

Non-Motorised Vehicles

Definitions

Non-Motorized Vehicles (NMVs) comprise vehicles propelled by human power upon which any person may ride or carry goods. These devices include bicycles, tricycles, rickshaws, unicycles and other similar devices.

Context and Policies

NMVs have an important part to play in making cities more sustainable. They are one of the most energy efficient modes of transport available and, unlike other transport modes, they use renewable energy. NMVs provide a quick, healthy, affordable and non-polluting form of travel that has potential to increase capacity on busy roads by reducing the number of unnecessary short car trips. NMVs make better use of road space, thereby reducing the need for investment in new transport infrastructure. On existing roads, NMVs have a lower physical impact on the road surface than motor traffic reducing the need for road maintenance. In towns and cities, NMVs provide an efficient way of travelling over short to medium distances, offering considerable timesavings over other modes.

The presence of NMVs on less frequented streets can help pedestrians feel safer. At the same time, it is important to ensure that NMV routes are well used to prevent them becoming isolated and unsafe. In general, cities with higher levels of cycling have better road safety records.

NMV use contributes to employment and social inclusion. A high level of NMV use generates a demand for NMVs, spare parts, and services such as repair, rent, and paid parking. As a low cost form of travel, NMVs are accessible to most people thereby helping to increase social inclusion. NMVs allow children, teenagers and adults to be independent and to access education, shopping and leisure activities cheaply. NMVs can be easily adapted to give disabled people a way of travelling independently.

In urban areas, NMVs are not only relevant for the movement of people, but also for the transport of goods. In many African towns, handcarts transport goods to and from markets by the seller or by small-scale entrepreneurs as a service provision for the customer. In Asian cities, rickshaws designed for passengers often transport goods.

Issues

NMVs have a strong connotation of being for the poor only. Indeed, for the poor, private vehicle ownership is limited to non-motorised vehicles -- such as bicycles, animal carts, or cycle rickshaws. However, ownership of such vehicles actually indicates a considerable level of economic achievement. The use of NMVs is often perceived and managed as a problem (e.g. when NMVs are prohibited on through roads as a road safety measure, or when slow traffic is prohibited to cross intersections in order to increase flow time for motor traffic). Very often NMV use is constrained by physical barriers and excessive detours to overcome barriers. Steep gradients, strong winds, heavy rain and intense heat are dissuasive to NMV use.



Photo credits: The Kingdom of Bicycles © Wang Wenlan

Resources

Documents

- **A Sustainable Future for Cycling**, 2008, Department for Transport, UK.
- **Bicycle Ambulances in rural Uganda: Analysis of factors influencing its usage**, 2008, Corinna Wallrapp and Heiko Faust, World Transport Policy & Practice Vol 14 No 2, Eco-Logica (UK)
- **Bicycles: An integral part of urban transport system in South Asian cities**, 2000, Geetam Tiwari, Transportation Research and Injury Prevention Programme, Indian Institute of Technology, Delhi (India)
- **Creating a chain reaction: The London Cycling Action Plan**, 2004, Transport for London, Greater London Authority, UK
- **Factors in the Design of a Bikeway Network in a Medium-Sized City: The Case of Tuluá in Colombia**, 2000, Iván Sarmiento O., Universidad Nacional de Colombia (Colombia)
- **Livable Copenhagen: The Design of a Bicycle City**, 2006, Alyse Nelson, Center for Public Space Research, Copenhagen (Denmark)
- **Measuring Level-Of-Service for Cycling of Urban Streets using "Probe Bicycle System"**
- **Measuring Passenger Car Equivalents for Nonmotorized Vehicle (Rickshaws) at Mid-Block Sections**, 2005, Md. Mizanur Rahman and Fumihiko Nakamura, Journal of the Eastern Asia Society for Transportation Studies, Vol. 6, pp. 119 - 126, Association for Planning and Transportation Studies, Tokyo (Japan)
- **Non-Motorized Vehicles in Asia: Lessons for Sustainable Transport Planning and Policy**, 1992, Michael Replogle, Environmental Defense Fund, Washington, DC USA.
- **Planning for bicycles and other non motorised modes: The critical element in city transport system**, 2002, Geetam Tiwari, Transportation Research and Injury Prevention programme, Indian Institute of Technology, Delhi (India)

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In many cities, the environment is unattractive for NMV use due to pollution, traffic volumes, poor quality on-street measures and a lack of parking. Potential cycle commuters are also discouraged by a lack of shower/parking facilities at work and public transport restrictions on carrying bicycles.

