

Accelerating the transition towards sustainable mobility: What are the right signals and the right messages?

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Introduction

Most of the world's cities are in trouble with the growth of car and truck traffic and the consequences of this growth for air quality, health (especially child health), death and injury on the roads and congestion that produces low average speeds. The challenge for all cities is to grow and develop in a way that supports a strong economy, provides employment for its citizens, does no damage to its citizens (air pollution, death and injury) and nurtures civilised cities that are desirable environments for children, the elderly, the mobility disadvantaged, pedestrians and cyclists.

The race to provide solutions is now on in every continent and we will solve this fundamental problem left over from the 20th century but to do so we have to change our mindsets. As Albert Einstein famously said "We cannot solve problems with the same mind set that created them".

This is why city after city has learnt to its cost that building ring roads and large capacity freeways does not solve traffic congestion. The recent public inquiry into major new bridge and highway infrastructure in East London (Thames Gateway Bridge) heard expert evidence on the relationship between new infrastructure, newly generated traffic and deterioration in air quality.

We will start this discussion on a very optimistic and problem-solving note by looking at four innovative transport solutions and strategies that have the potential to bring about this revolution in the way we live. The four examples are:

- The London and Stockholm congestion charge
- The London "Low Emission vehicle" policy
- The Swedish "Vision Zero" road safety policy
- The Bogota project

In passing we will note that many cities around the world have achieved a high standard of living and "liveability" in close harmony with low levels of car use, high levels of walking and cycling and relative independence from oil depletion concerns.

1. The London and Stockholm congestion charge

In January 2006 Stockholm introduced a congestion charging system modelled on the successful London scheme. As in London there was an immediate drop in traffic of about 25% with an overall average reduction for the first week of 25%-30% in the number of vehicles entering the city centre. The Stockholm media is very impressed with this result and after initial scepticism is running headlines such as "City Reclaimed". Businesses were also impressed with the results especially as the drive from one side of the city to the other in the rush hour is now "only" 45% longer than in quiet times when previously it was 200% longer.

The Stockholm experience is likely to be the first of many other cities copying London so what is it about congestion charging that presses the right buttons and produces such a clear result in the normally confused debate of how to get people out of cars?

The London experience sheds some light on this. The Mayor of London was bold enough to cut through the muddled thinking and offer the people of London the congestion charge as a manifesto pledge. It is difficult now to imagine just how bold that was at the time but Ken Livingstone won the 2000 election having promised that he would introduce the charge. This suggests that there is enough support in the general population for traffic reduction and traffic management measures as long as they are linked to other policies. The Mayor was very clear that he would invest up to £120 million each year in new bus services and bus lanes to speed up bus journeys and he delivered. The Mayor's political intuition was correct. Ordinary citizens would support a bold package for reducing traffic levels, pollution and road traffic danger if (a) this was linked to a financial incentive/disincentive and (b) it was linked to improvements to the alternatives to the car.

The congestion charge was introduced in February 2003 and produced an immediate 25% reduction in traffic levels as well as significant increases in bus use and cycling. The charge has been very carefully monitored since introduction and has performed well on all dimensions. In fact it has performed so well that revenue is down from the predicted levels because more people are being deterred from driving into London than expected. Interestingly this is also happening in Stockholm.

The main effects of the London congestion charge (3rd Annual monitoring report, 2005) are:

- 30% reduction in congestion levels
- 12% reduction in NOx and Particulate Matter pollution
- Neutral effect on the economy and no detectable impact on central London retail sales
- 37% increase in the number of people entering the charging zone by bus when 2003 data is compared with 2002)

Source:

<http://www.tfl.gov.uk/tfl/cclondon/pdfs/ThirdAnnualReportFinal.pdf>,
<http://www.tfl.gov.uk/tfl/cclondon/pdfs/FourthAnnualReportFinal.pdf>

Congestion charging has been implemented in various forms around the world for many years. In Singapore it was first implemented in 1975 and has been in continuous, though frequently modified, use since then. It is usually referred to as Electronic Road Pricing (ERP) and is very different to the London model. Vehicles in Singapore are fitted with electronic devices that can communicate with receptors on overhead gantries and the charges can be varied by time of day or by pre-determined levels of speed which must be maintained. If speeds fall below this level as a result of congestion the charge can be increased in real time and target speeds restored.

