to Cornwall, the south-west corner of England, where wages are low and unemployment high. The Londoners do not usually set up employment-generating businesses, but they do bring comparably great purchasing power. As a result, property prices have risen to the extent that locals are increasingly unable to afford housing. This has become such an issue since the opening of the Tamar toll-bridge providing better links between Cornwall and the rest of the UK that local village town councils discuss it in their meetings[10]. This exclusion from the housing market in the UK, where it is culturally important to own property, leads to greater feelings of relative deprivation than before. With property prices up and many young people leaving the county to seek work elsewhere, the road linking London and Cornwall really does go two ways.

2.1.2 Unfair distribution of transport's external costs

European transport's environmental and other externalities are also unfairly distributed, increasing existing marginalisation[11].

The distribution of transport's external costs is well-documented. Typically, they have a disproportionately large effect on the already-marginalised: the poor, the disabled, the elderly, children.

[10] The Tamar bridge was strengthened and widened in the late 1990s, and thereafter turned into a toll-bridge (http://www.hmso.gov.uk/acts/locact98/19980004.htm gives the Act).

[11] For example, homes near airports often house the more financially disadvantaged. Airport noise, particularly at night, puts residents at risk of sleep disturbance, reduced performance in cognitive tasks and ability to comprehend. Children are particularly at risk (Berglund et al., 1999). Banfi et al (2000) estimate transport's external costs in the EU, Switzerland and Norway – and excluding congestion – at around €530 billion. This is not insignificant.

Transport's negative effects include, but are not limited to:

- The well-known impacts of conventional air pollution on human health and on the natural and built environments, as well as the results of greenhouse gas emissions
- The physical and mental effects of noise pollution, which are often underrated
- Fragmenting of communities through their physical division
- Road deaths and injuries through crashes
- Economic costs (and see Adams's list of transport's social costs, above).

The UK government's Social Exclusion Unit (2002) reinforces this, saying that deprived communities suffer disproportionately from pollution, pedestrian deaths from traffic crashes and social isolation through communities being divided by proximity to busy roads. Transport 2000, in its 2001 response to the Social Exclusion Unit's initial consultation work, quotes numerous UK examples to illustrate the severity of the problem. For example, one study (p1),

> Found clear evidence of the health effects of high traffic volumes on people living close to Junction 34 of the M1 [which links London and Birmingham]. 45% of people living close to the junction reported problems with anxiety and depression compared to 33% of people living slightly further away. Over 40% of people living close to the junction also reported suffering from asthma; their respiratory health was substantially worse than that of people living further afield.

Other transport-related problems are more evenly distributed across society. For example, the public health effects of a sedentary lifestyle – to which motorised transport strongly contributes – are attracting increasing attention. The clearest example of this is in the US, where obesity-related problems are now one of the major causes of death. And economic problems caused by congestion carry enormous costs for the whole of society.

The aforementioned problems are all directly related to Europe. There are also broader concerns over Europe's heavily car-dependent transport systems, which are worth bearing in mind. For example, it takes 25 000 gallons of water[12] to produce one car (Vidal, 2002). In the context of increasing water demand and growing water scarcity across the developing world, production of new cars in developing countries could be seen as an unfair burden on developing country populations.

[12] About 100 000 litres. (1 UK gallon = 4.546 litres, 1 US gallon = 3.785 litres. The source is British, the author American, so which type of gallon is meant is unclear. The range is 94 625 to 113 650 litres).

2.1.3 Example: Children and community

The World Business Council on Sustainable Development points out that reliance on private vehicles means that those without access to them can be "seriously disadvantaged in their ability to secure jobs and services" (2002, p12). By definition, children are not car-owners, and often do not have access to them.

In a society in which the private motor vehicle is the dominant mode of transport, building and planning follow an irresistible logic. The result: dispersed settlements and individual properties cut off from one another in the suburbs, inner city areas split up.

The effect on children living in a dispersed settlements is disempowerment, as they are to an extent cut off from the outside world, even being at risk of injury or death when they venture outside. This limits the child to the realm of the very-close-by. The alternative is motorised transport in the form of an adult-driven car[13] – assuming the family has access to one – or easily accessible public transport – assuming the child's caregivers are happy with the child using it (or a bicycle). As distances have increased through widespread use of the car, the number of children they can now come into contact with on their own initiative has shrunk correspondingly[14].

Inner-city children suffer a different problem. They are less affected by lack of access to other children, though they may find goods and services equally inaccessible. However, they suffer a greater risk of being hit by a car as they engage in normal childhood behaviour. Inner-city children are also at higher risk of transport-related environmental problems than their suburban counterparts or their parents. For example, noise disproportionately affects younger people, harming their language- and other learning capabilities. And inner-city children's homes may be more strongly affected by traffic-related air pollution, which is likely to affect their health in later life.

Everybody eventually belongs to one of the many auto-mobility-impaired groups – the aged, the injured, the poor (see Annex I for a brief discussion of mobility). However, children occupy a special place in society. They are on the cusp between present and future generations: the patterns which they develop now and thus experience as normal will strongly influence how they structure society as adult decision-makers. Children's mobility and access needs must therefore be taken particularly seriously.

[13] This of course has an effect on the time which the parent or caregiver has available to undertake other activities.

[14] It is common knowledge that one's formative years are crucially important for social engagement later in life. Following Adams (1999) it seems reasonable to suggest that children who grow up in dispersed settlements in a car culture are at risk of suffering from restricted engagement with communities and their institutions when they are older.

2.1.4 Example: Employment

The importance of work and employment

Employment fulfils a "basic human need for structure in both the physical and social environment" (Kelvin, 1981, p8). Apart from payment, the biggest benefit of employment to the individual is the structure it provides (Haworth & Evans, 1987). There are five latent factors which motivate people to work (Jahoda, in Coffield, 1983) and which are important for self-esteem and well-being:

1) time structure;

2) regular contact with people outside of the nuclear family;

3) a linking of goals which transcend the personal;

4) work helps to define personal status and identity;

5) it forces activity, and an exercising of competence and skill.

Work and employment are now considered interchangeably and people tend to want full-time employment even when they do not need the money (Warr, in Haworth & Evans, 1987)[15]. Most unemployed people want full-time employment, and people tend to be distressed when they are unemployed, even when they disliked the job they had previously held (Coffield, 1983). Many young Britons would prefer to work for about the same amount of money that they would be getting if they were to be claiming unemployment benefits (McRae, 1987).

Employment helps to give structure and meaning to life in contemporary western society[16], and is one principal way in which adults' lives are structured. Contemporary society expects that everyone should be employed or seek to be so, and people's sense of identity is often tightly bound up with employment[17]. In many cases the factors which motivate people to work are so important that they continue to do so even when their job is unfulfilling or even dangerous (for example, mining), and other options exist.

As a consequence, unemployment does more to those affected than 'simply' remove their financial stability and affect the economy. The overall costs to individuals and communities can be very great.

[15] Employment is work for financial gain and is a subset of work, which is a broader concept. The two have become confused with one another over time, just as in the era of the car, mobility and 'auto'-mobility have become conflated.

[16] Media reports often speak of 'scroungers' living off unemployment benefits, which emphasises the social value placed on employment. However, employment is not the only site where the factors which motivate people to work can be satisfied: although unusual, some people have positive reactions to becoming unemployed as they find ways to structure their time which is more meaningful than their previous employment (Fryer & Fagan, 1993).

