Role of EST and Sustainable Urban Design for Achieving the SDG 11

11th Regional EST Forum in Asia

2-5 October 2018, Ulaanbaatar, Mongolia

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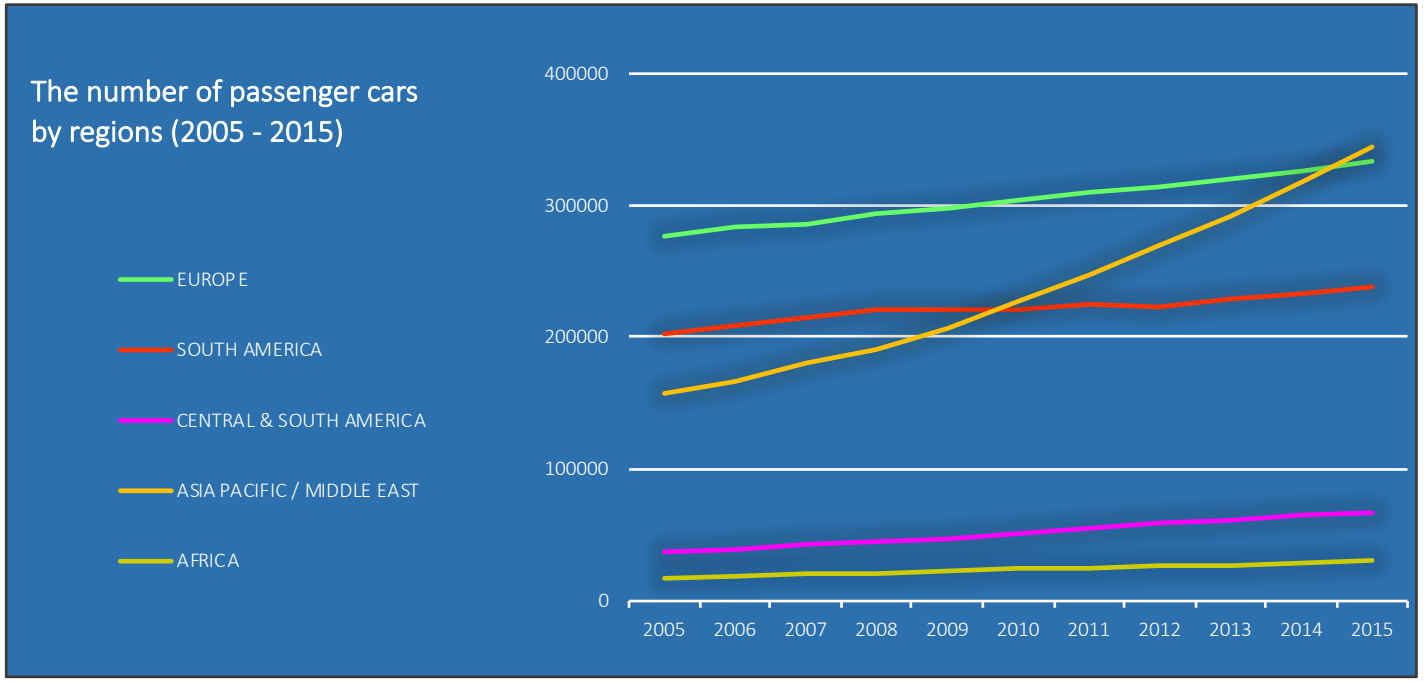
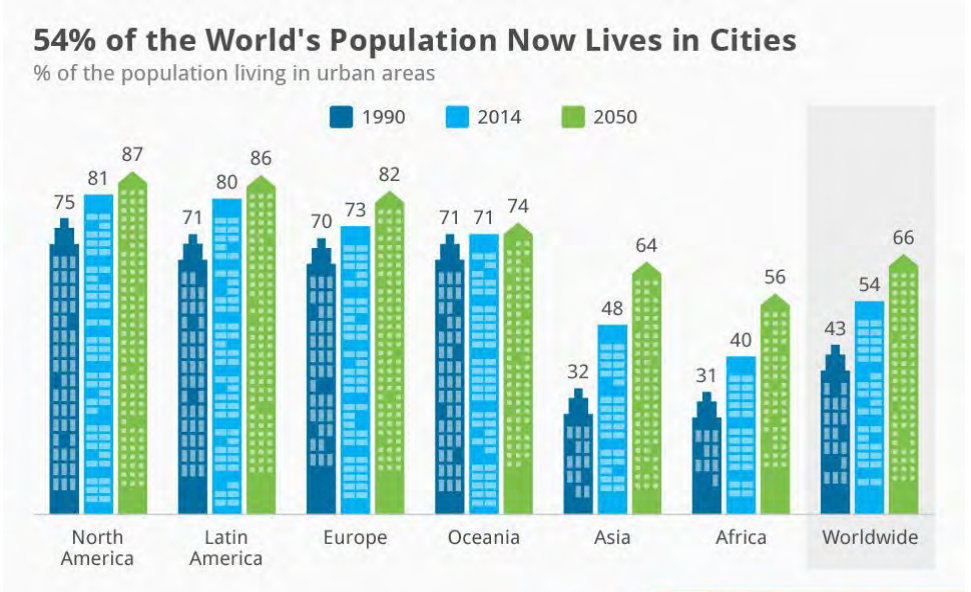
Urbanization and Motorization in Asian Cities

URBAN GROWTH: In Asia, the speed of urban growth is much faster than that of other countries. While London took 130 years to grow from 1 million to 8 million, Bangkok takes 45 years, Dhaka 37 years, and Seoul only takes 25 years (Giraud & Lefevre, 2006; Bouquet, 2010).

City has emerged as the most important factor in global sustainability as *3.5 billion people, more then half of the world's population, live in cities* (UN DESA, 2018)





Asia has increased the number of automobiles by 219% over the past decade, while the global average has increased by 145% (OICA , 2015).

