

## F) Reducing the Need to Travel

Robert Salter\*

### 1. Introduction

An important way to reduce the greenhouse gas emissions that transport produces is to encourage and enable people to travel less. People travel less overall when they switch from private vehicles to mass transit, walking or cycling, for reasons that will be explained. They travel less if their work is closer; if shops, health services and education are closer; and if family, friends and leisure activities are as well. They travel less if several purposes of travel can be covered in one trip, which is more likely if the places they need to visit are closer. They travel less if they can use technology to communicate with people and to perform tasks at least some of the time, instead of travelling somewhere to do this. And they may travel less if they live in a pleasant environment, and therefore have less need to go elsewhere to find satisfying places to be.

This section, therefore, considers a range of planning and other measures that can enable people to travel less. It deals mostly with reducing travel in urban areas, but the principles it applies can in many respects also be applied to rural communities. There are broadly five ways to enable people to reduce travel:

- by encouraging and enabling people to use mass transit and to walk and cycle, because people using these transport modes rather than private vehicles travel less in total
- by having denser communities, so that people are closer together
- by having more mixed land use, so that people's trip destinations – shops, schools, workplaces and friends' houses, for example – are also closer together
- by having greater community self-reliance, so that people can meet more of their needs and pursue more of their interests within their own communities
- by encouraging and enabling people to use information and communications technology to connect with others, to obtain information, and to perform tasks.

These factors influence each other in a complex range of ways. For example, when people switch to transit, there is a good chance that they will eventually move house or change jobs to live or work closer to a transit station, because they appreciate the convenience of this, and when many people do this it increases the demand for high density housing and work near transit. A transit oriented city requires much less land in which to move the same number of people, and therefore contributes to urban density, and a denser city makes transit more financially viable, because there are more potential customers to attract, and their homes and workplaces are closer to transit stations.

Also, in dense, more self-sufficient communities with mixed land use, trips become shorter, and it is more feasible to walk or cycle them. People doing this have much less need for private vehicles – for cars, motorbikes or motor scooters – and they are thus less likely to own them. In turn, if they don't own them, when they need to make a longer trip they are much more likely to use public transit to do so. Alternatively, a family in such a community may switch from owning two motorised vehicles to owning one (or refrain from buying a second one) and therefore share trips in the one vehicle more, or use transit more. And in denser communities, affordable parking will be less available, and roads will have less capacity to take large volumes of traffic, so people will take more trips on transit and fewer in cars.

---

\* Senior Lecturer in Sustainable Development, Curtin University Sustainability Policy (CUSP) Institute, Perth, Western Australia

Cities around the world, from Vancouver to Vienna, from Singapore to Seoul and from Curitiba to Copenhagen, demonstrate the economic, social and environmental benefits that accrue when people can live a good life without having to travel far. This section outlines how other cities and localities can achieve the same outcomes.

## **2. Benefits of measures to reduce travel**

### **Economic benefits**

By reducing travel through the measures described, people spend less on transport. Governments also save on total transport costs (services and infrastructure), as well as spending less on infrastructure for water, power, sewerage, drainage and telecommunications. Time saved due to reduced travel and reduced congestion raises productivity, as documented in a study done by the transport unit of the Economic Commission for Latin America and the Caribbean on the costs of GDP loss in Latin America due to congestion.<sup>1</sup> As health improves as a result of reduced pollution, accidents and travel stress and more exercise, there will be lower health costs. With better alternatives to private vehicles, those without such vehicles are more able to participate in work, education and economic life.

### **Social benefits**

These measures are likely to generate a stronger sense of community. As a result of reduced pollution and traffic accidents, better social connection and a more pleasant and less noisy locality health is likely to improve.

### **Environmental benefits**

These measures will lead to lower levels of local pollutants and greenhouse gases, as well as reduced noise, congestion and depletion of finite resources.

## **3. Greenhouse gas emissions reduction potential**

There are a number of measures to reduce travel described in this section, and they can be applied in different ways and combinations, over different geographical areas, and to differing extents. Given these variations, therefore, it is not possible to give a meaningful figure or range for the greenhouse gas reduction potential of these measures. However, Figures 2.2, 2.3, 2.4 and 2.5 in Chapter 2 show graphically the huge differences in 84 cities around the world on matters of urban density, public transport use, private vehicle use and greenhouse emissions. They show clearly that greater urban density, less private vehicle use and increased mass transit use will greatly reduce greenhouse gas reductions. Each of these is either an example or a cause of reduced travel, as this section explains. In each of these areas, the difference between cities like Atlanta and Houston at one end and Dakar and Mumbai at the other is enormous.

