**Public Symposium on the Implementation of SDGs ~
Role of Technology, Partnership and City-to-City Cooperation for
Building Resilient and Sustainable Societies**

**Urban Mobility and Sustainable Transport ~ Key Issues and
Challenges in Implementing SDG 11**

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*United Nations Centre for Regional Development*

UNCRD

# 11 SUSTAINABLE CITIES AND COMMUNITIES

# Connection Between Transport and the SDGs

**Sustainable transport and mobility are fundamental to progress in realizing the promise of the 2030 agenda for sustainable development and in achieving the 17 SDGs (Global Mobility Report, 2017). Sustainable transport has direct relevance to 7 SDGs (1, 3, 8, 9, 10, 11, 13)**

## SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

**SDG: 11.2.** *By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.* **(Indicator: proportion of population that has convenient access to public transport, by sex, age and persons with disabilities)**

*SDG:* **11.6.** By 2030, *reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality* and municipal and other waste management.

*SDG: 11.7. By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.*

11.a. *Support positive economic, social and environmental links between urban, peri-urban and rural areas* by strengthening national and regional development planning.
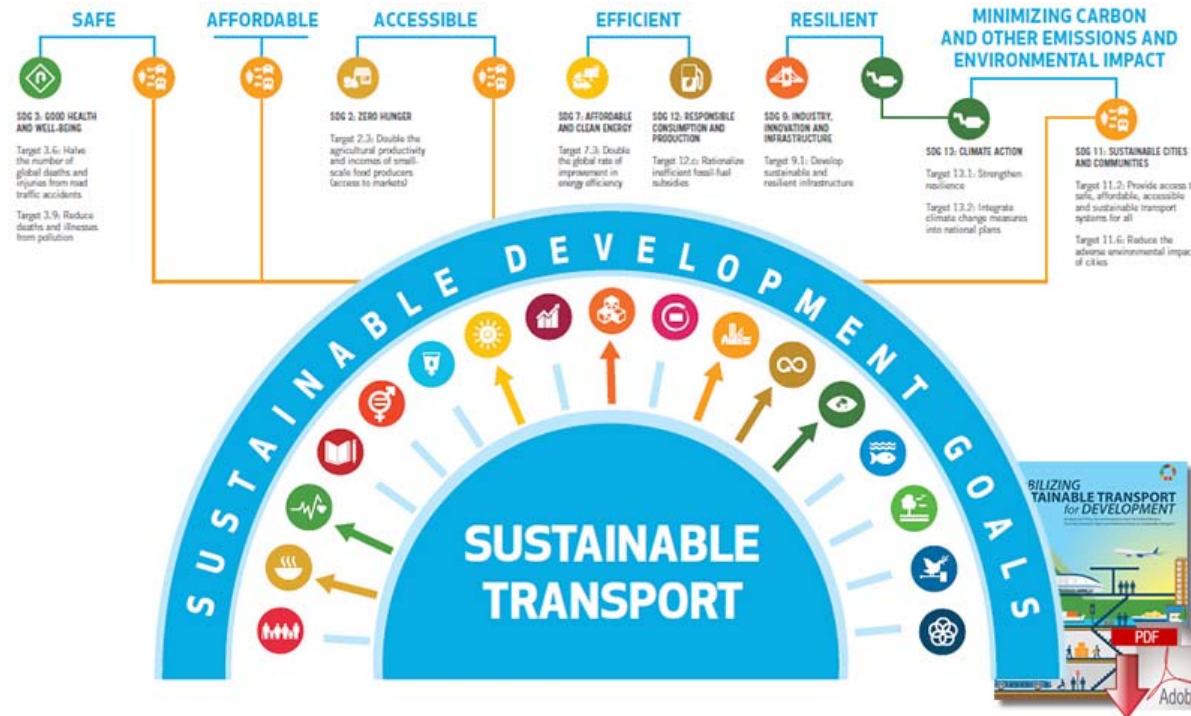
Mobilizing sustainable transport for development –analysis and policy recommendations from the United Nations Secretary-General's high level advisory group on sustainable transport, Oct 2016

**SUSTAINABLE mobility FOR ALL**

The Sustainable Mobility for All (SuM4All) is a global multi-stakeholders partnership with a goal to make the mobility – equitable, efficient, safe and green (clean).