[17] There is a gender difference, with men historically suffering more from unemployment than women. Class also plays a role. However, these issues may be changing over time and in any case does not alter the overall picture.

Once a person is unemployed, s/he very often feels a sense of isolation and possibly depression: "the mental health of the majority of unemployed people suffers" (Fryer 1992, p103). US Research (Dooley et al, 1992) clearly links alcohol disorders and unemployment[18].

Unemployment does not just affect the individual: it affects the psychological well-being of the population as a whole (Burchell, 1992). This is because a high rate of unemployment lead to low job-security for the employed. Again, the effects on marginalised parts of society are greatest, as they are typically the most vulnerable to unemployment and least able to cope with its effects.

What does this have to do with transport? Transport plays two roles, as explained below. First, the present system may prevent new job creation. Second, it certainly makes getting jobs (and holding on to them) more difficult, particularly for people from disadvantaged backgrounds.

Fewer jobs available

It is now well established within the scientific research community and with some policy-makers that Europe's present transport system is economically inefficient and competitively distorted, and is therefore bad for the economy as a whole. For example, a comprehensive study by INFRAS and IWW (Banfi et. al. 2000) of the external economic costs of transport in western Europe estimated the total at about €530 billion Euros per year, *excluding* congestion. This represents 7.8% of the combined GDP of the countries under discussion[19]. This point needs no further discussion here (for fuller treatment see also Liechti, 2002; Nahuis, & Tang, 2002; SACTRA, 1999).

It is also well-accepted that poor economic decisions and a weaker economy lead to lower rates of employment. There is ample evidence on this point.

It is clearly difficult to empirically isolate the specific effect of transport on the economy in general, and employment in particular, given that there are so many factors involved in economic growth (see, for example, SACTRA, 1999)[20].

By inference, however, bad transport systems and decisions will harm employment prospects by affecting the economy, preventing job creation (possibly even resulting in lower employment). There is some evidence to support this.

[18] It is difficult to establish a causal relationship between unemployment and alcohol disorders, but it is certain that unemployment at least aggravates them (Dooley, Catalano & Hough, 1992)

[19] The EU 15 + Switzerland and Norway. The total consists of accidents (29%), air pollution (25%), climate change (23%), and nature, landscape and urban pollution costs. Road transport causes 92% of these external costs, while two-thirds of the total costs are from passenger transport. Congestion costs: the authors settled on a figure for 1995 in the countries concerned of €33.3 billion, or approximately 0.5% of total GDP. This calculation method yielded the lowest estimate of the possible methods. 70-80% of congestion is in urban areas. The authors estimate that traffic demand growth will lead to congestion costing €80.2 billion by 2010, under the same calculation method.

[20] SACTRA, the Standing Advisory Committee on Trunk Road Assessment, is the most expert body available on national level to the UK government on such questions.

The clearest example is to be found in post-reunification east Germany (discussion follows Ion, 2002, Chapter 5.1). In an effort to improve economic growth and aid employment in the new *Länder* (federal states), the federal government commenced an enormous road-building scheme to improve the accessibility of the new *Länder* and thereby aid growth. This meant the development of 17 'unity' transport infrastructure projects (*Verkehrsprojekte Deutsche Einheit*), which were rushed through with an "acceleration law" despite serious environmental concerns and at great cost. In addition, western German planning laws were 'exported' eastwards, resulting in such developments as out-of-town shopping malls, increasing car-use and –dependence, even though many east German citizens could not really afford a car. The result of these transport decisions has not been the promised economic growth, but rather the opposite: "road infrastructure has reinforced spatial disparities and caused a further widening of the gap between "rich" West-German and "poor" East German regions" (ibid. p14). Unemployment in the new *Länder* is disproportionately high, some 10% higher than the neighbouring 'old' *Länder*[21]. In some cases the situation is now worse than it was in the early 1990s. Given the above, it seems clear that poor transport decisions have played a role.

Conversely, it seems reasonable to conclude that more sustainable transport systems will strengthen economic development and lead to increased employment opportunities. That was the conclusion of a detailed study by the German Environment Agency, part of the German government (UBA, 2001), which found that, "Sustainable transport policies promote economic growth and secure employment" (p3). This report goes on to say that the economy will not collapse if transport policy is not based on road transport, as feared; although different sectors will be differently affected. It stresses that, "sustainable transport policies can lead to increased economic development and improved employment prospects if transport reduction methods and incentives for technological improvements are kept in a good balance with each other" (p5).

Transport therefore has an important role to play in facilitating conditions which support employment. Present transport systems seem to not be doing this.

Less access to employment

The more transport systems presuppose that people have access to private motorised transport, the more they close the labour market to people who do not have it. This may make finding a job easier for those with access, but ensures the already-disadvantaged become more so. As a consequence, present transport systems fail job-seekers who do not have access to motorised transport.

[21] For example, German unemployment in May 2002 was 7.6% in the west and 17.7% in the east (7.1% and 17.0% in May 2001, respectively). Source: German government online.

The UK government's Social Exclusion Unit (2002) lists the following figures for the UK, which provide a good illustration of the scale of the problem:

- 40% of those seeking employment find transport a barrier to being employed
- 10% of people living in low-income areas turned down a job in the 12 months to May 2002 because of transport
- Young people are particularly vulnerable:
  - 25% of young people had not applied for a specific job in the 12 months to May 2002 because of transport
  - A driving license is a passport to employment: young people who have one are twice as likely to find employment as those without.
  - Education is a good indication of later ability to find employment: yet 6% of 16-24 year-olds have to turn down education and training opportunities because of problems with transport. Meanwhile, nearly half of 16-18 year-olds have difficulty with the amount they need to spend on transport.

Anecdotal evidence suggests that new developments continue to throw up transport-related obstacles to employment. The following example from personal experience provides a concrete picture of how this can function in a growing economy. By the end of the last century, the 'Celtic Tiger' economy had led to a burgeoning city. By the late 1990s Dublin's harbour area had been developed into a business park which attracted many new enterprises, notably computer and software firms. No bus service had been designed into the business park; nor was it easily accessible by foot. The closest public transport stop was a DART[22] service, but to get from the DART station to the business park required ten minutes of walking across uneven surfaces and large roads without pedestrian crossings, often in the rain. While it was possible to reach the park by bicycle, the roads were poorly maintained, badly lit and narrow. There was no cycle path. There seemed to be more space given over to parking than was made available for buildings: people were expected to arrive by car. Any improvements to this situation would be welcome add-ons, but have not been part of the initial planning process. The private car is concretely enshrined as the single most favoured mode of transport to provide access to this major new source of employment. Public and non-motorised modes were clearly not part of the designers' thinking. The Social Exclusion Unit (op. cit.) says that, "Jobseekers are typically not prepared to travel more than thirty minutes to a job." If this is true, then that Dublin business park was closed to many people.

[22] Dublin Area Rapid Transport, Dublin's bay area suburban rail system.

