

# SAFE AND SUSTAINABLE ROADS

An agenda for Rio+20

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**≡ MAKE ROADS SAFE**  
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## Executive Summary

Road traffic deaths and injuries represent a global public health epidemic. That epidemic has reached crisis proportions and is set to worsen over the years ahead. It is the product of transport policies that put vehicles, highways and speed before people and road safety. The same 'vehicle first' approach has makes current approaches to transport policy a threat to international efforts to tackle global environmental problems, including air pollution and climate change. The 'Rio+20' summit provides an opportunity to re-frame transport policy priorities around two simple principles: safety for people and sustainability for the planet. Failure to seize that opportunity will diminish the relevance of 'Rio+20' to one of the great development challenges of the 21st century.

The sheer scale of the road traffic injury epidemic is not widely recognised. Every year, some 1.3 million people die on the world's roads – 3,500 every day. Another 50 million people are left with injuries, a large proportion of which are serious or even permanent disabilities. The vast majority of the victims live in the world's developing countries, where road traffic injuries are holding back progress towards the Millennium Development Goals (MDGs). For millions of people, injuries sustained on roads are a source of poverty, debt and despair. Children and young people are among the main victims. Road traffic injuries

are the single biggest source of fatality in the 10-24 year-old age group, worldwide. In 2004, the last year for which comprehensive data is available, road traffic injuries claimed more lives among 5-14 year olds than major killer diseases such as malaria, diarrhoea and HIV/AIDS.

The future looks far worse than the present. Demographic, economic and human settlement trends point unequivocally to a marked increase in road traffic fatalities and injuries. In Africa, which has the world's highest ratio of fatalities per vehicle, a growing and increasingly urbanised population means that more people will be placed in harm's way. We estimate the cumulative increase in fatalities to 2016 at 47,000. Another 90,000 people could be killed on India's roads above current levels. Globally, there will be some 2 million road traffic fatalities annually by 2020 unless action is taken. With economic growth driving an increase in the number of cars on the world's most dangerous roads, this projection could prove to be an understatement.

The relentless increase in road deaths is symptomatic of a wider failure to put people and planet at the centre of transport policy. Outdoor air pollution kills as many people - 1.3 m annually according to the World Health Organisation – as road traffic injuries.

Some 70-90 per cent of the pollutants responsible for these deaths - such as carbon monoxide, ozone, sulphur dioxide, nitrogen oxides and other particulate matter - originate from gasoline-powered cars. Transport is also a major contributor to climate change, accounting for about one quarter of worldwide CO2 emissions - and cars and trucks represent three-quarters of this total. Emissions from road transport have increased by 50 per cent since 1990 and are now the second fastest-growing source of emissions after power generation. Meanwhile, the iron law of congestion, under which more roads act as a catalyst for more cars and more traffic jams, is a source of economic waste and inefficiency. Many major cities are losing 1-3 per cent of their GDP as a result of road congestion.

There are no surprises or hidden magic bullets for tackling the road traffic injury crisis. Vehicles need to be separated from vulnerable road users, such as pedestrians and cyclists. Speed has to be managed to reflect the safety features of roads. Overpasses and underpasses are needed to ensure that children have safe passage to school. Seat belt and safety-helmet legislation has to be enforced - and car manufacturers have to comply with safety standards that place a high premium on safety. The policies needed are tried, tested and affordable - but they are not being put in place.

Many actors have a responsibility to change this picture. Developing country governments need to draw up comprehensive strategies aimed at reducing road traffic injuries. Multilateral development banks spend billions of dollars each year to finance road building, yet systematically neglect road safety. High level policy statements from the World Bank and regional development banks have not been followed through and translated into operational practices. When it comes to assessing project performance, the multilateral development banks put speed and economic efficiency before all other considerations, including the safety of road users. Policies that are needed to tackle the crisis in road safety - the development of affordable and accessible public transport, slower speeds, safer and greener cars - would also generate significant environmental benefits. That is why 'safety and sustainability' should be the watchwords for the 'Rio+20' summit.

This report sets out an agenda for change. It highlights some of the priorities for international cooperation, including:

- Recognition of sustainable transport and road safety within the Rio+20 framework;
- Stronger leadership in developing countries, with governments taking responsibility for putting the interests of vulnerable people before the drive to reduce journey times at all costs;
- Increased financing, with US\$200m annually in aid to support the development of national road safety strategies in the poorest countries;
- The production of safer vehicles and stronger regulation to prevent car manufacturers conducting a race to the bottom in vehicle safety provisions for the poorest countries, through the harmonisation of global standards, uptake of new technologies and car assessment programmes.

For multilateral development banks we recommend:

- A common framework for road safety targets under which all projects are required to achieve a reduction in the absolute number of deaths on stretches of highway supported by the lending;
- An operational requirement that all roads supported by the multilateral development banks meet, at minimum, the iRAP 3 star standard;
- An agreement across the multilateral development banks to resource independent road safety assessment programmes charged with monitoring initial project design and project outcomes for all major transport infrastructure investments;
- The executive boards of all multilateral development banks to develop clear road safety criteria against which all proposed lending for transport infrastructure will be assessed, with a clear understanding that non-compliant projects will not be authorised.

2011 marked the start of a UN Decade of Action for Road Safety. The launch of the decade marked something of a breakthrough. After years of neglect, road safety has at last registered as a global public health epidemic that can only be effectively treated through international cooperation. But the danger is that the decade of action will transmute into a decade of talking and high-level summits. That is an outcome that will cost up to 5 million lives. The 'Rio+20' summit provides an early opportunity for the governments that signed up for the Decade of Action to demonstrate that they are serious about delivering results.



## Introduction

Twenty years ago the world's governments gathered in Rio de Janeiro for one of those rare events - an international summit that captured the public imagination. The United Nations Conference on Environment and Development put the global environmental crisis on the political map. It highlighted the disastrous consequences of economic growth models that counted GDP, while turning a blind-eye to the depletion of ecological assets. And the summit ended with a plan of action that promised to put 'human beings at the centre of concerns for sustainable development'.<sup>i</sup>

In June 2012, governments will gather again in Rio de Janeiro at the 'Rio+20' summit. They have a remit to look back at what has been achieved, renew the commitment to sustainable development, identify principles for moving towards a green economy, and, in the words of the UN Secretary General, 'address new and emerging challenges'.<sup>ii</sup>

No challenge merits greater attention than road safety. This year more than 1.3 million people will die on the world's roads. Countless millions more will suffer debilitating injuries. The vast majority of the victims will live in developing countries - most will be poor. The epidemic of road traffic injury is a source of poverty, humanitarian suffering and economic waste on

a global scale. UN Secretary General Ban-ki Moon has called on the 'Rio+20' summit to initiate an 'unprecedented campaign' aimed at eradicating five major killer diseases - and rightly so. However, none of the diseases in question claims the lives of more young people aged 15-24 than road traffic injury.

Devastating as the current road traffic injury may be, it is set to get worse. Over the next two decades, the number of vehicles in the world's poorest countries will increase at an unprecedented rate. Driven by rising incomes, population growth and investments in road infrastructure, today's growth markets for cars and trucks are in developing countries. Meanwhile, demography and urbanisation are increasing the number of young people exposed to risk of road traffic injury. The deadly arithmetic can be briefly summarized: more cars and more people under current road safety conditions in poor countries equals a prescription for increased fatalities.

Should governments decide to convene a 'Rio+30' summit, on a business-as-usual pathway they will be meeting against a backdrop of almost 2 million road deaths annually.

That outcome is avoidable. Unlike some of the issues that will be discussed at the 'Rio+20' summit, there are

few unknowns in road safety. Simple, affordable and available interventions can save lives. Urban planners and road engineers need to ensure that cars and pedestrians are either kept at a safe distance from each other or vehicle speeds are kept very low. Rules on crash helmets, seat belts, speeding and drink-driving have to be enforced. The safety features of vehicles need strengthening. None of this is rocket-science. Yet progress has been painfully slow.

Road safety has yet to figure on the 'Rio+20' agenda. This is an act of omission that, in a very literal sense, puts millions of lives at risk. More than that, it is a wasted opportunity. First and foremost, it is a wasted opportunity to prevent millions of deaths. It is a wasted opportunity for the governments that signed-up in 2010 for the UN's Decade of Action for Road Safety to demonstrate that they are serious, and to act on the commitments that were made. And it is a wasted opportunity to make road safety part of a wider agenda for sustainable transport – an agenda that puts the well-being of people and the planet at the centre of transport policy and urban planning.

The road traffic injury epidemic is a symptom of a far deeper malaise. Governments around the world are spending billions of dollars on road infrastructure, often with the backing of multilateral development banks and bilateral donors. These investments are geared overwhelmingly towards reduced journey times, increased vehicle speed, and the accommodation of more cars. Success is measured in terms of kilometres of metalled roads. Meanwhile, the body count of road traffic injury fatalities, air pollution, and the impact of vehicle emissions on climate change are viewed as a form of collateral damage – the inevitable price of economic progress. This is precisely the type of anachronistic, silo-based thinking that the Earth Summit challenged back in 1992 and which 'Rio Plus 20' should be challenging in 2012.

For far too long, road safety has been treated as a peripheral concern. While there are exceptions to every rule, political leaders in developing countries have failed to address one of the greatest threats to their citizens. UN agencies have for the most part been conspicuous by their absence. The bilateral donors and multilateral development banks that spend billions on road infrastructure, continue to treat road safety as an afterthought. Vehicle manufacturers view markets in developing countries as a commercial opportunity to be exploited, even if this involves diluting safety standards. More, development and environmental non-government organisations have been silent for too long on an issue that should be at the forefront of their concerns. While the Millennium

Development Goal (MDG) targets for cutting deaths among children aged 0-5 and for getting all children into school have been a rallying point, development campaigners have been silent on the single greatest cause of death and injury among school-age children. This is not a model of joined-up thinking.