**Universal Access** – to ensure that everyone (the elderly, children, women, families and people with disability) has access to the transport needed, and "*no one is left behind*" to take advantage of social, economic and environmental benefits for current and future generations. Equity and inclusivity are the core of the global mobility objectives. **Universal access features directly SDG target 11.2.**

**Safety** – Improve the safety of mobility across all modes of transport by avoiding fatalities, injuries, and crashes from transport mishaps across all modes of transport, thus averting public health risks, and social and economic losses associated with unsafe mobility. **Road safety has direct implications to SDG target 11.2.**

## GLOBAL OBJECTIVES

**UNIVERSAL ACCESS**

Ensure for all equitable access to economic and social opportunities by 2030

**EFFICIENCY**

Increase the efficiency of transport systems by 2030

**SAFETY**

Improve safety of mobility across transport modes

**GREEN**

Shift transport systems to low polluting (GHG/air/noise) and climate resilient path

(Source: Global Mobility Report, 2017).

**Efficiency** – This objective seeks to ensure that transport demand is met effectively, at the least possible cost. Since efficiency cuts across multiple aspects-the optimization of resources (i.e., energy, technology, space, institutions, and regulations) to generate an efficient transport system or network.
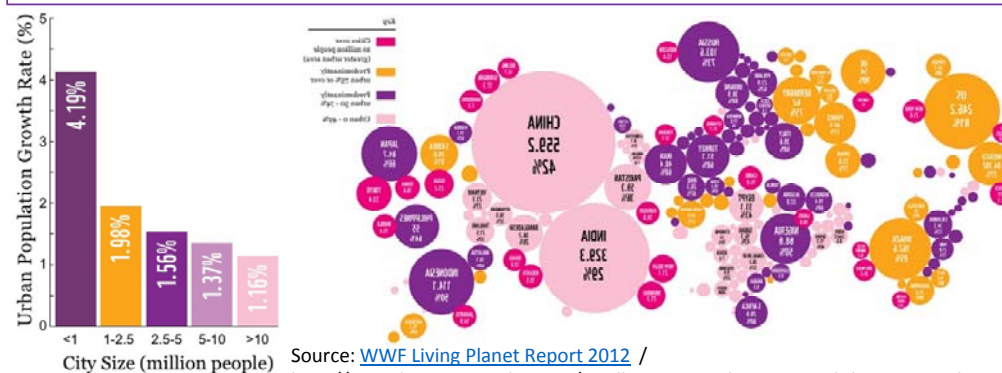


Source: New urban mobility concept, Greenpeace

**Green Mobility** – This objective aims to address climate change through mitigation and adaptation, and to reduce both air and noise pollution.
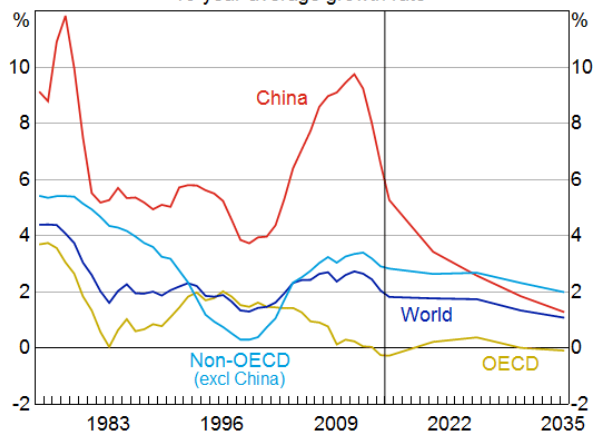
# Key Issues and Major Challenges in the Sustainable Transport & Mobility

□ Half of humanity – 3.5 billion people – lives in cities today. In 2016, an estimated 54.5 % of the world's population lived in urban settlements.

□ By 2030, urban areas are projected to 60 % globally. By 2050, 66% of the world's population will be urban (UNDESA, 2014).

□ Automobile sales are expected to increase from about 70 million a year in 2010 to 125 million by 2025, with more than half forecasted to be bought in cities. It is predicted that on the existing trajectory, today's 1.2 billion strong global car fleet could double by 2030 (Dargay, et al, 2007).

□ **Asia is currently home to some 17 megacities, which is expected to grow to 22 by 2030. This rapid growth raises many urban challenges, such as traffic congestion, air pollution and road accidents and fertilities.**

□ **95 % of urban expansion in the next decades will take place in developing world.**



Source: WWF Living Planet Report 2012 / http://www.businessinsider.com/small-cities-population-growth-by-2050 and

*Rapid urbanization is exerting pressure on urban mobility and public transport system.*



**Growth in Energy Consumption***
10-year average growth rate

*   BP Projections from 2015 onwards under base case scenario
Sources:  BP Energy Outlook 2016; BP Statistical Review 2015; RBA

**By 2050, the average time an urban dweller spends in traffic jams will be 106 hours per year, three times more than today.**
(Source: The Future of Urban Mobility Report)



**Mumbai, India**
Source: https://www.oneindia.com/feature/world-population-day-top-10-worlds-populated-cities-in-pics-1481206.html

# Urban Mobility Situation in Asia Cities

Traditional mobility solutions are not enough for future mobility situation. It needs significant improvements on overall policy, planning, infrastructures, technology, and financing.

