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Introduction

Making sustainable transport more attractive: some best practices

1. Background: people are on the move, ever more

Today's urban society is centred on individuals in quest of recognition ('Me culture' or 'Mass individualism'). The combined effects of this cultural development and of the planetary interaction ('the global village') have entailed an unprecedented demand by people for more communication and more movement.

Increased movement of people has been achieved largely by use of high energy individual modes of transport. This is reflected in the transport statistics: in the OCDE countries from 1980 to 1995 the population increased by 13%, while the number of vehicles increased by 50% and the number of vehicle miles increased by 65%. Vehicle kilometres traveled have thus increased five times faster than the population. Each year, there are four times more new cars than new babies.

The link between high energy use and high energy subsidies is clearly demonstrated by André de Moor in his contribution to this issue. He estimates that yearly public subsidies to the energy sector worldwide have reached \$US 240 billion.

Specifically in the transportation sector, the World Resources Institute of Washington DC estimates the cost of automobile transport not borne by automobile drivers, such as the valuable urban space set aside for roads and parking, at \$US 300 billion yearly for the United States alone.

Transport energy use in cities is the subject of Peter Newman and Jeffery Kenworthy's contribution. They make the case for increased use of rail, reduced sprawl, and reurbanisation to shorten distances travelled and improve quality of urban life.

The influence of road construction itself on traffic increase is explored by Petter Naess and his colleagues in their contribution, aptly titled 'Wider roads, more cars'. For each billion dollars spent on road construction, a perhaps equally large investment in public transport is needed just to maintain the existing modal split—a clear public overinvestment in mobility.

The discussion of public transport should not detract from efforts to improve the energy efficiency of the automobile and fuels, as indicated in the contribution by Max Åhman and his colleagues.

Fortunately, alternative ways to travel and to communicate have been developed in a number of cities, both by

taking advantage of information technologies and by introducing new policies. Some recent best practices will be explored below.

2. Recent experiences and best practices

2.1. Integrated provision of transport services: the case of Manchester, UK

In July 2000, the European Commission adopted a regulation covering public transport services, a significant step in transport liberalisation policy.

This policy raises an important challenge to the integration of transport services, as every operator will wish to maximize his own market share, rather than participate in network synergies favouring public transport as a whole.

Ironically, the provision of roads and parking space favouring the use of the private automobile remains public and financed entirely by the tax payer, while public transport is expected to support an increasing share of its own costs.

In this context, the Manchester public transport enterprise (PTE) has initiated an interesting effort to combine on-the-road competition among transport operators with integration of passenger services.

Soon after the 1986 deregulation, the PTE brought on the market a 'travelcard' accepted by all competing operators. In addition, it has developed, since 1989, an intermodal system by creating a new tramway network.

Today, the Manchester PTE is preparing the introduction in Britain of the first European integrated fare collection system based on the Hong Kong *Octopus* card (more than six million in use). This system consisting of a stored-value, memory-only contactless smart card that allows the passenger to use all travel modes with the same debit card.

Besides the pioneering integrated fare collection examples of Hong Kong and Singapore and their future replication in Manchester, many cities are now progressing towards integrated ticketing (not to be confused with integrated tariffs). In Paris RATP and SNCF are joining efforts to develop contactless e-purse smart cards. Some of them will be available for single trips (they are made of paper and cost less than 0.10 \$US). In Istanbul, the stored-value

Akbul coin (2.5 million in circulation) is accepted by all modes of transport and by some vending machines.

An issue for debate is how many services may be linked to the card. This in turn raises the transaction security issue and the governance issue, i.e. the respective roles of operators and banks in developing and managing the system.

2.2. Integrated provision of public transport and reduction of automobile ownership and use: the case of Singapore

Singapore successfully evolved from underdevelopment to a per capita GDP comparable to that of OECD countries. However, the present level of car ownership is only 100 cars per 1000 people, with a very low level of congestion. The contribution of B.W. Ang and K.C. Tan to this issue, 'Why Singapore's land transportation energy consumption is relatively low', discusses the mix of new technologies and policies that achieved the provision of 'convenient, accessible, comfortable, safe, environmentally friendly and affordable service to the majority of the population' and the related reduction in energy use.

2.3. Travel demand management and urban revitalisation: the case of Zürich

Since 1985, the city of Zürich has developed policies for traffic and parking systems that are based on information technology and give effective priority to: public transport in the streets; parking limitations for non-residents; increased residential density; and to the shortening of trips within the city. These policies have resulted in increased inner city population and wealth, and improved mobility within and around the city, and have been a political success for the local authorities.

Besides Zürich, which is probably the most successful, several other cities should be mentioned for their travel-demand management and urban revitalisation, such as Bern (Switzerland), Strasburg (France), Amsterdam, Copenhagen and Munich.