In Norway the cities of Trondheim, Bergen and Oslo introduced tolls in the early 1990s and these have worked to reduce traffic by about 10% with funds raised being specifically earmarked for more roads and tunnels. The Norwegian experience of tolling is generally seen as more of a fund raising exercise than one of reducing congestion which was the main objective for London. In Trondheim the variable tolls (higher in the morning peak) have produced a greater spread of traffic through the day thus enabling a more efficient use of road space.

Tolling is frequently used on roads, bridge and tunnels and has frequently been the object of large-scale protest as in the case of the infamous (and now abandoned) toll on the new

bridge connecting Skye to the mainland. Motorists in France and Italy routinely make decisions about whether or not they use tolled motorways or auto routes or stick to the untolled option and Britain now has its own example of such a scheme in the Birmingham Expressway opened in 2003. Interestingly the Birmingham expressway was largely justified on the argument that it would reduce traffic on the very congested M6 around Birmingham. Whilst it is possible to get round Birmingham more quickly on the tolled expressway than the M6 the main impact has been a growth in traffic overall and the “newly generated traffic” effect (new roads generate new traffic) will ensure a steady erosion of this temporary gain.

Tolled motorways and new projects which will be tolled (e.g. the Thames Gateway Bridge) are clearly in the business of attracting new traffic. Some of this traffic will be diverted from adjacent links (e.g. Dartford Tunnel to the Thames Gateway Bridge) but some will be newly generated trips that would not be “on the system” but for the new link. Indeed in a world dominated by “private finance initiatives” and by “public private partnerships” the whole intention is to maximise new traffic so that the toll revenue can pay for the expensive infrastructure. This is in stark contrast to the general aims of transport policy and sustainability. This puts such schemes in a very different category to that occupied by the congestion charge. The congestion charge is a so-called “demand management” strategy. It exists to deliver transport policy which is to:

- Reduce the need to travel
- Reduce the need to use the car for commuter trips
- Increase bus, walk and cycle trips as a proportion of all trips

2. Low Emission Zone

The mayor of London has decided to solve London’s air quality problems by declaring a “Low Emission Zone” to be introduced in 2008. This “LEZ” will severely restrict the use of polluting diesel-engined vehicles throughout Greater London.

Extract from the Mayor’s decision:

On behalf of the Mayor, Transport for London (TfL) is consulting the public and stakeholders on draft revisions to the Mayor's Transport and Air Quality Strategies. This preamble is not part of the proposed Revision text.

The proposed revisions seek to take forward the Mayor's proposal, made in his 2004 election manifesto, which, subject to consultation, was to designate the whole of Greater London a Low Emission Zone (LEZ).

The Mayor has a statutory duty to take steps towards achieving Government air quality objectives (and EU limit values) for seven locally managed pollutants in London. The objectives of the proposed LEZ are two-fold:

- to move London closer to achieving the air quality objectives (and EU limit values) for 2010, in support of the Government's Air Quality Strategy (AQS) and the EU's Air Quality Framework and Daughter Directives; and
- to improve the health and quality of life of people who live and work in London, through improving air quality.

The LEZ would seek to achieve this by deterring the most polluting diesel-engined vehicles from the Greater London area. From 2008 the LEZ would target Heavy Goods Vehicles (HGVs), buses and coaches based on their emission standards. The LEZ could be expanded to cover diesel-engined Light Goods Vehicles (LGVs) in 2010, subject to further analysis.

It is proposed to insert new sections 4G.126 – 4G.198 and new Proposals 4G.27, 4G.28, 4G.29 and 4G.30 in the Transport Strategy. It is also proposed to replace existing sections 4C.1 – 4C.35 and Proposal 10 of the Air Quality Strategy with new sections 4C.1 – 4C.73, and add new Proposals 10, 11, 12 and 13.

The same text is proposed for both strategies to ensure they are consistent. No other sections of either strategy are being updated, and all the remaining policies and proposals still apply.

These revisions also take into account the policies, proposals and objectives of the Mayor's other statutory and non-statutory strategies, published since the original Transport and Air Quality Strategies were published in July 2001 and September 2002 respectively. Copies of all the Mayor's strategies are available from the Greater London Authority (GLA) and on the GLA website at www.london.gov.uk. Copies of the strategies should also be available to view at all main public libraries in Greater London.