Integrated transport system allow people to move easily from one point to another and address the last mile connectivity.

Vehicles and transport infrastructure should be the part of the intelligent network which helps to improve the safety, efficiency and the traffic flow of the city.


Source: http://shemul.blogspot.jp
Urban mobility situation in Dhaka, Bangladesh


Air pollution in Kathmandu, Nepal


Source: https://walkabilityasia.org
Walking still a chore in Jakarta, Indonesia


Source: https://propakistani.pk
Traffic congestion in Lahore, Pakistan


Sttps://www.thebeijinger.com
Air pollution problem in PR China


There were 4,80,652 road accidents in India in 2016, (source: Ministry of Road Transport, India

|  | Traditional mobility solutions | New mobility services | |
|---|---|---|---|
| Individual-based mobility | Private car ownership | Car sharing: peer to peer | A peer-to-peer platform where individuals can rent out their private vehicles when they are not in use |
|  | Taxi | E-hailing | Process of ordering a car or taxi via on-demand app. App matches rider with driver and handles payment |
|  | Rental cars | Car sharing: fleet operator | On-demand short-term car rentals with the vehicle owned and managed by a fleet operator |
| Group-based mobility | Car pooling | Shared e-hailing | Allows riders going in the same direction to share the car, thereby splitting the fare and lowering the cost |
|  | Public transit | On-demand private shuttles | App and technology enabled shuttle service. Cheaper than a taxi but more convenient than public transit |
|  |  | Private buses | Shared and Wi-Fi-enabled commuter buses available to the public or to employees of select companies. Used to free riders from driving to work |

Source: McKinsey analysis

# Key issues and Challenges in the Sustainable Transport & Mobility cont…..

➢ **Isolated rural communities and limited connectivity:** In rural areas, where most poor people live, limited transport connectivity is a critical constraint to access markets and other opportunities. For example, more then **1 billion people (one third of the global rural population) lacked access to all weather roads** and transport services (Peter et al., 2006). An estimated **700 million people (40% of the Asia Pacific region)** lack direct access to all-season road (ESCAP, 2015).

➢ **Poor transport infrastructures:** According to Food and Agriculture Organization, one third of the food produced in the world **(1.3 billion tonnes)** for human consumption get lost or wasted every year. This loss is equivalent to roughly **US$ 990 billion**. In developing countries, **40% of food losses occur post-harvest due to poor transport conditions** (World Bank, 2017).

➢ **Traffic congestion and air pollution:** According to World Health Organization, **7 million premature deaths annually linked to air pollution (WHO, 2014).** Congestion is already close to unbearable in many cities and can **cost as much as 4% of national GDP**, by measures such as lost time, wasted fuel, and increased cost of doing business (ADB, 2010).

➢ **Transport safety challenges:** Between 2010 and 2013 traffic death increased by 32% in low income countries, which cost 2-5% of their GDP. A regional study conducted by UNCRD shows that the traffic injuries alone cost estimated to **US$ 735 billion to EST member countries\*** which is equivalent to 3-4% of their GDP (Wismans et al., 2014).         [[  * http://www.uncrd.or.jp/index.php?menu=384for EST member countries]]


Source: http://sites.dartmouth.edu
Source-httpen.karobardaily.com
Due to limited rural-urban connectivity and poor infrastructure, walking is the only alternative for rural people in Nepal.


Source-www.daily-sun.com
Source-archive.dhakatribune.com
Residents of Dhaka city lose 3.2 million working hours yearly standing still in traffic gridlocks which costs  Bangladesh economy up to Tk 550 billion a year (Prothom Alo, 12 July 2015).


Source-thelogicalindian.com
Outdoor air pollution contributes to an estimated 1.4 million premature deaths in India in 2013 (Indian Express, 13Feb.2016).

# Key issues and Challenges in the Sustainable Transport & Mobility cont.....

➢ **Energy consumption:** world's cities occupy just 3 % of the Earth's land, but account for 60-80 % of energy consumption and 75 % of carbon emissions. Transport is responsible for 23% of energy-related greenhouse gas emissions, and its share is growing (World Energy Outlook, 2015).