## **4. Details of these means of reducing travel and how they can be implemented**

The means of reducing overall travel introduced above are detailed below. They are considered individually, and then the effects they have when they are combined is described, with the examples of Vancouver, Curitiba and Surabaya to illustrate this.

### Increasing mass transit use, walking and cycling

As shown in Chapter 2, every kilometre of transit use replaces from three to seven kilometres of car use. This phenomenon, known as ‘transit leverage’, means that people switching to transit substantially reduce their absolute level of travel, and it results from a number of factors. For example:

- Trips may be more direct, especially in trains.
- ‘Trip chaining’ is more likely to occur, that is, doing other things while on a commuter trip, like shopping or accessing services.
- Transit users are more likely to own one vehicle instead of two, or none at all.
- Eventually, many of them, when changing jobs or moving house, will select a home or workplace closer to a transit station, because it is more convenient, thus contributing to greater urban densities close to transit.

Evidence also shows that people who walk or cycle, to get to their destination or to a transit station, build better connections in their own communities than do people who drive.<sup>2</sup> This means that they will appreciate their locality more and be inclined to spend more time there. And for practical reasons, they are also more likely to use local shops and services. Moreover, localities with lower rates of private vehicle use can devote less road and parking space to such vehicles, and be more compact as a result, and in turn greater urban density means that people don’t need to travel so far.

**Figure 3.26 Reducing the space devoted to parking here would lead to greater urban density and more human-scale community spaces**



*Picture Credit: Zachary Korb.*

Thus, the use of mass transit, walking and cycling as transport modes reduces greenhouse gas emissions twice over, because these modes generate fewer (or no) emissions per passenger kilometre, and they cause people to travel fewer kilometres. There are many ways through which governments and leaders can encourage and enable people to use these modes more, and they are explained in detail in a number of sections of this chapter, specifically in *Mass transit, The walkable locality, Supporting cycling, Influencing travel choices, Transit Oriented Developments, Private vehicle demand management, and Traffic management*.

In general, though, it involves provision of public transit (trains, buses and light-rail) that is clean, comfortable, frequent, punctual, affordable, at least as fast as private vehicle travel, and available when and where people need it. It involves the building of safe and direct walking and cycling routes. It involves designing multimodal transport systems in an integrated way, so they connect with one another and easy transitions can be made between them. It involves regulating private vehicle use so that it does not adversely affect users of other modes, so that private vehicles users pay the costs that this use imposes on society, and so that many of them are persuaded to switch to other modes. It also involves the shaping of cities in particular ways, and this we will now examine.

### **Higher urban densities**

If there are more people living in a given area then, when those people want or need to interact, they don't have to travel as far to do so. On average, urban densities are already higher in the developing than in developed countries, although these averages hide great variations. For example, European, Japanese and other high-income East Asian cities are much denser than North American, Australian and New Zealand cities.

Greater urban density can be achieved through a range of means:

- having more medium and high rise, as opposed to low rise, buildings
- having smaller residences on average
- having less land devoted to private gardens attached to residences, and instead – because gardens are important – having more land under public gardens
- having less land overall as travel space (either in absolute terms or per resident as population density rises) and having a smaller proportion of this travel space allocated as space for private vehicles to travel or park, and a larger proportion devoted to mass transit, walking and cycling
- having more travel space converted for multiple uses, for example, a pedestrian street that has elements of a park, a locality for street vendors and repairers, an outdoor community gathering place, a playground, and – in effect – local residents' front gardens.

Property taxes or council rates calculated progressively, that is, at a higher rate for larger, more valuable properties, can be an incentive for people to keep their houses and gardens smaller.

Higher urban densities are not without their problems, however. In developed world cities in the 1950s and 1960s, there was a widespread movement to tear down inner urban low- to medium-rise dwellings that were considered 'slums', and to replace them with residential tower blocks, usually surrounded by large areas of open lawn that were intended to be used by residents. However, as people like Jane Jacobs soon pointed out, in tearing down the buildings, the planners also destroyed the relationships, routines and features of life that are the very essence of communities, and often rendered the residents of the new tower

**Figure 3.27 Residents can still reap the benefits of attractive gardens when living in high density communities.**



*Picture Credit : La-Citta-Vita at Flickr.*

blocks isolated and alienated from each other.<sup>3</sup> The open spaces between the blocks were rarely used, because they were seen as featureless, soulless, and – all too often – the domain of gangs and criminals. There were fewer ‘eyes on the street’, people going about their daily business of shopping, working, travelling to school or sweeping their front steps, who could, at the same time, look out for one another.