Source:

<http://www.tfl.gov.uk/tfl/low-emission-zone/pdfdocs/draft-for-public-and-stakeholder-consultation.pdf>

3. Vision Zero

The World Health Organisation has identified road traffic accidents as a serious global problem. 3000 people are killed every day on the world's roads and the majority of these are in low-income countries and are pedestrians, cyclists and bus users. The conditions that produce this significant death toll are without exception treatable and deaths can be eliminated. Road traffic deaths and injuries can be eliminated from the system and recent Swedish experience is putting this concept into practice.

Road safety is a significant source of concern to Europe's citizens and is the focus of a great deal of policy innovation and target setting to bring about a reduction in the number of road deaths and injuries. The European Union (EU) mid-term review of road safety published in 2006 shows that not enough progress is being made when this is compared to the policy objectives.

Source: CEC (2006) *European Road Safety Action Programme: Mid-Term Review*, European Commission, Brussels COM(2006)74 final, 22/02/2006 http://europa.eu.int/comm/transport/road/library/rsap_midterm/rsap_mtr_communication_en.pdf

(Accessed February 2006)

In 2001, 50,000 people were killed on the roads in the 25 EU countries. The joint target proposed in 2001 and updated after enlargement in 2004 is that by 2010 there should be no more than 25,000 fatalities a year. The figures for 2005 show there were about 41,600 road deaths, a fall (albeit too small) of 17.5 per cent over four years. At the present rate, there are likely to be 32,500 road deaths in the EU in 2010, not a maximum of 25,000.

In terms of the annual number of victims per million inhabitants and per million private cars, the countries which come out best compared with the European average are Malta, the United Kingdom, the Netherlands, Sweden, Germany and Finland. The countries with most problems as regards the two indicators are Poland, Portugal, Greece, Estonia, Latvia, Lithuania, Hungary, Cyprus and the Czech Republic.

Between 2001 and 2004, the number of road deaths fell by more than 14 per cent (EU-25 average) in nine Member States (Germany, Estonia, France, Italy, Luxembourg, Malta, the Netherlands, Portugal and Sweden). In eight others (Belgium, Denmark, Greece, Spain, Ireland, Austria, Finland and the United Kingdom) there was some progress (a fall of at least 5 per cent but equal to or less than the average). In another eight (Czech Republic, Latvia, Hungary, Poland, Slovenia, Slovakia, Cyprus and Lithuania), there was slow progress or even a backward trend. These figures must nevertheless be treated with caution, especially in the very small Member States where a small number of serious accidents greatly affect the national result.

Sweden and the UK are included in the list of countries that “come out best” and both countries have a good reputation for making progress on road safety policy.

The Vision Zero policy in Sweden marks a significant departure from traditional approaches to road safety. It puts road safety in an ethical context rather than an economic or engineering context and in effect says that the only acceptable level of deaths and injuries in the road traffic environment is zero. It then sets out to deliver this result within a rather more conventional model of specific interventions and measures supported by intermediate targets.

The core of the Vision Zero approach to road safety is the principle expressed by the architect of this policy (Claes Tingvall):

“It can never be ethically acceptable that people are killed or seriously injured when moving within the road system.”

The UK focus groups covering over 200 participants were very supportive of Vision Zero. The locations were selected to encompass broad geographical categories from central London to “deep rural”. Even when doubts about achievability were expressed the overwhelming view put by participants was that the emphasis on zero deaths and injuries was right and that a re-invigorated effort was needed to move more strongly in the direction of reduction in deaths and injuries.

In a research project carried out by the Stockholm Environment Institute in the UK citizens were overwhelmingly in favour of adopting a Vision Zero policy. The opposite was the case with professional groups (road safety professionals, highway engineers and the AA and

RAC). If UK citizens had any “real” democratic authority the Vision Zero would be implemented immediately.

The UK stakeholder on-line questionnaire was aimed at professionals in government, transport, road safety, motoring, the police and politicians. Eighty-five responses were received and the majority of opinion on Vision Zero was negative. Respondents expressed the view that Vision Zero was not helpful and that it should not be adopted in the UK. Seventy-six per cent of respondents thought that the current UK approach was “effective at reducing deaths and serious injuries”.

