

Regional EST Policy Dialogue and Training Workshop Building Resilient and Sustainable Cities through EST Solutions and Measures ~ Realizing the 2030 Agenda for Sustainable Development

Asian Environmentally Sustainable Transport (EST) Initiative



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United Nations Centre for Regional Development



Environmentally
Sustainable
Transport

ASIAN EST INITIATIVE



Aichi Statement
(defining core EST areas)

Kyoto Declaration
(endorsed first by 22, now 63 Asian Cities/Mayors with addendum 2017)

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 Declaration on Sustainable Rural Transport (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

Promotion of Green Freight 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.

- Avoid trips**
- Shift to most efficient mode**
- Improve efficiency**

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

Integration of Transport and Land Use Planning for inclusive development

Economic benefits	Smart growth polices	Transit-oriented development
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	✓	✓



Oyumino (Chiba, Japan) is a smart growth community that interconnects residential and commercial areas with a large network of NMT routes. Photo: Lloyd Wright



Singapore's LRT System developed around purpose-built-communities in which residential, shopping, education, public services and workplaces are all co-located. Photo: Lloyd Wright

Smart growth refers to a set of policies that promote more accessible land-use policies. Smart Growth policies include the mixed-use development patterns that allow the close proximity of residential areas to shopping, work and services. **TOD** refers to integrating development and public transport along high density corridors and at key nodal points brings benefits to all. Such planning focuses largest number of destinations (work, residential, public services, schools near public transport stations, and thus encouraging both NMT as well as public transport usage.

TOD & Smart Growth supports inclusive development through efficient integration of land use planning, public transport, cycling and walking..



Photo by JKT-c, Wikipedia Commons
Nagoya Station in Japan, one of the world's largest train station by floor area (446,000 m²) and highest station building (245m)



Curitiba, Brazil has long provided a global model for successful integration of transportation and land use planning, with a focus on environmental preservation



Photo: Lloyd Wright
Oyumino (Chiba, Japan) is a smart growth community that interconnects residential and commercial areas with a large network of NMT routes



Photo: Llc
Singapore's LRT System developed around purpose-built-communities in which residential, shopping, education, public services and workplaces are all co-located.

- ✓ *More compact form of urban development reduces travel requirements - a critical component in building sustainable and inclusive cities*
- ✓ *ToD, supported by zoning and planning regulations, aims to locate people, jobs and services in areas within walking distance of public transportation*

NMT remains a peripheral issue though it is an integral part of inclusive transport policy, planning and development

...

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, joggers and families. Photo by Lloyd Wright.



Bicycle rental facility in Seoul, Photo: Lloyd Wright



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

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	√			√

Transport Demand Management (TDM) for Inclusive Development

Economic benefits	Vehicle use restrictions	Fuel taxes	Parking levies
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			

TDM generally refers to policies and measures:

- to reduce the total volume of traffic
- to promote effective shifts towards more sustainable modes of transport.



(City of Seoul)

Traffic congestion adds significant burden and costs to the society and individuals through longer travel duration, increased pollution level, fuel consumption and GHG emissions, and degraded urban amenity which ultimately affects the users of public transport, cycling and walking;

Social Equity & Gender Considerations

- women often carry out frequent and short trips during off-peak hours and off the main-routes for child care, household management activities, informal sector employment, etc.
- social safety and security of public transport for women given that women commuters are on rise due to increased women work force in many business and commercial sectors.
- trip making is deterred for the poor, particularly for women, children, and the elderly, due to their vulnerability as pedestrians to traffic accidents and to personal violence.
- for the physically impaired and the elderly, proper public transport accessibility is a critical consideration to prevent higher risk of social exclusion .





<http://www.gtkp.com/themepage.php&themepgid=162>



Poverty Eradication in Viet Nam: Rural access improved significantly from an average of 76% to 84 % at the provincial level during 2002 to 2004 and the poverty also dropped with an average 24% in the same period (Regmi, 2013).

Access to Education in India: Data analysis of Indian PMGSY rural road project show school attendance increased by 22% as a result of the new village access roads (Mukherjee, 2012).

Women empowerment in Pakistan: Improved mobility options and access to transport provide numerous opportunities for women which help to improve their education, health care and livelihood. Photograph shows women actively participating in a rally in Pakistan.