There are some positive signs of change. In its 2012 State of the World's Children Report UNICEF pointed out that 'safe public transport and well-regulated traffic are vital components of a city fit for children.'<sup>iii</sup> Save the Children has urged governments to make road safety part of the wider agenda for achieving the Millennium Development Goals (MDGs). The United Nations Environment Programme and civil society groups in the developing world are starting to join the dots connecting environment, development and transport policy. The World Bank's Global Road Safety Facility and the new Road Safety Fund have helped to mobilise financial resources. Meanwhile, there are tentative indications that, after years of talking, governments are starting to recognize that words and high-level communiqués divorced from practical action do not save lives. In May, 2011, the United Nations General Assembly launched a 'Decade of Action for Road Safety' aimed at saving 5 million lives.

'Rio+20' provides an opportunity to build on this momentum. The danger is that the opportunity will be wasted. That is an outcome which would have far-reaching consequences. It would call into question the commitments made by the governments, UN agencies, donors and international financial institutions that signed up for the Decade of Action, undermining their credibility. It would pose a real and present danger to the lives and limbs of millions of vulnerable children and young people, undermining efforts to combat poverty and build on progress towards the MDGs. And it would fatally damage the relevance and the legacy of the 'Rio+20' summit itself.

This paper is organised in four parts. Section 1 provides a brief overview of the road traffic injury epidemic – and its impact on the international development agenda. Section 2 looks at some of the wider associated environmental, social and economic costs. Section 3 sets the challenge of road injury prevention in the context of a rapidly urbanizing and motorizing developing world. Section 4 identifies some of the practical policies that are needed to save lives and integrate road safety into wider strategies for sustainable transport.



# 1 Counting the costs of the global epidemic

'When I see the needless horror and death we bring upon ourselves on the road,' wrote the great Nigerian novelist Chinua Achebe, 'I ask myself: How can intelligent beings do this to themselves?' He went on to describe 'the daily, nay hourly, massacre of our citizens, often in the most active and productive period of their lives and in such numbers each year to populate a whole city'

Chinua Achebe was writing about his own country in 1987. But he could have been describing almost any country in the developing world today, with one important caveat – the situation in 2012 is far worse.

## The body count

The sheer scale of the road traffic injury epidemic is not widely recognised. There is a widespread tendency to see that epidemic in terms of isolated and unpredictable events – as 'accidents' that befall unlucky individuals. In fact, there is nothing unpredictable about road traffic injuries. And the 'road accident' vocabulary deflects attention from the systemic nature of the risks that claim so many, many lives.

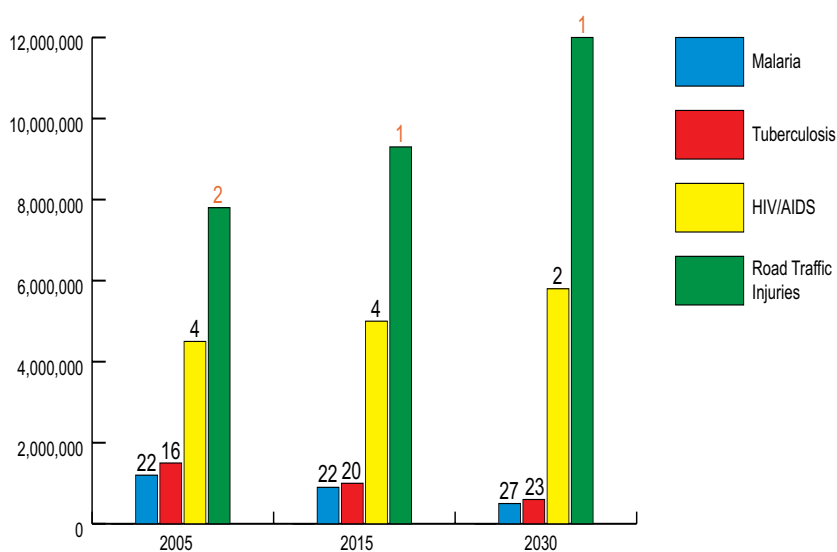
The headline numbers for road traffic injuries retain a power to shock. According to estimates from the

World Health Organization, around 1.3 million people died on the world's roads in 2008. That figure represents 3,500 deaths every day. Another 50 million people were seriously injured or disabled. In India alone, an estimated 2 million people are living with disabilities caused by road traffic injuries.

One of the most predictable aspects of the road traffic injury epidemic is the profile of victims. Over 90 per cent of deaths and injuries occurred in developing countries, with children accounting for one-in-every five fatalities. Globally, road traffic injuries are now the leading cause of death in developing countries for the 15-19 year-old age group; and the second leading cause of death among 5-14 year olds (**Figure 1**). In 2004, the last year for which comprehensive data is available, road traffic injuries claimed more lives among 5-14 year olds than major killer diseases such as malaria, tuberculosis and HIV/AIDS.

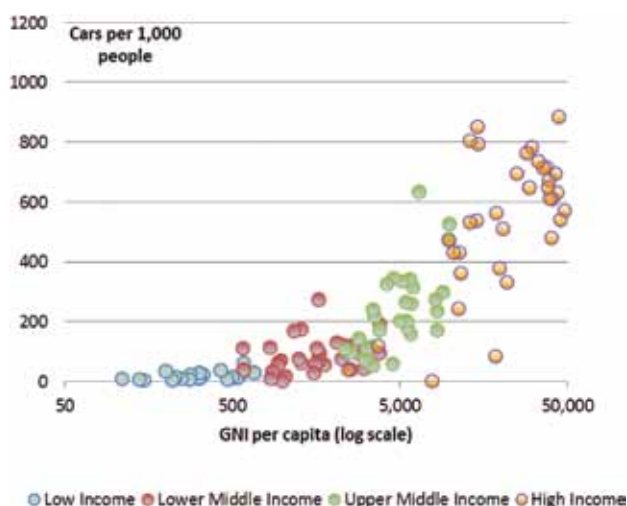
Ultimately, road traffic injury outcomes are a reflection of the relationships between population size, the number of vehicles on the road, and the ratio of injuries-to-vehicles. As might be expected, the ratio of cars to people is far higher in richer than in poorer countries (**Figure 2**). The point at which the ratio of cars to people takes off is somewhere between \$8-15,000 average per capita income. Before that take-

**Figure 1:** Projected Disability Adjusted Life Years (DALYS) in developing countries: (children aged 5 – 14)

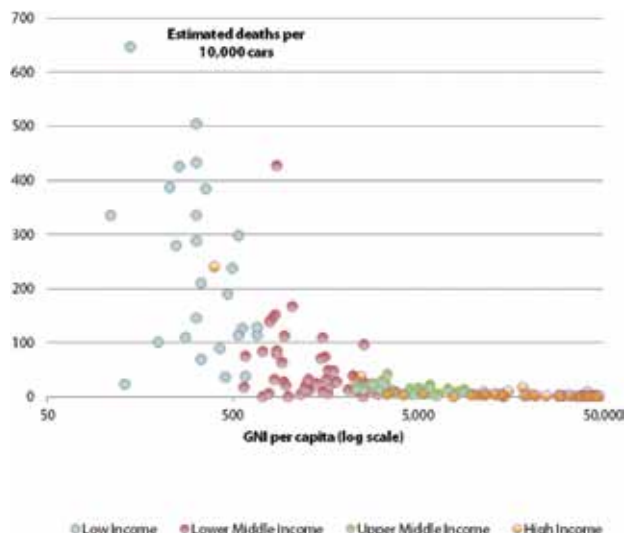


**Source:** Mather C, Loncar D, Updated projections of global mortality and burden of disease, 2002-2030: data sources, methods and results, WHO, October 2005

**Figure 2:** Cars per 1000 people



**Figure 3:** Estimated deaths per 10,000 cars



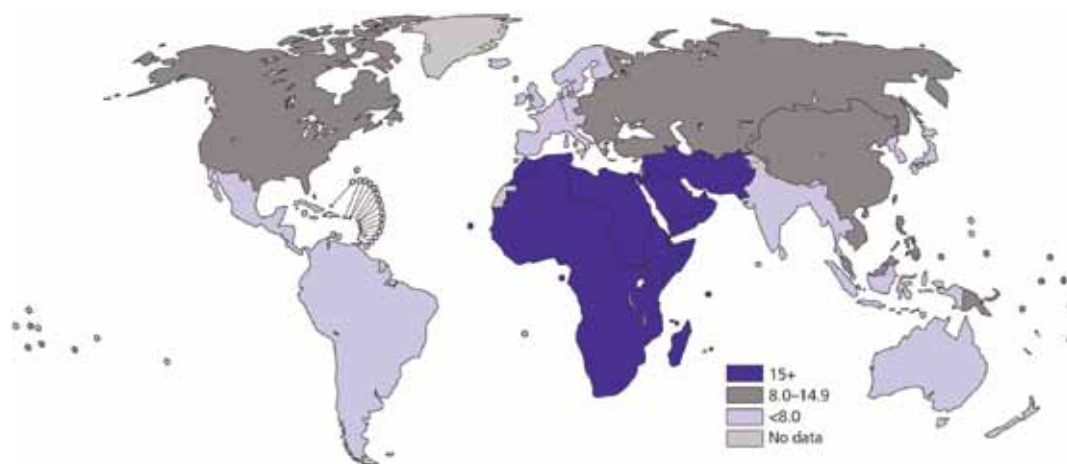
**Source:** Analysis derived from WHO and World Bank data

off point, spending on transport is typically associated with bicycles and motorised cycles. Countries with low-incomes and large populations like Bangladesh and Ethiopia have fewer than 10 cars for every 1,000 people. That ratio rises to 62 cars for India, 108 for China and over 230 for Mexico and Brazil. High income countries have ratios that range from 500-600 (the Netherlands and Norway) to 700-800 (France and Germany) and 820 (for the United States).