The Vision Zero research project also investigated the concept from the point of view of costs and benefits and made extensive use of published information on the cost-effectiveness of road safety interventions. The Swedish policy is explicitly based on the idea that road safety is not a matter of economics but a matter of ethics and human values (non-monetary). Nevertheless specific interventions are associated with varying costs and this variation is of value in prioritising policies to achieve Vision Zero objectives. Vision Zero, if adopted in the UK, brings with it a potential 10-year stream of benefits that can be valued at £111 billion. These benefits are also available through the exploitation of road safety policies that need not necessarily be branded as “Vision Zero”. The key public policy issue is the systematic nature of the interventions and the determination to reduce deaths and serious injuries to zero.

These benefits are larger than the costs associated with the interventions, pointing towards some very significant value for money and “spend to save” investment opportunities.

The key policy interventions that have been identified by the Stockholm Environment Institute are as follows:

- Speed control (20mph in all urban areas)
- Accident investigation agency modelled on the Swedish experience and independent of the police
- Law reform to deal with citizen concern about severe outcomes being dealt with “leniently”
- Road traffic reduction
- Urban design to lock in danger reduction for vulnerable users.

Vision Zero brings with it a very clear statement of the priorities and emphases of a civilised society. According to the WHO (2004):

"Road traffic crashes are predictable and therefore preventable ... the time to act is now. Road users everywhere deserve better and safer road travel" (page 164)

Source: WHO (2004) *World Report on Road Traffic Injury Prevention*, World Health Organization, Geneva, Switzerland,

http://www.who.int/world-health-day/2004/infomaterials/world_report/en/

(Accessed in February 2006)

If they are predictable and preventable then the appropriate policy instrument to go with this analysis is Vision Zero.

4. Bogota

In Bogota (Colombia) the then Mayor, Enrique Peñalosa (1998-2000) turned the whole of transport and land use planning debate on its head and said that planning had to serve the interests of poor people and give them a better environment, a better public transport system and a better environment for walking and cycling. In pursuit of these aims he implemented:

- A 17km long bike, pedestrian path from the down town area of Bogota to a poor quarter of the city to give those residents high quality and safe access to the employment, educational and health care facilities for down town Bogota
- A completely new bus system (TransMillenio) that was based on new buses, a central reservation bus lane to avoid buses being stuck in congested traffic and high frequency, high quality affordable buses paid for out of petrol tax
- Car free days so that citizens can enjoy city streets without cars



Figures 1 & 2

As Mayor of Bogotá, Enrique Peñalosa built the world's premiere Bus Rapid Transit system and hundreds of kilometres of sidewalks, bicycle paths, pedestrian streets, greenways, and parks.

And in addition

- Created a successful Urban Land Reform institution
- Spearheaded large improvements to the city centre, including the rejuvenation of plazas, creation of a large park in an area previously overrun by crime and drugs, and transformation of one of the main deteriorating downtown avenues into a dynamic pedestrian public space
- Built more than a hundred nurseries for children under 5 and assured resources for their operation

- Increased children enrolment in public schools by more than 200,000, a 34% increase in four years; did major improvements to more than 150 school buildings and built 50 new schools
- Put in place a network of 14,000 computers in all public schools connected to both the Internet and a network of 3 large new libraries and several smaller ones that were built
- Planted more than 100,000 trees
- Built or reconstructed hundreds of kilometres of sidewalks; more than 300 kilometres of bicycle paths, pedestrian streets, and greenways; and more than 1,200 parks.
- Instituted the city's first "Car-Free Day" in 2000, for which he received the Stockholm Challenge Award. Through a referendum, people adopted a yearly car free day and decided that from the year 2015 onwards, there would be no cars during rush hours, from 6 AM to 9 AM and from 4:30 PM to 7:30 PM
- Turned a deteriorated downtown avenue into a dynamic pedestrian public space

He helped transform the city's attitude from one of negative hopelessness to one of pride and hope, developing a model for urban improvement based on the equal rights of all people to transportation, education, and public spaces.

Source: <http://www.pps.org/info/placemakingtools/placemakers/epenalosa>

The Bogota experience shows what can be done to benefit the majority of the population of a city with a radically new design concept. The design concept is not trendy architecture or water features but a radical restructuring of social justice and equity. The design for Bogota actually impinged on the lives of all poor people and put cars lower down the list of priorities than creating a high quality environment.

5. Citizen Opinion

There is a strong body of evidence around the world to indicate that the majority of citizens when consulted in rigorous attitudinal surveys report a preference for sustainable transport rather than policies that support motorisation.

