CHAPTER 4

PROMOTING SUSTAINABLE TRANSPORT FOR INCLUSIVE DEVELOPMENT

AS RECOGNIZED AT THE UNITED NATIONS CONFERENCE ON SUSTAINABLE DEVELOPMENT (RIO+20) HELD IN JUNE 2012, TRANSPORT AND MOBILITY ARE CENTRAL TO DEVELOPMENT THAT IS ECONOMICALLY,SOCIALLY AND ENVIRONMENTALLY SUSTAINABLE. TRANSPORT NETWORKS FACILITATE THE MOVEMENT OF PEOPLE AND GOODS, ENSURING THAT LABOUR, RAW MATERIALS, PRODUCTS AND IDEAS CAN MOVE WITHIN AND ACROSS BORDERS AND CONTRIBUTE TO THE ECONOMIC, SOCIAL AND ENVIRONMENTAL BETTERMENT OF THE REGION. CHAPTERS 1 AND 2 OF THIS REVIEW IDENTIFIED REGIONAL TRANSPORT LINKS, BOTH RAIL AND ROAD, THAT PROMOTE SUSTAINABLE TRANSPORT FOR INCLUSIVE DEVELOPMENT.

With half the world’s people now living in cities and towns, the provision of integrated and inclusive urban transportation systems is a critical challenge in the region. Meanwhile, the increasing numbers of fatalities due to road accidents in the region are a major cause for concern requiring urgent action. These two substantive issues, urban mobility and road safety will be further explored in this chapter, with innovative strategies and policies that could make transportation more sustainable and inclusive in the region. Examples of initiatives and projects that are making positive change will also be showcased.
Transportation systems play a fundamental role in fostering cities that are, economically, socially and environmentally sustainable. The foundations of the successful cities of today lie, among other things, in past transport infrastructure policies and investments. While getting transport policy and investment right is a persistent challenge in all cities, the pace of city building in the developing world, coupled with enormous environmental and equality pressures, heightens this challenge and shortens the window of opportunity for making positive transport investments.

DRIVING FORCES

Growth Pressures
The world is undergoing the largest wave of urban growth in its history. By 2030, five billion of the world’s population will reside in cities, with 95 percent of that growth occurring in Africa and Asia. Much of the attraction towards cities is the economic opportunities they present, with over 80 per cent of the Asia-Pacific region’s GDP produced in cities and towns. Urbanization is thus seen as a key to economic growth. While rapid urbanization is often associated with the burgeoning of already large “megacities” (populations over 10 million), around half of the world’s future urban population is anticipated to live in smaller cities of fewer than 500,000 people (Figure 4.1). These smaller cities require different transport and mobility solutions than megacities, particularly given their fiscal capacity.

With cities as the engines of national growth and prosperity, transport and mobility in developing cities must account for the large disparity between rich and poor and ensure transport policies and the subsequent impact of those policies are inclusive. While absolute poverty is in decline around the world, urban poverty is increasing in many Asian and Pacific nations, with the poor urbanising even more rapidly than the population as a whole. This inequality is most easily visualized in the presence of slums, which across the Asia-Pacific house approximately 30 per cent of urban residents, bringing issues of equality to the fore.

**FIGURE 4.1**
**WORLD DISTRIBUTION OF URBANIZATION (2010) BY CITY SIZE (POPULATION)**

![Pie chart showing the distribution of urbanization by city size](source: UN DESA (2012))
With the benefits of urbanization and economic growth, great pressure is placed on governments to provide and maintain transport infrastructure that is both sustainable and inclusive. However, what has largely been observed is the growing dominance of the automobile as the primary provider of mobility and access in urban environments. Automobile ownership has increased dramatically across Asia, more than doubling in the last decade, with total numbers rivalling that of North America and Europe.

While the total number of vehicles in Asia is high, relative to other regions Asian countries have a much lower rate of passenger vehicle ownership per 1,000 persons (Figure 4.2). But with the global vehicle fleet expected to triple by 2050, mostly from growth in developing countries, the number of vehicles per head of population could skyrocket, resulting in an enormous increase in the number of vehicles in cities already inundated with traffic, and far outweighing any environmental gains made through improved fuel efficiencies.

Negative Externalities of Transport

Societies depend on efficient transport to function and grow. At the same time, however, transport networks need to be developed in ways which minimize unacceptable adverse impacts. To date the rapid urbanization of Asian cities has, for the most part, resulted in cities that are heavily congested, are poor in urban amenity, suffer high levels of air pollution, emit substantial amounts of CO₂, inefficiently use scarce land resources, and present unequal access to opportunities for their residents.

While a “transport system” consists of multiple modes of transportation with all modes playing an important role in the overall system, many of the negative externalities attributed to the transport sector are a result of, or exacerbated by, the growth in automobile ownership and use.

In urban environments, particularly dense urban environments that typify Asian cities, congestion on the transport network is a major issue and one that is growing substantially as urbanization intensifies.
Congestion adds significant costs to both society and individuals through longer travel times, increased pollution, fuel consumption and CO₂ emissions, and general degradation of urban amenity. In the case of road congestion, the degraded amenity particularly affects and decreases the use of other, lower polluting road users, namely public transport, cycling and walking.

While congestion increases air pollution and CO₂ emissions, even without congestion the transport sector is a considerable emitter – globally responsible for one quarter of all the energy related CO₂ emissions. However, different transport modes emit considerably different amounts of CO₂. For instance, Figure 4.3 shows that road transport contributes to more than 80% of CO₂ emitted by the sector in the region while Figure 4.4 illustrates how many kilometres can be travelled for every one ton of CO₂ emitted by a passenger using different modes. To support policy makers in selecting the most effective measures to reduce CO₂ emissions in the inland transport sector, different initiatives are ongoing notably one that is implemented by the UN regional commissions as described in Box 4.1.
In terms of air pollution, an estimated 1.3 million premature deaths occur each year due to the effects of urban outdoor air pollution. This is estimated to cost approximately 2 per cent of GDP in developed countries and 5 per cent in developing countries. Over 90 per cent of this air pollution is attributed to vehicle emissions, with older vehicles, poor vehicle maintenance, inadequate infrastructure and low fuel quality exacerbating the situation.