2.4. Region-wide pre-trip passenger information: the case of the Netherlands

The Netherlands illustrate the success of a sizeable telephone information centre, based on a robust traffic data bank, which provides information over the telephone to travellers before their trip. The centre employs some 400 staff and answers more than ten million calls per year. The high charge per call and minute confirms the perceived added value of this service to the users (mostly people travelling by car), and makes the service cost-effective.

Other best practices in pre-trip information include the UK information duty imposed on rail operators, and the free service in Oslo, *Trafikanten*, that provides information to passengers by telephone.

In addition to pre-trip information, best practices include an increasing number of passenger information systems indicating the waiting time for the next service at the stop.

These devices are attempting to match the improved driver information systems. A good example of a region-wide information system catering to all users is the Hampshire County Romanse project, which includes two larger cities and the interurban road network.

2.5. Favouring sustainable transport through high-density urban corridors: the case of Curitiba

The well-documented success story of Curitiba, Brazil goes beyond sustainable transport and energy use, covering all aspects of quality urban life. The mobility policy consistently implemented over the years has had the dual focus of privileging public transport by reserving space for it, and making the journeys faster by reducing the time spent at stops. In addition, the urban development policy entailed transferring development rights from areas set aside for environmental uses to high density urban corridors, generating the necessary level of demand required for a self-supporting and attractive public transport system.

The idea of busways has been replicated in several other Latin American cities such as Bogota, Quito, Sao Paulo, etc. This is discussed by Lloyd Wright in his article 'Latin American busways: moving people rather than cars'.

The busway has also been implemented in China for the first time, and with immediate success, in the city of Kunming, along an entire city thoroughfare. This type of policy can be combined with unitary reductions of tail pipe pollutants and emissions, as illustrated by the case of Guangzhou, discussed in this issue by Min Shao and his co-authors.

3. Future challenges in the transport field

3.1. Combining competition between operators and integrated services

It will not be easy to reconcile the provision of integrated transportation services with the competition among operators in the transport market. Therefore, information technology and the expertise in triggering commercial consortia to implement integrated user-friendly public transport are the first challenges to be met on the road towards improved mobility for citizens.

3.2. Simplifying the use of the system by the passenger

As for information technology, it should be remembered that the main deterrents to actual use of public transport are the complexity of fare collection and insufficient pre-trip passenger information.

The users' preference is for simplicity of use (not simplicity of tariffs). The simplest way to pay fares is to use a smart card with stored value. When a passenger enters a station (or bus) he/she is debited for the fare for all zones. When he/she leaves the system (or bus), the smart card is credited for the zones not travelled through. In other words, long trips are charged in full,

short trips cost less. The passenger only has to feed the card to the machine. The smart card can be used either for transport services only (the Hong Kong model) or for both trips and purchases at shops accepting the card as mode of payment (Singapore model).

The first examples of city-wide use of a single card to travel on all modes do confirm the technical possibility of combining the complexity of a fine-tuned tariff system with extreme simplicity for the user. Conversely, examples abound of techno-rigid man-machine interfaces, such as, for example, unfriendly ticket machines.

3.3. Making the passenger aware of the services available

Pre-trip passenger information seems to be most successfully achieved by a telephone answering system with a human voice. Examples show that telephone pre-trip passenger information pays for itself. The challenge is to make more of them available, and that is up to the managers. The same is true for real-time information at stops and stations.

Improving the awareness of the potential passenger about the services available around one's living and working place is also paying for itself (according to the results of the 'Switching to public transport' project by 40 operators/members of the International Association of Public Transport (UITP/SOCIALDATA, 1998). Improving awareness costs only a tiny fraction of what it costs to improve the actual service, but it requires an enormous change in attitude on the part of operators to improve passenger awareness.

3.4. Financing the value-added services

The expertise in triggering public-private consortia has proved to be a tool for financing technology improve-

ments, allowing franchises to provide integrated services. The service delivery is performed by consortia chosen by open tendering. The bidding process allows the authorities to determine the level of public service and social subsidies they want. Service franchising requires a high degree of expertise on the part of the authorities concerned, however.

An upstream challenge is the collection of combined traffic and public transport data useful for both the drivers and the public transport users. This requires the setting up of the appropriate joint institutional framework.

4. Conclusion

Current best practices from around the world suggest that the aim of sustainable transport and reduction of car traffic in cities, expressed in article 151 of the Habitat Programme adopted in Istanbul in 1996, can be achieved.

These best practices suggest the dual need for new urban transport policies and adoption of information technology. Innovations in each case should take into account, not only the technology itself, but also the requisite social acceptance (i.e. does the innovation meet a perceived user need), the institutional tools needed to have it put in place, and the capacity building needed to implement it successfully.

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