Fig. Vehicle in use by regions [Source: International Organization of Motor Vehicle Manufactures (2015)]

What kind of cities are we building?

Threatened pedestrians in Dhaka, Bangladesh

Air pollution in Kathmandu, Nepal

Pedestrian Environment in Jakarta, Indonesia

Traffic congestion in Lahore, Pakistan

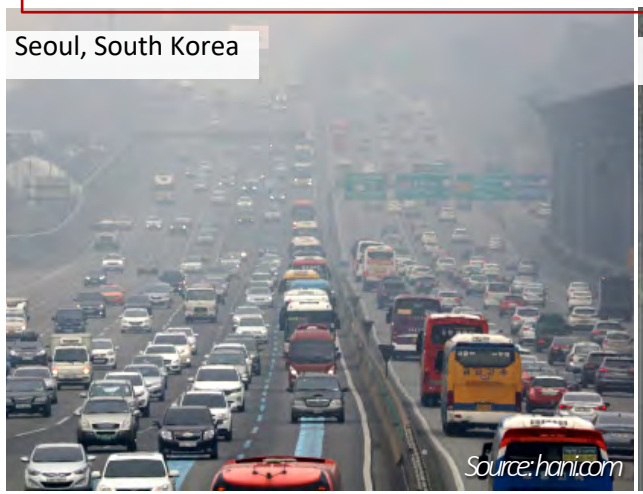
Air pollution in PR China

Road accidents in India

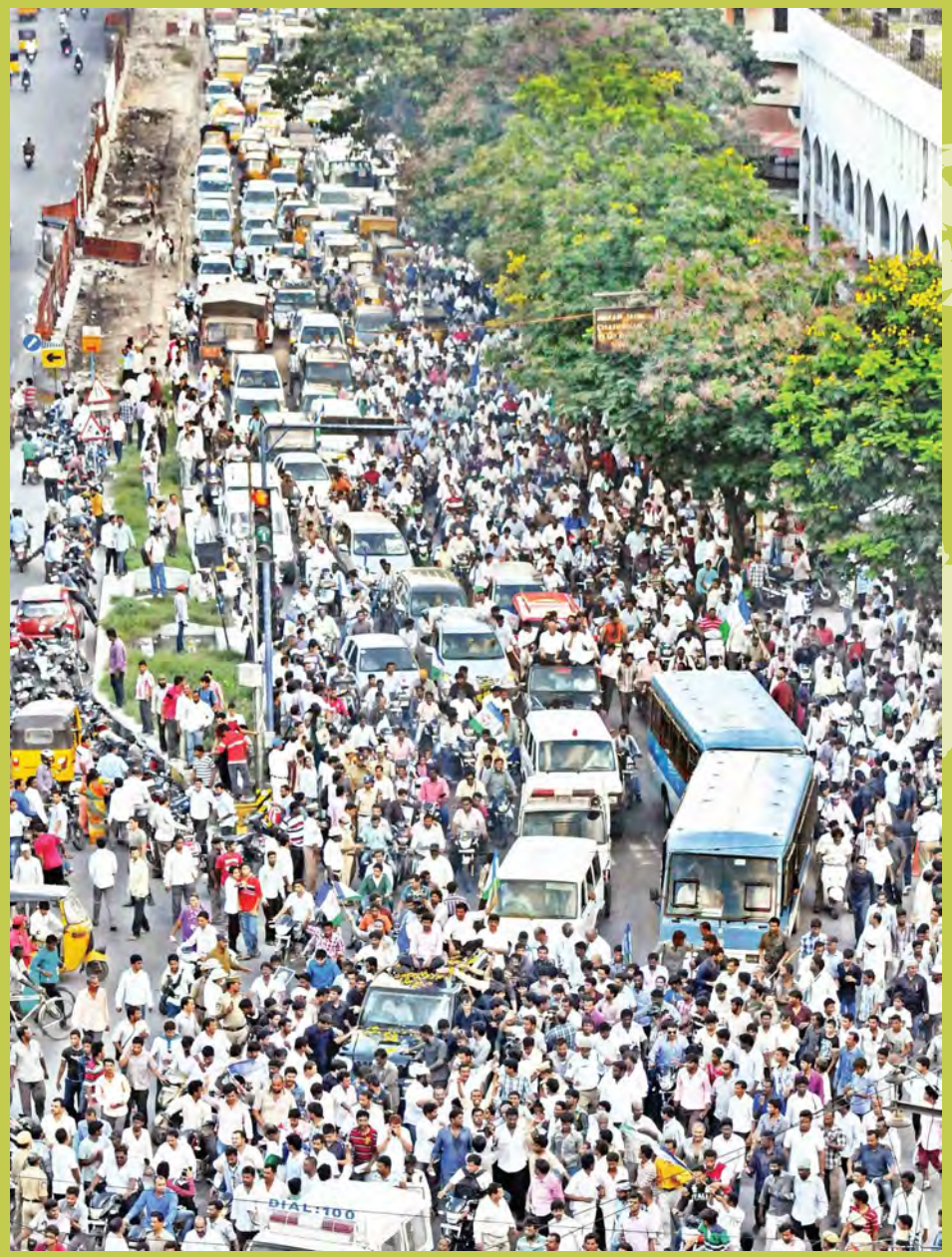
Asia has the highest rate of all day traffic congestion, traffic accidents and fatalities and carbon emission (WHO, 2015).

Why they look like the same?

As many cities are struggling with chronic congestion and toxic air pollution, yet private car ownership is projected to increase by up to 500% outside the OECD by 2050 (New Climate Economy Report, 2018). Estimate show that low carbon sustainable transport solutions can deliver savings of US$70 trillion by 2050 (UIC, 2017).