Recent work completed for the UK Department of Transport by Sustrans and SocialData confirm this:

Conclusion 9:
There is widespread dissatisfaction with current levels of traffic growth, and strong public support for policies to tackle this through measures which favour walking, cycling and public transport over car travel.

Figure 3 Citizens preference for sustainable transport

Figure 6: Expectations from transport policy/planning

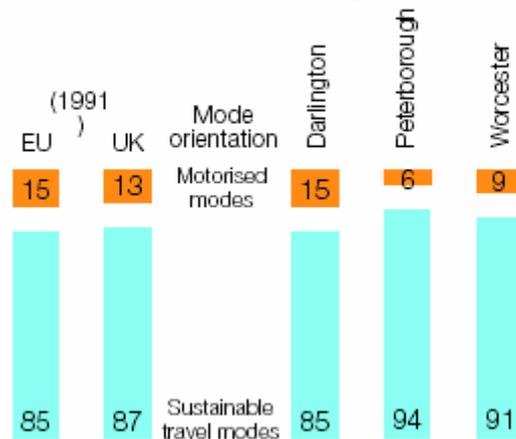


Figure 4 Expectations from transport policy/planning

Source: Travel Behaviour Research Baseline Survey 2004. Sustainable Towns Demonstration project, SocialData and Sustrans

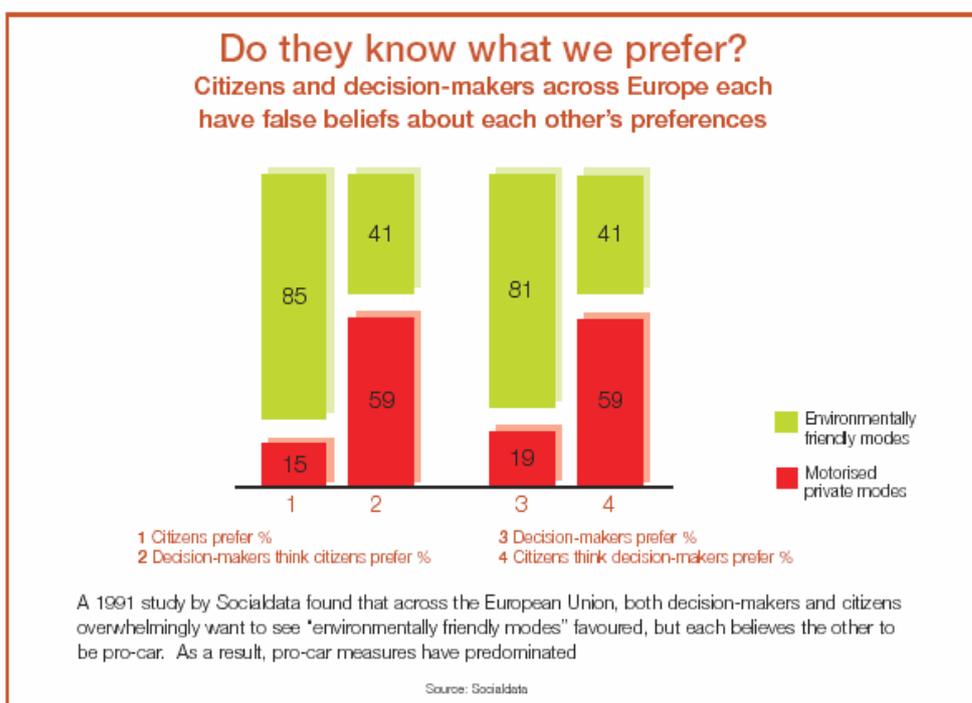
<http://www.persona.uk.com/thamesgateway/docs/2714-7%20STDT%20Research%20FINAL.pdf>

The key finding in this Sustrans/SocialData research is:

“There is unanimous support in each of the three towns (between 85% and 94% for transport policies that support walking, cycling and public transport even if these disadvantage the private car. These attitudes are similar to those held across the UK and the European Union according to comparable research studies conducted in the early 1990s”

Public perception and public attitudes are in favour of policies that are frequently avoided by politicians and professionals. This is illustrated very clearly in the figure below (again from SocialData)

Figure 4 The gap between public and decision-maker attitudes



The implications of these research findings are clear and significant:

- There is public support for sustainable transport initiatives
- This is not appreciated by politicians
- Citizens will make behavioural changes towards non-motorised modes

Indeed Australian cities have been in the vanguard of this work with impressive results reported in Perth (WA) from behavioural change programmes.