The relationship between cars and fatalities flips the correlation. Developing countries may have far fewer

cars, but those cars are far more likely to kill or maim (**Figure 3**). With less than 10 per cent of the world’s motorised vehicles, they account for 42 per cent of deaths While every 100,000 cars on the roads of high-income countries typically claim fewer than 15 lives, the ‘kill ratio’ rises to 70-90 for Brazil and Mexico, 152 for China, 270 for India and 1,897 for Bangladesh. Measured on this indicator, sub-Saharan Africa has the world’s most dangerous roads. The ‘kill ratio’ exceeds 2,000 in Mozambique and Uganda, 7,000 in Nigeria and 11,000 in Liberia and Ethiopia.

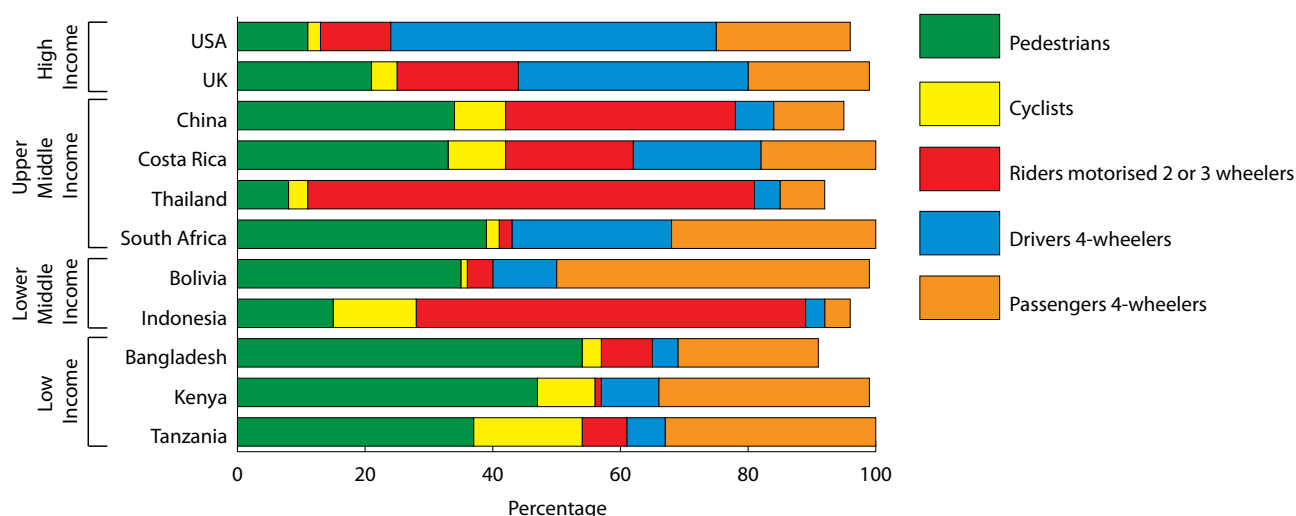
**Figure 4:** Road-traffic injury mortality rates per 100 000 children<sup>a</sup> by WHO region and country income level, 2004



Africa	Americas		South-East Asia	Europe		Eastern Mediterranean		Western Pacific	
	HIC	LMIC	LMIC	HIC	LMIC	HIC	LMIC	HIC	LMIC
19.9	8.7	7.7	7.4	5.2	8.3	18.3	17.4	4.2	8.6

<sup>a</sup> These data refer to those under 20 years of age.  
 HIC = High-income countries; LMIC = low-income and middle-income countries  
**Source:** WHO (2008), Global Burden of Disease: 2004 update

**Figure 5:** Deaths by road user category



Selected countries, Global Status Report on Road Safety, WHO, 2009

Based on the WHO's estimates, twenty countries account for around 70 per cent of road deaths India alone accounts for 12 per cent of total fatalities. But global aggregates such as these can obscure the impact in countries with smaller populations and fewer vehicles. Measured in terms of death rates for every 100,000 people, road traffic injury deaths in Tanzania or Ethiopia are twice as high as in India – and seven times higher than in the United Kingdom.

Fatality rates among children are typically higher than for the general population. In Bangladesh and Thailand, road traffic fatalities account for 38 per cent and 40 per cent respectively of all child deaths among children aged 10-14 – the single largest cause of death for the age group. Taking developing countries as a group, children aged 5-9 in poor countries are four times more likely to die as a result of road traffic injuries than their counterparts in rich countries (**Figure 4**) Once again,



fatality is the tip of an iceberg. Research using community-based surveys in Asia found that for every road death among children aged below 15, another four children were left with permanent disabilities while over 250 presented to hospital facilities for treatment. The profile of road casualties varies across countries. Three broad patterns can be identified. In many of the world's poorest countries it is pedestrians and cyclists that dominate the body count: in countries such as Bangladesh and Tanzania, they account for over 40 per cent of fatalities. As incomes and the number of motorised bikes increases, so too does the number of victims on these vehicles. In China, Indonesia, Thailand and Viet Nam, riders and passengers on these bikes represent the single largest source of fatalities. This reflects the pattern of transport. In Jakarta, Indonesia, almost half of registered vehicles are motorcycles. Further along the chain of income progression, the share of fatality accounted for by drivers and the passengers of cars, buses, taxis and trucks rises. In countries like Brazil, Mexico and South Africa, this is the largest group (**Figure 5**).

One caveat has to be attached to the headline numbers. Disturbing as they may be, they almost certainly understate the problem. The World Health Organization has drawn attention to what it describes as 'widespread under-reporting of road traffic fatalities

and injuries.'<sup>iv</sup> Detailed research carried out by the Make Roads Safe Campaign in Nairobi, Kenya, reinforces that assessment. The research, which focussed on three stretches of the Nairobi - Mombasa highway, found that official reports understated the number of fatalities by a factor of three and of serious injuries by a factor of six. It can reasonably be assumed that reporting rates are even lower in poor rural areas, informal settlements in urban areas, and peri-urban slums.

More recent research has confirmed the tendency towards under-reporting. One study in Ethiopia carried out by the Swedish Medical University of Lund found that inadequate communication between police, local authorities and hospital emergency over traffic accidents in rural areas meant that "many accidents and the number of victims cannot be registered."<sup>v</sup> Poor emergency medical services and the absence of compulsory liability insurance laws are among reasons contributing to the high fatality rates, it says, adding that "in the urban areas, although traffic police and hospitals are available, accident victims are usually evacuated by bystanders who [have] neither the necessary skills nor equipment in pre-hospital care.



## Vulnerable road users

Most cars in the developing world are driven by people in high-income groups. Most of the victims are far too poor to own a vehicle. High profile cases of slum dwellers in Mumbai, India, being killed by cars driven by movie stars, or of impoverished workers in Sao Paulo, Brazil, being killed by a vehicle driven by one of the country's richest businessmen, have turned the spotlight on the social profile of road traffic injury victims.

Modes of transport and road traffic in less motorised countries reflect socio-economic circumstances. People who are poor typically travel on foot, by bike or by buses and minibus. In Dhaka, Bangladesh, more than 90 per cent of daily travel by commuters is by bus, walking and non-motorised transport. And it is these people that bear the brunt of the road traffic injury risk. In Mumbai pedestrians account for over three-quarters of road traffic fatalities. Many are killed on the journey from the slums that house half of the city's population to their workplaces.

As the injury and fatality figures underline, children are particularly vulnerable. The risks are especially pronounced in urban areas. Millions of children are

living in informal settlements located in close proximity to major highways, with poorly demarcated road boundaries. For many urban children, the 'school run' involves hazardous journeys alongside badly demarcated roads, and across local highways. In Nairobi many children living in Kibera, the largest slum in Africa, have to cross the six-lane Nairobi-Mombasa highway in order to get to school. Their experience is not untypical.

Cyclists and motorcyclists figure prominently in the roll call of road traffic injury victims. On the day that this report was finalised, a brief survey of Google revealed dozens of incidents involving cyclists and motorised bike riders. One incident took place in Sao Paulo, where a woman named Juliana Dias was killed when her bike was hit by a bus. A memorial page opened for her on Facebook has an entry that reads: "One more cyclist died after having been run over in Sao Paulo. Again by a bus, again on the road that is a symbol of progress, again generating a protest by people who argue that the city should belong to everyone." On the other side of the world, three high school students were killed in Tagbilaran city, the Philippines, when the bike they were riding on was hit by a speeding bus.<sup>vii</sup>



Public transport systems in many countries pose acute risks to their passengers and other road users. In 2011, buses operated by the Delhi Transport Corporation killed eighty-three people – a 65 per cent increase over the previous year.<sup>viii</sup> Buses in Lagos, Nigeria, are referred to locally as danfos, or flying coffins – and not without good reason. In Kenya, matutu mini-buses are a major cause of road traffic injury. In March, 2012, to take just one illustration, ten people were killed when a matutu travelling from Narok to Nairobi veered off the road – an event that would have left few observers in Kenya surprised. People in developing countries themselves are well aware of the risks posed by public and private bus opera-

tors. But unlike wealthier road users who travel by car, they have little choice over their mode of transport.