IMPACTS OF UNSUSTAINABLE TRANSPORT AND URBAN DESIGN



India, Delhi

Congestion
Time lost in congestion affects overall productivity

Energy security
Dependence on petrol-based mobility affects national security

Natural habitats
Roadways disrupt habitats and open areas to exploitation

Waste disposal
The disposal of vehicles and vehicle parts contribute to landfill problems

Photo: quora.com

IMPACTS OF UNSUSTAINABLE TRANSPORT AND URBAN DESIGN

Mongolia, Ulaanbaatar

Air quality
Vehicle emissions harm human health and the natural environment

Noise and vibration
Noise affects productivity and health

Road Accidents
Each year millions people lost their life due to traffic accidents

Global climate change
Vehicles are responsible for roughly 25% of fossil-based CO2 emissions

Photo: english.vietnamnet.vn

IMPACTS OF UNSUSTAINABLE TRANSPORT AND URBAN DESIGN

Vietnam, Hanoi

Economic efficiency
Financial capital consumed by car expenses reduces capital for other investments

Severance
Roadways sever communities and inhibit social interactions

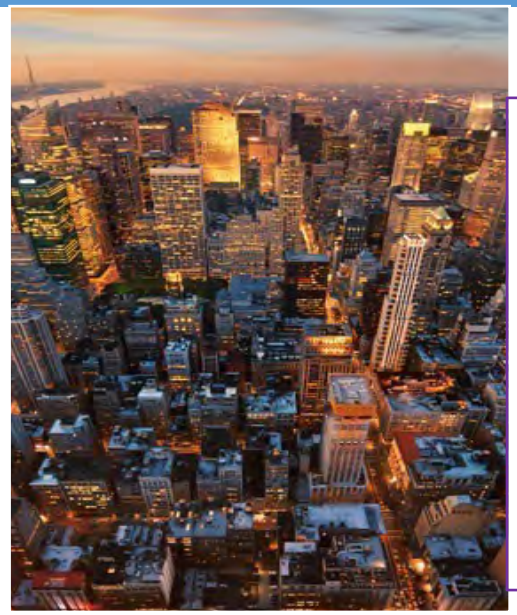
Visual intrusion
Cars, roads, and parking areas all detract from a city's beauty

Loss of living space
Roads and parking consume large amounts of urban space

Photo: english.vietnamnet.vn

How We Shape Our Cities?

Determine Our Future……



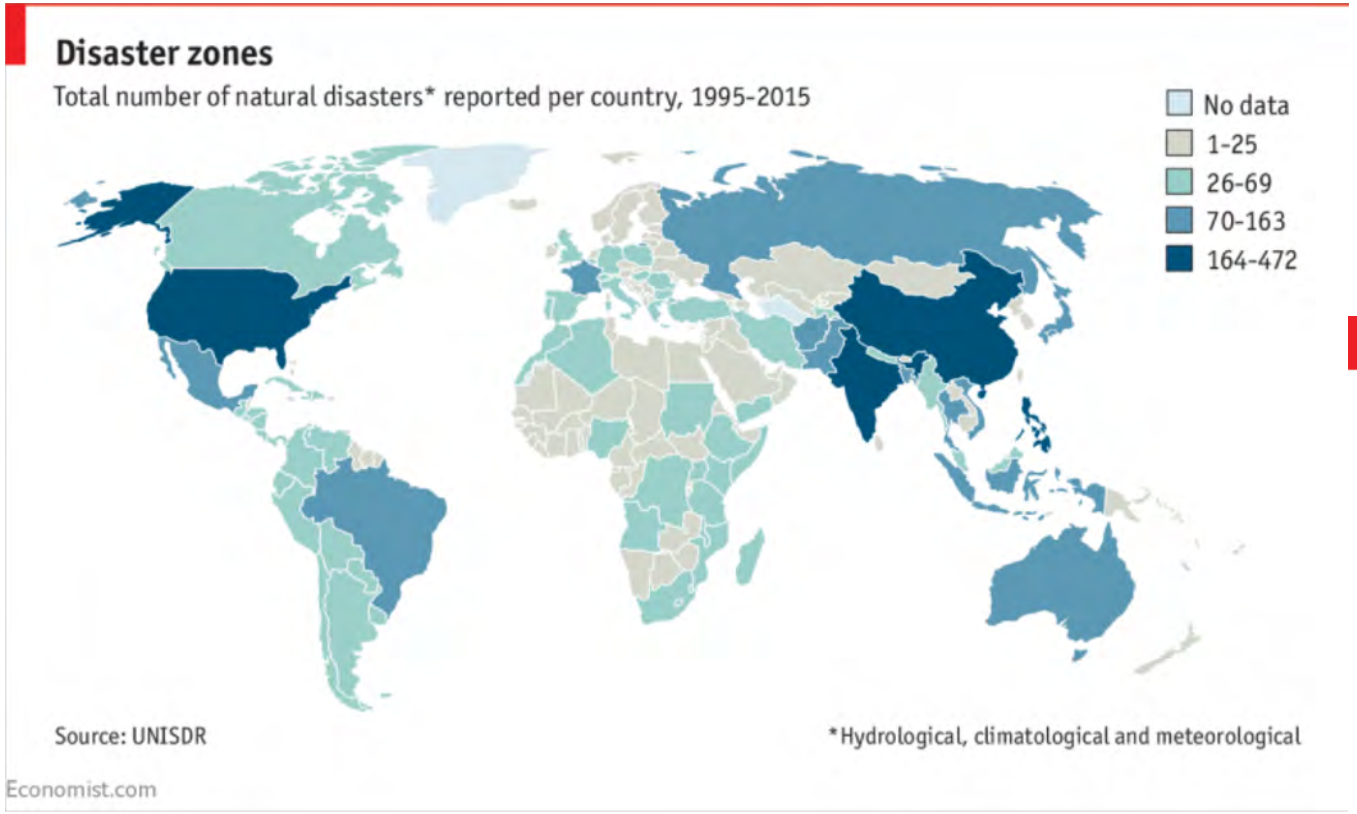
- **By 2050, the urban population is expected to reach 6.5 billion.**
- **In the coming decades, 95% of urban expansion will take place in the developing countries**
- **Building cities for 3 billion people is a big challenge and if we do not think the proper solutions and better options sustainable development cannot be achieved.**