Accessibility and rural-urban connectivity brings numerous benefit to different segments of society mainly disadvantaged groups such as poor, elderly, physically disables, children, women and girls, youth and farmers.



Photos courtesy of GMB Akash/Save the Children



Access to Health in Bangladesh: In the last decade, due to rural-urban connectivity, health facility for deliveries increased rapidly from 12% to 37% in rural communities, reducing both maternal and infant mortality incidences .

Cambodian Case: Rural-urban connectivity significantly helps Cambodian farmers for selling their vegetables using bicycles and tricycles.

Access to drinking water: India has the maximum number of people — 63 million — living in rural areas without access to clean water, according to a new global report released on World Water Day (Source: Indian express, 21 March 2017).

Long way to go in bridging the accessibility gaps in rural areas.....

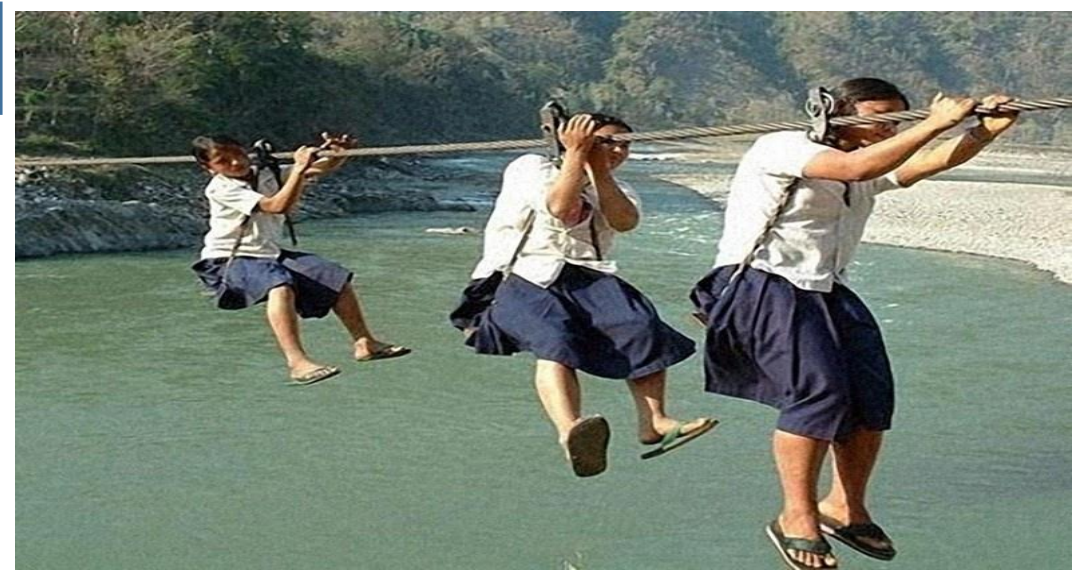
Many rural areas in developing countries lack adequate rural-urban connectivity. This poor connectivity constrains inclusive and sustainable development.



Lack of accessibility (India Case): The pregnant woman was carried by the men across the Nagabali river with waist deep water and all the way for five kilometres on the potholed road. (Source: <http://odishatv.in>; published in Jul 11, 2017)



Lack of infrastructure (Indonesia Case): In Batu Busuk Village, Indonesia, students have to walk over 30 feet above river to reach their school. If they don't use this method of going school then they have to walk 7 miles through forest root. (Source: <http://www.listotop.com>)



Lack of connectivity (Nepal case): Students are using ropes and pulleys (Gondola bridges) to pass the river without any safety. There are so many accidents appeared but there is no other option to reach school (Source: <http://www.listotop.com>).



Image Source: descansitoviral

China case: Students live in boarding school in Pili, China. To reach their school they have to pass in dangerous mountain area (Source: <http://www.listotop.com/top-10-most-dangerous-school-routes-around-the-world/>).

9th Regional EST Forum in Asia (Nepal Forum)

Theme: EST For Resiliency- Building Safe, Smart, Low-carbon and Resilient Transport

- Nepal Forum was held on 17-20 November 2015 in Kathmandu, Nepal
- **The Forum was hosted by the Government of Nepal and co-organized by the MOE-Japan, UN ESCAP & UNCRD. The Forum was officially inaugurated by Prime Minister of Nepal and Chaired by Deputy Prime Minister of Nepal**
- Over 350 participants from more than 40 countries attended the Forum
- **The Nepal EST Forum provided an opportune time to generate an Asia-wide regional consensus on-**
 - *how Asia's transportation sector can better integrate resilience in transport policy, planning, budgeting, as well as infrastructure development?*
 - *how the Asian countries can build their cities and towns in a manner that is more safe, resilient, liveable and sustainable?*



Why should EST matter for resilience?

