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Project-level indicators

> "Adding highway lanes to deal with traffic congestion is like loosening your belt to deal with obesity."
>
> Louis Mumford, cultural historian and city planner

Indicators are necessary in order to analyse and understand the current performance of roads and to measure progress as investments are made in safe road infrastructure. Simple and practical to use, **indicators and metrics for measurement and monitoring** are a means of ensuring that the approach suggested by Share the Road are applicable and useful.

Traditional approaches to road planning and building often neglect NMT needs in their assessments of engineering and costs because they focus on performance criteria for vehicles, e.g. improved connection, travel time, speeds and fuel savings.[16] This provides only a limited picture of the real impacts.

The set of indicators proposed by Share the Road[17] is meant to help decision-makers choose between alternative options the most cost-effective investments in NMT infrastructure. For instance, to better understand travel behaviour, it is helpful to distinguish between three levels of interventions: the travel, transport and traffic market. Some of the proposed indicators include the average number of destinations within reach given actual access to transport modes, based on travel time, and the percentage of trips for which people have the option to use a more sustainable mode of transport. Taken together, they provide a methodology for assessing the impact of roads that work to **integrate safety, environment and accessibility.**

Local assessment

> "There is no provision for cyclists in Nairobi at all. Even for pedestrians there is hardly any provision. Cyclists compete for space with cars…and are not considered as road users at all … I think the problem begins with planning. City planners have not considered pedestrians and cyclists as effective road users."
>
> Frederick Kwame, Regional Director for Oxfam
> (Survived being hit by a bus while cycling in Nairobi)

The first roads and NMT assessment study[18] by Share the Road was undertaken in **Nairobi, Kenya** in 2009. Nairobi was chosen as it is highly representative of the problems and challenges in a developing country city where 48.2% of the population are dependent on walking and cycling for the transport of both people and goods.

[16] Arora A. and Tiwari G. (2007) A Handbook for Socio-economic Impact Assessment of Future Urban Transport Projects
[17] The full presentation is available online at www.unep.org/transport/NMT_roads
[18] Ibid


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Of the 51.2 km of the roads surveyed, 76% of the length of these roads did not have any provision for pedestrians, while on 24% of the length that did have footpaths, 22% were non-segregated footpaths that were less than 1 meter wide and had to be shared by both pedestrians and cyclists. The main difficulties for NMT users are conflict with motorists and other utilities (water pipes, storm drains, power cables), encroachment by roadside commercial activities where facilities do exist and lack of security, especially at night.

From 2000-2008, 70.8% of road fatalities in Nairobi were pedestrians. Over a 20-year period, by investing USD 3.5 million in pedestrian crossings and USD 1.9 million in segregated pathways, 10,300 and 4,200 deaths and serious injuries could be prevented, respectively.[19]

Recommendations

Concerted and long-term efforts to preserve and promote more fuel-efficient, low-carbon transport modes like NMT are needed in both developed and developing countries. Investments for both improving existing roads (e.g. maintenance) and for constructing new roads should allocate resources specifically for safety, inclusive of NMT infrastructure.

At the international level, such as the First Global Ministerial Conference on Road Safety in Moscow, November 2009, high-level decision-makers in both donor institutions and government bodies can catalyse decisive action at the organisational and project levels through their leadership role.

- Adopt a **minimum 10% allocation of road investments** for safety, inclusive of NMT infrastructure, in support of the Make Roads Safe Campaign and the Decade of Action.
- Fully recognise the importance of safe and accessible NMT infrastructure and its benefits for decongestion, low-carbon transport and sustainable development.
- Develop donor institution policy to require safety audits, accessibility audits and NMT plans before awarding funding.

[19] International Road Assessment Programme (2009) iRAP Kenya Results 2009: Final Report

High benefits: Cost-benefit analyses (CBAs) of walking and cycling track networks in Norwegian cities, taking account health benefits, reduced air-pollution and noise from road traffic, and reduced parking costs that results when travel shifts from automobile to cycling and walking, estimated that benefits are at least 4-5 times greater than costs.[20]

At the organisational level, both donors and governments need to address areas of institutional development and internal capacity building to overcome current barriers to adopting a principle of minimum 10% for road safety, environment and accessibility.

- Support research, programmes, and policies on road safety and low-carbon transport in developing countries.
- Harmonise minimum data collection and design standards consistent with those outlined by funding bodies, successful national policies and published best practice.
- Further develop inclusive methodology for how benefit-cost ratios (BCRs) are calculated.