➢ **Urban sprawl:** cost of environment degradation, largely driven by sprawling cities is enormous. A study conducted in 50 cities worldwide estimates that about 60% of growth in energy consumption is directly related to urban sprawl (Bourdic et al., 2012).

➢ **Natural Disasters:** The frequency and magnitude of natural disasters appear to be increasing worldwide. In 2016 alone, there were 327 disaster events globally, which resulted in economic losses of US$175 billion, almost double the US$94 billion in 2015. Asia was worst hit in terms of the number of disaster events (128), and accounting for almost 50 % of the world's economic losses i.e. US$83 billion (source: Swiss Re, 2016).

➢ **Climate change & global warming:** ADB and UK Aid study shows that South Asia could lose about 1.8% of its annual GDP due to climate change impact by 2050, under the business-as usual scenario.

➢ **Managing increasing of global passenger and freight volumes:** By 2030, annual passenger traffic will exceed 80 trillion passenger-kilometers—a 50% increase; global freight volumes will grow by 70 % (Source: www.iea.org/about/faqs/transport/) .

➢ **Mobility for all (no one is left behind):** There are now more than **1 billion persons** with disabilities in the world, and most of them are isolated due to inadequate transport facilities (Global Mobility Report, 2017). The increase of aging of the urban population has significant transport implications for urban mobility, as their mobility patterns could differ than others. Similarly, the mobility of children, youth and women are different.



http://newsinfo.inquirer.net

A flooded street caused by rains from Typhoon Nina in Quezon City, Philippines
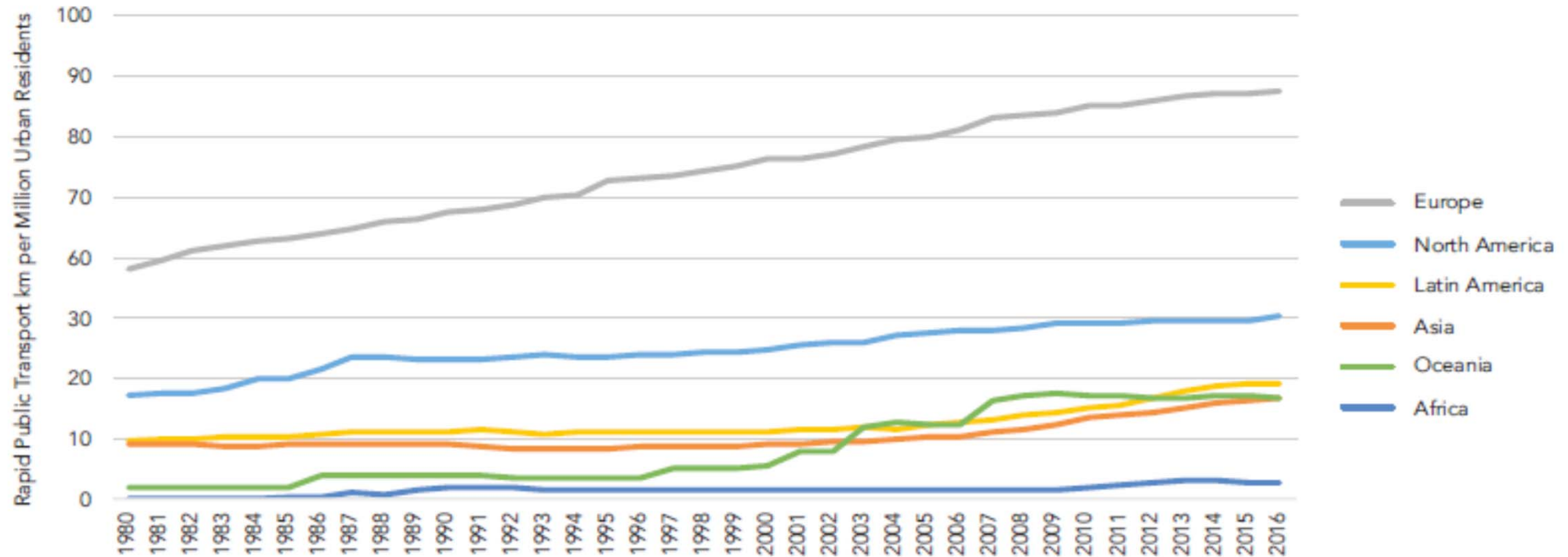