The effects of high automobile ownership are not only felt through worsening congestion, poor air quality and rising CO₂ emissions. In cities, space is at a premium, but different modes move people with different levels of efficiency in terms of land consumption and corridor capacity (Figure 4.5). The automobile is by far the most intensive user of urban space. In North American cities, where automobile ownership is the highest, roads and parking space account for between 30 to 60 per cent of the total area of cities. An automobile travelling at 50 km/h requires almost 600m² of land per travelling person, compared to around 30m² per passenger on a bus, 20m² for a bicycle, and only 8m² for a pedestrian. In the high density cities of Asia, the allocation of vast amounts of land for automobile use is unsustainable and exclusive.
Finally, as urban economies increasingly move towards “knowledge economies” the relationship between high levels of accessibility and improved economic outcomes strengthens, as observed in countless international examples. In dense urban centres the car is not only an inefficient mode for moving people in terms of land and energy use, but also in terms of carrying capacity. Such inefficient modes simply cannot move the number of people required to feed vibrant job- and service-rich urban cores. When a transport network reaches full capacity, accessibility is worsened, and the spatial distribution of opportunities becomes more distorted, giving further rise to issues of equality.

**Inclusive or exclusive growth?**

Transportation is a fundamental, yet often overlooked, element in alleviating disadvantage. Access to reliable means of transportation impacts heavily on quality of life, economic livelihoods, and social development. Inadequate mobility prevents people from being able to find or get to their jobs, their friends and family, education, health care or their other daily tasks.

Although disadvantaged is most commonly thought of in terms of low-income groups, it also includes people excluded based on gender, age or disability.

In alleviating economic disadvantage and poverty, access to transport is the second most significant contributor to economic growth, second only to education. Without good transport the urban poor are further marginalized by their poor geographical location. Reducing poverty and making progress towards social and economic development requires a re-design and implementation of policies that acknowledge the impact of transportation on those in need.

Car dominant cities have been consciously or unconsciously promoted through government action or inaction, including through subsidies on fuel, parking and government or company car fleets; expansion of roads; priority of road
space for motor vehicles displacing cycling, walking and public transport; and land use planning, policy and design that has spread activities and incentivized the use of the car.

But a significant proportion of the urban populations of Asia and the Pacific cannot afford to own personal motorized vehicles, be they cars or two-wheelers, and hence their ability to access opportunities is entirely dependent on the availability of non-motorized transport (walking and cycling), informal transport, and/or public transport (which even then may be unaffordable).

Neglecting non-motorized transport investments and consistently prioritising automobile infrastructure can lead to mobility standards only being improved for a relatively small group of people. Moreover, without facilities to regulate the interaction between motorized vehicles and non-motorized vehicles, new infrastructure impedes on the accessibility and safety of all other users of the road, reflected in the high casualty rates of cyclists and pedestrians.16

Sustainable and inclusive urban transport is a fast emerging issue within the region and many initiatives are currently being undertaken to promote and advocate for sustainable transport policies. One key initiative in this respect is the EST (Environmentally Sustainable Transport) Forum supported by the United Nations Centre for Regional Development, in which ESCAP has actively participated over the years along with other development partners. Under this Forum, the Bangkok 2020 Declaration was developed, which includes “Sustainable Transport Goals for 2010-2020” in order to demonstrate a regional commitment to measures for achieving safe, secure, quick, reliable, affordable, efficient, people-centric and environmentally friendly transport in rapidly urbanising Asia. Further, a concept of a voluntary regional agreement on green freight in Asia is also being discussed.17

This commitment is centred on the framework of “Avoid, Shift, Improve” when formulating transport policy and investment decisions. To be sustainable and inclusive, all transport policy and investments should aim to:

- Avoid unnecessary transport;
- Shift to more sustainable modes; and
- Improve transport practices and technologies.

Within this framework, sustainable and inclusive transport advancements in the region will be presented.
Lowering demand for transport without compromising user needs

Avoiding unnecessary transport

Avoiding the need to travel is the most sustainable and inclusive way of improving urban mobility. Transport is not an end in itself; it is a tool that facilitates access. Improving access, be it to employment, schools, healthcare, social activities, etc. is the ultimate goal of transport, and can be provided by either proximity to an activity, or through the provision of infrastructure that bridges the challenges of distance.

Most urban activities are fixed to a specific spatial location and are thus subject to land use planning. Where and how activities in a city are spatially organized has an impact on the requirements of transport, but importantly, transport infrastructure also guides land use development patterns. Transport and land use planning are therefore intrinsically linked, and can be used in tandem to avoid the need to travel at all. When dealing with changing urban landscapes, such actions can take years or decades for the benefits to materialize, and decisions made now about urban infrastructure can lock cities into positive or negative consumption and production models for years to come. However, this should not discourage planners and policy makers; the benefit stream of such endeavours is long, with many infrastructure investments continuing to influence urban form for decades, if not centuries after their construction (i.e. London, New York, Paris underground railways).

Furthermore, while most urban activities have a fixed spatial location, the development of information and communication technologies, particularly the internet, is increasingly untying activities from a specific location. As such, these technological developments can act as a substitute for physical travel, or provide opportunities for reducing travel.

Land-use and transport planning integration

Major transport infrastructure investments change accessibility patterns and influence the location choices of households and firms, stimulating development in desired locations (see Box 4.2 on Bangkok, Thailand). By the same measure, major changes in land use patterns influence the requirements of transport, including the number of trips, their destinations and their mode. The relationship between the two is mutually dependent.

The need to travel can be reduced or avoided through the integration of land-use and transport planning. When transport infrastructure is coupled with land-use planning that supports high-density, mixed-use developments, access can be improved by:

1. Minimising travel by reducing the distance between activities – reducing total vehicle kilometres and promoting walking and cycling;
2. Clustering trip origins and destinations – reducing the number of trips taken and making public transport a more attractive and commercially viable option.