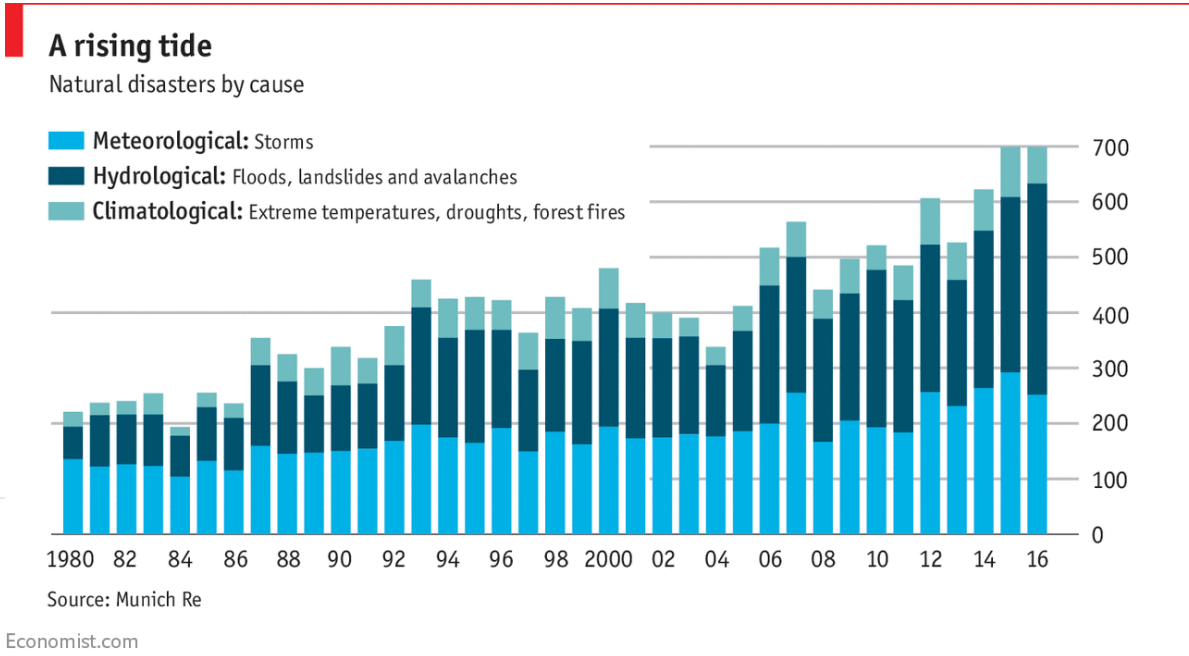
Significant transformation is required on ***how city designed, how they functioned, how they managed and how we live in these cities that all determine our future survival.***

"Our struggle for global sustainability will be won or lost in cities"

Bank Ki-Moon, Former UN Secretary-General

Climate Change and Natural Disasters





- Climate induced disaster were responsible for thousands of deaths and billions in losses every year. For example in 2017 only US$320 billion losses occlude due to weather and climate related disasters
- Climate change will lead to more frequent and more extreme events -floods, droughts, and heat waves

What kind of city we want?

Majority of trips in Asian cities are done by walking & cycling

Thamel Market, Kathmandu (Source: www.flickr.com/photos)

Bangladesh, Dhaka
Source: www.dhakatribune.com/bangladesh/dhaka/2018

More compact, connected, and coordinated cities are worth up to US$17 trillion in economic savings to 2050, and P.R. China alone could reduce infrastructure spending up to US$1.4 trillion by pursuing more compact, connected urban growth (New Climate Economy Report, 2018).

urbanizehub.com

metropolismag.org – best cities to live

svenworld.com – freiburg city of the future

URBAN DESIGN INVOLVES

BUILDING

- Buildings are **the most pronounced elements** of urban design - they shape and articulate space by forming the street walls of the city. Well designed buildings and groups of buildings work together to create a sense of place.

PUBLIC SPACE

- Great public spaces are the living room of the city - the place where people come together to enjoy the city and each other. Public spaces make high quality life in the city possible - they form the stage and backdrop to the drama of life.

STREETS

- Streets are the connections between spaces and places, as well as being spaces themselves. They are defined by their physical dimension and character as well as the size, scale, and character of the buildings that line them.

TRANSPORT

- Transport systems connect the parts of cities and help shape them, and enable movement throughout the city. They include road, rail, bicycle, and pedestrian networks, and together form the total movement system of a city.

LANDSCAPE

- The landscape is the green part of the city that weaves throughout - in the form of urban parks, street trees, plants, flowers, and water in many forms. The landscape helps define the character and beauty of a city and creates soft, contrasting spaces.

What can we do to make cities more people and environment friendly?

EST and sustainable urban development can offer cost effective way forward that provide high level of mobility, accessibility and connectivity options for the benefit of all

- Safety
- Walkable environment
- Dedicated bicycle lane
- High quality and people friendly infrastructures
- Integrated streets
- Mixed used development
- Smart growth
- A network of efficient and high-quality public transit connected cities.
- Improve the quality of life

Image: Singapore (right) [Source: urbna-animaiton.com, torque.com.sg]

INTEGRATED EST STRATEGY – AICHI STATEMENT (2005)












Avoid-Shift-Improve Principles:

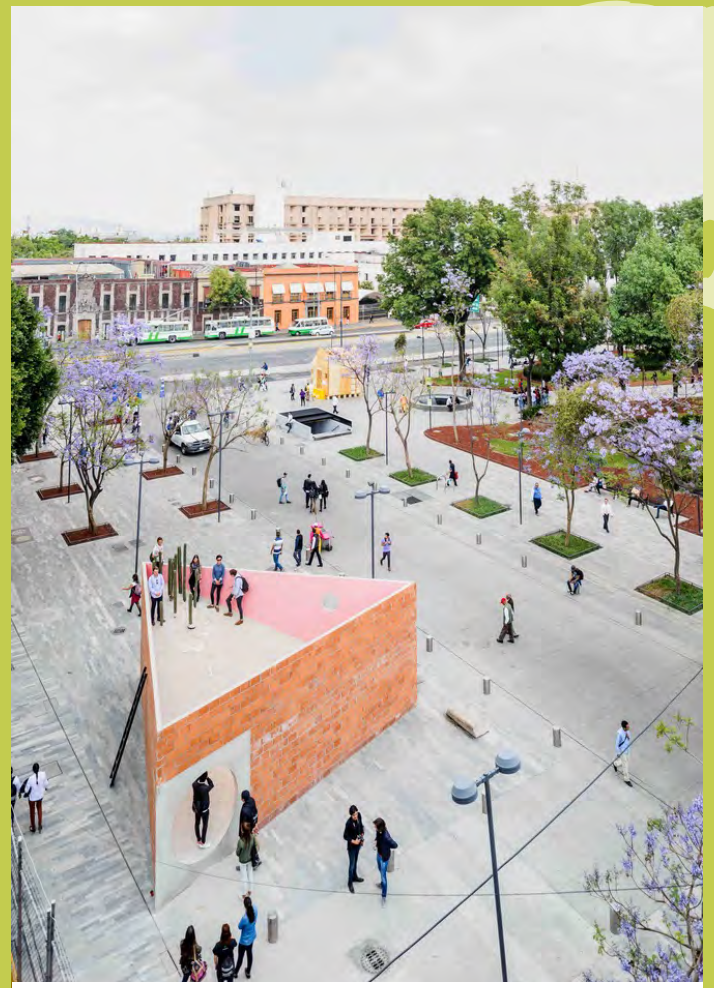
Avoid – avoid or reduce travel or the need to travel

Shift – shift to more environmentally friendly modes

Improve – improve the energy efficiency of transport modes and vehicle technology

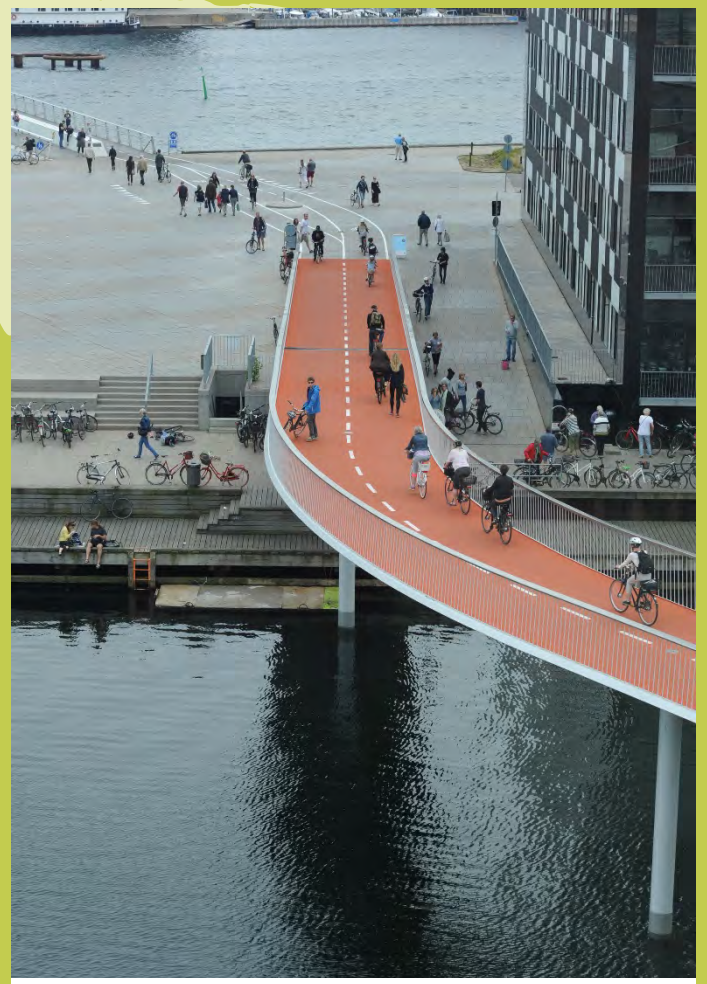
RELATIONSHIP BETWEEN EST AND URBAN DESIGN

- Transportation system and urban design are *directly affect each other*.
- Effective land use and urban design strategies *reduce transportation costs*.
- Transportation modes and accessibility affect *human activities* and urban development.



Urban design for pedestrian

Urban design for bicycle



Urban Design for NMT

Photo: ArchDaily.com

RELATIONSHIP BETWEEN EST AND URBAN DESIGN

Pedestrian friendly street design

Connectivity: An interconnected street grid that dispersed traffic and enhance walking