At the project level, specific elements should be applied in the process of developing, approving, implementing and monitoring a project for road transport infrastructure.

- Encourage components on infrastructure for NMT and public transport in city development plans.
- Utilise the audit process to build up a network of local and national experts who can contribute to policy development.
- Monitor the implementation of approved infrastructure projects and associated road safety programmes based on multi-pronged indicators.
- Carry out post-project monitoring, safety audits and other assessments on a range of sustainability criteria for thorough evaluation.

> "I walk to work every day, rather than take the presidential limousine. It's better for the environment and I can stop and chat to people on the way."
>
> Mohamed Nasheed, President of the Maldives[21]

Your Roadside View

Take photographs and video footage of your daily commute and the conditions you face in terms of safety, environment, congestion, and sharing road space with other users. You can contribute to raising the profile of safe, sustainable roads for all users and help highlight the state of roads and road sharing in both developed and developing countries around the world. Send us your images and footage via email with your name and a short description. Selections will be featured on our website and publications.

[20] Victoria Transport Policy Institute, Online TDM Encyclopedia
[21] TIME (2009) Heroes of the Environment

Share the Road...

Supports a paradigm shift towards roads that incorporate multiple modes of transport, e.g. walking, cycling, public transport and private motor vehicles

Advocates a minimum 10% allocation of road investments by multilateral and bilateral donors, as well as in national government budgets, for safety, inclusive of NMT infrastructure,

Develops with partners practical tools on design guidelines and project-level indicators to propose and implement road projects that incorporate all three aspects of environment, safety and accessibility,

Brings together in partnership multiple groups within the transport, environment, health, safety and development sectors to make safe, low-carbon and accessible mobility that benefits all users a reality.


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Share the Road:

Minimum 10% Finance for Safety, Environment and Accessibility

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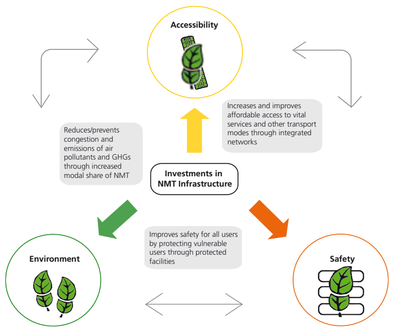

Positive feedback loop from investments in NMT infrastructure

Neither road safety nor low-carbon transport can be achieved unless non-motorised transport (NMT) is incorporated. **Share the Road: Minimum 10% Finance for Safety, Environment and Accessibility** is a joint initiative of the United Nations Environment Programme (UNEP), the FIA Foundation for the Automobile and Society (FIA Foundation) and a growing list of partner organisations. The goal is to improve safe access to sustainable transport by advocating road design and finance that is inclusive of all users and benefits all.

Share the Road supports a **paradigm shift** in the way policy makers, designers and road finance institutions, think about and construct roads, thereby changing the way users travel.

Making investments in safe NMT infrastructure – both the facilities and the integrated network – is the central overlapping action that can trigger positive feedback connections in all three aspects of safety, environment and accessibility.

Share the Road focuses on **cities** in recognition of the acute challenges faced by cities worldwide in addressing congestion, air pollution, greenhouse gas emissions and poor road safety.

Emissions savings: In 2003, the World Bank, the Global Environmental Facility (GEF) and local counterparts financed the 10 km bikeways project in Santiago, Chile. CO_2 emissions were reduced between 684 and 999 tons/yr, accounting only for reduced car trips, and saved USD 8,558. Additional savings include fuel (USD 166,234), travel time savings (USD 344,627), reduction in accidents due to infrastructure (USD 133,903) and costs of accidents due to mode shift (USD 24,473), for a total of USD 628,850 in 2005.[1]

[1] Schipper et al. (2009) Considering Climate Change in Latin American and Caribbean Urban Transportation: Concepts, Applications, and Cases

Decongestion is a key objective for cities and increasing the modal share of NMT can have a significant impact. For instance, cyclists need less than a third of the road space that is used by a private motor vehicle, and a pedestrian needs only a sixth of that space.[2] Providing safe NMT infrastructure can increase the flow of traffic for all types of vehicles.