As previously highlighted, personal motorized vehicle ownership has grown substantially in recent years, and to date, existing investments to improve urban transport have mostly centred on moving vehicles farther and faster. Coupled with land use policies that separate land use types, urban growth has tended to be greatest on the periphery of cities at low densities and with dispersed trip origins and destinations. This ‘urban sprawl’ growth pattern, commonplace in the region, has resulted in rising trip lengths, congestion and an urban form where personal motorized transport is often the only convenient option for traversing the city. This urban growth model is neither sustainable nor inclusive.
Promoting a more compact urban form that reduces travel requirements is a critical component in building cities that are more sustainable and inclusive. Such approaches locate people, jobs and services in areas within walking distance of public transportation, and are commonly referred to as Transit Orientated Developments (TOD). Transport connections in such developments are supported by zoning and planning regulations that support public transport use, walking and cycling. Throughout the ESCAP region, there are positive examples of transport and land use planning being coordinated to reduce the need for travel and improve the sustainability and inclusiveness of cities. For example, Eco-city Tianjin, a cooperation project between the governments of Singapore and China planned with the concept of green transport\(^1\), aims to increase trips using public transport, walking and cycling.

**Information and communications technologies**

Information and communications technology can substitute or reduce the need for physical travel and is gaining momentum as a travel demand management tool throughout the world. The widening accessibility and connection quality of the internet, coupled with developments in tele- and video-conferencing, present opportunities for people to access work, education, shopping, government services and social endeavours without having to physically travel. While information and communications technology is unlikely to be an adequate substitute for all travel and is not appropriate in many circumstances, using technology as a substitute for some travel can have a significant impact. Importantly, accessing opportunities via technology can particularly benefit groups that experience a higher risk of social exclusion than the general population, such as women, the young and the old, the poor, and persons with a disability.

Technology can also be used to avoid unnecessary or excessive travel by making transport connections more efficient. For instance, in Mumbai (India), a number of small start-up technology companies have developed internet and smartphone based apps that enable local taxi and rickshaw users to create and share rides (and the subsequent fare) with fellow passengers travelling on the same route.\(^2\)

---

**BOX 4.2 MASS TRANSIT-LED URBAN CONSOLIDATION – BANGKOK, THAILAND**

While Bangkok’s transport and land use planning has long been heavily car orientated, investments in urban rail, both elevated (BTS) and underground (MRT), are showing signs of changing the cities spatial structure and reversing the trend of urban sprawl. These mass transit investments have improved the accessibility of central Bangkok and in turn changed the land dynamics of areas within close proximity of stations, spurring high density and mixed-use urban redevelopment projects. The concentrating of jobs and residents in centrally located areas accessible by multiple modes of transport is a more sustainable and inclusive spatial organization of the city than was previously occurring.

**SOURCE:**
Ratanawaraha (2013)
Shifting urban development away from automobiles in Bangkok, Thailand
SHIFTING TO MORE SUSTAINABLE MODES

While designing cities to avoid the need to travel is the best way to improve the sustainability and inclusiveness of urban mobility, policies and investments that shift automobile travel to public transport, cycling and walking contribute substantially to building more sustainable and inclusive cities.

When travellers are deciding on which mode of transport to take for any particular trip, they ultimately decide based on an assessment of both ‘push’ and ‘pull’ factors. Push factors are those aspects of travel that discourage a user, while pull factors are those which attract them. In many situations push and pull factors relate to the same aspect of travel, but depend on whether the situation is negative or positive. For instance, too much road congestion will push a potential automobile user to instead take the train, but too little congestion and that same user may be pulled back to driving. Transport planners need to ensure that the mode they desire travellers to take is in fact the most logical choice for users. To improve the attractiveness of desired modes of travel, planners have the ability to influence both push and pull factors associated with urban transport.

Importantly, push and pull factors can be used in conjunction with one another, simultaneously discouraging one form of travel while incentivizing another. However, attempts to shift travel from one mode to another should not come at the expense of overall mobility standards. A transport strategy that simply adds cost and inconvenience to one mode of transport without providing an alternative should be discouraged, and consideration must be given to the potentially adverse impacts of interventions. This is particularly the case for the poor or disadvantaged, who have far fewer mobility options or alternatives to start with. Examples of push and pull factors that are being initiated in the region to encourage modal shift are detailed below.

Modal Shift - Push Factors

Many factors can push people away from automobile use and into more sustainable modes of travel. Some factors can be controlled by governments, such as increasing the cost of on-street parking (see Box 4.3 on Tokyo, Japan) or banning car travel on certain days (see Box 4.4 on Jakarta, Indonesia), while other push factors are more organic in nature, such as worsening congestion, globally increasing oil prices or concerns over personal safety or health.

BOX 4.4
CAR FREE DAYS – JAKARTA, INDONESIA

Jakarta suffers from poor air quality, with high levels of key pollutants consistently recorded. To reduce emissions and promote alternative, cleaner and healthier transport options, Jakarta held its first Car Free Day in 2007. The initial Car Free Day closed down one of the city’s main avenues, and was held once a year. However, the initiative has proved so successful that since early 2012, Car Free Days have been held every Sunday in all five of Jakarta’s municipalities.

SOURCE:
Jakarta Post (2012)

Some of the common factors that push individuals away from automobile use include:

- Congestion and high time cost;
- Increased monetary cost (e.g. congestion charges such as in Tehran, Iran (Islamic Republic of) / Box 4.5);
- Travel safety concerns and high accident rates;
- Travel bans or vehicles restrictions (e.g. Beijing, Shanghai, Guiyang and Guangzhou all limit the number of license plates that can be issued in any one year, while Beijing, Changchun, Chengdu, Guiyang, Hangzhou, Lanzhou, and Nanchang all enforce travel restrictions that limit the number of cars on the road on any given day)²;
- Parking availability and cost;
- Environmental awareness; and
- Desire for healthier lifestyles.
BOX 4.3
PARKING POLICY – TOKYO, JAPAN

Generally considered a success in terms of parking regulation and travel demand management, Tokyo has a unique set of parking policies that have resulted in a highly market-oriented parking system. As a result of several key planning laws and requirements, local markets in parking have arisen. The key features are:

- Very low minimum parking requirements that exempt all small buildings,
- Limited provision and discouragement of on-street parking, and
- “Proof-of-parking” regulation (a vehicle owner must prove they have access to a night-time parking place before they can register their car).