The problem of access is also important at a pan-European level. A study in the mid-1990s (Spikermann & Wegener, 1996) looked at the changes in levels of accessibility resulting from changes in the development of the Trans-European Networks. A comparison between the accessibility levels for the high-speed railway networks in 1993 and the projections for 2020 indicate that high-speed rail lines will mainly benefit the centres of large cities in the middle of Europe. Accessibility gains in the central regions are much larger than in the peripheral regions, which lose in both absolute and relative terms. The picture is repeated on a smaller scale in individual regions. This naturally has great consequences for those people previously reliant on conventional rail to seek and hold down a job.

And rural areas are particularly affected. Cartmel & Furlong (2000) conducted research for the Joseph Rowntree Foundation on youth unemployment in rural Scotland over a two-year period. One of the major findings (p1) was that "Poor or costly transport frequently restricted young people's employment opportunities." More importantly, even when transport was available, "employers tended to be wary about taking on young people who had to make long or complex journeys," particularly in winter.

Under such circumstances, it is perfectly reasonable for a jobseeker to try to get a car, even if s/he cannot afford it. If a vehicle is in fact bought and used, the burden on financially-weak households is tremendous (see above). Failure to become 'auto-mobile' can play a big role in perpetuating inequality and exclusion through restricting access to the labour market.

In addition, the nature of employment is changing (Drucker, 2002) and the tendency seems to be moving in the wrong direction. Workers are expected to be increasingly flexible and prepared to work at far removes from where they live. The most obvious form of this is the long commute: for example, people in the UK travel 42% further today than they did in 1975 as society has become organised around the car (Social Exclusion Unit, 2002). The changing employment patterns rely heavily on motorised transport, and therefore increasingly marginalise those whose access to transport services is restricted. Improving public transport clearly has a role to play, but it cannot be a 'catch-all' for those "unlucky" enough to not have a private car; if only because it will always be impossible to meet the needs of everyone through public transport. More systemic changes are needed.

Society rewards employment with money, belonging and respectability. The transport system essentially punishes the disadvantaged for having difficulty in accessing employment.

2.1.5 Example: Everyday violence

The causes of road rage are subject to much speculation[23]. Diekstra and Kroon (1997) suggest that people's personality changes when they are behind the wheel, that they become more aggressive and take risks. Whether this is true or not, it can certainly be argued that driver-aggression is a form of socially-acceptable outlet for frustration (aggressive driving, hooting at traffic lights, aggressive response to minor traffic accidents). Road rage could then be seen as an extreme, and unacceptable, form of this aggression.

It could also be argued that people feel a sense of ownership of not only the vehicle they are driving but also of the road space over which they are passing. This would be in line with the concept of the vehicle as "private territory" which plays a role in motivating people to own and drive a vehicle (see below). Under this view, driving can lead to conflict with others who feel the same way about the same road space. Diekstra & Kroon (1997, p5) somewhat polemically claim that "car-man with his territorial urges can – and does – become embroiled in territorial conflicts at any place and any time."

Time is an extremely valuable commodity. This is particularly so of leisure time ('marginal free time'), that time which is available to a person to spend as s/he wishes, and which may be limited to only a few hours each day. People have a strong interest in this time being of highest possible quality. The amount of free time available plummets if a long commute is involved; particularly if an unplanned delay is encountered on the road (reducing access to high quality free time). When one sits in an unexpected or particularly bad traffic jam, one's feeling of entitlement to mobility may be brought into conflict with the reality of one's lack of control. Although it is possible to compare oneself positively with public transport users, who drivers perceive to be far more stressed than they actually are (Palma, 2000, and see below), the level of frustration attained can be high. Road rage may therefore be a direct response to frustration at 'lost time' under certain circumstances and in some people.

Whatever the causes of road rage, the reality is that 'road-rage' individuals become irrationally violent through comparatively minor traffic incidents. This form of violence is entirely internal to the transport sector.

[23] Transport does have a link with more generalised violence, though it is difficult to establish and quantify. However, although it is worth mentioning this link, it would be out of place in this context. For this reason, transport's role in violence through deprivation is discussed in Annex II

2.2 Psychology and social behaviour

The previous section discussed structural problems in the transport field. However, one of the key barriers to socially sustainable transport lies not in physical and organisational structures, but in psychological structures (people's minds).

The importance of individual behaviour and choice cannot be stressed enough; and it is often forgotten. Unlike problems caused by single-source polluters, transport is complicated to solve: millions of individuals each using transport in one form or another for reasons which are, or seemed at one time to be, entirely reasonable, simultaneously add to the problem. Their behaviour patterns are often ingrained and difficult to change.

It is extremely difficult to change the unsustainable behaviour patterns which have developed in a comparatively tiny circle of people and which maintain poor transport policies (governments and ministries). It is doubly complicated to take measures which encourage a change in the behaviour of millions of individuals – measures which will often require sacrifice in the short term for benefits to be realised only in the medium term – and to then win the next election.

This section focuses on behaviour and the role of the private motor car in urban society, as this focus provides the best illustration of the more general point. Reasons include the car's impact on people and environment, its high visibility, and its place at the centre of early 21st century society, where it is simultaneously loved and hated, is useful and deeply problematic.

2.2.1. Making the decision to drive

What does the car provide?

Two *main elements* (Stradling, Meadows & Beatty, 2000) motivate people to drive:

- **Identity**/status
  - Particularly young people, the relatively poor, those low on the socio-economic scale and those driving small (<1.2l engine) or large (>2.0l) cars
  - People in the richest and best educated parts of society are increasingly decoupling the car and success in their minds, but they are in the minority[24].
  - A car is one of the most obvious public displays of personality, similar to clothing. In a way, therefore, the car can be seen as an extension of self. The model of car people buy, the colour they choose and the accessories they use are all important features, a fact picked up by advertisers. This explains, for example, why people can become so upset when their vehicle is involved in a car crash, even if nobody is hurt and they incur no financial costs.

[24] Sustainable transport requires breaking the link between vehicle ownership and status. The World Business Council on Sustainable Development recognises this as an important issue facing the automobile industry (WBCSD 2002, p15)

- Independent and autonomous **Control**
  - Especially people older than 40 (and within this group, women particularly)
  - Unrestricted access and mobility, limitless individual agency: these are standard keywords in car advertising, not least because of the power of the symbol of the open road.

Other factors motivating people to drive a car (ibid., and Diekstra & Kroon, 1997) include:

- *Power*: feeling of power through driving
- *Emotional attachment*: car as object of desire/love
- *Social cohesion*: car as common interest
- *Territorial aspect* – in two ways:
  - First, as *private territory*, an extension of my private property over which I have sovereignty; both the car itself and the space upon which it is being driven or parked. This is important in congested Europe[25]
  - Second, as '*sacred space*' in the sense of car use being a way of participating fully in society through adherence to a socially valued action. The car is a sacred cow in society, symbolising welfare, prosperity and development. In the same way as the flag and apple pie are important and ubiquitous symbols of modern USA, and their respective unfurling and eating are sacred practices, so the car plays a similarly important role in much of contemporary western society.
- *Stimulation*: driving can have physiological effects which are similar to narcotics
- *Structured time*: the predictable rush hour is a chance to have some time to oneself
- *Protection*: car acting as a second skin, offering protection from the outside world. The car is often seen as a private and safe space, much like a cocoon or womb, in which people can share intense experiences in a way that is impossible in the necessarily public space of public transport or while walking or cycling. This element makes it easier for car-users to cope with traffic stress than public transport users.
- [Gender-specific] *Masculine identity*: Triggers male archetype, chivalrous/macho/ heroic/superior, even showing off/impressing.