Long distance journeys on highways claim large numbers of casualties because of speed and the types of vehicles involved, with trucks and buses often a fatal combination. Within a couple of days of each other in March 2012 a few events reported in national and regional media highlighted the sheer scale of the body count. Fifteen people were killed when a bus plunged off a highway in the northern Moroppon province in Peru; eleven children were killed and twenty injured in Ambala, India when their school bus was in a collision with a truck; in Palestine ten children were killed when their school bus was hit by a truck near the city of Ramallah. Perhaps the only thing that was shocking about these media reports was that they appeared as relatively minor stories that were swiftly forgotten.

## The human costs – and beyond

It was Joseph Stalin who reputedly coined the phrase that ‘one death is a tragedy; a million deaths is a statistic’. That may help to explain why the international community has been so slow to link road safety to the MDGs and wider targets.



Behind the headline statistics some impacts of the road traffic injury epidemic are beyond measurement. Two years ago, on 9 June, 2010, a young South African girl joined the roll call of victims claimed by her country's epidemic. That girl was Zenani Mandela, the 13 year old daughter of Zoleka Mandela and great-granddaughter of Nelson Mandela. She had just attended the concert to mark the opening of the 2010 World Cup. Zoleka Mandela, now an Ambassador for the Make Roads Safe Campaign, has spoken publicly of her grief and anguish. 'My heart is already broken,' she said recently, 'but what makes this worse is that so often road crashes are preventable.'

It is all too easy to forget the human stories behind the global statistics. For each of the 1.3 million victims, there are grieving mothers, fathers, sisters, brothers and friends – and there is no price of grief. The loss of a parent can leave children with long-term psychological trauma. And the loss of a child leaves families with an overwhelming and irreversible sense of loss.

Other road safety costs are more readily amendable to measurement, but have been downplayed. In an earlier report we looked at the impact of road traffic injuries on the MDGs – the international community's shared human development targets for 2015<sup>ix</sup>. Among the findings that we highlighted:



Zenani Mandela

**Poverty reduction:** Road traffic injuries weaken economic growth and the costs are borne disproportionately by the poor. Many developing countries are losing as much as 2-3 per cent of national income as a direct result of injuries, disability, physical damage and loss of schooling. The World Bank estimated the total costs of road traffic crashes and injuries at US\$100bn in 2009 - a figure that represented 80 per cent of OECD aid in the same year. For the poor households who make up a majority of road traffic injury victims, the combination of health costs and loss of livelihoods can produce a one-way ticket into a life of debt and extreme poverty. Research in Bangladesh and the city of Bangalore, India, found that road traf-



fic injuries had pushed many previously non-poor households into poverty\*. In Bangalore, 71 per cent of urban and 53 per cent of rural poor households with members that had suffered road traffic injury were not poor before the loss of a wage earner. Poverty also undermines the treatment of road traffic injury, punishing the victims twice over.

**Child mortality:** Efforts to reduce by two-thirds the number of child deaths has produced mixed results. The 2015 target focuses on children under the age of 5. That may explain why the road traffic injuries that represent the second largest cause of death for children aged 5-14 have been kept out of the spotlight. However, the lack of attention to road deaths highlights a widespread tendency to treat child rights – including the right to life – in a highly compartmentalised fashion.

**Health system costs:** Road traffic injuries place an immense burden on health-care systems, diverting financial and human resources from other priorities, including the treatment of infectious diseases and chronic health problems. In Kenya, road traffic injury patients account for 45- 60% of all admissions to the country’s surgical wards. In India they account for 10-30% of hospital admissions. Moreover, because of the severe and long-term nature of the injuries incurred the costs of treatment are often very high. As

the Swedish Medical University of Lund survey mentioned above put it in the context of Ethiopia: “Many of the victims are underprivileged people and they can neither afford out-of-pocket payments nor do they have health insurance to receive healthcare services, [thus many such casualties] are not reported.”

**Education:** Opportunities for education offer the world’s poorest and most vulnerable children hope of an escape from poverty. They and their parents understand the importance of getting an education. That is why they make such extraordinary efforts and sacrifices to get to school. The devastating impact of road traffic injuries on education is not widely recognised. Every year, some 262,000 children, adolescents and youth lose their right to an education for a brutally simple reason – they are killed on the world’s roads. Many more drop out of school as a result of road injuries to themselves or to their parents. And more still are unable to realise their potential because they are dealing with the trauma and loss that comes with road traffic injuries.



## 2 The wider costs – environment and economy

The toll taken by road traffic injury on the lives, limbs and hopes of vulnerable people is just one part of the ledger. Transport policies that put cars and roads before all other considerations also generate far wider costs for people and the planet.

### Outdoor air pollution

Vehicle emissions are a major cause of outdoor air pollution. This kills as many people - 1.3 m annually according to the World Health Organisation – as road traffic injuries. Some 70-90 per cent of the pollutants responsible for these deaths - such as carbon monoxide, ozone, sulphur dioxide, nitrogen oxides and other particulate matter – originate from gasoline-powered cars. These pollutants have major health effects, including respiratory tract infections and cardiovascular disease. Mortality in cities with high levels of air pollution exceeds that observed in relatively clean cities by 15-20%, according to the WHO.

Major urban centres across much of the developing world are now so badly polluted as a result of vehicle emissions that their populations face grave health risks. These emissions are at the heart of a major environmental crisis in China, where one-third of 113 major cities failed air quality tests in 2009. In Jakarta,

Indonesia and Cairo, Egypt, particulate matter levels average respectively over two and three times WHO guidelines. But it is not just major urban centres that are affected. One study looking at risk factors for childhood respiratory illness in the Niger Delta region of Nigeria found a strong association with exposure to traffic fumes in the homes and school.<sup>xi</sup>

The economic costs associated with outdoor air pollution are enormous. One detailed study looking at the data for Jakarta estimated that in one year traffic-related air pollution resulted in the loss of 18 million<sup>xii</sup> days of full activity by adults, 296,000 cases of lower respiratory tract infection among children aged less than five, and 3.5 million respiratory tract infections among adults. The associated treatment costs and economic losses were put at 1 per cent of the city's GDP. Other studies have found far higher costs.

These are problems that can be ameliorated. In the European Union successive legislation on EURO emission standards has dramatically reduced tailpipe emissions. Some developing countries are now trying to adopt and follow Europe's cleaner air trajectory. Following the Johannesburg Summit in 2002 (the precursor to Rio+20) a 'Partnership for Clean Fuels and Vehicles' was established by the United Nations Environment Programme with the aim of



eliminating leaded fuel from the developing world. In just ten years this objective has been achieved resulting in \$2.4 trillion in annual benefits and 1.2 million fewer premature deaths, according to UNEP. The Partnership is now turning its attention to reducing the sulphur content of fuel (to below 50 ppm worldwide) which is a vital prerequisite of the use of modern emission control technologies such as catalysts and particulate traps needed to reduce black smoke and toxic pollutants.

## Climate change

Climate change is one of the issues at the heart of the Rio+20 agenda – and here, too, transport policies are heavily implicated. According to the International Energy Agency and the OECD, transport accounts for about one quarter of worldwide CO<sub>2</sub> emissions – with cars and trucks representing three-quarters of the total. These shares are rising fast. Emissions from road transport have increased by 50 per cent since 1990 and are the second fastest-growing source of emissions after power generation.

Recent studies suggest that it may be even less sustainable than indicated by the headline numbers. These studies indicate that the net climate impacts of

on-road transportation are greater than for any other sector. This is because of the contribution of vehicle emissions to the formation of ozone, which is both an air pollutant and a strong greenhouse gas.<sup>xiii</sup> With car ownership set to triple by 2050, transport-related CO<sub>2</sub> emissions are projected by the IEA to increase by almost 50 per cent to 2030, and by more than 80 per cent by 2050.<sup>xiv</sup> This is not a sustainable future. A 'Global Fuel Efficiency Initiative' launched by IEA together with UNEP, the FIA Foundation and the International Transport Forum is seeking to improve average fuel efficiency by 50% by 2050 by promoting technological developments, mentoring governments and advising on fiscal and consumer incentive strategies. But initiatives of this kind need more political support and more funding to achieve their ambitious goals.

## Economic costs

Road infrastructure is critical to economic growth and poverty reduction. People lacking access to roads are typically poorer, have less secure livelihoods, and more restricted access to basic services. Making roads part of the wider poverty reduction agenda makes sense. What does not make sense, either for economic growth or for poverty reduction, is the un-



planned expansion of roads.

No region better illustrates the dilemmas associated with road infrastructure than sub-Saharan Africa. Road density is the lowest in the world. Only one third of the region's smallholder farmers live within 2 kilometres of an all-weather road. Small firms seeking to compete in international and even local markets are hurt by the high costs of transport and long journey times. According to the World Bank, raising the coverage of Africa's roads to the level of South Korea would increase per capita economic growth by 2.6 per cent a year. By the same token, Africa has the world's most dangerous roads – so under current conditions the economic growth premium would come with a large increase in road traffic injury fatalities.

Looking beyond the human costs, poorly planned road infrastructure investment can lead to high levels of economic waste. In a growing economy, where access to roads is either free or very low cost, the demand for roads on the part of private vehicle users will always outstrip the supply. This is at the heart of what has labelled 'the fundamental law of road congestion'.

