



Need for transformational changes in public bus transit in Asia & the Pacific : key challenges and opportunities in post COVID- era

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Developing cities in Asia and beyond.....look like the same



Mumbai, India



Kabul, Afghanistan



Dhaka, Bangladesh



Jakarta, Indonesia

As many cities are struggling with chronic congestion, toxic air pollution and road accidents, **yet private car ownership is projected to increase by up to 500% outside the OECD by 2050** (New Climate Economy Report, 2018).



Sao Paulo, Brazil



Lagos, Nigeria

Issues with Rural-Urban Connectivity

An estimated **700 million people (40% of the Asia Pacific region)** lack direct access to all-season road (ESCAP, 2015).

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



Estimated **US\$41 trillion is required for transport investments** in developing regions by 2030 (OECD, 2017).



Lack of infrastructure: 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 route. (Source: <http://www.listotop.com>)



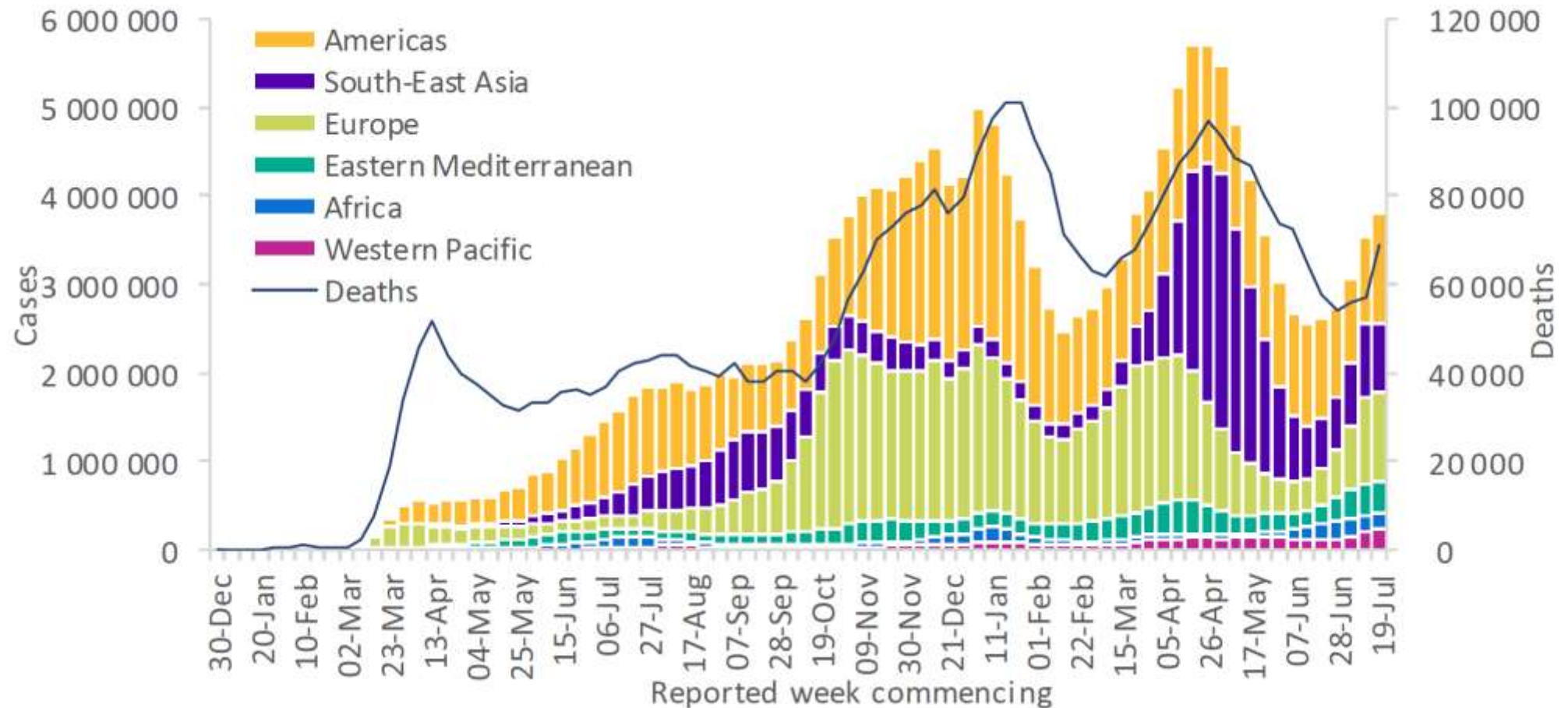
Image Source: descansitoviral

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/>).