In addition to the above pull factors, non-motorised and collective transport have an image problem. For example, public transport is often seen in the public eye as an unreliable mobility source of last resort, a second-best to the car.

[25] Diekstra & Kroon (1997, p5) even claim that "car-man with his territorial urges can – and does – become embroiled in territorial conflicts at any place and any time." See 2.1.5 above.

Big actors in broader society

Here are two of examples of motors which help to maintain the car's position at the top of the socially perceived transport hierarchy.

Advertising

Advertisements use both emotion and reason by turns; appealing to both main motivating factors, as well as various secondary factors. Car merchants have identified typologies, matching people in various socio-economic strata to particular models of car. They play to these when advertising vehicles. A good example of such targeted advertising appears below: it was liberally distributed in Brussels pubs as a beer-mat in 2002.

This sort of advertising is augmented by 'soft' advertising. This includes a range of approaches, all with the effect of making the car thoroughly desirable. Two examples are product-placement in films and the Sunday newspaper auto-sections and their counterparts.

Infrastructure

The physical make-up of the local environment is a powerful factor in initial choice of whether or not to resort to a car, and helps to maintain behaviour. Detroit, in the USA, is the extreme case: there it is barely possible to cross the road without a motor vehicle, and people stare at you as if you come from another planet when you suggest walking to the mall. It is well-reported that many Americans buy sports-utility-vehicles (SUVs) out of fear of others' vehicles, resulting in a sort of arms race.

The language and practices adopted by policymakers typically do not help. They talk of the right to drive a car and the possibility of building infrastructure to solve congestion problems. In other words, they are immersed in the myths of motorised transport, and thus perpetuate the image of the private car as the solution.

Rational decision-making at the moment of choice

In addition to the emotional and pre-rational factors encouraging car-use, people often make the decision to own and then drive a private vehicle on entirely rational grounds. Such rational decision-making includes such factors as price, perceived comfort and levels of stress (Palma 2000). The OECD comments that "behaviour is not based on 'objective' reality, but on the individual's 'subjective' view of the world." For example, I believe that my motorbike is relatively quiet (I control it), while in reality my neighbours are so annoyed at the noise it makes that they are going crazy. The perceptions may be factually wrong, but they nevertheless form the basis for rational decisions.

Mainstream perception of driving is heavily influenced by the media, advertisements, and other 'high order sectors' and these sources encourage people to perceive reality in a way which is highly beneficial to the private car. This external influence, combined with the motivating factors mentioned above lead to extremely favourable conditions for car-drivers.

In addition, there are many factors which militate against the use of public transport, often based on factually wrong perceptions; and not improved by the public transport companies themselves[26]. Car drivers perceive public transport to be slow, uncomfortable and unsafe.

For example, car drivers in the city of Lisbon perceive using public transport to be far more stressful than it is from the perspective of the public transport users themselves (follows Palma, 2000). And drivers typically perceive that they have greater control when sitting behind the wheel than their public-transport-using counterparts, even though this is not the case in congested areas[27]. People's decision to drive rather than take public transport, 'because I will have greater control and it will be less stressful,' is therefore entirely rational; though based on inaccurate perceptions. And, as indicated below, once the decision to drive a car is made, driving behaviour is likely to be entrenched until the next "moment of opportunity" to take an active decision arises.

2.2.2. Locked into the car

Maintaining factors: Why do people continue to drive?

The greatest factor maintaining driving behaviour – in both individual behaviour and transport policies – is something very human: force of habit and social patterns. Once people have chosen a form of travel behaviour or of organisation, they tend to stick to it. Patterns of individual and group behaviour are slow to change.

The OECD says that, "Travel behaviour is only marginally related to fundamental values and preferences. Rather, travel patterns and levels are more likely to result from a combination of *habits* and *circumstances*" (p4, emphasis in original).

Why is this? A somewhat stereotypical example is indicative. Maria is in her mid-20s, lives in a city and is concerned about the environment. She knows cars have some problems and doesn't really want to use one. But when she's looking around for alternatives the bicycle seems too dangerous (and cold in winter), the bus too slow (and is always late anyway), and the underground too crowded and uncomfortable (and dangerous at night). Unless Maria is one of a small number of 'converts', she will get a car if she can afford it, perhaps placating her conscience by making sure that she always recycles her paper. When Maria chooses to buy and drive a car, she acts against her beliefs. Yet she quickly develops a behavioural pattern which is difficult to break. Without intervention, she will become car-dependent.

[26] Anecdotal stories abound of poor or late services: in an already hostile environment, this only needs to happen once or twice and people will abandon the service. This is not fair, but it is what happens.

[27] In fact, cyclists and pedestrians have the greatest mobility of all in traffic, something usually ignored.

While it is quite possible for behaviour and values to be at odds with each other, there is a cost: cognitive dissonance[28]. In the long run, actions and beliefs must be reconciled (see diagram, below). This suggests that even people who are some 'shade of green' will feel quite comfortable driving a car once they have been doing so for a while. They may be aware of the problem, but will have worked out some way to pretend that their car is not part of it; and thereby not feel troubled.

The difficulty is that patterns of behaviour, once established, are extremely resistant to change precisely because of this self-reinforcing loop. This is logical: there are so many different decisions to be made in a day that it is tiring to make them all consciously – most of them end up being made on 'autopilot' and become part of a routine once an initial decision has been taken[29]. Changing a pattern takes energy – and if there is no impetus from the outside (legislation, death of a friend in a road accident, etc), it is unlikely that someone who has a strongly developed pattern of car-driving will change behaviour, even if presented with alternatives. A certain inertia develops with repetition – in any area of life – which is extremely hard to break, no matter how dysfunctional. The reverse also holds: good patterns are also self-sustaining.

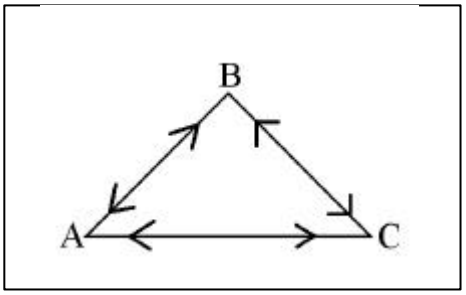
It is not only people who develop and maintain patterns: once established, social structures seem to develop a life of their own and are strongly resistant to change. For example, patriarchy has perpetuated itself for thousands of years, and the Christian church structures which developed in the 5th and 6th centuries – and which have so strongly influenced European society – are still in evidence in contemporary society, 15 centuries later. Over-reliance on the car will be difficult to overcome under present conditions.

Behavioural theory: A conceptual tool

It is generally accepted that behaviour, thoughts and feelings are closely linked, and that a change to one of these areas will lead to a corresponding change in the others. The cognitive-behavioural school of psychology has specialised in this link, with therapy typically directed toward changing harmful habits, such as giving up cigarette smoking. One commonly-used tool to conceptualise the behavioural feedback loop is the ABC diagram:

[28] Cognitive dissonance can be broadly described as the mental conflict that occurs when actions and beliefs are at odds, or when new information emerges to challenge cherished beliefs. A person will resort to a range of manoeuvres to overcome this tension.

[29] An extreme example is Einstein, who reportedly bought many copies of the same shirt, so as to not have to choose, thereby freeing up mental energy for other endeavours.