Thus, if major steps are to be taken to achieve greater urban densities, it is vitally important that planners – as much as possible – start from the fabric of existing communities, consult local residents on the changes they would like to see, and thereby help these communities not only to stay together, but to be strengthened by new developments. Through such consultation processes, various ways of achieving urban consolidation can be explored, for example, blending old and new, and high, medium, and low rise building, while retaining much of the layout, form and character of local streets where people come together.

It is important to build on a human scale. For example, if buildings close to streets are not taller than four or five storeys, then people in the streets won’t feel dwarfed by them. And it is also a good idea to have many doors and windows facing onto the streets (rather than long, blank walls) so that people in the streets and those in the homes, shops and other buildings have more interactions, and there is a feeling of collective security and conviviality.

Higher densities and more attractive developments may push up the price of rents in both existing and new dwellings in the area, and make them less affordable for those on low incomes. Governments need to anticipate this and ensure that, at the very least, there continues to be affordable housing for all tenants already living in a redevelopment area.

## **Mixed land use**

People will travel less if the destinations they need to travel to are mixed together in one locality rather than being widely segregated in planning zones (for example, residential, industrial and commercial zones some kilometres apart). Such zoning became widespread in the developed world, especially in English-speaking countries, with the growth in popularity of the car last century. It was considered desirable to separate where people lived from noisy, dirty, unsightly factories, and to a lesser extent from commercial areas, and cars enabled the longer trips that were then required to be made quite easily. However, once these patterns of land use were established, they were very hard to undo, and car driving became essential in such localities if people wanted to conduct normal lives.

In addition to the extra travel that localities with segregated land use generate, there is another major disadvantage. In ‘dormitory’ suburbs where almost every household has one or more cars and residents usually drive out of the suburb for work, shopping, recreation and other purposes, there is often relatively little social interaction within the suburb.<sup>4</sup> People have fewer reasons to interact with their neighbours, and in any case they can’t do so if they just pass each other in cars. So it is harder for them to act together as a community if this becomes necessary, and those who don’t have a car and are not well connected can lead very isolated and vulnerable lives.

The original reasons for segregated land uses have also diminished in importance. For example, with cleaner technology, pollution control and noise abatement measures, the adverse affects of industrial production can be reduced or eliminated – for the sake of employees as well as local residents. Nowadays in many developed world cities, the old inner suburbs with more mixed land use are highly desirable localities to live in, because they have more character and everything is closer.

Thus, developing world cities should seek to retain their mixed land use, and even increase it. They should be aware of the implications of allowing developments like gated communities, dormitory suburbs, shopping malls and large industrial zones to emerge, one of which is that such developments are likely to lead to significantly more private vehicle travel.

## **Local self-sufficiency**

Associated with mixed land use is the notion of local self-sufficiency, that is, the ability of communities – both urban and rural – to meet a large proportion of their own economic needs. Trade across countries and across the world is clearly justified in many instances, but it is also important to recognise its costs. One important cost of global and other long-distance trade is that it greatly increases freight and (to a lesser extent) passenger transport. It is also argued that a less self-reliant local economy makes communities less diverse, less interesting, and more vulnerable to economic, political and natural forces in the wider world, such as rising or falling commodity prices (including rising prices of oil). It is possible to have a robust local economy while maintaining significant economic connections with the wider world, and such a state affairs will contribute to reductions in the need to travel.

National and local leaders can help to promote local economic development through small business loan schemes, advice and information services, and training programs. They can also make sure that the different parts of a locality are well-connected with each other via roads, paths and transit services, and that there are areas for markets and other local trade. As well, requiring people to pay the full economic, social and environmental costs of their transport (what economists call internalising the externalities) will tend to reduce private passenger and freight travel and encourage more localised economies.

## The combined effect of all these measures

If you have all of these measures – higher urban densities, mixed land use, local self-sufficiency and increased mass transit use, walking and cycling – then they will not only reduce levels of travel individually, they will also do this by reinforcing each other. Thus, they can become far more low carbon localities.