1) Significant population growth

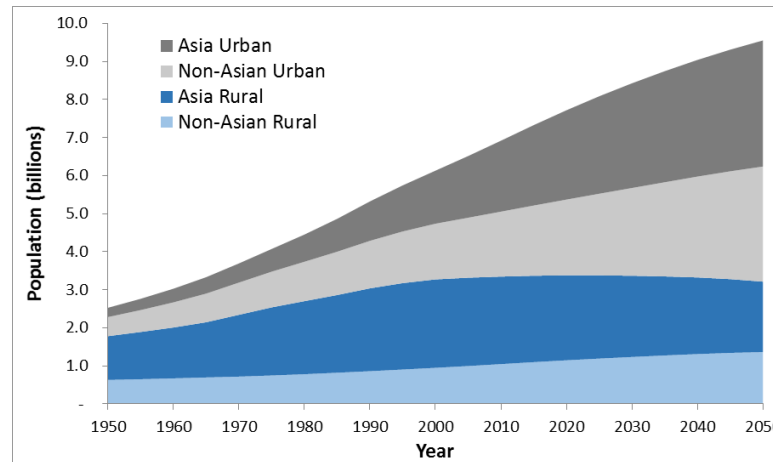
- ✓ According to ADB, every year, around 44 million people are being added to the population of Asian cities and towns

2) Rapid Urbanization

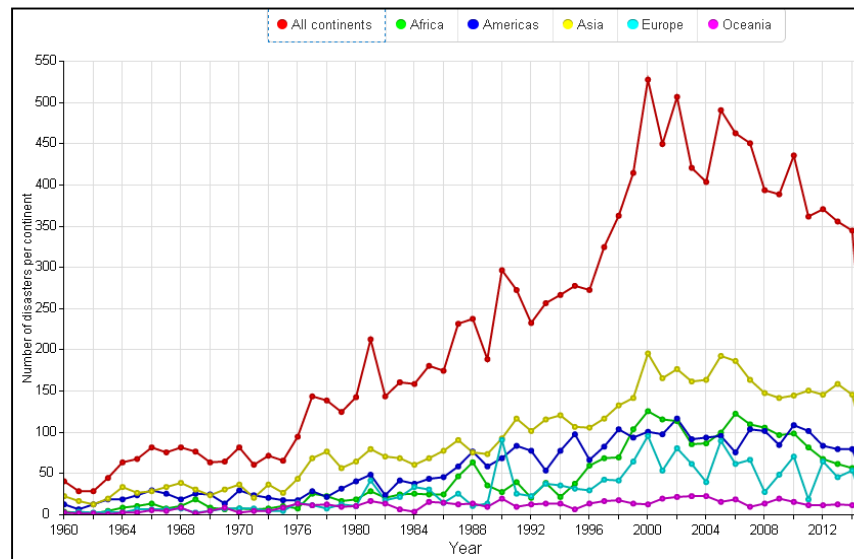
- ✓ Asia is one of the fastest urbanizing regions in the world. More than two third of the world's megacities are in Asia. Out of ten top mega cities 8 will be in Asia by 2030
- ✓ large stress on transport and mobility in urban areas
- ✓ Vehicle fleets across Asian cities are doubling every 5 to 7 years
- ✓ Energy demand is increasing by 2.7% annually

2) Natural Disasters

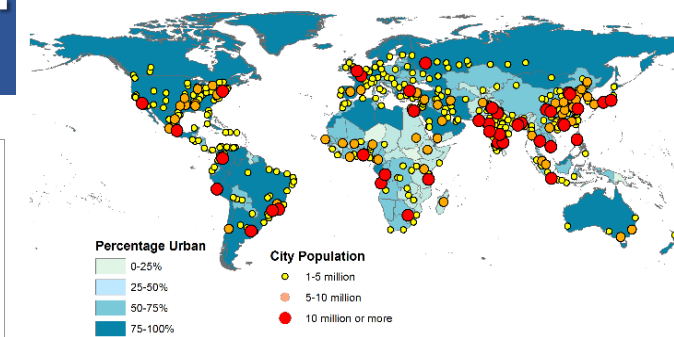
- ✓ Asia and the Pacific is one of the most prone regions to natural disasters and climate change impact
- ✓ The magnitude and the frequency of the Natural disasters in Asia are increasing significantly