The coming together of these policies has resulted in a significant proportion of people parking in commercial off-street parking compounds within the vicinity of their homes. Separating parking from the home encourages shorter trips and errands to be done on foot or by bicycle, while the lack of on-street parking frees road space for other road users (complemented by a 2006 law change bolstering the enforcement of illegal on-street parking).

A market-oriented mechanism in parking policy facilitates market-based pricing that responds to supply and demand conditions – putting a price on parking, and facilitating a more efficient use of parking resources and urban land.

SOURCE:
ADB (2011a)

BOX 4.5
CONGESTION CHARGING – TEHRAN, ISLAMIC REPUBLIC OF IRAN

The urban heart of the capital of the Islamic Republic of Iran has long had a form of motorized vehicle demand management, with a Restrictive Traffic Zone in place since 1979 to address both traffic and security concerns. Vehicles were required to possess paper based permits to enter the 32 km² zone, with exceptions made for public transport, public taxis, emergency, diplomatic and military vehicles. However, difficulties in enforcement meant that as much as 35 per cent of vehicles entering the zone were unauthorized, with only 2 per cent caught and fined by police. To address these enforcement issues, and coupled with improvements to public transport services, the city developed an enforcement system based on automated number plate recognition cameras positioned at each of the 104 road entrances to the restricted zone. The system automatically identifies vehicle registration numbers that have not paid for an annual, weekly or daily pass and subsequently sends out violation notices.

Relative to the cost of alternative transport options, the congestion charge is high, with a day pass costing 123,000 Iranian rial (about $11.60), a week long pass 738,000 rial ($69.50), and an annual pass around 1,850,000 rial (US$174). By comparison a single ticket on the Tehran BRT ranges from 1,500-2,500 rial (S$0.10 to 0.20).

SOURCE:
Modal Shift - Pull Factors

While government policies and investments can discourage individuals from automobile use, of equal importance are pull factors that encourage travellers to use more sustainable and inclusive transport modes. Pull factors can include big and ‘hard’ infrastructure investments, such as metro lines, or ‘soft’ and more small scale initiatives, such as improved ‘walkability’ (see Box 4.6), accessibility to sustainable transport modes or connectivity between these modes (see Box 4.7).

Some cities have tried to pull people towards more sustainable transport options by providing a pleasant, safe and fast channel for non-motorised transport such as pedestrian and bike-friendly greenways. In China, for instance, 6,000 kilometres of greenways have opened in the last two years, and another 14,000 kilometres are planned. Another example in the region is the pedestrian greenway which replaced a six-kilometre elevated motorway in Seoul, Republic of Korea in 2005 and which attracts today over 64,000 visitors daily. As illustrated in Box 4.6, further progress is, however, required to improve cities’ friendliness to non-motorised transport modes.

BOX 4.6
WALKABILITY INDEX – CLEAN AIR ASIA

While often a neglected mode of transport in the region, the quality of walking infrastructure is being highlighted through audits and regional benchmarking. Clean Air Asia and its partners have conducted ‘walkability’ surveys in 23 Asian cities to better understand the state of ‘walkability’ in the region. From these surveys a ‘walkability’ index score is given (0=lowest, 100=highest). Of the cities surveyed, pedestrian conditions were predominately rated as “walk at your own risk” or “pedestrians tolerated”, with only one city considered “Pedestrian friendly” (Hong Kong). This consistent benchmarking of cities against various ‘walkability’ parameters can then be presented to policy makers and planners to improve walking conditions.

<table>
<thead>
<tr>
<th>Walk at your own risk</th>
<th>Pedestrians tolerated</th>
<th>Pedestrians friendly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chennai</td>
<td>Bhudaneshwar</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Surat</td>
<td>Rajkot</td>
<td></td>
</tr>
<tr>
<td>Indore</td>
<td>Pune</td>
<td></td>
</tr>
<tr>
<td>Bangalore</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Jakarta</td>
<td>Lanzhou</td>
<td></td>
</tr>
<tr>
<td>Katmandu</td>
<td>Hanoi</td>
<td></td>
</tr>
<tr>
<td>Karachi</td>
<td>Colombo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kota</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cebu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ho Chi Minch City</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Davao</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ulaanbataar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metro Manila</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: Clean Air Asia (2012)
Some of the common factors that encourage more sustainable and inclusive transport choices include improvements in:

- Public transport coverage and quality;
- Value for money;
- Priority measures that save time;
- Convenience; and
- Safety.

As mentioned earlier, large investments in public transport infrastructure considerably influence travel choices as well as urban form. Across the region and particularly in China and India, major investments in metros and bus rapid transit (BRT) systems have recently taken place or are planned. Metro lines are the most efficient means of moving large numbers of people. However, such systems are costly, and for many cities BRT systems present a more achievable and realistic option given their resource limitations (BRT systems can cost as much as 10 times less than heavy rail systems). These cost savings in construction and operation can then be passed onto commuters, allowing for a greater spread of riders and improving the inclusiveness of the network.

As per the “BRTdata.org” database, 39 cities within the ESCAP region have either a bus rapid transit system, buses with a high level of service, or improved bus corridors in operation. Figure 4.6 and 4.7 illustrate that BRT construction has risen rapidly in recent years while Box 4.8 described the specific case of BRT introduction in Lahore, Pakistan.
**FIGURE 4.6**
**ADVANCED BUS SERVICES IN THE ESCAP REGION**

<table>
<thead>
<tr>
<th>Country</th>
<th>Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Adelaide, Brisbane, Melbourne, Sydney</td>
</tr>
<tr>
<td>India</td>
<td>Ahmedabad, Bhopal, Indore, Jaipur, New Delhi, Pune, Rajkot</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Auckland</td>
</tr>
<tr>
<td>Thailand</td>
<td>Bangkok</td>
</tr>
<tr>
<td>China</td>
<td>Beijing, Changzhou, Chongqing, Dalian, Guangzhou, Hangzhou, Hefei, Jinan, Kunming, Lanzhou, Lianyugang, Urumuqi, Xianmen, Yancheng, Yinchuan, Zaozhuang, Zhengzhou</td>
</tr>
<tr>
<td>Turkey</td>
<td>Istanbul</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Jakarta</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Lahore</td>
</tr>
<tr>
<td>Japan</td>
<td>Miyagi, Nagoya</td>
</tr>
<tr>
<td>South Korea</td>
<td>Seoul</td>
</tr>
<tr>
<td>Iran</td>
<td>Tabriz, Tehran</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Taipei</td>
</tr>
</tbody>
</table>