That law can be observed in any number of the devel-

oping world's major urban centres. In Mumbai, it can easily take over ninety minutes to make the fourteen mile trip from the airport to the financial district. Delhi's twelve-lane ring-road, designed to ease congestion, is frequently paralysed by bumper-to-bumper traffic. After two decades of massive investment in road infrastructure with more to come, the gap between highway supply and private vehicle user demand is widening. Current investment envisages a 25 per cent increase in the urban road network, but demand is growing at three times this rate. By 2030, peak vehicle densities are projected to reach 610 ve-





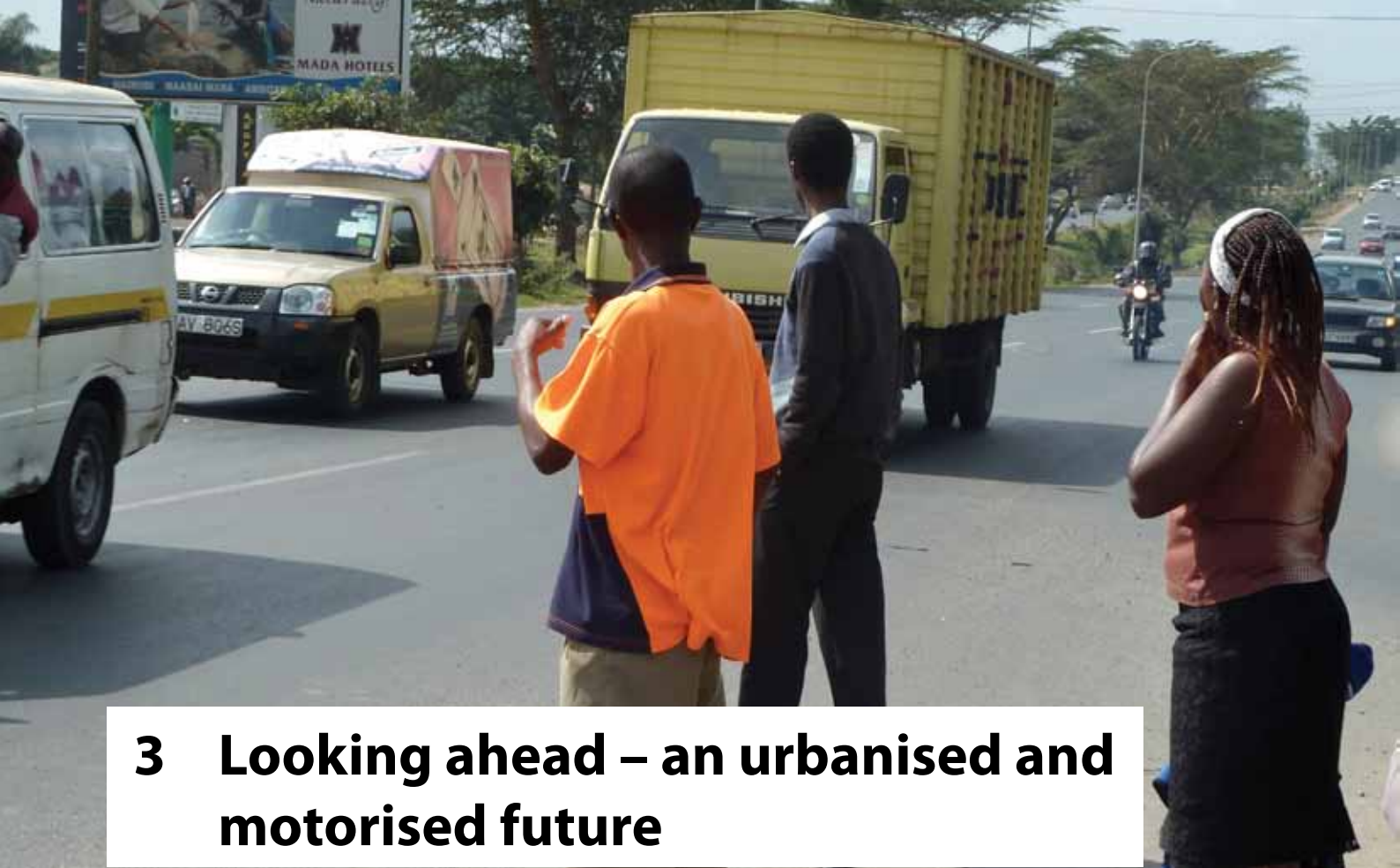
hicles per lane kilometre. This is a variant of the iron law of congestion that the McKinsey Global Institute estimates will increase average journey times during peak periods in urban India to five hours.

Latin America is often seen as the final destination point for transport policies geared towards the expansion of private car use. Today, many of the region's cities are in a state of perpetual gridlock. Sao Paulo, the commercial hub of Brazil, has invested heavily in expanding road infrastructure over the past decade. Meanwhile, the average speed of cars during the afternoon is now 16 kilometers an hour – 24 per cent slower than in 2000. Wasted time and fuel consumed in traffic congestion cost the economy of Sao Paulo nearly US\$20bn in 2008, about 10% of its GDP, according to some estimates.<sup>xv</sup>

Major cities in other regions now rival their Latin American counterparts. In Cairo, journeys of 3/5 miles can take up to two hours. But one recent global survey covering 23 cities found that commuters in Jakarta were the least happy in the world – and for good reason. Average vehicle speed in the city is 12 miles per hour. Economic losses from traffic congestion in the city were estimated in 2007 at \$3.7bn.

Some experts predict total gridlock by 2014, despite a planned US\$140bn road upgrading programme.<sup>xvi</sup>

The history of urbanisation provides some stark warnings for transport policy. During the 19th Century, contagious diseases and a lack of clean water and sanitation turned the great urban advantage – connecting people and firms – into a cause of death and illness. In the 20th Century, traffic congestion weakened the urban advantage of cities first in the developed and then in the developing world. Meanwhile, the expansion of transport infrastructure to cater for an ever-growing number of cars with scant regard for road safety cost millions of lives and caused countless millions more injuries. The challenge for the 21st Century is to learn from history and put people and sustainable development at the centre of transport policy.



### 3 Looking ahead – an urbanised and motorised future

The 'Rio+20' summit will take place against a backdrop of profound change. Demography, human geography and patterns of economic growth are re-configuring global interdependence. The underlying trends will have far-reaching consequences for the relationship between people and motorised vehicles.

#### Emerging trends

The first decade of the 21st Century has already been marked by some major symbolic events. At some point during 2010, the world's population reached 7 billion. Just a few years earlier humanity became a predominantly urbanised community.

Population growth and urbanisation will continue to reshape the world. Over the next fifteen years population will rise by another 1 billion, with developing countries accounting for the entire increase. Urbanisation is also gathering pace. Current UN projections suggest that 58 per cent of the world's population will live in urban areas by 2025. Here, too, it is developing countries that are driving the change. At the turn of the 20th Century, 40 per cent of the developing world's population lived in urban areas. By 2025, according to the United Nation's projections, 53 per cent of a much larger population will be urbanised.

The power of demography can be seen at the base of the age pyramid in the world's poorest countries. In sub-Saharan Africa, which is still in the early stages of the demographic transition, the number of young people aged between 5 and 19 will increase by 115 million by 2025, while the number of people in their 'twenties will increase by 64 million. In Southern Asia and North Africa the 5-19 age group will increase by 11 million and 9 million respectively, while the number of South Asians in their 'twenties will rise by 30 million. Why do these trends matter for road traffic injuries? Because demography rapidly increasing the population size of age cohorts that face the greatest risks of fatality.

Economic growth is another motor of change. The 2008 global financial crisis and the slow pace of recovery in Europe and the United States have accelerated a shift in the balance of economic power towards the South and the East. Measured by GDP in purchasing power parity, which adjust for price differences, the seven largest emerging markets will have overtaken the Group of Seven (G7) economies by 2020. On current trajectories, by 2015 India will have a larger economy than Japan; Brazil will overtake the United Kingdom; and by 2018 China will overtake the United States.



These headline projections have to be interpreted with some caution. Economic trends can change over time. Moreover, the size of national economies can obscure very large wealth gaps. Measured in per capita terms, average incomes in Brazil and China will still be just one-third of the level in the United States by 2030; and average income in India will be just one-quarter of that level by mid-Century. So income convergence is happening far more slowly than the convergence of national economies. At the same time, it is the developing world that is providing the growth poles for the world economy.