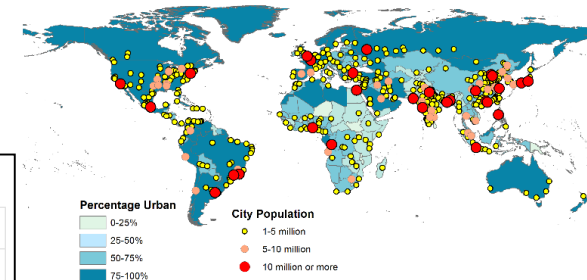
Source: Urbanization in Developing Countries (UN 2011) (<http://esa.un.org>)



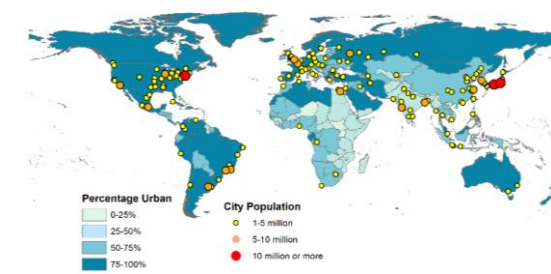
Source: CRED EM-DAT International Disaster Database (2015)



By 2030 No. of Mega Cities - 41
< out of top 10 cities 8 cities are in Asia >



2014 No. of Mega Cities-28 <16 are in Asia>



1970 No. of Mega Cities -3 <2 are in Asia>
Tokyo and Osaka in Japan

Source: UN

Why should EST matter for resilience?

Impact of Natural Disasters in Asia & the Pacific

Asian countries and cities are highly vulnerable to natural disasters

- ❑ The majority of developing countries and cities have NOT made disaster and climate resilience as an integral part of their policy and planning for the development transport infrastructures and services
- ❑ Most of the Asian developing countries and cities lack state-of-the-art early warning systems, strong enforcement of building codes, land-use planning, people-and environment-friendly transport system, and climate and disaster resilient transport infrastructure and services
- ❑ Limited accessibility and transport facility; and
- ❑ Lack of rural-urban connectivity

According to recent reports published by UN ESCAP (2014 & 2015) in Asia and the Pacific region;

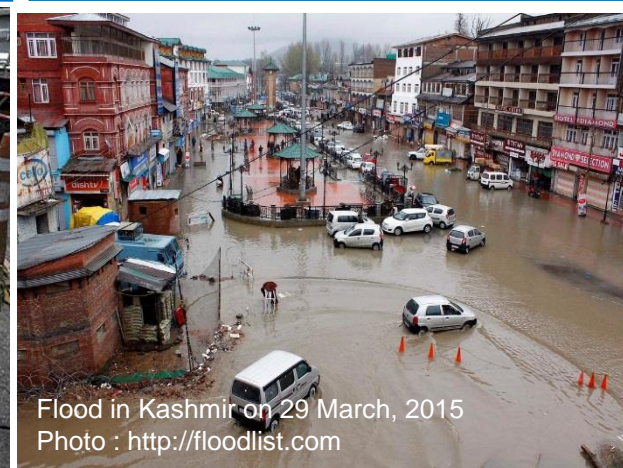
- ❑ From 1970 to 2014 period, **5,139 natural disasters occurred** which is about **43% of the total disasters globally**
- ❑ Approximately **2 million people lost their lives**
- ❑ Around **6 billion people were affected**; and
- ❑ Estimated **US\$1.15 trillion in economic damage**, which is **40.7% of global total**



Earthquake in Nepal April 2015
Photo-AFP



Earthquake in Nepal April 2015
Photo – Hindustan Times



Flood in Kashmir on 29 March, 2015
Photo : <http://floodlist.com>



Landslide in China 25 June 2015
Photo – <http://www.chinadaily.co.cn/china>

Why should EST matter to resilience?