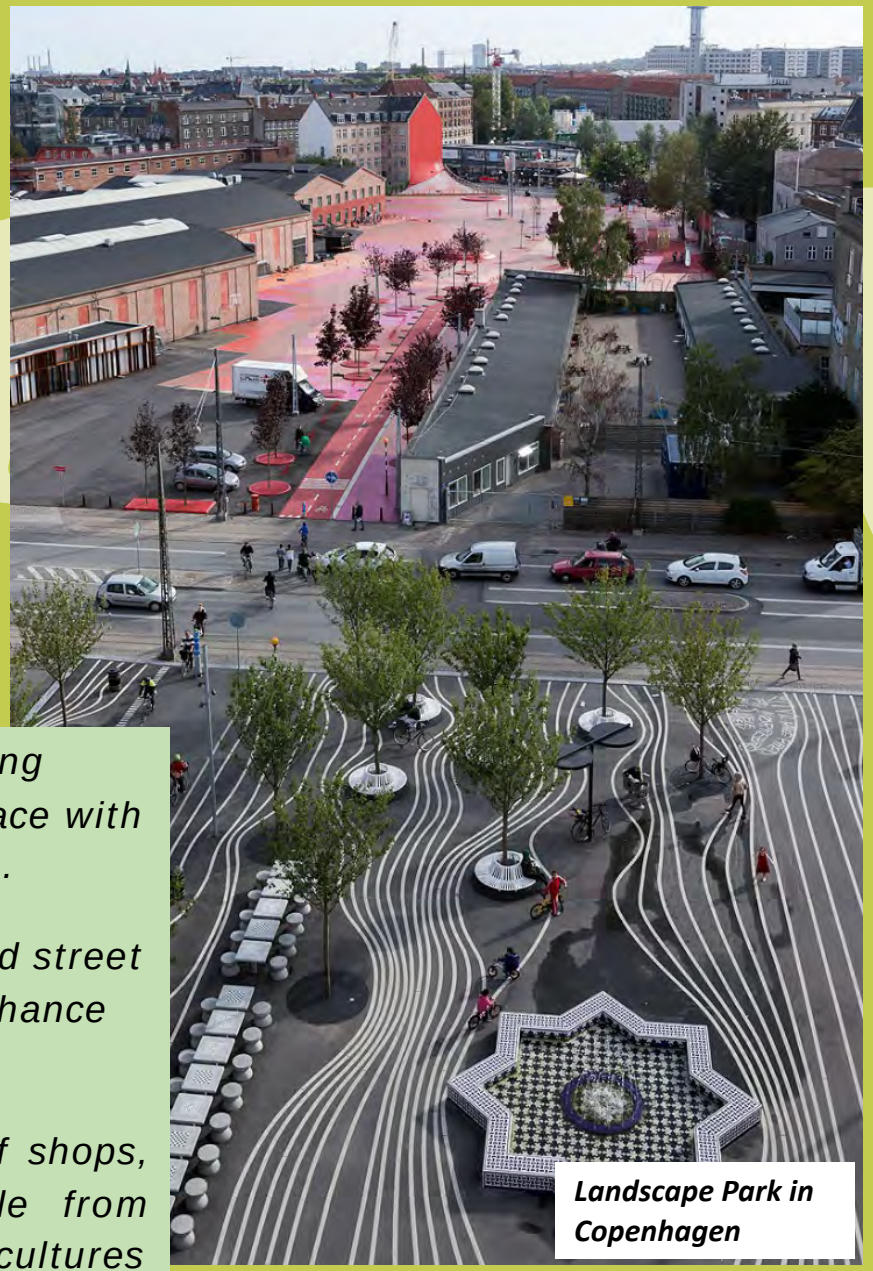
Urban design can ***reduce the car-dependent transport system*** by creating a walkable urban environment.

Urban design can also ***enhance accessibility*** *to public transportation and reduce travel costs.*

Photo: ArchDaily.com, rentacarvietnam.com

RELATIONSHIP BETWEEN EST AND URBAN DESIGN CON….

Project for an Elevated Park in Chapultepec, Mexico



Landscape Park in Copenhagen

Garden in Sicily, Italy.

- ✓ *Walkability: A 10-minute walking distance from home and workplace with pedestrian friendly street design.*
- ✓ *Connectivity: An interconnected street grid that dispersed traffic and enhance walking*
- ✓ *Mixed-use & Diversity: Mix of shops, offices and homes with people from different age, income levels and cultures*

Photo: ArchDaily.com

RELATIONSHIP BETWEEN EST AND URBAN DESIGN CON…

River and Public park, Seoul, Korea

Landscape Collaboration, Thailand

- *Mixed housing:* A wide range of housing types, prices and size with closer proximity

- Quality architecture & beautification of the city: Beautiful and human-scale buildings with attractive and beautiful public open and green spaces.

- *Increased density*: Buildings, shops and services closer together to make walking more comfortable

Photo: ArchDaily.com, inhabitat.com

Urban Design for Public Transportation

Porttram (Light rail), Toyama

Source: foreign.info-toyama.com

By giving priority to public transportation rather than automobiles, urban design can increase public transportation usage.

BRT, LRT and high speed railways provide high quality public transport services for all

Image : BRT station in Ghangzohu (China) (source:ythat.dk)

The most representative example is BRT (Bus Rapid Transit) lane, which provide buses priority lanes and signals so that they move more efficiently and smoothly.

Urban Design for Pedestrian

Case of Yonsei-ro Road : Yonsei-ro which was a congested road in Seoul has transformed into transit malls-street in which personal mobility traffic is prohibited. After the opening of the transit mall, traffic congestion was substantially reduced which allowed lots of public events to be held on the street. As a result, the traffic accidents were reduced by 34%, *the bus commuters were increased by 11.1%, and the* visitor's satisfaction rose to 70% from 14% from previous year and the business revenues near the streets went up by 10.6% (The Seoul Institute, 2017)

Image . Yonsei-ro (Seoul) before pedestrianisation (source: news.joins.com)

Design for pedestrian

We have start to build cities for people……not for car……

Compact and people-oriented urban design reduces the need for cars and fosters pedestrian activities.