The creation of Transit Oriented Developments developed world cities represents attempts to achieve this blend of features on a somewhat smaller scale. But there is no reason why the principles underpinning TODs (described in another section of this chapter) cannot be applied to a whole locality. In fact, many developing world cities already have the main elements of this – relatively high densities, mixed land use, local self-sufficiency and low levels of car use. Making such cities better places to live in, possibly increasing their populations, and thereby maintaining low per capita greenhouse gas emission levels or reducing them further involves a range of other tasks, such as:

- providing good quality public transit, as described elsewhere
- improving roads, paths and drainage, including ensuring that there are adequate walking and cycling paths and that these are clear of obstructions
- improving traffic management, particularly to allow pedestrians and cyclists to travel safely and to have their fair share of travel space
- providing sewerage, clear water, power and telecommunications infrastructure
- improving the building stock and general amenity to attract people to live and work there
- initiating new building development, including some that is higher rise, in consultation with the local community, blending in with the area's existing character, and including some low-income housing
- providing parks and other pleasant spaces, including the conversion of many inner city streets to pedestrian-only thoroughfares.

If these measures are taken, then the city will have avoided two pitfalls: it will not have become a high carbon, car-dominated city, and it will not have destroyed the physical and social fabric of existing communities in order to erect somewhat soulless tower blocks. In seeking to achieve something like a Transit Oriented Development on a larger scale, compromises will need to be made, because a living community is very different from an unoccupied site – the starting point of most TODs. However, over time, as buildings change hands and are pulled down and erected, and as changes are made to thoroughfares, infrastructure and services, the key elements of higher densities, mix land use, attractive pedestrian spaces and good transit can be realised more fully.

There are many urban areas, in both the developed and developing worlds, that are moving towards this model, sometimes in quite different ways. Downtown Vancouver, for example, was an area in decline in the 1970s and 1980s, but since then its population has grown by 135,000. This 'return to the city' has seen strong leadership from the City Council and the creation of quality urban spaces, good cycling and walking facilities, reliable transit (mostly electric rail and electric trolley buses) and most of all high density residential opportunities with at least 15% social housing (public and co-operative). So successful has this been that between 1991 and 1994 car trips per day declined by 31,000 vehicles (from 50% to 46% of trips, and from 35% to 31% in the central area) whilst cycling and walking trips per day went up by 107,000 (from 15 % to 22%). Families are moving back in large numbers with the result that schools, child care centres and community centres have become crowded, while the number of cars owned in the city is less than five years earlier – probably a world first, especially in a city undergoing an economic boom.<sup>5</sup>

In the early 1970s Curitiba, Brazil, under the leadership of Mayor Jaime Lerner, started to reinvent itself as a pedestrian and transit city. Over one weekend it created a pedestrian precinct in the heart of town, initially in the face of strong opposition from shopkeepers and car drivers, but this opposition melted away when the change proved to be highly popular with the public. Lerner then implemented a bus rapid transit system that involved dedicated bus lanes with priority traffic signals and very rapid entry and exit for passengers. Garbage trucks could not get down the narrow lanes in the *favelas* or shanty towns and so, to avert the risk of rats and disease, residents were paid in bags of food and then bus tokens to carry their garbage up to a main road. The city government also established garden plots in the *favelas*, so that older men could teach young people how to plant and grow, and as a result residents grew their own food and supplied the city with trees and flowers for parks.<sup>6</sup>

A new shopping plaza was built downtown to draw middle-class residents back into the city, and a series of linear parks were created along the banks of restored natural streams that had previously been re-routed into underground concrete pipes. These parks also had paths, bike rental services, outdoor cafes, skateboard parks and other attractions. Thus, Curitiba drew people back to the city for work, leisure, shopping and other purposes, it boosted urban agriculture (thus increasing self-sufficiency and mixed land use) and it created a highly efficient, low-carbon transport system of Bus Rapid Transit and walking – all of which contribute to reductions in overall travel.

The Kampong Improvement Program in Surabaya, Indonesia, took another approach to the improvement of a locality. Though in 1993 Surabaya's kampongs occupied only 7% of the city's area, they housed 63% of the population, and so, while buildings were low rise, settlement was already dense. There were many features of kampong life that worked well. For example, the streets had multiple purposes: thoroughfares for the thousands of residents in each kampong, meeting places, marketplaces, playgrounds and the front yards of residences. On the other hand, there were also problems to be addressed to enable life to function better.

**Figure 3.28 A pedestrian only shopping district in Curitiba**



Picture Credit: Karl Fjellstrom, itdp-china.org.