A = **A**ffect, feelings; **B** = **B**ehaviour, actions; **C** = **C**ognition, thought: each impacts on the other

Given the power and stability of the factors which maintain the car's position as a socially desirable object, and individuals' well-entrenched behaviour patterns, A, B and C are powerfully aligned in individuals to ensure the car retains its dominant position. Return to Maria: the chances are that in time she will cease to feel troubled by using her car[30].

There are four kinds of action which either encourage or discourage behaviour, indicated here:

	Positive	**Negative**
Behaviour to be encouraged	Positively Reinforce	Negatively Reinforce
Behaviour to be discouraged	Extinguish	Punish

Positive reinforcement is what happens when a particular action is rewarded. Over time a very strong pattern of behaviour develops. Once the pattern is developed, behaviour can be quite stable even in the absence of immediate positive reinforcement (Pavlov rang his famous bell before feeding his dogs; later they salivated whenever he rang the bell, even in the absence of food). Positive reinforcement is particularly powerful, and the above-mentioned motivators are all positively reinforced through use[31].

Negative reinforcement involves actions to be taken to prevent a negative consequence (I drive, because I feel frustrated and powerless when I take public transport).

Behaviour is *extinguished* when it no longer elicits the desired response (I used to enjoy speeding, but I no longer find it exciting). A well-established pattern can take a long time to be extinguished: it may never be if the behaviour continues to be occasionally reinforced.

[30] One study in the UK, for example, showed only 6% of people feel a measure of guilt at driving a car, (Stradling et al, 2000) guilt being indicative of dissonance between values and actions. This despite the fact that the private car's negative effects have been known for years and a far greater proportion of the population is aware of environmental problems and wants something done about them.

[31] Diekstra and Kroon (1997) suggest that the car also reinforces intrinsic human qualities, such as the power of mobility, ability to mark out territory and to attack and defend. If this is so, then the positive reinforcement power of the car is formidable indeed

Punishment is 'rewarding' a particular action with an unpleasant consequence (if I need to get to an important meeting and I'm late because two busses in a row don't turn up, I won't take the bus again if I have a choice). The more powerful the punishment, the more likely I am to not repeat the behaviour (and to resent the agent associated with punishment).

Motivating factors for car-use are typically positively reinforcing.

2.2.3. Breaking the habit

Car-use is not bad in itself, but the side-effects of the present transport system are. But established transport patterns will not change by themselves. People will not make a leap away from their cars *en masse* despite a widely-reported desire for a higher quality of life.

Policymakers wishing to encourage behaviour change and develop better transport systems which are publicly accepted must therefore take psychological and behavioural aspects of transport into account. The alternative in a western, democratic society is policy failure.

Blanket approaches, however, are not useful: timing and audience are crucial, as is the source of any intervention. Fergusson, Davis and Skinner (1999) draw on work in the health field to suggest that there are times when people are 'susceptible' to change and times when they are not. European or national policies can help in this regard[32]. And there are moments in everyday life where people are open to change. For example, the moment of purchasing a new car is a window of opportunity to reflect on whether car ownership is needed. Interventions need to be "targeted to the right people at the right times" (ibid., pii), and they need to come from the right source[33].

The OECD reports that "Examples from the Netherlands, Austria and Germany show that decision-makers can underestimate the willingness of citizens to restrict their car-use and/or promote public transport by as much as a factor of four to ten." Decision-makers can thus be a key obstacle to change, and need to be aware of the above-mentioned issues.

[32] It could be argued that new measures affecting transport demand, such as road pricing, would precipitate such a window of opportunity, encouraging people to become susceptible to change when they would otherwise not be.

[33] So, for example, an EU-wide public television advertising campaign by the European Commission is likely to have little effect in causing behaviour change in the desired direction, even in cases where people are at a point where change is possible. An article in the local newspaper, on the other hand, could be far more useful, and in this hypothetical case of Commission action, the goal of achieving behaviour change towards more sustainable forms of transport would be better served by comprehensive briefings to journalists, put out through the Commission's national representations.

2.3 Complexity is not recognised

Just as transport's complexity bedevils attempts to deal with environmental problems in the transport system, so the impact of transport on human society is often subtle and not well-understood. The complexity of the issues and a tendency to oversimplify matters together result in transport's social impact often being neglected.

2.3.1 Example of climate change

The case of transport and climate change illustrates well the complexity of transport's effects. There are essentially two issues: direct costs caused by the effects of climate change; and social damage through (e.g.) loss of jobs as other sectors struggle to compensate for transport's failure to bear its share of CO_2 emissions reductions.

There is now no doubt that global climate change is happening. There are signs that damage is already occurring, with (for example) islanders on the south Pacific island of Tuvalu gearing up to leave their homelands as "climate change refugees"[34]. Europe is also at risk and the costs are already being visited on parts of Europe. For example, 10% of British houses are prone to flooding, and insurers are now refusing to provide insurance cover for them (Simms, 2002). The recent floods across central Europe have been openly linked to the effects of global climate change[35]. And the damage is expected to increase over time: big insurers' projections "suggest that the upward curve of economic damage from global warming will overtake gross world product by 2065, effectively bankrupting the global economy. Serious destabilisation is likely before that date" (ibid, p26).

Even if these alarming predictions do not come true, there is little doubt that global climate change will cause great damage[36]. The costs will be enormous, disproportionately affecting poorer communities across the world; though Europe will feel its own pain.

The Intergovernmental Panel on Climate Change says that, "All regions [in the world] are likely to experience some adverse effects of climate change" (IPCC, 2001, p16). These are particularly strong in poorer regions, such as Africa and Asia. However, Europe will also suffer – particularly southern Europe, Alpine regions and flood-prone areas (ibid, p15). It is to be expected that the socially disadvantaged will suffer most, as they have fewest resources and are thus least able to adapt. The risks to societies are enormous.

[34] In the face of environmental problems and increased flooding of low-lying land, the people of Tuvalu in the south Pacific reached an agreement with New Zealand in 2001 to accept an annual quota of its citizens as refugees (BBC, 2001). It is now trying to take legal action in the International Court of Justice against the most polluting countries; a threat which Australian legal experts have warned their government to take seriously (BBC, 2002).

[35] The floods affected much of central Europe, with nearly a quarter of a million people displaced in the Czech Republic alone (*Der Spiegel*, 2002a). The flooding caused many deaths and billions of Euros of damage (*Der Spiegel*, 2002b), with estimates of damage in Germany running from €15 billion (Der Spiegel, 2002c) to €25 billion (Der Spiegel, 2002d), most of which is uninsured (ibid.); causing the federal government to suspend its prestigious tax-cut programme.

[36] For example, see the International Panel on Climate Change, an international panel set up by two UN agencies to "assess the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change": http://www.ipcc.ch

To the direct costs of climate change must be added the less quantifiable human misery which will accompany it. The resources which will be used to overcome the effects of climate change will have to be used at the expense of other endeavours, which could have been used by individuals and governments to spend on social goods, like health and education. In Europe, existing regional disparities are likely to grow, with the IPCC (2001, p15) estimating that the north of Europe will actually gain in agricultural productivity while productivity in relatively poorer southern and eastern Europe is likely to decrease. Desertification is already a worry in the Mediterranean area.