Source-themadisonian.net
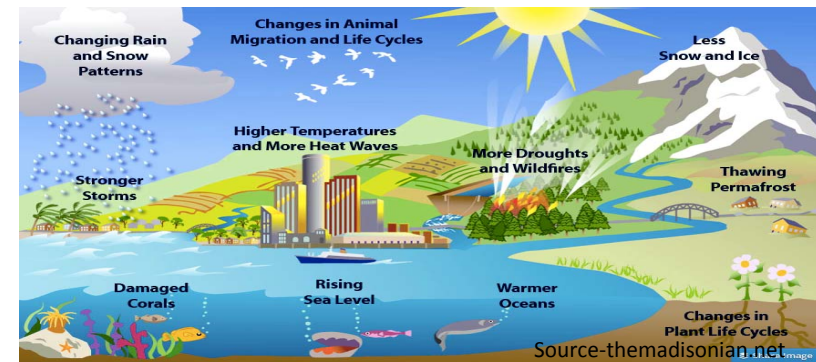
Passenger Transport Volumes (Business as Usual 2015-2030)    Freight Transport Volumes (Business as Usual 2015-2030)
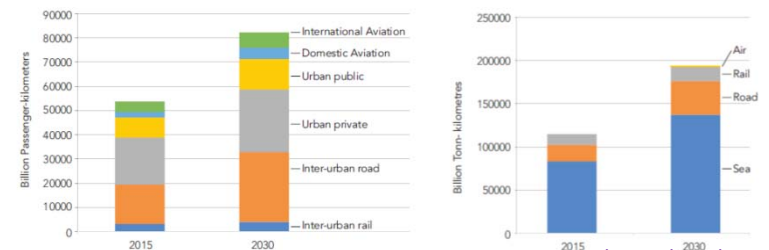


Source: www.iea.org/about/faqs/transport

# FIGURE 2.5: Supply of Rapid Transit Relative to Urban Population



**Europe** · **North America** · **Latin America** · **Asia** · **Oceania** · **Africa**
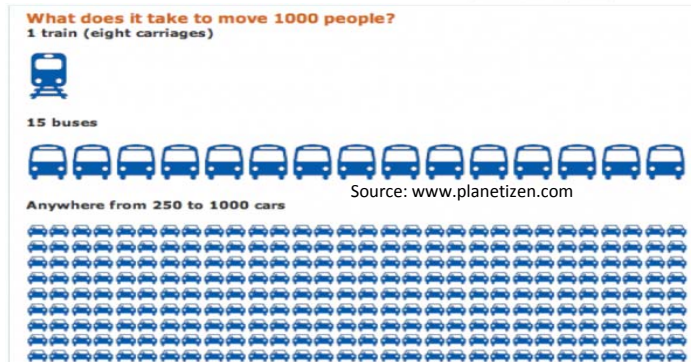
Rapid Public Transport km per Million Urban Residents

⇒ for all regions, supply of rapid transit is one rise since 2000 with highest ratio in Europe, and with heavy investment in BRT in Latin America and in metro transit services in Asia;

⇒ But even with larger increases in urban population, the rate of public transport use (journey per capita) is actually decreasing

# How could the mobility in cities improve?

➢ **Sustainable Transportation** is the lifeline of any city, it plays an important role to improve the urban mobility, and significant positive impact on social, economic, and environmental aspects. Efficient urban mobility allows people and goods to move fast, reliable and affordable transport solutions.

➢ **Cities need safe, high-quality and effective public transport system** that can respond to the needs for increased mobility of businesses and peoples. All the transport system need to be integrated, combining cars, buses, tramways, railways metros, together with air and water transport system.

➢ **An inclusive, efficient, resilient, and people and-environment-friendly transport system** supports economic growth, human productivity and contribute for making cities and human settlements inclusive, safe, resilient and sustainable.

➢ **Urban transportation should provide flexibility, quality, efficiency, and affordability.** It is equally important to ensure maximum **harmonization, integration, simplicity, stability, acceptability, and attractiveness** of the public transport system.



www.japanistry.com
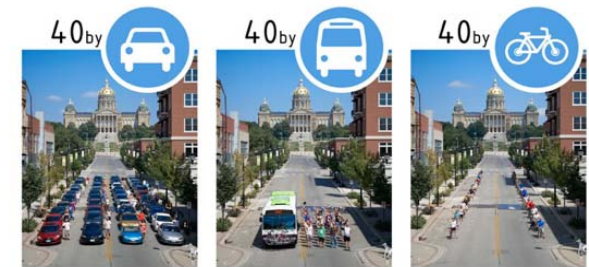


Amount of space required to transport the same number of passengers by car, bus, or bicycle.
Event info at www.facebook.com/Urban.Ambassadors - Photos by www.tobinbennett.com
(Des Moines, Iowa - August 2010)