**SOURCE:** BRT Center of Excellence, EMBARQ, IEA and SIBRT (2013)

**FIGURE 4.7**
**BRT GROWTH WORLDWIDE**

- **CITIES WITH BRT / BUS CORRIDORS**
  - Guangzhou, Hefei, Yancheng, Zaozhuang - China
  - Jaipur - India, Pekelmbang, Gorontalo, Surakata - Indonesia
  -拷 - Thailand, East London Transit - UK
  - Joao Pessoa - Brazil, Barranquilla, Bucaramanga - Colombia
  - Estado Mexico - Mexico, Lima - Peru, Brampton - Canada

**SOURCE:** EMBARQ (2010)
Lahore, capital of Pakistan’s eastern province of Punjab, is home to over 10 million people, and until recently the only public transport options available were motorized rickshaws, private buses, minibuses, or taxis. Reflecting the lack of alternative transport options, vehicles registered in Lahore increased sharply from 95 vehicles per 1,000 people in 2001 to 238 vehicles in 2008, resulting in an estimated 8 million motorized trips on a usual weekday.

However, in February 2013 the city opened Pakistan’s first Bus Rapid Transit (BRT) system, a 27 kilometre-long corridor linking the suburbs of Gajju Matah and Shahdra to the city centre of Lahore. The north-south route, consisting of 27 stations is served by 45 articulated buses that can transport up to 12,000 people per hour.

In a true example of knowledge and experience sharing, the Punjab Traffic Engineering and Planning Agency collaborated with counterparts in Turkey. The system was modelled on the Istanbul Bus Rapid Transport System, a Turkish construction company was partnered with, and investment funding from a Turkish firm was received. This partnership appears to have delivered considerable benefits, with the project being constructed and operational within a year, and the construction of the route costing in the region of $303.6 million against an initial estimate of $713-815 million, under half the original cost estimate. This BRT line may be the first of many for Lahore, with the Lahore Urban Transport Master Plan 2011 recommending a total of 7 BRT corridors for the city.

SOURCE:
Finally, planners and policy makers have the ability to improve the sustainability and inclusiveness of existing transport infrastructure and services. The adoption of environmentally cleaner fuels, vehicles and technologies, as well as the enforcement of environmental standards can significantly improve the sustainability of urban transport. The inclusiveness of transport can be improved through design provisions that enhance access for disadvantaged or vulnerable groups, particularly those with a disability and women.

Clean Fuels, Technology and Enforcement

Two of the worst air pollutants in urban environments are particulate matter (PM) and nitrous oxide (NOx). Across Asia and the Pacific, the prevalence of these harmful pollutants is high, spurred by an ever-increasing number of aging vehicles, old technology, and unclean fuels.

**Box 4.9**

**E-TRIKES – PHILIPPINES**

The Philippine Government is working to promote the adoption of e-trikes and has launched an electric Jeepney. The Philippines is home to over 3.5 million combustion engine tricycles and motorcycles, all of which have a dramatic impact on air quality and carbon dioxide emissions. The adoption of e-trikes would considerably lower the environmental impact of the tricycle industry. Furthermore, e-trikes produce no noise and zero tailpipe emissions. By 2016 the Government hopes to have 100,000 e-trikes on the roads, initially in Manila but ultimately across the country.

**Box 4.10**

**GREENER, CLEANER BUS FLEET – CHINA**

In a bid to improve the environmental performance of China’s bus fleet, the Asia Development Bank has earmarked $275 million of long-term funding for up to five Chinese financial leasing companies to support the leasing of cleaner buses. Cleaner actions include the leasing of compressed natural gas and liquefied natural gas vehicles, the conversion of existing fleets to cleaner technologies, and investments in ICT systems that improve fleet operations.

It is hoped the provision of stable long-term funds will ease funding bottlenecks and leverage co-financing, with the program expecting to finance at least 5,000 leased vehicles by 2018. The improvement of China’s bus fleet could have substantial environmental impacts, with the program anticipating an annual avoidance of 1.31 million tonnes of greenhouse gases, while also improving air quality and transport options for lower income persons.

Fuel policies and subsidy schemes have a considerable impact on what types of fuels are used and through refinement can promote cleaner and healthier fuel choices. For example, in India a large gap exists between the price of diesel and gasoline due to fuel subsidies on diesel. This has lead to substantial increases in the sale and production of diesel vehicles, which now make up to 40 per cent of the Indian vehicle market.

New vehicles and technologies can also be incentivized or developed that reduce the environmental and health impacts of motorized transport. Initiatives can include the development of electric vehicle infrastructure (see Box 4.9), or the conversion of transport fleets to cleaner fuels (see Box 4.10).

Finally, minimum environmental standards for the performance of vehicles exist in many countries throughout the region. However, while such standards may exist, enforcement is a challenging task and in many cases is often neglected. Enforcement of standards presents a significant opportunity for governments to improve the environmental performance of motorized transport in their countries.
Improved Access, Safety and Affordability

Improving the accessibility and safety of urban areas benefits all members of society, but particularly disadvantaged or vulnerable groups within society, such as those with a disability and woman. In addressing the specific mobility requirements of these groups, governments should move away from accessibility as a welfare issue to an approach of accessibility as a human right, whereby every citizen has the right to participate fully in urban life.

Improving transport accessibility for disadvantaged and vulnerable groups means taking into consideration every stage of a journey. While it might be possible to access a low floor bus in a wheel-chair, this is of little use if the footpaths that lead to the bus stop cannot be navigated in a wheel-chair. While a metro station may be well lit and appear safe at night, if the streets that surround it are dark and deserted, issues of safety will remain ever-present.

Across the Asia-Pacific there are some 650 million persons with a disability, and with an ageing population, many more will have some form of impediment that makes accessing transport difficult or impossible. However, improving access for those with disabilities and the elderly not only relates to physical access, but also the presentation of information that is easily understood (such as ‘wayfinding’).