With **rapid urbanisation** the rising demand for mobility will be met primarily by NMT, the most affordable option. This creates an opportunity for the future. In terms of modal choice, the majority of the trips in non-OECD countries are being undertaken by sustainable modes: public transport, cycling or walking. These modes should be promoted by transforming walking and cycling from a dangerous, arduous journey to a safe, clean, quick and affordable way to travel.

Trends in transport and road safety

Environment, safety and accessibility are three key aspects of road travel. The transport sector is both an engine of economic growth and a **major source of CO_2 and non-CO_2 emissions**: Road transport accounts for 17% of global CO2 emissions (73% of total transport-related emissions) and 70-90% of air pollution in urban areas.

The world's **light-duty motor vehicle fleet is set to triple by 2050**, at which time two-thirds of the global fleet will be found in non-OECD countries. CO_2 emissions from developing countries will increase from 30% in 2006 to 45% of the global total by 2030.[3]

For the majority of people in developing countries the only viable mobility options are walking, cycling and public transport. Yet with deteriorating, or non-existent, infrastructure for NMT and public transport, these **low-carbon modes are becoming increasingly unsafe**.

According to the World Health Organisation, over 90% of the global toll in road fatalities occurs in low-income and middle-income countries, which have only 48% of the world's vehicles.[4]


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[2] GTZ (2003) Preserving and Expanding the Role of Non-motorised Transport
[3] IEA (2008) Energy Technology Perspectives
[4] WHO (2009) Global Status Report on Road Safety: Time for Action

Almost half of those who die in road traffic crashes are NMT users such as pedestrians, cyclists and users of motorised two-wheelers – together known as **"vulnerable road users."** The proportion of NMT users in road fatalities is substantially higher in developing countries.

The **urban poor are particularly at risk** and the inherent comparative disadvantage of vulnerable users in a potential collision is exacerbated by the general lack of safe road infrastructure.

The disproportionate amount of road traffic deaths and injuries pose a huge burden. The **economic costs** are estimated at USD 64.5 billion to USD 100 billion – nearly equivalent to the total bilateral overseas aid to low- and middle-income countries in 2005 which amounted to USD 106.5 billion.[5] The cost of urban air pollution is estimated to approach USD 1 billion per year and often upwards of 5% of GDP in developing countries in healthcare costs alone. At the household level, the cost of urban transport is a significant part of expenditures – ranging from 12.4% in Abidjan, Ivory Coast in 1993 to 28% in Dakar, Senegal in 1999.[6]

Despite such soaring costs to low and middle income countries, road safety has been almost totally ignored as an issue of sustainable development. Road safety does not feature in the UN Millennium Development Goals (MDGs) which aim to eradicate poverty and is largely missing from UN and G8 policies and programmes for **sustainable development.**

Income savings: In South Africa low-income earners spend 25% of income on public transport to and from work; after initial bicycle purchase cost, the household cost of transport was reduced to 5% of income after three months.[7]

Increased mobility enhances economic opportunity. **Better facilities and network connectivity for NMT users** will catapult efforts for road safety, green economy and poverty reduction. In industrialised countries, the needs of NMT and public transport users must also be addressed. For example, nearly 30% of European households have no access to a private car.[8]

More extensive, affordable and safe transport options and infrastructure would reduce the burden of harm and expense on low income groups and improve the conditions for sustainable development through better access to services, in particular in remote rural areas and for **women and girls.**

[5] Commission for Global Road Safety (2006) Make Roads Safe
[6] World Bank (2005) Non-Motorized Transport in African Cities, Sub-Saharan Africa Transport Policy Program, SSATP Working Paper No. 80
[7] Bicycle Empowerment Network (2004) BEN Survey
[8] European Commission (2009) Reclaiming city streets for people

Roads and development: The availability of paved roads had a significant influence in school attendance levels in a community in Morocco. Attendance rates rose from 21% to 48% for girls and from 58% to 76% for boys. In Burkina Faso it was found that communities living more than 10 km from a health centre suffered infant mortality rates that were 33% higher than those of communities living within a 10 km radius.[9]

Minimum 10% of road investments

The combined road sector investments of the multilateral banks in 2005 amounted to over USD 4 billion. If at least 10% of this portfolio were applied to road safety this would amount to a total of USD 400 million. This catalytic investment would help to increase local technical capacity in low and middle income countries, and to ensure that road safety management becomes self-sustaining over the long term.[10]

A resurgence in road financing as part of stimulus packages is mirrored by a **renewed interest in financing for 'road infrastructure'** by bilateral and multilateral donor and lending agencies active in developing and transitional countries.