What does it take to move 1000 people?
1 train (eight carriages)

15 buses

Anywhere from 250 to 1000 cars

Source: www.planetizen.com

# Urban Mobility -Best Practices

Cambodia's first accessible tuk tuk

**Korea case:** Safe sidewalk with protection fences, creating a safe walking environment for children.

**Japan case**: a person riding in the subway in a wheelchair.

Source: http://unicefcambodia.blogspot.jp

Source- Seoul's Seocho District Office

Source- www.accessible-japan.com

- ▪ **A city should provide equal opportunity for the mobility options for everyone, including those with a disability.**
- ▪ **A city should have continuous accessible paths of travel linking public transport, parking, retail, business, and entertainment areas.**

**Hong Kong  Case:** Inclusive cycling routes from Sha Tin to Tai Po

Shibuya Crossing, Tokyo, Japan

Accessible taxi available in Narita airport

Source-www.timeout.com

Source: www.videoblocks.com

Source: accessible.com/transport/airport/narita.htm

# Urban Mobility -Best Practices

*The sustainable transport system provides increased mobility options for people and goods, and make cities inclusive, safe, resilient and sustainable that improves the quality of life of the citizen.*

## BEST PRACTICE — New York, USA

Within a short space of time New York City has done an impressive job of altering its infrastructure and ensuring that people are far more receptive to the idea of sustainable mobility. Testing pilot projects for a limited time proved to be a great success. Innovative approaches could be trialled before spending money on permanent alterations to the infrastructure. The pilot projects gave people an opportunity to test the full effects of the potential changes and to provide feedback based on their experiences. Before and after surveys on accident statistics, street soccer, cycling, economic impact and behavioural aspects provided the proof needed to document the project's success, which in turn lent considerable political clout to the advocates of further changes.

**CHOICE OF TRANSPORT MODE**
14%
30%
1%
55%
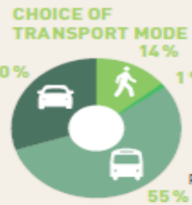
**FACTS**
Area: 22.8 km²
population: 612,000 (2010)
19 million live in greater metropolitan area (source: www.nyc.gov)

Case

**CITYWIDE**

**11.3 %** increase in trips into the inner city (2003–2012)

**2.4 %** less traffic volume (2000–2009)

**30 %** fewer fatal accidents citywide (2000–2010)

**6.5 %** fewer vehicles heading into downtown (2003–2012)

**58 %** greater use of bicycles throughout the year (2008–2012)

Source: Sustainable Streets Index, 2012, New York City Dept. of Transport

**Source: A New Urban Mobility**

## BEST PRACTICE — Copenhagen, Denmark

Copenhagen has been working for some time on creating a continuous network for green mobility. A well-defined web of interlinked cycle tracks and convenient, easily accessible pedestrian spaces has been integrated with local and regional public transport. This produces a coherent system of green mobility that prompts people to use their cars less and creates an attractive, inviting city centre that people are happy to visit and spend time in.

**CHOICE OF TRANSPORT MODE**
4%
24%
31%
41%
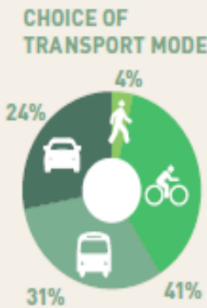
**FACTS**
Greater central city: 30.25 km²
population: 299,000 (2012)
98 inhabitants per hectare
1.2 million live in the greater metropolitan area (www.dst.dk)

Case

Proximity to public transport
Integrated public transport nodes
Short paths of travel
Diversified experiences
Efficient public transport
Good walking routes connect spaces

**Source: A New Urban Mobility**

# Solving the transport & mobility challenge require innovative bold, coordinated actions from the public and private sectors by adopting/implementing -

- ➢ Intelligent policies, regulations, legislations and planning such as smart growth, transit orented development, transport demand management, land-use and transport planning, among others.