Women are also particularly vulnerable users of transport. Women rely more on public transport than men, but public transport is less safe in terms of the threat of violent assault. To improve the safety of urban mobility for women, gender responsive actions must be taken into account. Examples of strategies that can create safe gender-based transportation include:

- Bus routes that cater to women’s schedules and the places they travel to;
- “Request stop” programs that allow women to get off closer to their destinations late at night and early in the morning;
- Subway station design features that prioritise the prevention of violence, as well as accommodate those who have experienced or feel the threat of violence;
- Women-only buses and subway cars in those cities where overcrowding is synonymous with the sexual, physical and verbal harassment and abuse of women (see Box 4.11);
- Provision of bike lanes so that women have alternative, flexible transport options; and
- Well-lit, clearly visible, emergency services-equipped sidewalks and pathways so that women can walk to and from public transport, as well as to and from their destinations.

BOX 4.11
WOMEN ONLY CARRIAGES

Lewd conduct, molestation and other forms of sexual harassment are commonly reported offences on many mass transit networks in the world, with incidences exacerbated by overcrowding. These offences particularly impact upon women, and to offer safer travel the train networks in several countries offer female only carriages. Such carriages are commonplace in Japan, India, Iran (Islamic Republic of), Viet Nam, Taiwan, Indonesia, the Philippines, and Malaysia.

SOURCE: ABD (2011b)
To be inclusive transport also need to be affordable. In that respect, providing subsidies to public transport services can certainly be helpful. For instance, public transport in Seoul, Republic of Korea is very affordable due to government subsidies. A trip on the subway system costs around US $1, while the bus ranges from US $0.76 to $1.75. In addition, discounts are given to families and children while senior citizens, persons with a disability and children under six travel for free. Offering subsidized fares does, however, not go without risks as the financial sustainability of the transport operator, and subsequently his ability to deliver high quality services, depend then on the effective payments of subsidies by the public authorities. Therefore, subsidies need to be designed in such a way that they are also affordable for public budgets while providing sufficient resources for long-term development of the public transport operator.

Another option to contribute to the affordability of public transport is supporting the development of informal transport services as further detailed in Box 4.12.

**BOX 4.12**

**INFORMAL TRANSPORT**

**INFORMAL TRANSPORT – INDONESIA**

Informal transport networks come at little or no cost to government but provide affordable transport services to a large proportion of the urban population, particularly the poor. The Cities Development Institute for Asia (CDIA) conducted research in three medium-sized Indonesian cities and found that informal transport:

- Is flexible and drivers accommodate a wide range of demands and uses;
- Fills gaps in the formal transport network, picking up where formal transport networks end or are lacking; and
- Serves niches, with drivers adjusting routes, fares and schedules based on the needs of specialized user groups, including students, women, informal vendors and the elderly.

**CYCLE RICKSHAWS – INDIA**

Across India it is estimated that more than 7 million cycle rickshaws are in operation, with over 600,000 in Delhi alone. The cycle rickshaw is a low cost and environmentally sustainable mode of transport for short trips. Able to integrate easily into other transport systems, the rickshaw can provide point-to-point service at a price within reach of low income earners.

---

**SOURCE:**

UN-HABITAT (2010) and Cities Development Institute for Asia (2011)
RAISING ROAD SAFETY AS A SUSTAINABLE DEVELOPMENT ISSUE

At the Rio+20 Conference in 2012, road safety was recognized “as part of our efforts to achieve sustainable development” in the outcome document of the Conference, “The future we want”. This recognition highlights and reiterates the view that road safety in many countries of the region is an important development issue, considering its magnitude and the gravity of the negative impacts of road accidents on the economy, public health and general welfare of the people, particularly the poor.

ROAD FATALITIES

Globally, road crashes kill about 1.24 million people and injure another 50 million each year. According to the Global Status Report on Road Safety, 777,000 or more than half of the world’s total road traffic deaths in 2010, occurred on roads within the ESCAP region. The economic cost of road crashes has been estimated at between 1% and 3% of GDP on average, but as high as 5% for some developing countries.

Despite the frequency of road accidents in the region, progress is mixed. While the number of global fatalities in 2010 remained similar to that in 2007, estimated road fatalities in the region as a whole increased considerably in 2010 compared to 2007. Nevertheless, over this same period, 21 countries in the region reduced deaths on their roads, showing improvements are possible. Table 4.1 shows road traffic deaths by sub-region.

In reducing road traffic deaths, there has been progress in two sub-regions, with the number of road traffic deaths in the Pacific and North and Central Asian sub-regions declining, as well as in some countries of other sub-

<table>
<thead>
<tr>
<th>SUB-REGION</th>
<th>REPORTED DEATHS (adjusted for 30-day definition)</th>
<th>ESTIMATED NUMBER OF DEATHS (using a model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2007</td>
<td>2010</td>
</tr>
<tr>
<td>Pacific</td>
<td>2,471</td>
<td>2,151</td>
</tr>
<tr>
<td>North and Central Asia</td>
<td>12,041</td>
<td>9,574</td>
</tr>
<tr>
<td>East and North-East Asia</td>
<td>145,950</td>
<td>108,455</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>53,586</td>
<td>75,454</td>
</tr>
<tr>
<td>South and South-West Asia</td>
<td>151,203</td>
<td>172,361</td>
</tr>
<tr>
<td>ESCAP (% of the world total)</td>
<td>365,251 (55.23%)</td>
<td>367,995 (57.72%)</td>
</tr>
<tr>
<td>World</td>
<td>661,319</td>
<td>637,584</td>
</tr>
</tbody>
</table>

SOURCE: WHO (2013a) / definitions of reported deaths and estimated deaths are included in this report.
regions (for example, Russian Federation and Turkey). However, the situation in East and North-East Asia, South-East Asia and South and South-West Asia, the three most populous sub-regions, worsened in 2010.

In terms of deaths per 1,000 people, the traffic death rate in South-East Asia was highest among the five sub-regions at 19.8 deaths per 100,000 population (Figure 4.8). Road traffic death rates in 14 countries (including China, India, Iran (Islamic Republic of), Kazakhstan, Malaysia, Russian Federation, Thailand and Viet Nam) were higher than the global average. However, of these, four countries brought down the death rates from their previous levels in 2007. For the other ten countries, the death rate increased further over this period.