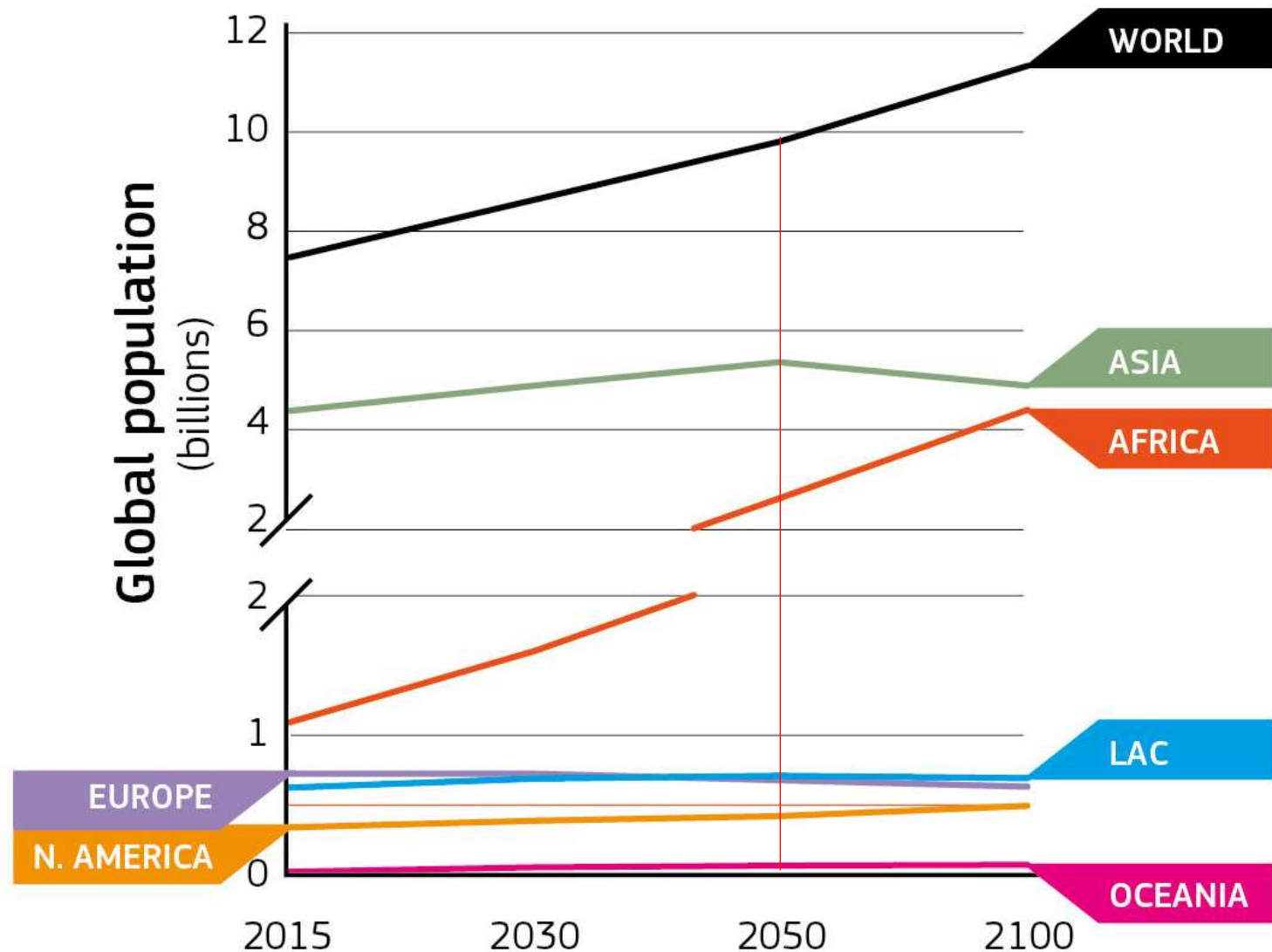
World Mega Trends : COVID-19 pandemic

COVID-19 pandemic impacted almost every aspect of our lives and livelihood -disrupting the very nature of how we live, work, and travel. This is outstanding time in history that have brought a lot of challenges as well as opportunities to not only recover form the pandemic but also transform entire global dynamics.



COVID-19 pandemic has resulted in **at least 194 million cases & over 4 million deaths worldwide** as of 27 July 2021