Environmental scarcity is unlikely to cause cross-border conflict, but it will probably exacerbate already-poor relations where these exist, and could lead to civil wars (Homer-Dixon, 1999). Climate change effects are likely to be prominent amongst the causes of environmental scarcity. In addition to its other effects, therefore, climate change could lead to an increase in inter-communal violence.

Clearly this is not all the fault of the European transport sector. Nevertheless, it does play a significant role, and therefore cannot escape its responsibility for climate change's effects.

Transport in Europe presently contributes around 4% of total global CO_2 emissions[37], which is more than the whole of India. This means that European transport is responsible for 4% of the overall costs of climate change[38]. It is not possible to assign a monetary figure to this cost; nor is that the point. Morally and ethically, Europe's transport systems – and the people using them – bear a responsibility for the effects on society, both at home and abroad.

One common reaction is a variation on Margaret Thatcher's famous 'There is no alternative,' with people believing there is no way out and therefore abdicating responsibility for change. However, organisations (like T&E) have been showing for some time both *that* it is possible to move transport in Europe towards sustainability and *how* that could be done. There is, therefore, an alternative.

[37] The European Union is responsible for 13.7% of total global Greenhouse Gas (GHG) emissions, expressed in CO_2 equivalent, 29% of which come from transport. In other words, EU transport contributes to 3.97% of total global CO_2 emissions. India is responsible for 3.9% of total global CO_2 emissions. Data from the Commission's online, "Transport in Figures," http://europa.eu.int/comm/energy_transport/etif/list_of_tables.html#ENVIRONMENT

[38] For example, the Earth Policy Institute (EPI)(2002) reports that the world is incurring a vast deficit; as wells in developing countries go dry people are abandoning their villages and becoming environmental refugees. The EPI predicts world food shortages as a result.

Within Europe there is another issue related to climate change: the transport sector has traditionally shirked its responsibility to reduce emissions. As other sectors of the economy have struggled to reduce their emissions, transport's CO_2 emissions have grown (both absolutely and relative to other sectors). Under the Kyoto Protocol, the EU is obliged to reduce its greenhouse gas emissions by 8% in the period 2008-2012[39]. Other economic sectors will have to work harder, at greater cost, to reduce their GHG emissions because of inaction in the transport sector. This is inefficient and harmful to the economy and will lead to lower efficiency and lower overall welfare. It will worsen the existing situation, leading to fewer jobs and lower economic performance (see above).

There has been some movement to reduce European transport's GHG emissions. Europe's leaders have repeatedly stressed the need for transport to reduce its CO_2 emissions, most powerfully in recent years at the Gothenburg summit (European Council 2001). Transport ministers developed a strategy for integrating environmental concerns into EU transport policy in 1999, the first Council formation to do so (Council of Ministers, 1999). The voluntary agreements on CO_2 emissions reached in 1999 and 2000 with European and Japanese and Korean car-manufacturers, respectively, is touted as being a great step forward.

Yet there is doubt as to whether car-makers will be able to meet their voluntary commitments.[40] More importantly, the targets in the voluntary commitment do not provide a long-term solution, even if they were met. The EU wants to see lower average emissions from new cars than were agreed with carmakers[41] and the Commission's own figures (Auto-Oil II base case) indicate that total CO_2 emissions from cars will be rising again from the year 2020 onwards because of expected demand growth. The voluntary agreement approach is therefore inadequate.

In addition, road freight transport is on the increase and while the passenger car market is saturated in most EU countries, new registrations continue to grow in some EU states (EIS, 2002), and in central and eastern Europe. Rail transport, meanwhile, continues to decline. Aviation emissions are growing as the industry does, even in the wake of 11 September 2001. This is worrying given the particularly strong contribution to global warming of aviation emissions due to the altitude at which they are emitted[42].

[39] Enough countries have ratified the Kyoto Protocol; all that is still needed for it to enter into force is for one major polluter and one or two smaller ones to ratify so that at least 55% of so-called Annex 1 emissions can be covered. In practice, this means only Russia needs to ratify. It is likely that the Kyoto Protocol will enter into force in the course of 2003.

[40] A T&E report (Kågeson, 2000) states that significant changes to current production and marketing strategies are necessary to meet the commitment. More recently, the industry has been reported to be on target, though the proof of this will come only in 2008 (ACEA) and 2009 (JAMA/KAMA).

[41] The EU target is 120g/km of CO_2 – on average – by 2010 at the latest from all new passenger cars marketed in the Union: the voluntary agreement falls short of this, at 140g/km. The OECD speaks of a need for 58g/km by 2030 for sustainable transport (see UBA, 2001).

[42] This concern prompted the Intergovernmental Panel on Climate Change to produce a special report on aviation, the first ever on a particular sector (IPCC, 1999).

The measures taken to limit the transport sector's impact on climate change typically miss the point. They are being taken as if climate change's effects were not real and would not affect citizens at home. They fail to consider the injustice and social misery which climate change will cause, and lack the real urgency of a predictable impending catastrophe. Transport's role is essentially invisible, and the solutions so complex, that decision-makers often appear to have abdicated responsibility for making changes.

It will require concerted effort to effect real CO_2 emissions reductions. The way around this problem must involve demand management and political will, on the basis of thorough social debate and discussion; not a reliance on technological fixes. In the meantime, the effects of transport-related global warming continue to be enormous, contributing to human misery and increased inequality around the world, including in our own back-yard.

2.3.2 Example of access, mobility and human rights

It is often argued that reducing transport would harm people's right to mobility, which would be akin to infringing their human rights. Therefore, goes the argument, people's right to move as they wish should be respected. This is a good example of simplistic thinking.

Movement is fundamental to human development and health, is linked to freedom, and is properly considered a right. However, the right to mobility is not a 'trump card' which can justify environmentally unsound, economically stupid or socially destructive behaviour.

There is a danger of falling into the trap of entering a human-rights-based argument about mobility. On the one hand are proponents of unfettered mobility and on the other those who want socially regressive movement policies on the basis of narrow concerns. The "movement-constrainers" say that enhanced mobility causes environmental and social damage, which is then taken to mean that free movement should stop; and at the extreme end that immigration cease[43]. The "limitless mobility" lobby argues that movement is a basic and fundamental human right, and to prevent it is to border on the fascist. Neither argument is useful and policymakers should refuse to be drawn into the debate.

It is useful to talk of different forms of mobility and then describe private motorised mobility as "automobility" (following Beckmann, 2001): this is explored briefly in Annex I. However, when speaking of social issues in transport, it makes sense to continue the rights debate.

[43] The roots for this argument are outside of the scope of a paper on transport and social issues.

The right to free speech can usefully be employed as an analogy. The right to free speech is generally enshrined in western societies. Yet it is also agreed that it is not an absolute right. The right to free speech extends only to the point where the exercise of that right impinges on others' rights. So, for example, hate speech is generally forbidden, as is incitement to violence. Society has effectively said, 'You may say what you like, up to a point; but there is a certain line which you cannot cross, as in doing so you endanger the more basic rights of others.' The exact location of this line changes over time and is hotly contested, but the principle is broadly accepted.

So it must be with mobility. While people must have a general right to physical mobility, the social (and other) consequences of *how* they exercise this right are very important: the right to mobility can only be socially just if its limit is reached when it starts to impinge on the rights of others to more basic rights (e.g. health), as well as others' right to mobility[44].

