National Capacity Building Workshop on Planning for Resilient and Inclusive Public Transport Systems  
9 September 2022, Ulaanbaatar

Enhancing Sustainability and Social Inclusion in Urban Transport

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1. SDG progress

- Sustainability of public transport
- Social inclusion
- Electric mobility
- Safety

Source: ESCAP, Asia Pacific SDG progress Report, 2021
SDGs and Transport

Target 3.6: Reduced road fatalities & serious injuries by 50% by 2020
Target 7.3: Energy efficiency
Target 9.1: Resilient transport
Target 11:2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all
Target 13.1: Climate change

Review of SDGs Progress
• Global, regional, national
• Voluntary National Review
• High Level Political Forum- UNGA

Paris Climate Agreement
• GHG reduction
• <1.5°C
• UNFCCC
2. State of Public Transport in Asia

- Different forms and modes public transport systems
  - Metro, subway, urban rails, Bus Rapid Transit, Bus

- Low share of public transport
- Growth of private vehicles - two wheelers
- High share of para transit and active mobility

- Good public transport: Seoul, Singapore, Hong Kong, China, Tokyo
- China - Transition to electric mobility
- China and India: Metro and BRT
- Integration - mode, service, fare
3. Sustainability

- Transport: Contributor to the climate change and impacted by climate events
- Carbon intensive transport system
- Paris Agreement: to keep rise global average temperatures to below 2°C and closer to 1.5°C above pre-industrial levels
  - Mitigation and Adaptation Action
  - Nationally Determined Contributions (NDCs)- ambitious
  - Glasgow outcome: Rapid GHG reduction, coal, fuel subsidies, EV

- Various definitions: meet access needs, safe, affordable, efficient, limits emissions & waste, use of renewables, reuse & recycle (Gilbert et al., 2002)
- Transport policies and plans based on three fundamental principles of sustainability: environmental sustainability, social inclusiveness, and resilience
Transport CO2 Emissions in Asia

41% growth of Transport Emissions in Asia, 2010-2019

- Passenger & Freight Volume > double by 2050 compared 2015
- Major GHG emitters in Asia
- Transport sector - 25% emissions
- Road transport > 75% emissions
- Passenger-59% and freight- 41% of global transport CO2 emissions

Source: SLOCAT, Transport and Climate Change, 2021
Active Mobility in Asian Cities

<table>
<thead>
<tr>
<th>City</th>
<th>Share of active mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhopal</td>
<td>47</td>
</tr>
<tr>
<td>Kathmandu</td>
<td>42</td>
</tr>
<tr>
<td>Yangon</td>
<td>31</td>
</tr>
<tr>
<td>Surat</td>
<td>27</td>
</tr>
<tr>
<td>Khulna</td>
<td>26</td>
</tr>
<tr>
<td>Ho Chi Minh</td>
<td>23</td>
</tr>
<tr>
<td>Colombo</td>
<td>22</td>
</tr>
<tr>
<td>Tehran</td>
<td>20</td>
</tr>
<tr>
<td>Dhaka</td>
<td>17</td>
</tr>
</tbody>
</table>
Informal Transport in Asian Cities

Mode Share of Informal Transport (%)

- Jaipur
- Surat
- Phnom Penh
- Bandung
- Surabaya
- Khulna
- Hong Kong, China
- Kuala Lumpur
- Dhaka
- Manila
- Jakarta

0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00
Transport Strategies in NDCs

- Parking policies: 1
- Land use: 2
- Fuel subsidy removal: 2
- Vehicle restrictions: 4
- Mobility management: 4
- Intelligent transport systems: 5
- Fuel quality & vehicle emission standards: 6
- Energy efficiency (feebate, ecodriving): 6
- Fuel economy/energy efficiency standards: 7
- Green freight measures: 7
- Inspection & maintenance: 7
- Walking and cycling measures: 8
- Public Transport (Metro): 8
- Road infrastructure development: 8
- Rail Infrastructure Development: 10
- Electric mobility: 14
- Biofuels & LPG/CNG: 14
- Public transport (Bus): 18

Source: UNFCC
4. Policy Scenario Modelling for CO2 Reduction: ASI

6 scenario analyzed
- A reduction of transport demand (Avoid)
- Mass-transit development (Shift)
- Car sharing (Shift)
- Energy efficient improvement (Improve)
- Electric mobility (Improve)
- Carbon pricing (Improve)

CO2 reduction by 2050
- Electric mobility (Improve) -72%
- Energy efficiency (Improve) -66%
- Car sharing (Shift) -20%
- Demand reduction (avoid) -10%

Electric mobility and energy efficiency improvement
- Technology dependent
- Investment needs
- Technical capacity of countries
Electric vehicle Vehicle Sale in 2019

China - 100% electric public transport
- Guangzhou
- Shenzhen
- Xi’an

• Project on accelerating transition to electric mobility
• Policy support to transitioning to electric mobility
• Asia-Pacific Initiative on Electric Mobility

Transport Research and Education Network

Source: IEA
Asia-Pacific Initiative on Electric Mobility

- Support acceleration of transition to electric mobility in the region
- Enhance regional cooperation, provide opportunities for peer learning sharing of experiences
- Strengthen countries’ capacity to formulate national policies on transitioning to electric mobility
- Enhance multi-sectoral collaboration
- Develop a knowledge base on electric mobility ecosystem
5. Impacts of COVID-19 on Transport and Mobility