The number of road users killed in road traffic crashes per population has been particularly high in emerging economies and newly industrialised economies. Regardless of motorization level, higher road traffic death rates per population are also linked to higher vehicle densities (i.e., vehicles per kilometre of road), which shows an important link between road safety and infrastructure development in general.

Road fatalities on the Asian highway network

Data on road safety components are contained in the ESCAP Asian Highway Database, including the number of road crashes and fatalities for each Asian Highway section. Road safety data (2010) are available for 45.5 per cent of the length of the Asian Highway, including 695 road sections (or 46.6 per cent of all sections), covering 64,818 km in 24 countries. Figure 4.9 shows average fatality rates per billion vehicle-km by Asian Highway class. It clearly illustrates that higher classes of road are generally much safer than lower classes of road, and that significant improvements in road safety may be achieved through upgrading of Asian Highway routes.
The upgrading of roads to access-controlled Primary Class and other higher classes has significant benefits in reducing fatality rates. Substantial improvement in terms of safety can also be gained when roads below class III are upgraded to the minimum class III standards. The road safety record for class II, however, show worse performance compared to class III, possibly due to other relevant factors, such as higher traffic flows, higher shares of motorized vehicles, and greater average travel speeds.

The upgrading of roads has also been linked to improved Asian Highway safety in many countries, particularly when the upgrades involved: (a) the construction of barriers to separate opposing directions of traffic and different types of vehicles; and/or (b) the improvement of road shoulders.

Vulnerable road users
Motorcyclists, cyclists, and pedestrians are collectively known as “vulnerable road users” or VRUs. Road fatalities among VRUs are a cause of serious concern in many countries, with half of the world’s road traffic fatalities occurring among VRUs. In the ESCAP region, road traffic deaths among VRUs account for nearly 55 per cent of total road traffic fatalities.

In recent years, most developing countries in the region have experienced rapid growth in vehicle ownership, making roads more dangerous for VRUs. The high rate of deaths and injuries among VRUs in the region, is, however not entirely explained by the growth in vehicle numbers, with vehicle mix also posing a considerable safety threat. There is a clear link between road safety and the provision of adequate and appropriate infrastructure facilities for different types of road users, as well as the enforcement of applicable laws. Despite some initiatives to address these issues, the high rate of pedestrian deaths in many countries, for example, clearly indicates inadequacies in the provision of appropriate infrastructure facilities, law enforcement and behaviour of road users.
IMPROVING ROAD SAFETY

Motorcyclists and helmet use
Among all road users, motorcyclists are the most likely to die on the region’s roads, making up 31% of all road deaths. At a sub-regional level, motorcycle deaths make up the largest share of all deaths in South-East Asia and the second biggest share in West and South Asia. Motorcyclists alone account for more than half of all road traffic deaths in four countries – Cambodia, Lao People’s Democratic Republic, Malaysia and Thailand.

Despite being one of the highest risk factors, motorcycle deaths and injuries are avoidable. Research shows that wearing a good-quality helmet can reduce the risk of death from a road crash by 40 per cent and the risk from severe injury by over 70%.

42 countries in the ESCAP region have adopted helmet laws at the national level and 2 countries have adopted helmet laws at the subnational level. While the adoption of helmet laws is encouraging, enforcement of such laws varies significantly from country to country. As a result, the motorcycle helmet wearing rate is estimated to vary from 10 to 99 per cent in the region.

In addition to the adoption and enforcement of helmet laws, helmet standards are also a critical factor in determining the level of protection riders have. Only 25 countries in the ESCAP region have requirements for minimum helmet standards.

Non-motorised road users and their safe traffic environment
Non-motorized transport is a viable alternative mode with the added benefits of being affordable, reducing air pollution and CO2 emissions, as well as conserving fossil fuels. Many countries in the region have a renewed focus on this mode of transport, with 19 countries in the ESCAP region adopting either national or subnational policies to promote the use of non-motorized modes of transport such as walking and cycling.

However, almost 200,000 lives of non-motorized road users (pedestrians and cyclists) were lost on the region’s roads in 2010, accounting for over a quarter of total road traffic fatalities in the ESCAP region. The region’s roads have become more dangerous for non-motorized road users, with 91 per cent of total deaths occurring in middle income countries where the rate of motorization has surged.

The availability of safe routes and crossings for pedestrians and dedicated bicycle lanes, which separate them from motorized road users, is necessary to enhance safe environments for non-motorized road users. However, according to the 2013 Global Status Report, only seven countries in the ESCAP region have a policy to separate VRUs from high speed traffic at the national level, while nine countries have a policy at a subnational level.

Furthermore, pedestrians and cyclists are especially at risk of injury due to excessive motorized vehicle speeds. Measures to reduce speeds, in particular in urban areas with high concentrations of VRUs, can significantly limit the incidence of death and injury. Studies show that a 5% cut in average speeds can reduce the number of fatal crashes by as much as 30%.

While every country in the region has enacted national speed limits, the effectiveness of overall enforcement varies substantially. On a scale of 0 (no enforcement) to 10 (total enforcement), only 20 countries in the ESCAP region score greater than 5.
Other road traffic related laws

Helmets and speed limits are two of the five key risk factors in road safety identified by the World Health Organization. The other three key risk factors include drink–driving, insufficient use of seatbelts and insufficient use of child restraints. Addressing each of these risk factors is considered an essential component of comprehensive national legislation on road safety.

With the exception of child restraint laws, the adoption of laws relating to drink–driving and seatbelts throughout the region is encouraging; however, the level of enforcement varies widely between countries. Furthermore, in many countries these laws are not comprehensive enough to cover all aspects of the risk factors.

### TABLE 4.2

<table>
<thead>
<tr>
<th>SUB-REGION</th>
<th>TOTAL NUMBER OF COUNTRIES COVERED</th>
<th>NATIONAL SPEED LIMIT LAW</th>
<th>DRINK-DRIVING LAW</th>
<th>HELMET LAW</th>
<th>SEAT-BELT LAW</th>
<th>CHILD-RESTRAINT LAW</th>
<th>MOBILE PHONE LAW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>North and Central Asia</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>East and North-East Asia</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>South and South-West Asia</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

As indicated in the Global Status Report, except in a few developing countries (for example, Azerbaijan, Uzbekistan, and Turkey) and five OECD member countries (Australia, Japan, New Zealand, Republic of Korea and Singapore), the level of enforcement of the all road safety laws across the ESCAP region can be considered to be low to medium.