It is therefore more useful when discussing transport policy to speak of a **right to access**. People need certain basic goods and services. It is reasonable that they have a right to equitable access to those goods and services which are available. Much transport is essentially a derived demand. Therefore, if goods and services are easily accessible without the effort, cost and time of much travel, then people are not obliged to use private motorised transport to access them. This holds whether talking of economic migration from developing to developed countries or of going to the local market in a European town[45].

Present-day transport systems are typically created by people who are 'auto-mobile' and who perceive the world in such terms, leading to auto-mobility essentially becoming a self-fulfilling prophecy. As a result, people often need to have a car to be guaranteed access. Yet by no means all European households own a car. For example, around half the households in many Swiss cities do not own one – 45% in Zurich, 51% in Lucerne and 54% in Basel (Zimmermann, 2000). Further, about half the car mileage in Switzerland is driven by 8% of the adult population (or 14% of car drivers) (ibid). Switzerland is one of the most highly motorised countries in Europe, so the pattern is likely to be relevant elsewhere in Europe. This suggests that improving infrastructure and systems for private vehicles, in a context of existing high-quality transport infrastructure, is not automatically to the benefit of society.

Consequently, decision-makers should focus on developing transport systems with the right to access in mind rather than the right to mobility.

[44] This is already well-accepted in the case of driving under the influence of alcohol, where the law across the EU is very simple: drunk driving threatens others' right to life and so is forbidden.

[45] Once people have developed patterns of behaviour, it is difficult to encourage them to change, so improving access (a carrot) may in itself be insufficient to encourage the needed change in transport behaviour in the absence of an effective disincentive to use more polluting modes of transport (a stick), be they pricing or other instruments – but this is a different argument, see below.

3. Creating socially sustainable transport

There is a clear difference between the vision of socially sustainable transport and reality.

This difference has led some groups to develop radical approaches to tackle the symptoms. For example, the Belgian "*Collectif Sans Ticket*" campaigns for free access to public transport for all, to ensure social justice and to enable Belgians to take advantage of the political, social, cultural and economic rights guaranteed to them under their constitution. The *Collectif* argues that only by making public transport freely available to all can these rights be guaranteed, because contemporary society is increasingly reliant on motorised transport. They have a point: public transport is definitely a key factor in sustainable urban living.

But this approach essentially perpetuates society's reliance on motorised transport, which is not the whole solution. Furthermore, providing free public transport would lead to economic distortions within the transport sector which cannot be justified by the resulting social gains. Far more socially just, and environmentally sensible, would be to tackle the causes of social inequity within the transport sector.

This chapter sketches several possible policy implications which are worth investigating further.

3.1 Policy implications for Europe

Integration. Wherever the European Commission has competence to act, it should take transport's social problems more fully into account. For example, Directive 2002/49/EC requires the European Commission to present "appropriate legislative proposals" on reducing noise by July 2006. Although it is four years in the future, the Commission has strong reservations about this requirement. The Commission should overcome its reservations and propose strong noise limits in 2006.

Behaviour. The underlying social causes behind motorised transport's growth need to be tackled. This will require not only information provision, such as labelling cars on their environmental performance, but also more active demand management. While this should be largely carried out by member-states, in line with subsidiarity, the European Commission has a role to play, particularly in coordinating measures to prevent competitive distortions.

A concrete action the Commission could undertake would be a "*European equitable transport award*", which would go to the city, region or country with the most socially sustainable transport development.

Indicators. Work on socially sustainable transport would benefit from a set of social indicators in transport, much as the European Environment Agency has developed TERM, the Transport and Environment Reporting Mechanism. The European Foundation for the Improvement of Living and Working Conditions could be tasked with developing such a set of indicators. It could also draw on work done in the development field (for example, the Gini coefficient and quality of life index).

Clear targets: A set of appropriate targets for socially just transport is needed, just as a set of environmental targets is essential. Ensuring that transport systems distribute access equitably will mean upsetting some people: although society as a whole will benefit, those presently over-benefiting will have to give up some privileges (Adams, 1999, p97). As this is likely to result in lively political discussion, a clear set of targets is necessary. The European Commission should take the lead. It is worth pointing out that, because transport is bound up in broader society, reducing inequity in transport will require targets going beyond the transport sector. The Commission should therefore ensure that all relevant DGs, such as Transport and Social Affairs, are closely involved.

Removing tax incentives at EU and national levels which encourage distorted market conditions and prejudice inequitable modes of transport over equitable ones. For example, removing the strange exemption on VAT for tickets or on fuel tax which airlines enjoy in Europe; or ensuring that comprehensive road pricing is implemented and fuel taxes are harmonised upwards to encourage a shift of goods from the road to less polluting modes, and of people from more to less polluting transport modes.

Promoting tax incentives to stimulate sustainable transport through differentiated taxation. This means increasing the price of (for example) big and/or dirty vehicles. It is also possible to provide tax breaks for certain desirable modes of transport, effectively decreasing their price. One example would be providing significant incentives for bicycle use. Car-sharing[46] is another interesting possible target for reduced-price incentives, as it can help to provide access to a car without the need for purchasing. More importantly, one of the most important first steps in bringing about socially equitable transport is to establish a clear distinction between car ownership and car usership; as this weakens the importance of the psychological function of the car. The European Commission is presently discussing car taxation: vehicles destined for car-sharing could usefully be subject to a special rebate to encourage development of car-sharing schemes across the EU.

[46] Car sharing is essentially short term car hire. It is not the same thing as car-pooling, where a number of people use a vehicle belonging to one of their number on preset routes.

Internalising external costs of transport is absolutely crucial in providing full information through price to transport users, and to encourage a re-think in behaviour as "moments of possibility" arise over time (moving house, selling car, etc.). There is consensus that pricing for infrastructure use is inevitable for freight transport: the same should be applied to private passenger car travel. Initiatives, such as in London, to charge for use of a specific city area, are welcome. If successful, London will be a potent political example. A Europe-wide differentiated charge is needed which should include pricing the social effects of transport.

Use of revenues More importantly, however, is the use to which the revenues from pricing would be put. This is the absolute determinant of whether pricing will succeed or fail, as the transparency and seeming fairness of the use of these revenues will determine public acceptance. At this point it seems that at least some of the revenues from pricing should be used to directly compensate those most affected by it, and that the rest of the revenue should be put into the general budget for use according to general priorities. It should certainly not be reserved for the transport sector.

Equitable transport concept. Financial incentives and the "polluter pays principle" are crucial. However, it is not appropriate that one sector of society be able to perpetuate social injustices and costs on the basis of its ability to pay: there should be an absolute ceiling to transport's social costs. For this reason the overall system needs to ensure that transport use is in and of itself socially sustainable: it should become difficult to widen social divides through normal transport patterns. This will require use of indicators and targets, and the concept of a total impact assessment.

Total Impact Assessment. This is a logical consequence of ensuring that social issues are included in transport policy decisions – together with the EU's existing strategy to integrate environment into transport and the nature of the Single Market. It is perfectly reasonable to insist that the consequences for all three pillars of sustainability be properly evaluated before a particular transport policy or infrastructure project is adopted. This would complement the Strategic Environmental Assessment which is to come into force in 2004.