6. Can we learn from Munich?

International best practice serves an important purpose of showing what can be done when there is strong political will and determination. The importance of these factors cannot be overstated. There is an overwhelming mass of excellent transport research, economic analysis and engineering experience around the world that shows there are no technical, economic or engineering problems. The only problem is how to generate political determination and will.

A question for all of us is do we want to move in the direction of Munich (population 1.3 million)?

- A hugely successful city in terms of jobs, economy and opportunity
- High quality public space leading to high levels of use of public space
- Highly integrated public transport system
- High quality bike facilities (paths, parking, repair)
- Modal split is 23% on foot, 13% on bike, 1% on motorbike, 31% as car driver, 8% as car passenger and 24% on public transport

7. Conclusion

Transport brings most if not all of the issues around sustainability, environmental and social impacts and citizen participation to a very sharp focus. If we can get transport "right" then we can deliver a huge contribution to greenhouse gas reduction and a huge increase in social justice all in one "go". In many ways transport is a metaphor for the generality of environmental and pollution (including land take) problems. Whilst very clear threats do exist to climate, biodiversity and human health the same tendencies and forces that are pressurising environmental systems are also putting an intolerable burden on the poor, the sick and the powerless. Our current transport problems really do damage children and damage the elderly and dump environmental problems on the poor.

There is also a serious global dimension to this debate. If countries currently operating at a high level of economic development and motorisation cannot, or will not embrace a "mobility transition", then neither will China or India. Transport is the key to global environmental and social justice. Transport problems are real and severe in European, Australian and North and South American cities but the threats to health, environment and social justice in Asian and African cities is far greater. The threat is greater because many poor people live at higher densities in close proximity to polluting traffic and because many of the cities will have to undergo fundamental re-engineering to make room for the cars if the growth in car use is going to continue at the same rate as the last few years. This re-engineering will destroy the

high performing accessibility of cities like Calcutta where hundreds of thousands of people live within walking and cycling distance of jobs, shops, schools and other commonly accessed destinations. Once the accessibility is lost the spatial structures will reinforce the non-sustainability of many spread out developed world cities.

If Asian and African and Latin American cities move rapidly into the western model of transport and land use then many millions of residents will be exposed to noise, pollution and physical relocation (to make way for new infrastructure) all of which damage health and deny human rights. If China is to provide the road space required by the size of its car fleet in 2030 then thousands of hectares will be removed from food production and laid down for the final "crop" which is tarmac and concrete. India, Bangladesh and China will be faced with a choice between land for food or land for cars and the balance of probabilities is in favour of cars.

Henry Ford played a centrally important role in initiating a high-mobility car dependent way of living and he appreciated the deep psychological impact of what he was doing. Writing in 1929 he said:

"We are entering a new era. Old landmarks have disappeared. Our new thinking and new doing are bringing us a new world, a new heaven and a new earth, for which prophets have been looking for from time immemorial".

Source: Ford, H (1929) My Philosophy of Industry, George C Harrap, London (page 13)

A mobile society was seen as a religious achievement and a major transformation for the better of what was there before. This is the legacy that is still being exported and heavily marketed to China by the same company set up by Henry Ford. Our developed world bias is intended to make the point that the developed world has to re-assess its 100 year old fascination with mobility and recast that set of objectives within a socially and environmentally just approach to sustainability. Put very simply, those parts of the world that led the transition to auto-dependency must now lead the transition to sustainable mobility and a reduction in the demand for transport.

Sustainability can never be achieved on the basis of driving, trucking and flying x% more kilometres year on year without limit and without thought. Europe and North America have to bring an effective "closure" to the Henry Ford dream and move into a new paradigm based on the economic, social, environmental and human rights illogicality of hyper mobility. In so doing we will send the clearest message of all to India, China and Bangladesh about the wisdom of pursuing a business as usual strategy in transport. If we don't send this message then Henry Ford will have achieved his objectives on a scale that even he could not have contemplated. The world will become motorised at current European/North American standards with similar levels of mobility in terms of kilometres driven each year, flown each year and per capita truck kilometres driven each year. The consequences for climate change, pollution, health, social justice and land take are clear. This vision of the future is within our reach but will we get there?