In conclusion, considering the alarmingly high and ever increasing rate of casualties from road crashes, coupled with the magnitude of negative impacts on the economy and social welfare, the issue of road safety has been on the global agenda for some time as further explained in Box 4.13.
Since 2003, the United Nations General Assembly has adopted seven resolutions calling for strengthened international cooperation and multisectoral national action to improve road safety. In its resolution 64/255 of 10 May 2010 on improving global road safety, the General Assembly proclaimed the period 2011-2020 as the Decade of Action for Road Safety with a goal to stabilize and then reduce the forecast level of road traffic fatalities around the world by increasing activities conducted at the national, regional and global level. Further, the General Assembly, in its resolution 66/260 of 23 May 2012 on improving road safety, encouraged member States to develop national plans in line with the Global Plan for the Decade of Action for Road Safety 2011–2020. As noted above, the importance of road safety was also highlighted at the Rio+20 Conference in 2012.

For many years, ESCAP has worked to improve road safety in the region in response to the General Assembly resolutions on road safety and has been mandated to assist the countries in the Asia-Pacific region in meeting their commitments under the Decade of Action of Action for Road Safety (2011-2020).

ESCAP’s road safety role may be broadly summarized as being that of: an advocate of global and regional road safety best practices; a connector of road safety experts and officials and representatives from international organizations and charities active in the Asia Pacific region; and a disseminator of road safety information, data and statistics collected from member States.

In advocating global and regional road safety best practices, ESCAP provided technical assistance to governments to develop and refine their national road safety goals, targets and indicators in support of the Decade of Action through the organization of National Workshops in Road Safety. The national workshops on road safety were organized in collaboration with the relevant national Ministries of Azerbaijan, Bangladesh, Cambodia, Kyrgyzstan, Lao People’s Democratic Republic, Mongolia, Nepal, Philippines, Sri Lanka, Tajikistan and Uzbekistan.

Through the organization of expert group meetings, ESCAP connects road safety experts and officials and representatives from international organizations and charities active in the Asia Pacific region to share and exchange best practices and experiences in specific themes set out in each of the meetings. Past themes included the development of regional road safety goals, targets and indicators; improving road safety on the Asian Highway network; data monitoring and collection; and vulnerable road users.

ESCAP also collects road safety data from countries in the region approximately every two years in conjunction with the expert group meetings on road safety. The collected data are available on the ESCAP website.
END NOTES

1 ITDP 2010a
2 UN-HABITAT 2010
3 Suzuki et al 2013
4 Ravallion et al 2007
5 UN-HABITAT 2010
6 International Energy Agency Mobility Model 2011, in Wright 2012
7 ADB & GIZ 2011
8 Countries report to IEA through the OECD member site and non-OECD government site. The IEA secretariat does not adjust the data. Data obtained on 28 February 2012
9 WHO 2011
10 UNEP 2012
11 ITDP 2010a
12 adapted from VTPI 2011
13 A knowledge economy is one where the value of what is being created is primarily based on intellectual capital. Knowledge industries are predominately in the service sector, and in the Asia-Pacific the service sector has grown significantly, comprising 25.8 per cent of jobs in 1991 rising to 36.4 per cent in 2007 (UN-HABITAT, 2010, p.76).
14 SGS Economics and Planning 2011; UN-HABITAT 2010
15 ITDP 2010b
16 Tiwari 2011
17 For further information on green freight agreement, please refer to http://www.urcdr.or.jp/env/7th-regional-est-forum/
18 UN-HABITAT 2010
19 World Bank 2009
20 ADB and GIZ 2011
22 MacDonald, M. (2013)
26 Jain, 2013
27 Venter et al 2003
28 UN ESCAP 2010b
29 UN Women 2012
30 WHO 2013a
31 Based on estimated number of deaths (using a model). Detailed information about the estimation is available in explanatory note 3: Estimating Global Road Traffic Deaths of the WHO Global Status Report (2013)
32 For more information on the Asian Highway network please refer to http://www.unescap.org/ttdw/index.asp
33 The fatality rates in the figure are based on reported fatalities on 24.12 per cent of the length of the Asian Highway network, which includes 485 road sections (or 32.5 per cent of all sections) covering 34,370 km of highways in 23 countries for which the required data for calculation was available in the Database. It should be noted that fatality rates for all of 64,818 km of roads could not be calculated as necessary data for all sections was not available.
34 WHO 2013a
35 WHO 2013b
36 WHO 2013a
37 One of the internationally-accepted helmet standards is the UNECE R-22 (Protective helmets and visors). The regulation is provided under the UNECE Vehicle Regulation, the 1958 Agreement. More information about the UNECE R-22 standard can be found at http://www.unece.org/trans/main/wp29/wp29regs21-40.html.
39 Australia, Azerbaijan, Cambodia, Georgia, Iran (Islamic Republic of), Japan, Kazakhstan, Maldives, Marshall Islands, New Zealand, Palau, Republic of Korea, Russian Federation, Samoa, Singapore, Tajikistan, Tonga, Turkey, Uzbekistan, Viet Nam
40 WHO 2013a
41 General Assembly resolutions 57/309, 58/9, 58/289, 60/5, 62/244, 64/255 and 66/260
42 In accordance with several ESCAP resolutions such as: Resolution 63/9 (23 May 2007) which encouraged members and associate members to continue to act upon the recommendations contained in the Ministerial Declaration on Improving Road Safety in Asia and the Pacific; Resolution 66/6 (19 May 2010) on Improving Road Safety in Asia and the Pacific; and Resolution 68/4 (23 May 2012) which endorsed the Ministerial Declaration on Transport Development in Asia and the Pacific (The Declaration provides a board mandate to assist countries in the Asia-Pacific region in meeting their commitments under the Decade of Action for Road Safety)
43 http://www.unescap.org/ttdw/roadsfety/RoadSafetyIndicators.asp