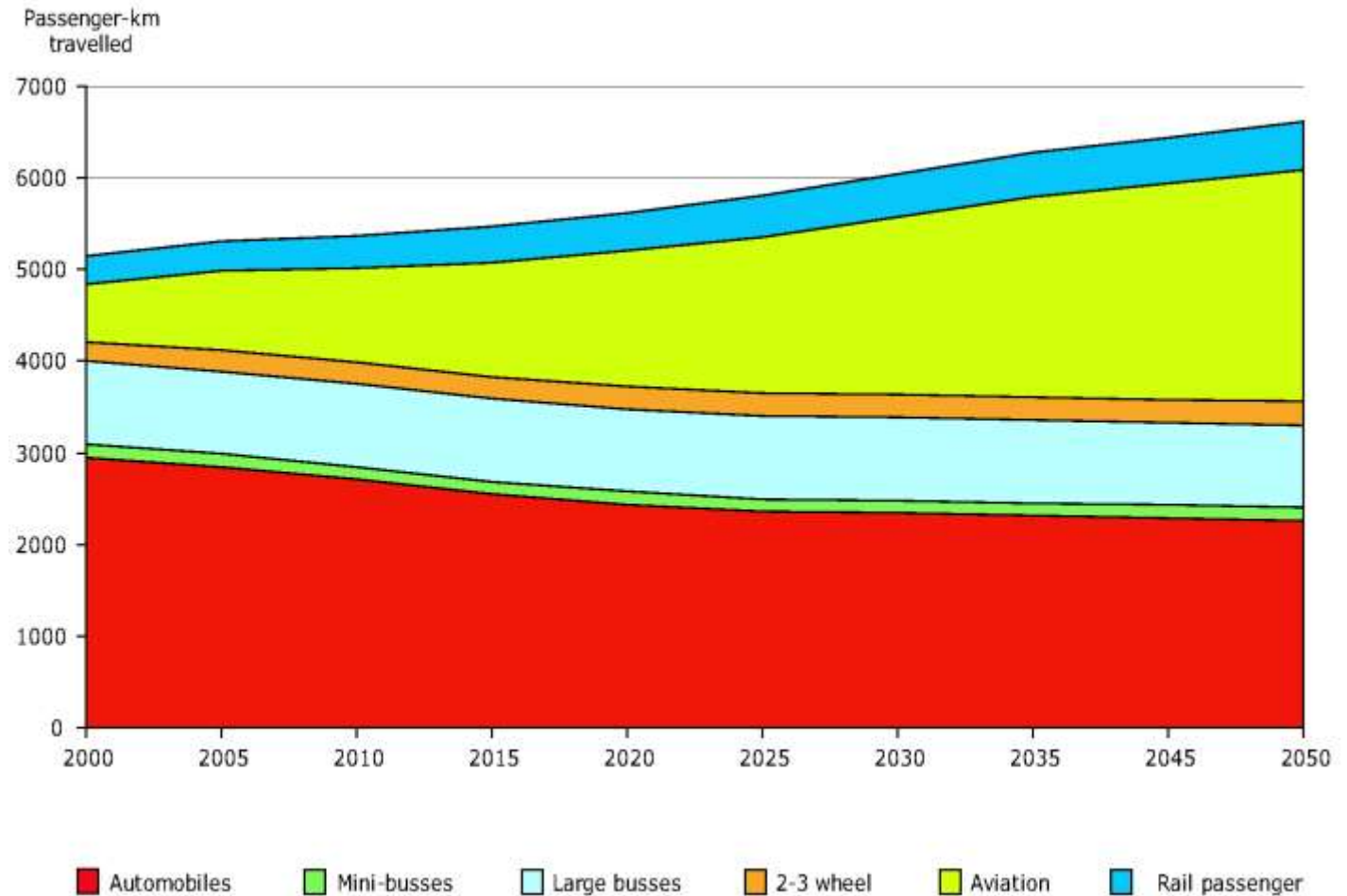
Population growth and urbanization in Asia



- UN projects global population to reach **8.5 billion by 2030** and **9.7 billion by 2050**.
- 68% of the world population projected to live in urban area by 2050.
- World Economic Forum predicted that by 2030 **Asia will have 50% of the global population with 60% of global economic growth**.
- About **44 million people are being added** to Asia's urban population every year (ADB, 2020).

Increase Transport Demand

- Rapid urbanization will **increase demand (2.6 times)** for sustainable transport around the world by 2050 (ITF, 2021).
- **Over US\$ 40 billion is expected to be invested** in procuring buses across the 75 cities of in 23 countries in Asia and the Pacific by 2030 (Asia Pacific Bus Market Outlook Report, 2021).



Source: www.eea.europa.euS

Air pollution from transport sector

- Air pollution kills an estimated 7 million people worldwide every year. Recent study reveals that **more than 10 million people die each year** from air pollution (Vohra et al., 2021).
- An exposure to air pollution cost almost **US\$ 5.11 trillion in welfare losses globally** (WHO, 2018).
- Transport's CO2 emissions will grow almost 20% by 2050.
- It is predicted that by 2030 **Asia will account one third of global transport CO2 emissions** (SLOCAT, 2020)



Photo source: www.sinceindependence.com

Even if today's commitments to decarbonize transport are fully implemented CO2 emissions from transport will increase by 16% to 2050 (ITF, 2021).

What could be the solutions?