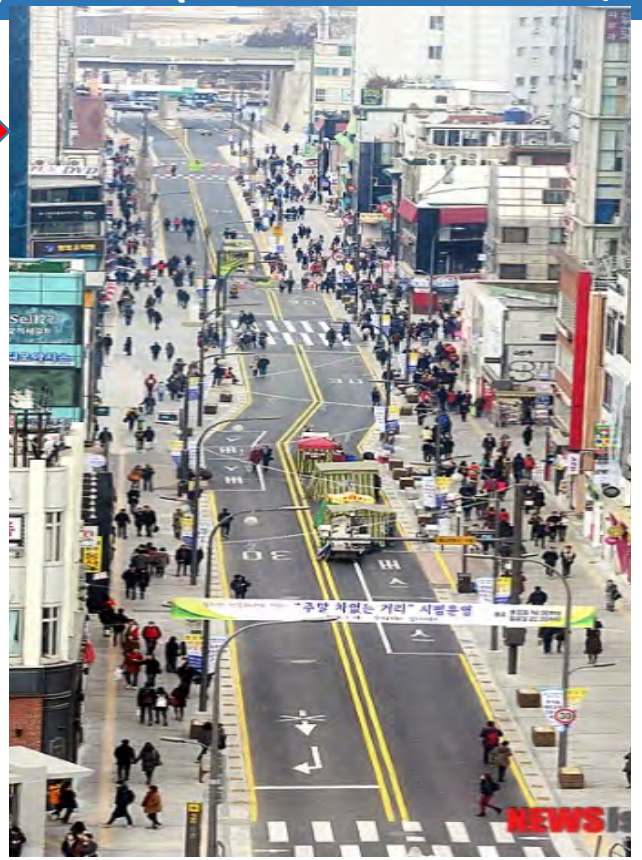


Image Yonsei-ro (Seoul)I after pedestrianisation (source:news.joins.com)

Urban Design for non-motorized transport (NMT)

Case 2: Chennai city India prioritizes pedestrians facility

Chennai plans to increase the share of pedestrians and cyclists on its roads by 40% in 2018, and construct footpaths along 80% of its roads to encourage travelling on foot. The city dedicated 60% of its transport budget on non-motorised transport.

Appropriate and safe urban design for NMT must be followed in order to increase NMT use and improve its safety.

Source: https://www.thebetterindia.com/127110/pedestrian-friendly-india-safe/

Non-Motorized Transport (Public Bike Sharing Systems)

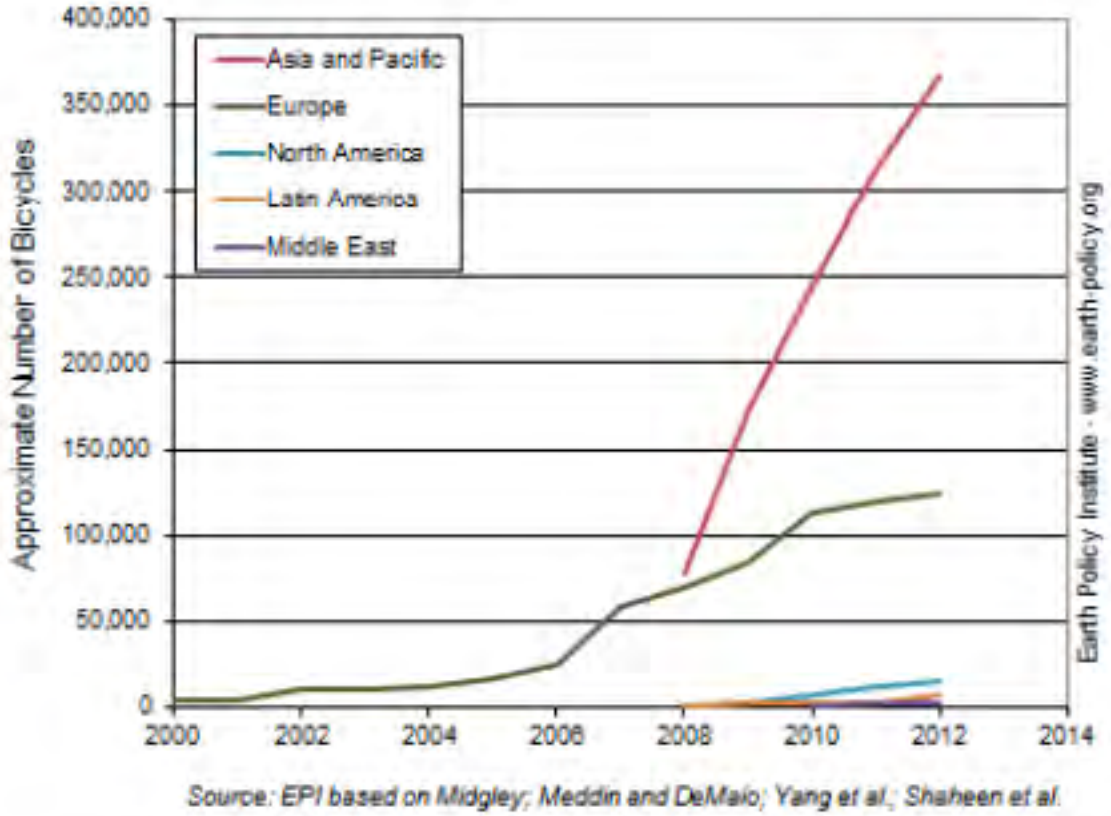


Figure 1. Number of PBSPs by Region (adopted from Larsen 2013)

Soruce : Public Bicycle Sharing in Asian Cities (Babiano, 2015)