➤ in most cases resilience is not an integral part of the transport policy, planning, and infrastructure and services development resulting in unprecedented damages to both human life and economy during such extreme events;

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



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Nepal Earthquake & it's Impacts

On 25 April 2015 devastating earthquake with a magnitude of **7.9 hit Nepal**

- ❑ **Human loss:** more than **9,100 people killed**, **nearly 25,000 injured**
- ❑ **Property loss:** about **605,254 houses** were completely destroyed and **288,255 houses** were partially destroyed
- ❑ **Cultural loss:** more than **30 monuments collapsed** and **120 partially damage** in Kathmandu & more than **1,000 temples, monasteries and shrines** were impacted
- ❑ **Economic loss:** Estimated economic damage is more than **US\$ 7 billion** (i.e. **one third of the Nepal's entire GDP**)



Source: Government of Nepal, 2015; Nepal Earthquake Event Recap Report 2015

Why should EST matter for Resilience?

3) Traffic congestion: It is estimated that road congestion cost **Asian countries 2-5% of their GDP** annually.

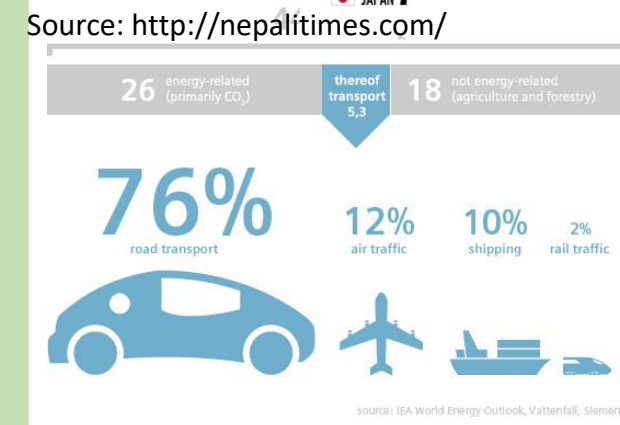
4) Road accidents & fatalities: About **733,000 deaths (59% of global)** occurred in the Asia Pacific roads on 2013. Road accidents **cost Asian countries 1-4% of their GDP** (Global Status Report on Road Safety, 2013). The traffic injuries alone cost estimated **US\$735 billion to EST member countries** which is **3-4% of their GDP** (Wismans et al., 2014).

5) Air pollution: According to WHO the outdoor **air pollution causing 100,000 premature deaths** and associated economic **cost of 81 billion each year** in the region.

6) GHG emissions : Transport being responsible for **a quarter of global GHG emissions and 23% of global CO2 emissions**. Road transport contributes **76% of the CO2 emissions related to transportation**.

7) Climate Change & Global warming: According to a recent study published by ADB and UK Aid, **South Asia could lose about 1.8% of its annual GDP due to climate change impact by 2050**, under the business-as usual scenario

8) Food loss : Studies show that poor rural transport infrastructure and services, distribution networks and lack of cooling facilities result in **post-harvest waste losses of 30- 40% in developing countries**.



Resilient & Sustainable Transport Planning - Benefits

Resilient transport policy, planning, and infrastructure development can help cities in many ways, such as –

- ❑ **enhance cities' ability for efficient and fast rescue, evacuation, relief distribution, and recovery**
- ❑ scale up the capacity of countries and cities for emergency response measures
- ❑ **improve the ability of cities and communities to withstand disaster and adverse effect of climate change**
- ❑ facilitate cities' development pathway for energy efficiency and energy security through low-carbon transport options and measures
- ❑ **improve road safety measures and provisions of people-friendly transport infrastructures**
- ❑ disaster risk reduction and enhance adaptability
- ❑ **long term cost benefits for the governments by reducing future maintenance and reconstruction cost; and**
- ❑ increase in international investment and business opportunities due to high confidence of international investors and business communities



Source: <http://www.theguardian.com/>



Source: <https://www.tes.com>

The Way Forward (1/2)