- ➢ Using new cutting edge technology

- ➢ Smart, resilient and people friendly infrastructures and their regular maintenance

- ➢ Adopting safe , low carbon, affordable public transport options –including NMT, walking facilities with inter-modal and multi-modal mobility services

- ➢ Innovative funding and financing

- ➢ Improve institutional capacity

- ➢ Social equity and gender considerations

- ➢ Providing free space/open space in the city center

- ➢ Intra-agency coordination and cooperation

- ➢ Good governance

- ➢ Awareness raising, educate and campaigns
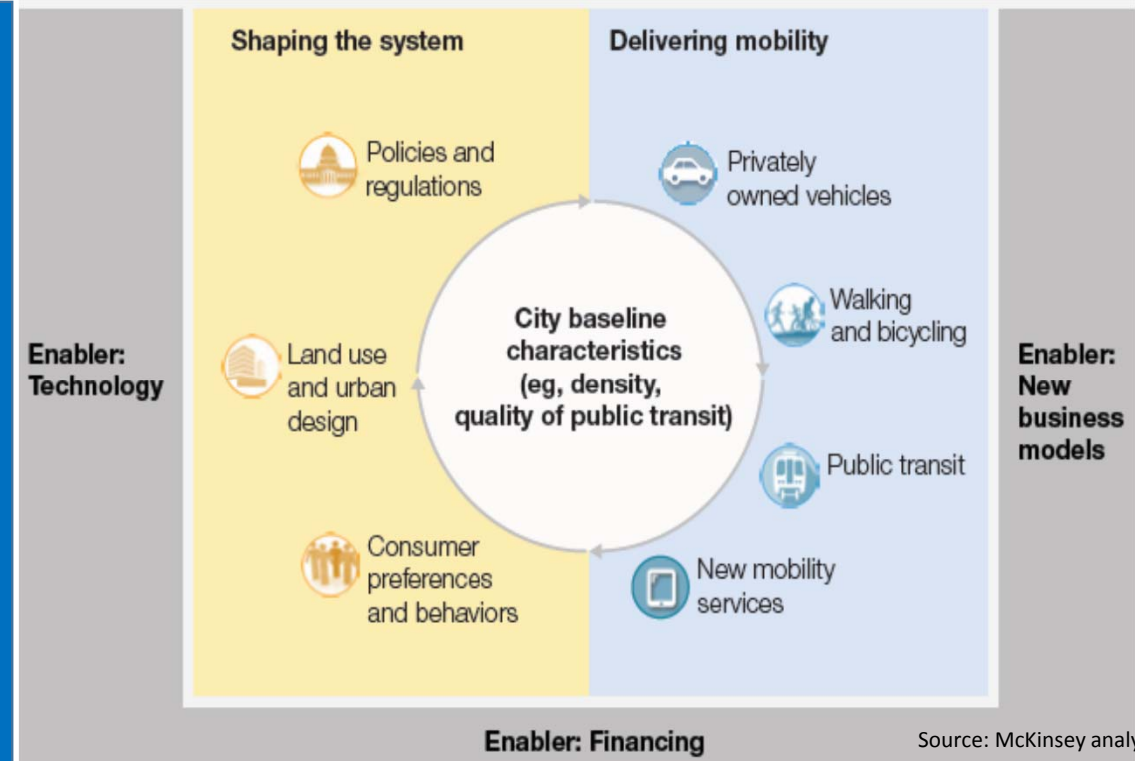
- ➢ Regional and global partnership



Source: McKinsey analy



Photo by stari4ek,

| Economic benefits | Pedestrian upgrades | Pedicabs | Bicycle rentals | Car-free day |
|---|:---:|:---:|:---:|:---:|
| Congestion reduction | √ | √ | √ | √ |
| Consumer spending savings | √ | √ | √ | √ |
| Employment creation | √ | √ | √ | √ |
| Small-enterprise development | √ | √ | √ | √ |
| Traffic accident reduction | √ | √ | √ | √ |
| Technology transfer | | √ | | |
| Energy security | √ | √ | √ | √ |
| Economic productivity | √ | √ | √ | √ |
| **Environmental benefits** | | | | |
| Greenhouse gas reductions | √ | √ | √ | |
| Particulate matter reduction | √ | √ | √ | |
| Sulphur oxides reduction | √ | √ | √ | |
| Nitrogen oxides reduction | √ | √ | √ | |
| Carbon monoxide reduction | √ | √ | √ | |
| VOC reduction | √ | √ | √ | |
| Noise reduction | √ | √ | √ | |
| Solid waste reduction | √ | √ | √ | |
| Water contaminant reduction | √ | √ | √ | |
| **Social benefits** | | | | |
| Health (e.g. obesity reduction) | √ | | √ | √ |
| Crime reduction | √ | √ | √ | √ |
| Gender equity promotion | √ | √ | √ | |
| Universal access for disabled | √ | | | |
| Scholar access improvement | √ | √ | √ | |
| Convenience and comfort | √ | √ | √ | √ |
| Community sociability | √ | | √ | √ |
| Reduction in severance | √ | | | |

Source: Win-Win Solutions to Climate Change and Transport, UNCRD, 2009.