More innovative and ambitious transport decarbonization policies to be implemented which can **reduce transport CO2 emissions almost 70% by 2050** compared to 2015. Such a reduction would bring the goal of the Paris Agreement to limit global warming to 1.5°C.

Major policy recommendations : Low carbon transport solutions, clean air technology, improve quality of fuel, vehicle inspection & maintenance, eco-driving, traffic demand management, remove fuel subsidy.



Picture source: www.electrichybridvehicletechnology.com

The global electric bus market size is projected to grow from 81 thousand units in 2021 to reach **704 thousand units by 2027** (World Electric Bus Market Report 2021-2027).

Traffic congestion

Congestion costs Asian countries 2-5 % of their GDP per year due to time delay, the waste of fuel and higher transport costs.

The recent report “Unlocking Cities: The impact of ridesharing across India” revealed that travelers in **India's biggest cities (Delhi, Mumbai, Bengaluru and Kolkata)** spend **1.5 hours more on their daily commutes** than their counterparts in other Asian cities, which **cost estimated US\$ 22 billion annually**.



The residence of Bangkok spends a daily average of 72 minutes in gridlock per day, which is followed by Jakarta, Indonesia -68 minutes, Metro Manila city -66 minutes, and Kuala Lumpur -53 minutes per day (Chin et al., 2018).

What could be the solutions?

Smart congestion relief policies and strategies could significantly help to reduce congestion level.

- integrated land use and transport planning
- integrating mode of transport
- use of high-occupancy vehicles
- use of dedicated bus lanes
- transit-priority traffic control system
- use of state-of-the art frontier technologies- ITS, GPS, automations



Picture source: www.pixtastock.com

Picture: Dedicated bus lanes in Nagoya, Japan

Road accidents and fatalities

- Approximately **1.3 million people die annually** due to road traffic crashes (WHO, 2021).
- More than **60% of the global road fatalities** occurred in the Asia-Pacific region (UNESCAP, 2020).
- It cost countries **3% -5% of their gross domestic product (GDP)**.



Photo source: www.bicycling.com

Road traffic injuries are the leading cause of death for children & young adults aged 5-29 years.

What could be the solutions?

- Follow traffic rule & regulations
- Safe driving practices
- Better road design
- Speed control
- Use of seatbelts
- Prevent drinking & driving
- Improve vehicle standards
- Expand public awareness on road safety
- Better emergency care & post-crash response



A study conducted by the World Bank in P.R. China, India, Thailand, and the Philippines predicted that **reducing road traffic deaths & injuries by 50% could generate the income** (in % of their national GDP) equivalent to 7.2 % in Philippines, 14% in India, 15% in P.R. China and 22.2% in Thailand (World Bank, 2017).

Natural disasters & Climate change

- In the last 45 years, approx. **2 million people lost their lives**, 6 billion were affected and almost **US\$1.15 trillion of the economic loss** occurred in the region, which is more than 40 % of the global total (UN ESCAP, 2015).

- New estimations warned that South Asia could lose about **1.8 percent of its annual GDP due to climate change** impact by 2050 (ADB, 2014), and **progressively reach up to 11% by end of the century** under the business-as usual scenario (ADB, 2015).

Climate change is affecting every country worldwide.



In business as-usual scenario, the **global economic losses from coastal flooding may exceed US \$1 trillion annually** by 2050 unless the major coastal cities prepare for it (Hallegatte et. al, 2013).

The solutions

- Installation of state-of-the art early warning system.
- Strong enforcement of building codes, land-use and transport planning.
- Building climate and disaster resilient transport infrastructure and services.
- Build better policies, planning and development strategies for achieving disaster risk reduction.
- Build back better after the disaster event that help to reduce loss of lives and property damage.



Picture source: www.dreamstime.com

Need of transformational changes in public bus system

- Improve safety and security of the bus system
- Improve accessibility and connectivity
- Provide comfort, convenience and easy to use environment
- Improve efficiency, reliability, and frequency
- Regular inspection and maintenance
- Public bus should be affordable and inclusive
- User friendly information system
- Build better environment, beautification and improve esthetic values

Need of transformational changes cont.....

- **Better transport infrastructure development** -road design, vehicles design, station design
- **Reform the Bus terminus, stations and stops** : Public transport stops should be well designed, comfortable and easy to use. It needs clean shelters, proper lighting, appropriate sheeting arrangements, clear up to date information and maps, wide sidewalk space to pedestrian, cyclists and well contacted with other mode of transport.
- **Use of state-of-the-art technologies** for improve customer experiences - smart ticketing, automatic fare collection gates, interactive transport apps
- **Automatic adjustment of fare** : Automated Fare Collection (AFC) can bring a wide range of benefits to governments, transport planners, operators and to commuters themselves.
- **Integrated fares**: The payment system should be well-integrated in the multiple transit modes.

Thank you!



Picture source: www.visitsingapore.com