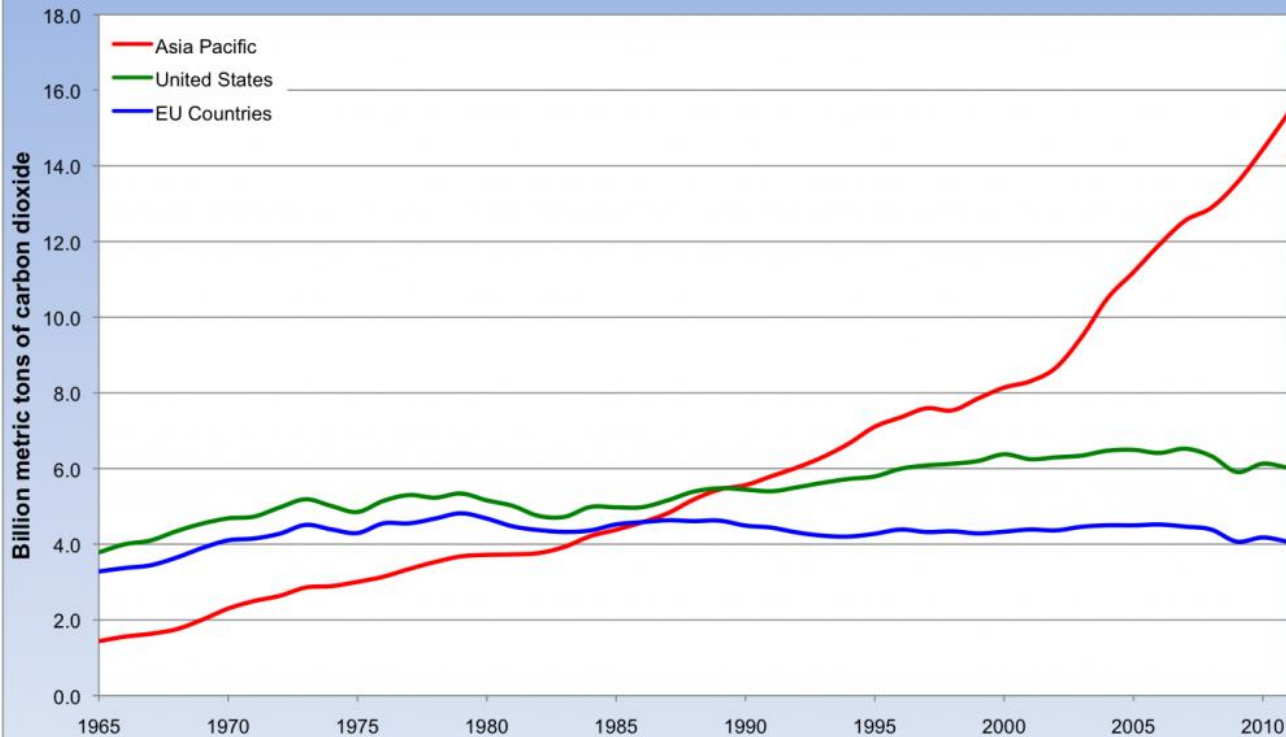
- Given the frequency and magnitude of natural disasters (flood, earthquake, cyclones, landslides, etc.) are on the rise across Asia, the countries and cities need to strengthen their policy, planning, and development to better cope with disaster risks and extreme climate events. They also need to increase their investments in building disaster and climate resilient infrastructures and services.
- This would happen only if the countries and cities can integrate “resilience” as an important strategy and component of their national planning, budgeting and financing of infrastructure and services development in all sectors, including the crucial transport sector.
- Kyoto Declaration for the promotion of EST towards realizing resilient, smart and liveable cities in Asia (63 Asian Cities/Mayors have so far signed in different phases – 2007, 2008, 2010, 2014, 2017)



The Way Forward (2/2)

Asia's transport sector emissions are a significant contributor to the global greenhouse gas (GHG) emissions that leads to climate change and global warming. If present trend persist, by 2035 the transport sector will become **the single largest GHG emitter accounting for 46% of global emission**, and by 2050 that will reach up to 80% (ADB, 2012).

CO₂ Emissions 1965-2011



Data source: 2012 BP Statistical Review of World Energy

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By 2030, the share of Asia in total worldwide transport-sector related CO₂ emissions will increase to 31%.

- 1) *What are the climate implications of Asia's emerging transport trends and development?*
- 2) *What are the long term climatic impacts on Asia's transport infrastructure?*
- 3) *How far Asia's climate and transport policies are integrated for low carbon development and resilience?*
- 4) *Is climate and disaster resilience an integral part of Asia's transport policy, planning and development, including infrastructure development?*
- 5) *How can we build resilient cities in post-2015 development era / in line with the objectives and targets under SDG 11?*