One of the most visible indicators for the shift in economic power is an emerging middle class. At the start of the 21st Century, there were fewer than 1.5 billion people in the world with an income of between US\$10-100 (in purchasing power parity) – a widely used benchmark for middle income status. Today, that figure has reached almost 2 billion. Almost the entire expansion has taken place in emerging markets and developing countries. These trends are set to continue. Over the next two decades, the size of the middle-class population in developing countries will rise five-fold - from 247 million today, to 1.3 billion in 2025. Much of the increase will take place in China, where the middle-class population will grow by some 430 million. Middle-class India will expand

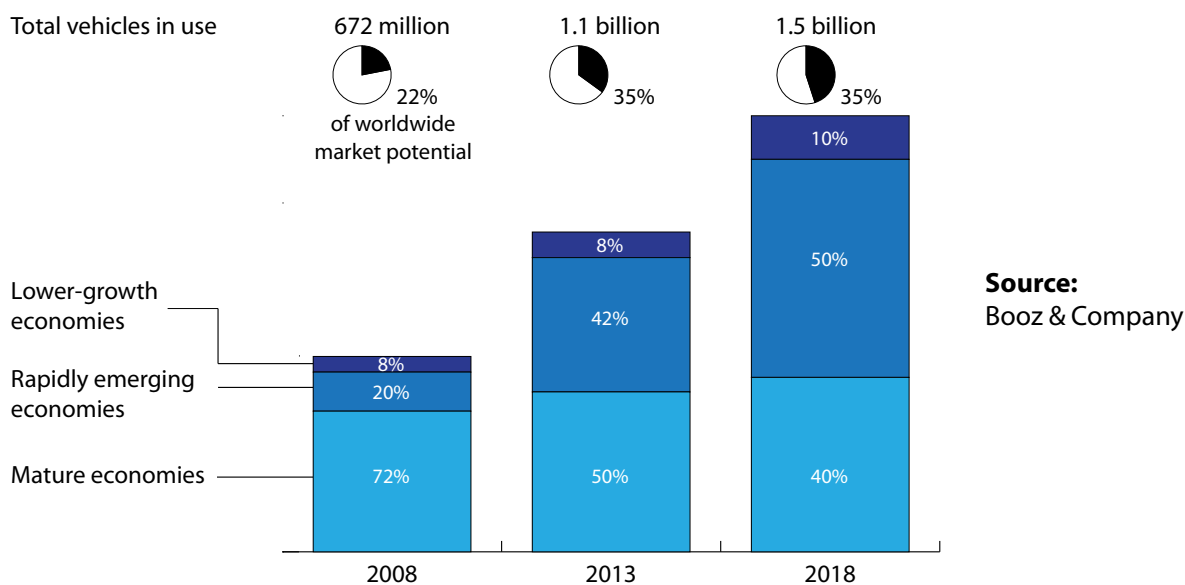
by over 300 million. Other emerging markets such as Brazil, Indonesia and Viet Nam will also see a rapid increase in the size of the middle-class population.

All of these forces are changing the landscape of globalisation. The centre of gravity is shifting decisively from rural to urban, from North to South, and from an ageing industrial world to a younger developing world. Multinational companies around the world are adjusting their portfolios to reflect these changes and to take advantage of commercial market opportunities. Unfortunately, governments around the world have been less adroit in responding to the human development challenges that are part of the emerging landscape.

## The 21st Century road safety challenge

Demography, human geography and the emerging middle class in developing countries are combining to create new opportunities for human development. Some of the world's poorest countries have an opportunity to reap a demographic dividend, to benefit from the networks, inter-connectedness and innovation that can accompany urbanisation, and to translate econom-

**Figure 6:** Projected vehicle growth to 2018



ic growth into rising living standards. For each of these opportunities there are downside risks associated with youth unemployment, environmental degradation, urban squalor and high levels of inequality. Outcomes will depend on how effectively governments plan for seizing the opportunities and mitigating the risks.

Nowhere are the risks more evident than in the case of road safety. The combination of rising income, population growth and urbanisation is simultaneously pushing up demand for motor vehicles and putting more people – especially young people – in harm’s way. This is true not just in urban centres, but along the highways that link these centres, such as India’s Golden Quadrilateral network.

Vehicle numbers are growing as impressively as population size. One of the landmark events that went largely unnoticed in 2010 was a surge in demand for vehicles that pushed the total number of cars and trucks on the world’s roads over the 1 billion mark. There is now one car for every seven people on the planet – and the ratio is rising. Emerging markets have been the primary driver of change. While demand for vehicles in the developed world rose by 1-2 per cent in 2010, it increased by 27 per cent in China. The 17 million increase in vehicle registrations accounted for half of the global increase. Brazil experienced the second largest increase in volume, with an additional 2.5 million registrations. India’s vehicle population grew by almost 10 per cent, putting another 1 million vehicles on the road.

What happened in world vehicle markets in 2010 was part of the wider shift in the world economy. In the

advanced economies of the OECD, demand for vehicles is associated principally with the replacement of existing stock. Demand for additional stock originates increasingly in emerging markets. In 2008, advanced economies accounted by 72 per cent of total vehicle use. By 2018 that figure will have fallen to around 40 per cent, with rapidly emerging economies accounting for half of total demand (**Figure 6**).

Reflecting wider trends in the world economy, growth poles for the automobile industry are moving South and East. In 2008 Chinese automotive sales exceeded those in the United States for the first time. India has emerged as one of the world’s fastest growing markets. In terms of annual sales, it has already overtaken Spain and Italy. On one market estimate India’s new car sales will reach 4 million by 2015, overtaking Germany as the world’s fourth largest market.. By 2020, the market will rise to 5 million vehicles. To put this in context India’s car market in 2000 was around 750,000 units. By 2025, emerging markets will account for four of the top five markets in the world for car ownership.

Looking beyond the major markets demand is rising across the developing world. While the data is patchy, projected new registrations for sub-Saharan Africa will increase from less than 400,000 in 2011 to over 1 million in 2016. Over the same period, registrations in Latin America are projected to increase from 6.4 million to 9.1 million.

For multinational car companies the growth of emerging markets represents a vast commercial opportunity. By 2018 there will be 1.5 billion vehicles on



the world's roads. This is some three times the number in 2005 – and most of the growth in market demand will come from developing countries. Automobile firms are increasingly gearing their production and marketing strategies towards these multi-billion dollar growth markets.

Viewed from a different perspective, the market opportunity comes with enormous risks. Demand for vehicles is growing most rapidly in precisely those countries with the highest ratio of deaths per vehicle. Based on current ratios for fatalities per 10,000 vehicles and projections for increased vehicle registrations to 2016, the cumulative increase in road traffic fatalities would amount to:

- 250,000 for China
- 89,000 for India
- 57,000 for Latin America
- 47,000 for sub-Saharan Africa

Looking slightly further ahead, projections by the World Health Organisation suggest that road traffic deaths could read 1.9 million by 2020 – an increase of 700,000 over current levels.

Any projections are highly sensitive to assumptions about demography and the ratio of road traffic death to vehicle numbers. Trends and outcomes in these areas are not fixed. Countries at similar levels of income can have very different road traffic injury profiles. It is possible to reduce fatality rates in the face of an increased number of vehicles, as OECD countries have demonstrated. Yet the sheer scale of the surge in

emerging markets in the face of slow progress in cutting road traffic injuries is a matter of grave concern. That concern is magnified by the changes in demography and human geography outlined earlier. Consider first the demography. In sub-Saharan Africa, the fastest growing population groups are precisely those facing the greatest risk of road traffic injury. The youth bulge will put another 169 million children, youth and young adults in harm's way over the next fifteen years. In India population size in the 5-29 age group will increase by 31 million. These are very large increases in populations that are highly vulnerable to road traffic injury.

Urbanisation has the potential to exacerbate the risks. The problem is not just that urban centres act as a magnet for people and cars, but that highly vulnerable populations are being pushed into areas marked by elevated risks. By 2025, the world's city with the largest number of children under the age of 15 years will be Kinshasa in the Democratic Republic of Congo – a city in which road safety rules are all but non-existent. Other cities ranking in the top ten for numbers of children in 2025 include Karachi, Dhaka, Delhi, Mumbai and Manila. None of these cities are currently equipped to simultaneously absorb a large increase in population and more vehicles without exposing children to acute risks.

Emerging middle-class consumption patterns give rise to wider concerns. At the lower end of the middle-class spectrum, rising incomes will generate demand for bicycles and motorised cycles. Along with pedestrians, this is the group that accounts for the vast majority of road traffic injuries and fatalities.



## 4 An agenda for road safety and sustainable transport

Twenty years ago, the Earth Summit challenged political leaders, companies and non-government organisations to re-think the relationship between economic growth and development. It sent a clear signal that GDP was a limited and partial measure of human progress, especially when the process of wealth creation was destroying the environment, leaving behind vulnerable populations, and – ultimately – eroding the foundations for future growth. The 'Rio+20' summit needs to send a similar signal on approaches to transport policy.

Ultimately, transport systems should be seen as a means to the end of enhancing human welfare. The private transport of people and the haulage of goods are one element in this equation, alongside other elements such as the safety of road users, the quality of air in urban areas, and the environment. Current approaches to road infrastructure are unbalanced because they typically attach more weight to narrow economic objectives than to a broader vision of road safety and environmental sustainability.

Turning this model on its head is a humanitarian and ecological imperative. It is also sound economics. Safer roads and greener transport policies have the potential to transform the immense risks that will come with urbanisation, population growth and ris-

ing incomes in developing countries into new opportunities. Those opportunities start with saving lives. According to the Commission for Global Road safety, 5 million deaths and 50 million serious injuries could be prevented by 2020 through affordable investments in road safety.

### Putting vulnerable road users first

The starting point is to consider the needs of the pedestrians and cyclists who account for the bulk of road traffic injury victims. Roads can be designed to ensure that footpaths are clearly separated from vehicles, that traffic calming and speed management measures are put in place, and that safe and practical pedestrian crossing points are provided. Far more can be done to provide cycle lanes that put space between cyclists and vehicles. Accessible and affordable public transport systems can reduce the exposure of vulnerable road users to traffic. The immediate priorities and practical policies will inevitably vary across countries – the underlying principle of 'people first' should be fixed.

One of the most urgent of all priorities is ensuring that children have safe routes to school. Road engineers need to think far more about the routes that



children are likely to take to school, and to make provision for overpasses, clear demarked crossing points, and safe lanes for walking and cycling. Beyond the school run, urban planning needs to ensure that children can move safely within their environments. That means designing settlements and road systems that segregate children from traffic.