The international road finance community should send a strong market and governance signal. Dedicating at a minimum 10% of road investment for safety is a recommendation of the **Make Roads Safe Campaign** and is crucial to achieving the goals of the 2010-2020 **UN Decade of Action for Road Safety.** It has both a symbolic and functional value as it highlights the fundamental importance of considering safety and also serves as a benchmark of investment in safer and more sustainable roads.


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[9] African Union and the UN Economic Commission for Africa, Transport and the Millennium Development Goals
[10] Commission for Global Road Safety (2006) Make Roads Safe

Countries achieve a high modal share of NMT in their cities through investment in NMT infrastructure. Denmark reduced deaths among cyclists by 35% by providing separated cycling lanes alongside urban roads.[11] Although cycling increased by 50% in the Netherlands between 1980 and 1997 fatalities and injuries decreased significantly. When proper NMT infrastructure is provided, a top deterrent to using NMT – concerns for safety – is resolved.

Dedicated investment of around USD 5 to USD 10 per capita could realistically yield a modal share for NMT of 5 - 10%.[12] With a long enough investment horizon, net NMT infrastructure costs may even be negative. A city with more cycling and walking and less road space for motorists would be cheaper to build and maintain than one dominated by personal cars. According to the International Energy Agency's assessment, "the **provision of walking and cycling infrastructure is amongst the least expensive elements in changing land use and transport patterns."**[13]

> "10% of total project cost should be considered as an absolute minimum to be allocated to a much more comprehensive system of road infrastructure appraisal and assessment and related road safety measures."
>
> Commission for Global Road Safety, Make Roads Safe Report, 2006

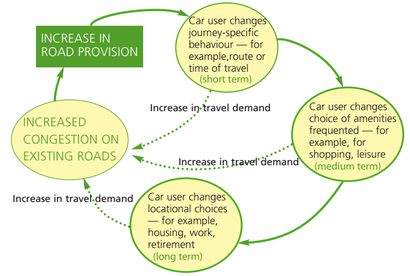
Footways and bicycle facilities should be regarded as safety features that also encourage active lifestyles, low-carbon travel and serve as community meeting places. Additionally, NMT infrastructure is also an **investment in poverty reduction and economic development,** as it enables the vast majority of citizens to access jobs, vital goods and services.

Advocating for a minimum 10% of road investments to be devoted to safety measures is a way to bring about a new paradigm where the **safe, low-carbon mobility of all users,** including pedestrians and cyclists, is considered the ultimate aim of roads as a matter of course.

Design standards

Safety and sustainability can be designed into roads simply be **re-thinking the balance** between motorised and non-motorised users. The design of safe road infrastructure involves managing the speed of motor vehicles and protecting NMT users. Pedestrians and cyclists are relatively safe only when motor vehicles are travelling at less than 30 km/h. For proper protection, they should be separated from motor vehicles, with their own footpaths, cycling paths or lanes, especially where motor vehicle speed excels the threshold.[14]

[11] WHO (2004) World Report on Road Traffic Injury Prevention: Summary
[12] IEA (2009) Transport, Energy and CO2: Moving Towards Sustainability
[13] Ibid
[14] WHO (2004) World Report on Road Traffic Injury Prevention: Summary



Traffic induction cycle[15]

Safe design will depend on the specific traffic flow and characteristics of the road. Nevertheless, it is clear that pedestrian footpaths, crosswalks, on-road cycling lanes or separated cycling paths, and bicycle parking are the basic features. All should be as continuous as possible, with a smooth surface, and have proper street lighting and signage to maximise visibility and security.

Besides safety concerns, travel time and convenience are the main factors that concern current and potential NMT users. In order to minimise travel time and maximise convenience, the integration of NMT infrastructure into the larger transport network, especially public transport must be a key objective.

When road design reallocates the total space available for roads more proportionately between motorists and non-motorists, a segment of road users will be encouraged to shift from using vehicles to walking or cycling, especially for shorter trips. Simply increasing road space for motor vehicles propels the traffic induction cycle. On the other hand, a **modal shift in favour of NMT** tends to result in less congestion, smoother traffic flow, and therefore, better accessibility for all. By addressing the paramount concern of safety, roads designed with NMT facilities promote more eco-friendly, accessible travel.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[15] European Commission (2009) Reclaiming city streets for people