Cycling is often seen as a difficult option because too few people know how to access information about suitable routes, reliable parking, the level of fitness required and acceptable distances/logistics for cycle trips. Many people also lack the confidence or road skills to cycle. NMVs in general and bicycles in particular can be some of the easiest vehicles for thieves and vandals to target. The provision of safe and secure NMV/cycle parking is therefore an essential ingredient to promote NMV use.

Actions

Planning for NMVs is not a stand-alone activity but an integral part of urban and transport planning. A comprehensive traffic and transport policy is required that defines the role of NMVs within the total transport system and in relationship to other modes. Action Plans need to include measures that will help overcome barriers to NMV use, such as:

- Improving NMV infrastructure to deliver a better quality, safer and more convenient NMV environment;
- Marketing and promotion activities to provide people with information, skills and positive examples or role models that will promote the popularity of NMVs;
- Improving public transport-NMV links to make NMV use feasible as a part of longer journeys; and
- Maximising the shared benefits to NMV users from other programmes and initiatives designed to improve road conditions for all road users.

The analysis of "Detour Factors" is a useful way to determine how to overcome barriers to NMV use, such as unsafe, high-speed roads, street restrictions, barriers to crossing streets, one-way street systems and other barriers (such as canals, railways, and other impassable infrastructure).

- A "Detour Factor" is the extra distance required for NMV users to reach their destination, relative to the straight-line distance (as the crow flies distance).
- A "Detour Factor" of 1.2, as observed in Delft, (Holland), is extremely low. This means that the average NMV user only needs to travel 20% farther than the straight-line distance.
- A mapping of "Detour Factors" in Surabaya (Indonesia) indicates that a combination of one-way streets, few intersections, a weak secondary and tertiary street system, and unsafe high speed roads can result in detour factors as high as 4.0 (four times the straight-line distance).
- The reduction of such "Detour Factors" is clearly a primary objective of any NMV improvement programme.

- **Sustainable intermediate transport in West Africa: Quality before quantity**, 2008, Bryan Dorsey, World Transport Policy & Practice Vol 14 No 2, Eco-Logica (UK)
- **The Economic Significance of Cycling**, 2001, Jeroen Buis, I-ce Interface for Cycling Expertise (The Netherlands)
- **Vehicle Mix and Road Space in Dhaka: The Current Situation and Future Scenarios**, 2005, Debra Efroymson and Mahabubul Bari, WBB Trust (Bangladesh)

Media

- **Baisikeli - bikes for a better life**, 2009, Henrik Mortensen, Baisikeli (Denmark)
- **Ciclovia: Bogotá, Colombia**, 2007, Clarence Eckerson Jr., StreetFilms.org (USA)
- **Cycling the city**, 2009, European Environment Agency (EU)
- **Physically Separated Bike Lanes**, 2007, Clarence Eckerson Jr., StreetFilms.org (USA)

Presentations

- **Bicycle & Cycle-Rickshaw Promotion In Delhi For Air Quality Improvement**, 2008, Nalin Sinha, ITDP India, New Delhi (India)
- **Bicycling in Asia**, G. Tiwari, Anvita Arora and Himani Jain, TRIPP, IIT Delhi (India)
- **Cycle rickshaw and Cycling Advocacy in Delhi**, 2008, Nalin Sinha, ITDP India, New Delhi (India)
- **International cooperation on the integration of cycling planning in city processes**, 2006, Roelof Wittink, I-ce Interface for Cycling Expertise, Velo Mondial 2006, Cape Town (South Africa)
- **The bicycle in the lives of the urban poor Case Study : Delhi**, 2006, Anvita Anand, Geetam Tiwari and Rajendra Ravi, Velo Mondial Conference 2006, (South Africa)

Recommended Links

- **AfrBikeNet: Pan-African Bicycle Information Network** (Yahoo Group)
- **Bicycle Empowerment Network** (Namibia)
- **Bicycle Empowerment Network** (South Africa)
- **BYPAD: Bicycle Policy Audit** (EU)
- **European Cyclists' Federation** (Belgium)
- **Interface for Cycling Expertise** (Belgium)
- **SpicyCycles** (EU)
- **Umma wa Wapanda Baisikili Dar es Salaam (UWABA)** (Tanzania)
- **Uvumbuzi** (Kenya)
- **Velo Mondial 2006 Cape Town** (South Africa)

For further information

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