• Rise in use of personal vehicles

• Growth of active and micro-mobility

• Measure taken by public transport
  • Frequent and deep cleaning, sanitization, contactless payment,
  • Wearing of mask
  • Staggering seating to maintain physical distancing

• Growth of use technology/ICT, teleworking, virtual meetings, on-line shopping

• Rethinking of mobility and city planning: Engineering and Socio-Ecological resilience

• Flexibility and agility of the transport system

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators</th>
<th>Measurement units</th>
<th>Weights</th>
<th>Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extent to which transport plans cover public transport, intermodal facilities and infrastructure for active modes</td>
<td>0 - 16 scale</td>
<td>0.1</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>Modal share of active and public transport in commuting</td>
<td>Trips/mode share</td>
<td>0.1</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>Convenient access to public transport service</td>
<td>% of population</td>
<td>0.1</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>Public transport quality and reliability</td>
<td>% satisfied</td>
<td>0.1</td>
<td>30</td>
<td>95</td>
</tr>
<tr>
<td>5</td>
<td>Traffic fatalities per 100,000 inhabitants</td>
<td>No of fatalities</td>
<td>0.1</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Affordability – travel costs as part of income</td>
<td>% of income</td>
<td>0.1</td>
<td>35</td>
<td>3.5</td>
</tr>
<tr>
<td>7</td>
<td>Operational costs of the public transport system</td>
<td>Cost recovery ratio</td>
<td>0.1</td>
<td>22</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>Investment in public transportation systems</td>
<td>% of total investment</td>
<td>0.1</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>Air quality (pm10)</td>
<td>μg/m3</td>
<td>0.1</td>
<td>150</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>Greenhouse gas emissions from transport</td>
<td>CO2 Eq. Tons</td>
<td>0.1</td>
<td>2.75</td>
<td>0</td>
</tr>
</tbody>
</table>

• 30 Cities in 20 countries
• SUTI Baseline studies for ASEAN cities- SMMR
SUTI Ulaanbaatar, 2019

1. Extent to which transport plans cover public transport, intermodal facilities and infrastructure for active modes
2. Modal share of active and public transport in commuting
3. Convenient access to public transport service
4. Public transport quality and reliability
5. Traffic fatalities per 100,000 inhabitants
6. Affordability – travel costs as part of income
7. Investment in public transportation systems
8. Air quality (pm10)
9. Greenhouse gas emissions from transport

SUTI: 39.09
The region urbanized and now more than 50% of population are living in urban areas. 630 million persons in the region do not have access to a good quality road network. 690 million persons in the region have some form of disabilities. Only 34-35% of the urban population currently have access to public transport. Fewer than 20% of women are employed in transport jobs. Travel pattern of women are dependent on public and non-motorized transport. Ageing population and society.
Inclusiveness: Universal Design

- Inclusive meet the needs of the largest range of users (including women, the elderly, and people with disabilities),
- Universal Design promotes the idea of usable built environments for all people
- Early design of built environments- avoid retrofit and costs

The seven Principles of Universal Design:

1. Equitable use;
2. Flexibility in use;
3. Simple and intuitive use;
4. Perceptible information;
5. Tolerance for error;
6. Low physical effort; and
7. Size and space for approach

Project on enhancing social inclusion in urban public transport planning
Enhancing Sustainability, Inclusiveness & Resilience of Mobility

- **Sustainability**
  - Increasing share of public transport, walking and cycling
  - Low carbon mobility: shift to electric mobility, enhance energy efficiency
  - Regional cooperation mechanism on low carbon transport and electric mobility initiative

- **Inclusiveness**
  - Accessibility, universal design, affordability
  - Gender, social inclusion and vulnerable group needs
  - Regional guideline on social inclusion

- **Resilience**
  - Resist and absorb the impacts, robust, flexible, agile, adaptable system
  - Integration of urban and transport planning, NMT modes, multimodal planning

- **Collaboration:** ESCAP open for research collaboration, invite to join TREN
8. Ulaanbaatar Urban Transport System

- Many studies - need for a mass transit system
- What type of mass transit?
  - Metro - cost
  - BRT - space
  - LRT - capacity and landscape
- Integration
  - Role of informal transport
  - Non-motorize transport
- More efforts in planning, polices and monitoring
  - Evidence based decision on option
  - More focus on implementation
  - Short-, medium- and long-term measures
9. Concluding Remarks

▪ Need to enhancing sustainability, inclusiveness, safety & resilience of mobility

▪ Integrated policy and strategy for public transport and electric mobility

▪ Coordination among ministries, (Transport, Urban, Energy, Finance), governments (Federal, Provincial, Local) and stakeholders

▪ Lead institution-accountability, governance and coordination

▪ Financing & Diffusion of Technology

▪ Innovations and Opportunities: **Public transport operation, Transitioning to EV, Battery leasing, Retrofitting of ICE to EV**

▪ Partnerships: Global & Regional Initiatives and Alliances- **private and public sector, NGOs, CBOs**
Thank You

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TRANSPORT RESEARCH AND EDUCATION NETWORK

https://www.unescap.org/projects/tren

Nepal Workshop on EV


Regional Meeting on Just Transition to Low Carbon Mobility and EV, 10-11 August 2022