Minato, Tokyo

Tel-O-fun, Tel Aviv

Mobike, Beijing

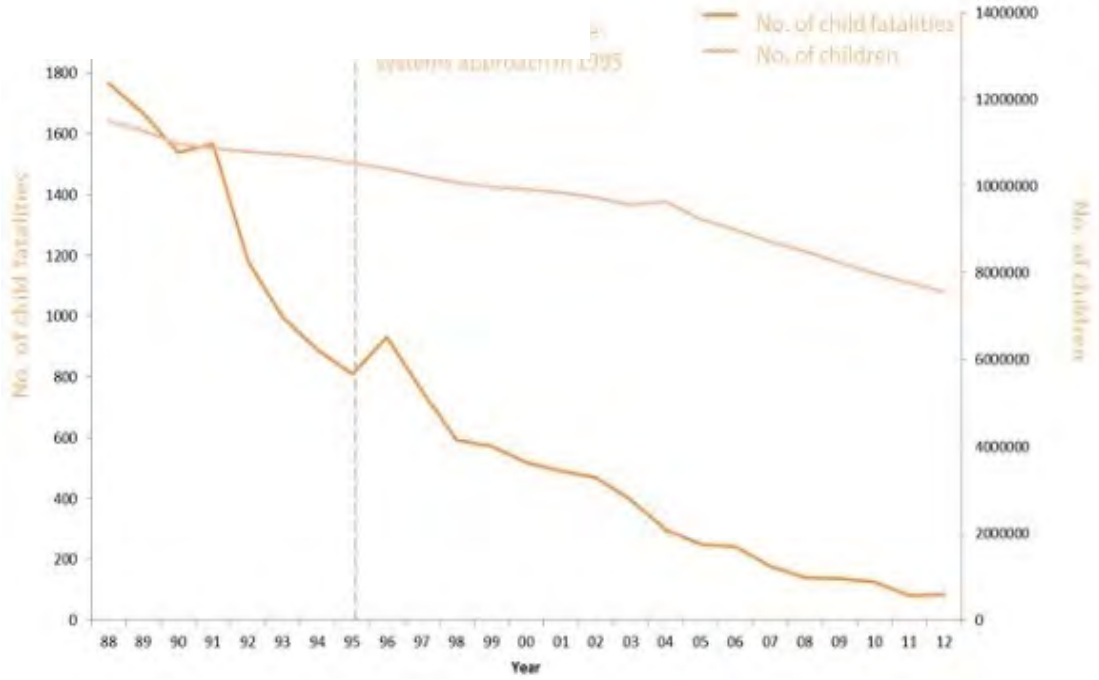
Ddareung-I, Seoul

Asia is the fastest growing market for bikesharing activity

Urban Design for Road Safety

Safe and sound design provide better option for walking and bicycling

Image 14 The number of child fatalities in Korea (88-12) (KOTI)



Korea has put lots of efforts to reduce traffic accidents involving children. Various policy measure has implemented, including school zones, ensure the safe operation of school buses, and initiate road safety education for children, foster civic groups specializing in road safety. With these efforts, the number of children killed in road traffic accidents in Korea went down by more than 95% from the peak of 1,766 in 1988 to 83 in 2012 (*KOTI Knowledge Sharing Report ISSUE 15, 2014).*

Transit Oriented Development (TOD) and Smart Growth

Sha Tin town centre in Hong Kong
built around the Sha Tin railway station

Singapore, LRT system developed around purpose-built communities in which residential shopping, public services ar co-located

Oyumiino in Japn, smart growth community that interconnects areas with a large network of NMT routes

Transit Oriented Development is a key for sustainability. This creates low carbon lifestyles by enabling people to live and work without depending on a car for mobility. This type of lifestyle can reduce energy consumption and driving by up to 85% (Transit Oriented Development Institute).

KEY ELEMENTS AND GUIDING PRINCIPLES FOR SAFE URBAN DESIGN

Safe and appropriate people friendly design reduce the need of automobile and make people get out on the streets, and people shift their means of transportation from cars to public transportation and Non-motorized transport means- cycling and walking

The most widely used principles that can promote traffic safety are

- ✓ *Short block size: Longer street block allow higher vehicle speeds. For walkability and pedestrian safety, shorter block length which is about 75 to 150 meters are desirable.*
- ✓ *Highly connected street: A highly connected street networks allow more direct travel between destinations and create more accessibility (VTPI, 2012). Create multiple links for pedestrians and cyclist through an interconnected street network is desirable.*
- ✓ *Wide street widths: The width of space for vehicle on streets greatly influences pedestrian's walkability. Minimizing vehicle lane and prioritize pedestrians can greatly enhance road safety.*
- ✓ *Easy access to key destinations: Key destinations such as residential areas, schools and shopping areas should be located within walking distance. And safe pedestrian and bicycle routes should be complemented near these destinations.* (Source: OECD/ITF, 2012; WRI, 2015)

PRINCIPLES OF UNIVERSAL DESIGN

- ✓Equitable use: The design should be useful and appealing with diverse abilities. And provide the same means of use for all different users.
- ✓Flexibility in use: The design should accommodates the widest range of individual preference and abilities
- ✓Simple and intuitive use: Use of design should be simple and easy to understand, regardless of the people's experience and knowledge.
- ✓Perceptible information: Necessary information must be effectively delivered to all people, regardless of ambient conditions or the user's sensory abilities.

✓Tolerance for error: The design should minimizes hazards and the adverse consequences of unintended actions.

✓Low physical effort: The design should be used comfortably and efficiently with minimum effort and fatigue.

✓Size and space for approach and use: Appropriate size and space should be provided that everyone can use regardless of user's body size, posture and characteristics.

Benefit of Sustainable Urban Design and EST

Economic	Environment	Social
- Traffic and parking congestion reductions - Infrastructure savings - Increased economic productivity - Reduced crash costs - Reduced trade deficits	- Reduced air, noise and water pollution - Open Space (farm and wildlife habitat) preservation - Improved livability (local environmental quality)	- Basic mobility for non-drivers - Increased affordability and economic opportunity - Improved public fitness and health

EST AND URBAN DESIGN TOWARDS SDG11

EST

- *To plan and implement policy on transport and environment based on a long-term perspective.*

Urban design

- *Making connections between people and places, movement and urban form, nature and the built fabric.*

SDG11

- *Sustainable Cities and Communities "Make cities and human settlements inclusive, safe, resilient, and sustainable."*

The coming 15 years are important to make cities and human settlements inclusive, safe, resilient, and sustainable

SUSTAINABLE DEVOLOPMENT GOAL 11

Goal 11: Sustainable Cities and Communities

"Make cities and human settlements inclusive, safe, resilient, and sustainable."

SUSTAINABLE DEVOLOPMENT GOAL 11: TARGETS

By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

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

By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

Strengthen efforts to protect and safeguard the world's cultural and natural heritage

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

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

Source : www.sustainablekc.org

Singapore
Photo: Zoh Hyun-Min