Consequently, no money should be given to projects which would be unsustainable on one of more of the three axes. This should also hold for development of new technologies, such as the much-vaunted 'hydrogen economy' which has yet to undergo a sustainability review.

International opinion seems increasingly behind such a development. The 7th Conference of the Parties to the United Nations Framework Convention on Climate Change, meeting in Marrakech in 2001, specifically called for social impact assessments of climate decisions on developing countries. In addition, the UN Development Programme is in the process of developing a Sustainability Impact Assessment Instrument (UNDP, 2002), which could be usefully applied to European transport. The instrument,

> would be based on a horizontal approach to policy-making that helps identify the optimal balance between the environment, economic and social objectives of sustainable development. Its aim would be to provide an integrated picture of the potential impacts that actions could have in respect to economic, environment and societal considerations, by combining in the same instrument Economic, Social and Environmental impact assessments. Hence, reflecting the wider concerns of society.

The Commission does recognise the need for a full impact assessment and produced a Communication in 2002 on exactly that (Commission of the European Communities, 2002). This is not the place to provide a critique of that communication, but the following points illustrate why there is substantial room for improvement on its approach. The impact assessment will be carried out within the Commission, thereby making it an extended 'inter-service consultation' rather than a formal impact assessment; it applies only to legislative proposals and specifically excludes emergencies; and the promised methodology paper has yet to appear. What is needed is a thorough total impact assessment which applies to every transport-related initiative. This is justified given the enormous consequences in all three sustainability pillars which transport can have, and on the development of society in general.

Annex I – Mobility

Mobility is essentially a generic term covering movement in all its forms. T&E has in the past avoided the term, because of its contemporary association with unfettered movement by polluting means. Instead, it has preferred to speak of access to goods and services, which in many cases provides the demand from which transport arises[47]. Nevertheless, mobility needs to be dealt with in any discussion of transport's social context; particularly in conjunction with the notion of automobility (Beckmann, 2001), which places mobility into its broader context.

There is a simple difference between mobility and automobility, or movement by motor vehicle. The two have become confused over time. Just as the confusion of work and employment has often led to excessive suffering on the part of the unemployed[48], so the confusion of mobility and automobility has led to people limiting themselves to transport by car.

The World Business Council on Sustainable Development (WBCSD) says that society needs to be able to move, and that sustainable mobility is, among other things, the ability to move freely "without sacrificing other essential human or ecological values, today or in the future" (WBCSD 2002, p5). It goes on to say that "mobility is an essential human need" (ibid., p9).

This is all perfectly reasonable, but tells only part of the picture: mobility does not presuppose any particular form of transport. Mobility is about movement in general; 'automobility' refers to physical movement by internal combustion engine, most commonly the car. The first is a right, the second is not. This is in some ways a needs and wants debate.

[47] Adams (1999, p95) measures mobility by the distance travelled in a given period of time; and accessibility by the number of opportunities which can be reached in a given time.

[48] See this publication's discussion of employment.

Annex II – Violence and deprivation

Too unequal a division of resources in society is dangerous: if too few people have too much, there will be trouble. Western societies lie somewhere between revolution and perfect society. While revolution may be unlikely, relative deprivation is a good indicator of violence.

The most relevant effect of relative deprivation involves feelings of alienation and powerlessness, reducing participation in society and feelings of belonging to it, and making it easier for individuals to resort to violent behaviour, either alone or in groups. This is particularly the case for males[49].

Not only are the effects of such violence bad for affected individuals and their immediate neighbours; they are also costly to the whole of society, both directly and measurably (treatment of the mental and physical costs, to the individuals and resulting from any damage they may do) and indirectly (lost opportunities and reduced quality of life). For example, research by the UN (Breines, Connell & Eide (Eds.), 2000) reveals that male violence, particularly against women, increases with alienation and feelings of loss of identity and self-worth. The costs of this single form of violence has been put at €290 million annually[50] in Switzerland alone (Godenzi & Yodanis, 1999). And it is increasingly accepted that the problem of gangs is often a reaction to lack of belonging through (e.g.) unemployment.

It is clearly impossible to evaluate with accuracy transport's effects on violence, just as it is impossible to blame transport for violence arising from relative deprivation. That is not the point. Transport does play a role in creating and maintaining social exclusion and relative deprivation, as has been shown; and to that extent, plays a role in violence also. Transport systems are all the more socially unsustainable for their role in supporting the conditions which encourage violence. Conversely, socially just and sustainable development must include good transport systems.

Poverty is relative

Few people in Europe are truly poor by the standards of the developing world (e.g. India). But poverty is relative. Beyond the absolute, deadly form, however, poverty is a relative concept which differs from society to society. There are different theories of basic needs, possibly the best-known being Maslow's hierarchy of needs, which posits a pyramid of needs, only one set of which relate to sheer physical survival: there are many in Europe who are poor by the standards of their society, excluded through financial or other poverty from participating fully in society, and who are thus not meeting their non-physical needs.

[49] It is also possible that advertising which promotes expensive cars as a means of identity and fully belonging to society also leads to enhanced feelings of alienation, given that research indicates the most disadvantaged place the most stock in such symbols.

[50] The costs were listed in US$: an exchange rate of 1:1 has been used. The estimates include only the direct costs to the state – medical treatment, police and justice costs, victim-related support and counselling, and research. Other costs, not yet measured, include the costs to business, to individuals (victims, family, volunteers) and tax payers. Source: Godenzi & Yodanis (1999).

Relative deprivation means weak buying power, leading to purchase of the cheapest, lowest-quality products, little choice in housing and consequently close proximity to sources of noise and air pollution (main roads, airports); leading in turn to a host of pollution-related problems.

Any policy or set of policies which widens the gap in ownership of and access to resources leads to an increase in relative deprivation (visible in shanty towns in European cities like Lisbon) and should be avoided.

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ABOUT THIS PAPER

All types of motorised transport leave their mark on the environment to some degree. The challenge is to find the right balance and mix of policies that can lead to the best possible outcome for society as a whole, both now and in the future. This cannot be undertaken without an understanding of the social issues involved.

European transport does not equitably meet the needs of the present generation; nor is the existing system likely to serve society better in the future. It is now time that the social issues associated with transport in Europe be discussed, so that all three pillars of sustainability can be fully present in the debate on transport's future.

This publication provides an overview of the main issues in transport and society. First, it starts to develop a policy-relevant vision for socially sustainable transport in Europe. Then it shows how Europe's transport systems are not socially sustainable; thereby augmenting economic and environmental arguments for a changed European transport system. Finally, it looks at ways forward, exploring policy implications for Europe.

This publication launches T&E's work on socially sustainable transport. It is intended to be a broadly conceptual paper, providing an overview of the issues and setting out T&E's vision.

ABOUT T&E

The European Federation for Transport and Environment (T&E) is Europe's principal non-governmental organisation campaigning on a Europe-wide level for an environmentally responsible approach to transport.

The Federation was founded in 1989 as a European umbrella for organisations working in this field. At present T&E has some 40 member organisations covering 21 countries. Members are mostly national organisations, including public transport users' groups, environmental organisations and European environmental transport associations ('Verkehrsclubs'). These organisations in all have several million individual members. Several transnational organisations are associated members.

T&E closely monitors developments in European transport policy and submits responses on all major papers and proposals from the European Commission. T&E frequently publishes reports on important issues in the field of transport and the environment, and also carries out research projects.

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