Despite numerous co-benefits, NMT receives very low priority in most transport planning and infrastructure design and development, which is most often oriented to promote motorized transport rather than to support people movement or pro-poor mobility needs….

consequence => thousands of non-polluting pedestrians and cyclists are killed by accidents each year in developing countries!



. Each Sunday, Bogotá gives 120 kilometres of road space over to cyclists, skaters, jogg and families. Photo by Lloyd Wright.



Bicycle rental facility in Seoul, Photo: Lloyd Wright



Delivery service by Pedicab/bicycle taxi in London, Photo: ITDP

➢rise in frequency and magnitude of natural disasters (flood, earthquake, cyclones, landslides, etc.) across the world;

➢climate resilience is not a major part of the current transport policy, planning and urban/transport infrastructure and services development resulting in unprecedented potential damages to both human life and economy during such extreme events;

➢ urban/transport infrastructures in Asia and Africa are vulnerable to effects of climate change and these vulnerabilities should be addressed in the design, construction, and geometry of roads, railway tracks, and other transport infrastructure, including the drainage system of cities.



www.shutterstock.com · 113676997



www.shutterstock.com · 88610239

## Conclusions: Key issues & and challenges in relation to mobility & sustainable transport (----> SDG11)

1. Access to rural/inter-urban areas and rural-urban connectivity; Who will finance? Can private sector finance be mobilized?

2. Transport infrastructure together with ICT and energy infrastructure for land locked countries (LDCs);

3. Access to advanced transport technologies, human resource and institutional capacity building on sustainable transport;

4. Mobilizing national and international financial resources for implementation of sustainable transport policies, programs and projects;

5. Mobilizing private sector financing to meet the growing demand for mobility (given insufficient public funds); public-private-partnerships for the provision of mobility services;

6. Enabling policy environment and institutional coordination (horizontal and vertical); coherent national urban transport policy with overarching policy goals for local level action; implementing zero tolerance policies towards traffic accidents;

7. Integrated and inclusive transport and land use planning (e.g., ToD and smart growth (mixed land use/compact city), supported by zoning and planning regulations, aiming to locate people, jobs and services in areas within walking distance of public transportation);

8. Intermodal integration for seamless transfer from mode to mode (keeping in mind the transport sensitive groups) and public –transport oriented development (BRT, railways, waterways, etc.) for travel demand management (TDM); public transport and NMT integration;

9. Urban freight management; fuel economy/energy efficiency for low carbon transport development (-> Paris Climate Agreement calls for massive decarbonisation of transport sector) to achieve its ambitious target of avg temp rise < 1.5 oC ;

10. Integration of climate and disaster resilience as an integral part of the transport policy, planning and transport infrastructure and services.

# ASIAN EST INITIATIVE

**E**nvironmentally
**S**ustainable
**T**ransport

UNCRD

Ministry of the Environment Japan

**Aichi Statement**
(defining core EST areas)

**Kyoto Declaration**
(endorsed first by 22, now 47 Asian Mayors with addendum 2014)

**Seoul Statement**
(climate change)

**Bangkok 2020 Declaration**
(20 goals)

**Colombo Declaration for Next Generation Low-carbon Transport Solutions in Asia**

**Bali Declaration on Vision Three Zeros (Zero Congestion, Zero Pollution, Zero Accidents)**

**Vientiane Decleration on Sustainable Rural Transport  (2017)**

| EST 1 2005 | EST 2 2006 | Mayors 2007 | EST 3 2008 | EST 4 2009 | EST 5 2010 | EST 6 2011 | EST 7 2013 | EST 8 2014 | EST 9 2015 | EST 10 2017 | SDGs |

**25 EST Member Countries**



**Awareness Raising on Sustainability Transport in Asia**

**Formulation of National EST Strategies (Philippines, Viet Nam, Cambodia, Lao PDR, Indonesia, Nepal)**

**Development Banks start shifting funding to Sustainable Transport**

**Avoid trips**

**Shift to most efficient mode**

**Improve efficiency**

**Promotion of Green Freigh in Asia/Green Freight Agreement in Asia**

**Greater   focus on sustainable transport, low carbon solutions for livable society in Asia in line with Rio+20 outcome – *The Future We Want*, SG's Climate Summit (2014), Post-2015 Development Goals/SDGs.**