More generally, road planning in poor countries needs to treat pedestrians and cyclists as primary users – not as an impediment to vehicle use. This is one area in which there are some significant win-win options for safety and environmental sustainability. Creating pedestrian zones and protected lanes for people who are walking or cycling are measures that protect vulnerable road users while generating significant benefits for the environment. Few methods of reducing carbon emissions and other vehicular pollution are as effective as substituting cars with bicycles on short trips. Similarly, the expansion of cycle lanes can reduce congestion. Cities such as Shanghai and Beijing have now reversed earlier policies and introduced cycling lanes with the explicit goal of cutting congestion.

Public transport systems also offer multiple benefits. In Curitiba, Brazil, a rapid bus transport system now accounts for over half of all trips made in the city. Per

capita fuel consumption is less than one-third of the level in cities of comparable size. The city has one of Brazil's lowest rates of air pollution, and average journey times are a fraction of those in other cities of comparable size. Another example comes from Bogota, Colombia, where the 'Trans-Mileno' high capacity bus system was introduced in 2000. Within three years it had cut trips made by cars by 10 per cent. CO<sub>2</sub> equivalent emissions per passenger have fallen by 14 per cent. In both Curitiba and Bogota, rapid transit bus systems operating along exclusive transport corridors have been just one element in a wider set of reforms aimed at expanding cycle networks and pedestrian-only areas. Apart from cutting transit times and reducing air pollution, road fatalities in Bogota have fallen by 50 per cent since 2002.

Questions are sometimes raised about the affordability of public transport systems. In some cases these questions reflect a narrow understanding of the economics of transport policy, notably with respect to the limitations of market pricing. Private car users create negative externalities in the form of road safety threats, congestion, and air pollution, but consider only their own private costs and benefits. The role of public policy is to align private costs with these negative externalities to ensure that the polluter pays. One way of doing this is through congestion charg-



ing – an approach that has transformed the transport system in Singapore. The most effective approach is to use charges on private road use to finance safe and efficient public transport systems. Such charges can range from vehicle sales, registration or taxation surcharges, to fuel-based taxes. For example, the infrastructural investments for Bogota’s ‘Trans-Mileno’ system were initially financed through a 20 per cent surcharge on petrol.

It is not just urban transport systems for people that stand to benefit from a more balanced approach. Some countries have dramatically under-invested in non-road transport. One example is India, where the road system accounts for a share of freight traffic that is three times higher than in China. This is despite the fact that a large part of India’s freight comprises bulk materials like steel, cement and coal that can be moved more economically by rail or waterways. The expansion of the national highway system to facilitate more rapid movement of freight is already a source of rising road injuries. Moreover, the higher dependence on road transport has adverse environmental consequences. Road transport emits three times as much CO2 equivalent per ton-km as railways and six times as much as for waterways.

## Strengthened regulatory provisions

Regulatory measures have a critical role to play in road safety – and in a more integrated approach to transport policy. Road traffic injuries are often a direct consequence of failure to enact or to enforce rules. Many of the injuries and deaths caused by vehicles to vulnerable road users are associated with speeding, drink-driving or general disregard for traffic rules. Countless lives have been lost because people riding on motorcycles have chosen not to wear crash hel-





mets. While effective regulation is not cost-free, it is relatively low cost and potentially effective – especially when backed by public information campaigns aimed at increasing awareness.

There is no shortage of evidence demonstrating that regulation, enforcement and information can deliver results. Random breath-testing has proven effective in cutting the number of alcohol-related crashes in several developed countries. Wearing a helmet on a motorcycle reduces by about 70 per cent the risk of head injuries and fatalities in the event of a crash. In 2007, Viet Nam introduced a law making helmet wearing compulsory for both drivers and passengers – and the resulting increase in usage led to reductions of 12% in reported deaths and of 24% in serious injuries. However, laws are not effective without enforcement. In the case of Viet Nam, the proportion of children wearing crash helmets is estimated at between 10-25 per cent in most cities. And in India, which has also enacted crash helmet legislation, the sight of several children on a bike with no helmet remains distressingly common.

Driver licensing systems have a critical role to play in raising road safety standards. Apart from restricting under-age driving, effective training systems equip drivers with the practical and theoretical skills need-

ed to minimise risks to themselves and other road users. However, in many developing countries licensing systems are very weak. One stark illustration of regulatory failure comes from Mexico. Several years ago, members of the public were able to secure driving licenses without passing a driving test by bribing officials. Authorities responded not by tackling the governance problem, but by waiving the requirement that people had to pass a test before receiving a license. All that is required today is an electoral card and proof of address.

Car manufacturers have at best a mixed record on safety. In the developed world, governments now set a high bar for car safety standards. The rules require that manufacturers meet these standards as a condition for selling vehicles. Unfortunately, governments in developing countries often set the safety bar at a far lower-level, and in many cases monitoring and enforcement is far weaker. Rather than adhering to the quality requirement set by rich countries, car manufacturers have all too often exploited opportunities to dilute safety standards.

Recent evidence from Latin America is instructive. In 2010 and 2011, the organisation Latin New Car Assessment Program (Latin NCAP) carried frontal crash tests on a range of best-selling cars in the region. It found



that levels of safety were some twenty years behind the 'five star' standards found in Europe and North America. Top-selling models produced by traditional manufacturers were found to have 'one-star' levels of safety for either adults or children, or both – a safety level implying a high risk of death in head-on collisions at 64km/hr. Airbags were the exception in new models, rather than the rule. To cite some of the findings from crash-testing, the Latin American version of one model was found to pose an "unacceptably high risk of life-threatening injury to the driver's head presented by the steering wheel"; on another the "restraint system was incapable of preventing the driver's chest from impacting the steering wheel"; and the child restraint system of a third "failed during the frontal impact". Worryingly the worst performer of all was not a traditional manufacturer, but a car originating from one of the manufacturing giants of the future, China. This was the only car to score zero stars.

Results such as these raise wider questions about the role of regulation. In a wide-range of areas, industry associations representing car manufacturers call for government to avoid mandatory controls and to rely instead upon voluntary self-regulation by the industry. The record on road safety provisions calls this model into question. This is why countries such as Argentina and Brazil have now passed legislation

requiring the mandatory insertion of airbags in new models by 2014. Others are likely to follow suit in requiring minimum safety standards.

## Rethinking road design – a key role for multilateral development banks

Some aspects of the future are highly predictable and not readily amenable to change. The great trends in demography, human geography and economic growth discussed earlier in this paper will continue to drive motorization and urbanization across the developing world. The human consequences of these trends are not pre-determined. Whether or not the surge in motorised transport leads to a parallel surge in road traffic injuries will be determined by public policies – and few policies will have greater impact than those relating to the design of roads.

The gold standard for approaches to road safety has been set by Sweden. Its Vision Zero policy framework, introduced in the late 1990s, is geared towards reducing the risks facing pedestrians and non-motorised road users by separating them from vehicles



through car-free play areas for children, bicycle and pedestrian lanes, and tunnels. Where it is not possible to separate motorised traffic from other road users, the policy emphasises speed management and safe-crossing. Not all developing countries can reach in the near-term future the road safety standards set by Sweden. But the vast majority can integrate into national planning the principles and practices that inform Vision Zero – and aid donors can play a critical role in supporting best practice.

Multilateral development banks now occupy a central role in the financing of transport infrastructure. Collectively, the World Bank, the Asian Development Bank, the Inter-American Development Bank and the African Development Bank allocated around US\$11.5bn to road transport infrastructure in 2010. The largest donor was the World Bank, which invested US\$6-7bn annually between 2010 and 2012. In 2011, the IADB and AfDB invested respectively US\$1.2bn and US\$1.5bn, with the ADB allocating US\$2.65bn. While these resources represent a small share of the resources mobilised within countries, investment on this scale puts the multilateral development banks in a strong position to create incentives for good practice – and to address bad practices.

There is a growing body of good practice supported by multilateral development banks. In 2005 the World Bank launched the Global Road Safety Facility (GRSF). This is a donor-supported global fund with a remit to raise road safety standards and build institutional capacity in developing countries. GRSF grants have been used to support a range of activities, including legislation to improve car safety for children in Uruguay, a regional road safety training centre in China, and an initiative to improve road safety on major transit routes in Africa. The GRSF has also played a pivotal role in forging a common set of operational principles, culminating in the launch, in April 2011, of the Multilateral Development Bank Road Safety Initiative and a joint statement on shared principles for combating road traffic injuries.

Lending for individual projects has also enhanced road safety. In Argentina, the World Bank provided in 2010 a US\$30m loan to strengthen the National Traffic Safety Agency, upgrade monitoring systems, and implement a range of safety measures on highways identified as high risk. In another World Bank-supported project in India – the Karnataka State Highway Improvement Project – engineers have worked with the International Road Assessment Program (iRAP) to dramatically raise safety standards on some 550 kilometres of road. The iRAP system scores roads on a



scale from 1 star to 5 stars. In the case of the Karnataka project, the length of road scoring 1-2 stars will fall from 86 per cent to 2 per cent for vehicle occupants and from 100 per cent to 12 per cent for pedestrians. It is estimated that the measures put in place, most of them at marginal cost, will lead to a 54 per cent reduction in road traffic deaths and serious injuries.

Other multilateral development banks have also gone some way towards integrating road safety into their transport portfolios. The IADB provided support to Paraguay for the development of a National Road Safety Plan which has reduced fatalities despite a marked increase in the number of vehicles on the country's roads. It has also supported one of the world's first regional road safety projects. The Pacific Corridor project is attempting to introduce a common set of safety standards across the seven countries traversed by the road system, including Mexico, Guatemala, Nicaragua and El Salvador.

