

HOW THE BICYCLE CAN ENHANCE SUSTAINABLE TRANSPORT

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ABSTRACT

The bicycle has been voted mankind's greatest invention, so why does mankind not utilise this mode of sustainable transport more effectively in transportation planning – both urban and rural? Being affordable, non polluting and energy efficient, the bicycle is an ideal short distance mode to move people to transportation terminals (railway stations, bus terminals), schools, businesses and shopping malls. Every one of these trips will require safe routes for pedalling and secure lock up facilities at the destination. Regular commuters are not prepared to risk their lives to commute to work by bicycle unless their route offers reasonably safe conditions. There are many more bicycles sold in South Africa than motor vehicles and as the bicycle is defined as a "vehicle", more emphasis should be placed on integrating this sustainable mode into passenger transport planning. With the world anticipating 2 to 3 years of economic upheaval, it is time to create the necessary facilities for cycling to enhance sustainable transport to the benefit of all.

INTRODUCTION

With consistent economic and population growth since the 1960's, urban sprawl has taken on massive proportions aided by the attraction of rural folk to employment opportunities in towns and cities. Expansion of residential areas has mainly been by single story dwellings which complicates public transport (rail, bus, taxi, etc) as well as private transport (motor vehicles, motor bikes, bicycles, walking, etc).

It is high time that all modes of transport are considered when offering passenger transport, by integrating whichever modes are appropriate for a specific location. This will require renewed thinking by especially mass transport operators.

This paper will explore how mankind's greatest invention, the bicycle, can contribute to making passenger transport more sustainable.

WHY THE BICYCLE?

The bicycle has many attributes for short distance mobility. To mention a few:

- Affordable – the purchase of a new or used bicycle is within the reach of most South Africans.
- Running cost – the bicycle is the most efficient mode of transport with respect to energy requirements.
- Clean – the bicycle does not pollute the air and is noiseless.
- Health – the bicycle offers excellent exercise and therefore a healthy pastime.
- Congestion – the more cyclists in an urban area results in less congestion due to the lower space requirements of cyclists and fewer motor vehicles.

There are however a few disadvantages related to cycling.

- Vulnerability – despite the definition in South African law that both bicycles and motor vehicles are defined as "vehicles", the bicycle is the more vulnerable when sharing the same road space.
- Weather – wind, and especially rain, are not pleasant factors for the cyclist but can be overcome with proper clothing.

The bottom line is that safe facilities should be created for bicycles so that this mode can be integrated with passenger transport.

HOW TO INTEGRATE THE BICYCLE INTO PASSENGER TRANSPORT

As more bicycles are sold in South Africa than motor vehicles, the logic of integrating the bicycle into passenger transport should not be questioned. For trips of 10 km or less the bicycle is an ideal mode of travel provided the travelled way contains safe facilities for cycling viz. well designed,

continuous cycle paths for a door to door trip. When a commute trip has to be combined with mass transit the following measures as indicated in Table 1 have to be considered.

Table 1: Integrating the Bicycle into Passenger Transport

Mode of transport	Method of integration
Rail	<ul style="list-style-type: none"> • Safe routes to stations • Secure parking • Bicycles on trains • Bicycle hire at stations
Bus/ Minibus taxi	<ul style="list-style-type: none"> • Safe routes to terminals/ ranks • Secure parking • Racks on buses
Private motor vehicles	<ul style="list-style-type: none"> • Create park and ride facilities • Safe access routes • Bicycle parking and hire
Bicycles	<ul style="list-style-type: none"> • Bicycle Master Plans • Safe routes • Parking facilities • Hire facilities

The “method of integration” in Table 1 needs some explanation.

- “Safe routes” comes up in all columns as safe riding facilities are paramount for any of the feeder routes to the main modes of transport. Without the implementation of cycle paths, on which cyclists experience a reasonably safe ride to rail stations or bus terminals, cyclists will not support the main transport modes.
- “Secure parking” is also an issue in each of the integration cases. Combating bicycle theft is a challenging pastime; hence secure parking must be on offer at rail stations and bus terminals, to ensure the bicycle is part of a commuter’s return journey. Many examples of lock up facilities are available from simple racks, to which bicycles can be locked, to large bicycle parking areas with only one security entrance. These are illustrated on the next page.
- “Bicycles on trains” and “Racks on buses”
The needs of many commuters is the access to a passenger transport terminal and then further transport, after the rail or bus trip, to the final work destination. Being able to pedal to the terminal, place one’s bicycle on the main mode and complete the trip on one’s own bicycle, will reduce daily commuter costs apart from being very convenient.

Secure Cages cycle, motorcycle & security shelters

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▲ 50 cycle secure cage in Swindon



BICYCLE-COMMUTER SECURITY LOCKERS



Bicycles on trains is a concept used by several countries eg France, UK, Switzerland and Australia. In Cape Town, there was a time bicycles could travel in the guard's van but this van has disappeared and bicycle-on-trains along with it. Where bicycles are allowed on trains, they are

either confined to one coach (often in the middle of train) and generally allowed outside the peak hour for commuters. The coaches where bicycles are allowed are well signed as indicated below.



On one of the bike carriages on the Copenhagen train - the S-Train. Just stick your back wheel in the holders provided, sit down and enjoy a good book or newspaper.

Racks on buses is a fairly new development which is well used in American cities. Canberra, in Australia, is also a very good example of this progressive innovation. The racks could be attached on either the front or rear of the bus and if there is conflict with the local traffic laws then the latter should be adapted to allow the fitting of racks. Some examples are illustrated below.



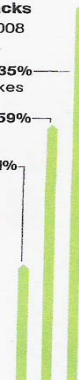
Bikes on bus racks
April to August 2008

Houston, TX +235%
1,510 to 5,059 bikes

Hartford, CT +159%
820 to 2,122

Charlotte, NC +71%
4,977 to 8,519

BIKE SPIKE
The rise in gas prices has set off a cycling spurt. One measure: The use of bike racks on buses is soaring.



- For “private motor vehicles”, park and ride facilities and lift clubs should be encouraged to reduce congestion at peak travel periods. In addition, bicycle parking and bicycle hire, where appropriate, should be created at park and ride locations. This will assist commuters in outlying park and ride facilities to ride to the facility, park their bicycle and join the lift club vehicle.
Similarly, at arriving at the parking hub near the city centre, a bicycle (personal or hired) can be used to travel the remaining distance to place of employment.
- Bicycle Master Plans should be developed for all urban areas and be part of Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) etc to ensure that the many advantages of the bicycle are not overlooked.

CONCLUSIONS

1. All transport and spatial planning, especially for urban areas, must take the bicycle mode into consideration.
2. Bicycle facilities must become part of integrated passenger transport.
3. Bicycle Master Plans should be developed by all cities and towns.
4. Safe bicycle facilities and secure bicycle parking, is set out in the Pedestrian and Bicycle Facility Guidelines of the Development of Transport, should be used for uniformity in design.
5. With global warming, economical upheaval and higher fuel costs, on the doorstep, the bicycle can contribute to affordable, non polluting mobility and be integrated into passenger transport.

REFERENCES

Department of Transport. 2003 Pedestrian & Bicycle Facility Guidelines
 Federal Transit Administration. 1999. Bicycle and Transit: A Partnership that works
 Pedal Power ACT. 2006. Bicycles on Buses at City Bus Interchange
 Transportation Research Board. 2003. A Return on Investment Analysis of Bikes-on-Buses Program
www.bikeracksonbuses (contains short demonstration videos)
 Institute of Transportation Engineers. Jumana Nabti, Matthew Ridgway. Innovative Bicycle Treatments