However, instead of authorities imposing solutions, they empowered residents to identify the improvements they wanted, and to be actively involved in achieving these, through the formation of a large number of foundations, cooperatives and self-help action groups. Local government provided funding and technical and other support. Improvements made included upgrading of paths and roads, laying drains and culverts, laying water pipes, building washing and toilet facilities, improving rubbish collection, and constructing schools and health centres.<sup>7</sup> Streets within kampongs were closed to cars (which had been rare anyway), thus helping to preserve the traditional social life on the narrow streets. The only modes used within the kampong are walking, cycling and becaks, the traditional Indonesian trishaw.<sup>8</sup> Residents felt a strong sense of ownership of the changes that had been made.

Through this process, the Kampong Improvement Program in Surabaya managed to make life a lot better in already low travel, low carbon communities, by involving residents and retaining the best aspects of the existing community life. This example illustrates well the interconnectedness of appropriate transport, urban density, mixed land use and a degree of self-sufficiency, and the relevance of all these factors to reductions in travel and a low carbon transport future.

### Using ICT in place of travel

Another, somewhat different, measure to reduce travel is the promotion of information and communications technology as a substitute for some travel. People can have conversations, locate and send information, conduct meetings and conferences, buy or sell things, do banking, manage finances, do stocktaking and perform a host of other personal and business functions via mobile or landline phones, computers, emails,

**Figure 3.29 Teleconferencing means businesses generate fewer emissions from road and air travel**



*Picture Credit: Polycom.*

the internet or social networking sites. Costs of the technology required are decreasing over time, and there are now many free video conferencing services such as Skype, MSN Messenger, Yahoo Messenger, NetMeeting and SightSpeed. While prices for telecommunications infrastructure vary enormously, a lot can be achieved with mobile phones and mobile internet connections. Bangladesh's Grameen Bank supplied local women selected as the coordinators of its savings groups with mobile phones, which enabled them to conduct the business of the group much more easily.

Such technology should not entirely replace face-to-face contact for business and personal interactions, because face-to-face contact is important practically and psychologically, but even if ICT is only used sometimes it can still bring about substantial greenhouse gas reductions.

## 5. Costs and sources of finance

For the costs of mass transit, see the *Mass transit* section. With regard to the costs of higher density, mixed-use urban localities, the buildings and infrastructure involved would, over time, be constructed anyway, and this form of development enables it to be done at much less cost, as explained in the *Transit oriented development* section. In any case, most of this expenditure is not undertaken by government. With regard to costs for information and communications technology, the hardware, software and services are private costs, with sufficient variation to allow even low-income earners to participate to some degree, and infrastructure costs also vary greatly such that different levels of technology can be implemented to suit government budgets.

## 6. Conclusion

The measures described in this section – switching transport modes, moving to higher density, more mixed-use and more self-sufficient communities, and greater use of ICT – lead to reduced travel and greenhouse gas emissions while at least maintaining, and probably improving, quality of life. The three examples cited demonstrate the diverse ways in which this can be undertaken, and the diverse outcomes that can be generated, while the underlying principles remain the same.

## Endnotes

1. Ian Thomson & Roberto Bull, *Urban Traffic Congestion: its Economic and Social Causes and Consequences*, *CEPAL Review* 76, April 2002, <http://www.eclac.org/publicaciones/xml/7/20217/thomson.pdf>, viewed 24 Feb 2011.
2. Bill McKibben, *Deep Economy: The Wealth of Community and the Durable Future*, Holt, New York, 2007.
3. Jane Jacobs, *The Death and Life of Great American Cities*, Random House, NY, 1993, originally published 1961.
4. McKibben.
5. P Newman & J Kenworthy, 'Greening Urban Transportation', in M O'Meara (ed), *State of the World 2007*, Worldwatch Institute, Norton, Washington DC, 2007.
6. McKibben, *Deep Economy*; also *The Bill McKibben Reader: Pieces from an active life*, Holt, New York, 2008.
7. Shobhakar Dhakal, 'Comprehensive Kampung Improvement Program in Surabaya as a Model of Community Participation', Working paper, Urban Environmental Management Project, Institute for Global Environmental Strategies (IGES), Kitakyushu, Japan, December 2002 (available from [dhakal@iges.or.jp](mailto:dhakal@iges.or.jp)).
8. P Newman & J Kenworthy, *Sustainability and Cities: Overcoming Automobile Dependence*, Island Press, Washington DC, 1999.