Encouraging as all of these (and other) projects may be, multilateral development banks have yet to provide the international leadership that is required. While there are many islands of good practice, too many projects continue to treat road safety as a peripheral afterthought. The statements and shared principles adopted by leaders of the multilateral de-

velopment banks are trickling down very slowly to the transport infrastructure teams that design projects, set benchmarks for performance, and allocate financing. Some major World Bank projects illustrate the problem:

- The Lucknow-Muzaffarpur National Highway project in India involves loans of US\$851 million. Project plans set clear benchmarks for reduced travel times and cost reduction, but targets for reducing road traffic injuries are not well defined.
- The Tamil Nadu Road Sector Project (US\$507m) and the Punjab State Roads project (US\$300) both set clear targets for journey times and, in the case of the Punjab project, for increasing average journey speeds. However, the two projects set entirely different targets for road safety. The Tamil Nadu project set a target for cutting the ratio of fatalities/10,000 vehicles. While the target was achieved, the absolute number of deaths rose because of an increase in the volume of traffic. The Punjab project set a target of maintaining fatal accidents at 2005 levels.
- One of the World Bank's largest road infrastructure investment projects in Africa is the Kenya Northern Corridor Improvement Project. The US\$546m loan is aimed at supporting the rehabilitation and upgrading of roads that form part



of a regional transport hub linked to the port of Mombasa. Road safety does not figure in the core project objectives, there are no clearly defined targets for reducing road traffic injury, and less than 1 per cent of the project loan is directed towards road safety.

- In Nigeria, the Federal Roads Development Project, a US\$313m investment, does set clear targets for reducing road traffic fatalities – from 161 deaths/10,000 vehicles to 125 deaths/10,000 vehicles by 2016. However, the project documents do not provide a clear matrix identifying how the reductions will be achieved.

These examples are not intended to single out the World Bank as a poor performer on road safety. On

the contrary, its road infrastructure projects attach more weight to road safety than the other multilateral development banks. Even so, the World Bank's project document raises four major concerns that illustrate the wider problem:

**Arbitrary and inconsistent road safety targets.** It is not clear why in some cases the chosen metric is fatality/10,000 vehicles, while in others it is the absolute number of fatalities. Moreover, the targets appear to be selected without reference to national goals for road safety, and without consultation with civil society groups. Clearly, any targets selected have to combine realism with ambition. But the preferred or default option should be a target for cutting the absolute number of fatalities.

**Failure to adopt best practice models.** It is not clear why the World Bank does not follow its own best practice. The Karnataka State Highway Improvement Project aims at achieving minimum safety levels equivalent to an iRAP 3 star road assessment rating through carefully assessed road safety management interventions. Surely there are grounds for applying this target and this model across all road infrastructure projects.

**Over-generalised safety targets.** Almost all World Bank documents set clear and quantifiable project-



performance targets for kilometres of improved roads, journey times, and cost of journeys. When it comes to road safety, the targets are typically arbitrary (see above) or too vague to allow for quantification, making it difficult to assess performance. Many projects appear to set objectives - such as institutional strengthening - that, while important, are by their nature difficult to quantify.

**Failure to include road-safety cost-benefit analysis.** Research by iRAP demonstrates that, apart from humanitarian imperatives, there is a strong commercial logic for investments in road safety. Depending on the context, iRAP road safety plans point to potential returns for each US\$1 invested of between US\$4-15 in savings as a result of less injury, lower health costs and reduced damage. This compares favourably with estimated project returns from reduced journey times, raising the question of why road traffic injury cost-benefit analysis does not figure more prominently.

Multilateral development banks urgently need to close the very large gap separating their policy statements and a small number of showcase projects from their standard business model. It is now four years since the banks came together in July 2008 at the prompting of the Commission for Global Road

Safety to start discussions on a shared framework for enhanced safety. It took almost eighteen months to forge agreement behind a statement from the heads of the major multilateral development banks declaring that all of their institutions “are committed to taking a leading role to address what is becoming one of the most significant public health development priorities of the early 21st Century.” That statement came with a pledge from the heads of the MDBs to meet in 2010 to assess progress towards the implementation of a common plan of action. In the event it was not until April 2011 that World Bank President Robert Zoellick announced an initiative covering all of the major regional development banks, as well as the Islamic Development Bank, the European Investment Bank and the European Bank for Reconstruction and Development, aimed at introducing well targeted safety measures to protect people from what he described as “a growing tide of cars and trucks”. The statement of intent included a commitment to “deliver the needed resources to create transformational change for road safety.”

If a road safety star rating system were used as a benchmark for measuring rhetoric rather than performance, the multilateral development banks would achieve the full five stars. Unfortunately, their operational practices have yet to rise above a 1-2 star



rating. All of the banks have highly competent and professional staff committed to pursuing road safety goals. The problem is that senior managers have yet to get and apply the road safety message – and multilateral development bank heads have failed to follow through. Project managers are manifestly failing to integrate robust road safety performance indicators into project design. If, as the heads of the multilateral development banks declared at the end of 2009, road traffic injury is ‘one of the most significant public health priorities’, then leaders, institutions and, by extension, their shareholders, are falling woefully short of minimum performance standards – and their failure is costing lives.

Urgent action is needed to close the high-level rhetoric and operational reality gap that characterises multilateral development bank approaches. It has to be recognised that, when it comes to transport policy, institutional reform is not easy. In any institution it takes time to change mind-sets and reform long-established practices. The transport project documents of the banks make it abundantly clear that the two primary indicators for performance remain speed and cost, with safety a semi-optional add-on subjected to far lower levels of scrutiny. Four simple measures would help to change this approach:

- A common framework for road safety targets under which all projects are required to achieve a reduction in the absolute number of deaths on stretches of highway supported by the lending;
- An operational requirement that all roads supported by the multilateral development banks at minimum meet the iRAP 3 star standard;
- An agreement across the multilateral development banks to resource an independent road safety assessment body charged with monitoring initial project design and project outcomes for all major transport infrastructure investments

The executive boards of all multilateral development banks to develop clear road safety criteria against which all proposed lending for transport infrastructure will be assessed, with a clear understanding that non-compliant projects will not be authorised.

## A decade of action for road safety

2011 marked the start of the UN Decade of Action for Road Safety. The launch of the decade marked something of a breakthrough. After years of neglect, road safety has at last registered as a global public health epidemic that can only be effectively treated through



international cooperation. But the danger is that the decade of action will transmute into a decade of talking and high-level summits. That is an outcome that will cost up to 5 million lives. The 'Rio+20' summit provides an early opportunity for governments that signed up for the Decade of Action to demonstrate that they are serious about delivering results.

Every country faces different challenges in translating road safety commitments into policies. The Global Plan for the decade, drawn up by the United Nations Road Safety Collaboration, has identified five broad 'pillars' of activities:

- Road safety management including the development of national institutions and strategies
- Safer roads for the benefit of all road users, with a focus on pedestrians, bicyclists and motorcyclists; and a strengthened commitment to safety-conscious planning
- The production of safer vehicles through the harmonisation of global standards, uptake of new technologies and car assessment programmes
- Improving road use behaviour through safety legislation, enforcement and awareness raising
- The development of post-crash emergency response, treatment and rehabilitation systems



This is a framework that lends itself to integration with a wider agenda for road safety and transport sustainability. That is why the 'Rio+20' summit should call on governments to adopt targets backed by strategies for reducing road deaths, cutting vehicular air pollution and CO2 emissions, and strengthening green transport systems. It should also address the key issue of financing.

There is a marked asymmetry in current development financing. Upwards of US\$500bn annually is spent each year on road infrastructure. Multilateral development banks and bilateral donors have made the upgrading of road infrastructure a key element



in their financial portfolios. Yet the combined level of donor aid for road safety is best described as a pittance. It is estimated at between US\$10-25m a year. This falls far short of the US\$200m annually – US\$2 billion over ten years - that the Commission for Global Road Safety estimates will be required to translate the Global Plan for the Decade of Action into results. This funding gap must be bridged. The global Road Safety Fund, which is managed by the FIA Foundation and the World Health Organisation, provides a vehicle that that could galvanize political and financial support. It provides a mechanism through which bilateral donors, companies, philanthropic foundations and individuals can pool their resources to achieve a common goal – the goal of saving lives. It should also provide a mechanism through which the companies that are profiting from global motorization - the car and oil industry and associated sectors – re-invest in global road injury prevention through ‘innovative financing’ such as a small voluntary customer donation on each sale. Just as the global health funds have played a critical role in turning the tide against killer diseases like HIV/AIDS, malaria and measles, so the Road Safety Fund could form the basis for a partnership that will weaken the lethal links between motorization and urbanization on the one side, and road traffic injuries on the other.

## Conclusion

Transport policy and road safety stand out alongside affordable housing, clean water and sanitation, and jobs, as priority areas for any agenda on human development and environmental sustainability. Continuing on the current pathway is a route towards a scenario in which there are no winners. The unplanned expansion of motorised transport threatens to place millions of vulnerable people at risk. It is fuelling dangerous climate change – the defining environmental challenge of our generation. And the traffic gridlock that will come with the current expansion of motorised transport will jeopardise the economic growth potential that properly planned and well-regulated urbanisation could unlock.

None of this is inevitable. Transport policy and road safety could be integrated into a wider strategy for green growth and sustainable development. This is a potential win-win scenario that will save lives, create jobs, and reduce the adverse environmental impacts of road transport. The ‘Rio+20’ summit provides an opportunity to unlock that scenario.

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