Policy Options for Reducing Transport Emissions

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UN Mandates

- Global
  - Rio+20, focus on three pillars of sustainability
    - Economic
    - Social
    - Environmental
  - Millennium Development Goals, 8
  - Sustainable Development Goals (beyond 2015)
  - Kyoto Protocol – new protocol by 2015

- Regional
    - Sustainable transport development (10 Thematic Areas)
Rio+20 Outcome (Transport)

- Transport and mobility are key to Sustainable Development
- Efficient movement of goods and people
- Energy efficient multimodal transport system
- Clean fuels and vehicles
- Integrated approach to planning
- Affordable and sustainable transport
- Sustainable transit transport - need of landlocked and transit countries
- Capacity development
Growth of railways, road and vehicles

Growth Rate

- China: Rail Lines (1990-2010) - 14%, Road (1990-2010) - 6%, Vehicles (1993-2008) - 14%
- Iran: Rail Lines (1990-2010) - 4%, Road (1990-2010) - 2%, Vehicles (1993-2008) - 4%
- Japan: Rail Lines (1990-2010) - 0%, Road (1990-2010) - 0%, Vehicles (1993-2008) - 0%
- Pakistan: Rail Lines (1990-2010) - 6%, Road (1990-2010) - 4%, Vehicles (1993-2008) - 6%
- Russian Federation: Rail Lines (1990-2010) - 8%, Road (1990-2010) - 6%, Vehicles (1993-2008) - 8%
- Turkey: Rail Lines (1990-2010) - 10%, Road (1990-2010) - 8%, Vehicles (1993-2008) - 10%

Legend:
- Green: Rail Lines (1990-2010)
- Orange: Road (1990-2010)
- Blue: Vehicles (1993-2008)
Growing pattern of urban development

- Half of world’s people live in town and cities
- 90% of world’s urban expansion in developing countries
- Unsustainable pattern of growth of big and megacities
- Cities account for more than 2/3 of energy use and GHG emissions
- Car centered developments
- Lack of affordable public transport
- Cost of congestion- 2-5% of GDP
- Air pollution- health cost 2-4% of GDP
- Vicious cycle: more new cars- more new road – more congestion
State of emissions (recap)

- Global CO2 emissions
  - Transport share CO2 - 22% of total emissions
  - ESCAP share - 27% of world

- CO2 Emissions - almost doubled in 20 years in Asia
  - Road transport share of emissions - 83% in Asia

- Growth of motorized vehicles - 4-12%
Emission assessment

- ASIF Approach
  
  $\text{Emission} = \sum \text{Activity (pkm or tkm)} \times \text{Structure (mode share)} \times \text{Fuel Intensity (fuel consumption per vkm by vehicle type)} \times \text{Emission Factor (of fuel used in vehicle type)}$

Different mitigation policies necessary:
- Passenger transport
- Freight Transport
- Urban transport
- Non-urban transport
Mitigation policies (1)

- Integrated transport planning
- Urban transport planning
- Improvement of public transportation
  - Bus Rapid Transit
  - Metro
  - Light Rail Transit,
  - Bus service- frequency and quality
  - Social inclusion- affordability
- Promotion of Non-motorized Transport
  - Walkways
  - Cycle lanes, cycle hire, parking
  - Pedestrian zones

(2 km walking (a very feasible distance) or a two km bicycle trip reduces GHG by 419 grams of CO2 (e) if it replaces a car trip)
Mitigation policies (2)

- Travel demand management
  - Reducing need to travel – compact city planning vs satellite cities
    - Tele conference, use of ICT
  - Managing vehicle growth
  - Parking policies, restriction
  - Road pricing- discouraging use of private vehicle
  - Car free zones
  - Park and ride

- Technology
  - Clean and Green fuels
  - Alternate clean energy
  - Energy efficient modes
  - Hybrid and electric vehicles
  - Use of ITS

- Maintenance of transport infrastructure

- Drivers training
Mitigation policies (3)

- Modal shift to energy efficient modes
  - Freight: road to rail, coastal shipping and IWT
  - Freight rail– double stacks of containers
  - Intermodal integration
  - Passenger: Private car to public transport

- High speed rails
  - HSR is a feasible alternative to air travel, 500 miles
    - Thailand, Malaysia-Singapore, China, ROK, Japan
  - Seoul and Daegu HSR in 2004, the Korean Train Express (KTX) partly responsible for a 34-75% drop in domestic aviation

- Social inclusion
  - Extend reach of transport to vulnerable groups
  - Provide affordable public transport
  - Subsidies to social vulnerable groups- Tbilisi city travel, Bangkok (red line bus-free), India railway fare subsidies
Some policies being implemented in countries (country reports)

- **Sri Lanka**: banning of two stroke three wheelers, fare subsides to school children, increasing use of hybrid vehicles, emission assessment
- **Nepal**: Kathmandu mass transit, sustainable urban transport project, fuel standards
- **Viet Nam**: Hanoi- BRT and MRT, MRT-Ho Chi Minh City
- **Tajikistan**: fare subsidies in Dushanbe, improvement of infrastructure, NMT in Dushanbe- extending to other 3 cities
- **Georgia**: Tram link by 2016, test of electric vehicles in Tbilisi, fare subsidies
- **Indonesia**: ERP, BRT, MRT, fare subsidies
- **Thailand**: BRT, MRT, free public bus, alternate fuels, fuel standards
- **Bhutan**: NMT, improve fuel efficiency, fuel standards, improving public transport- high capacity buses
Concluding remarks

- Need to know the state of the problem and evaluate options
- Various assessment methodologies/approaches give various outcome
- Combination of policies essential to mitigate emissions
- Many successful examples from Asia
  - BRTs- Bangkok, India, Pakistan, China
  - Transit Oriented Development –Hong Kong, Singapore, Japan
  - Compact city planning- Tianjin eco city
  - Electronic Road Pricing - Singapore
  - Electric vehicles and charging infrastructure – Kanagawa, Goto Islands, Nagasaki, Shanghai, others city in Asia?
  - Alternate fuels- not extensive use and availability yet
  - NMT- focus on walking and cycling –Europe
  - Japan- natural reduction of VMT
Workshop programme

26 September 2013
Session I
- Introduction to UNDA Project
- Overview of state of transport emissions in Asia
- Policy options for reducing transport emissions
- Introduction to ForFITS

Session II
- International experiences on emission measurement and mitigation policies

Session III
- Country experiences on emission measurement and mitigation policies (contd.)

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Session III
- Country experiences on emission measurement and mitigation policies (contd.)

Session IV
- ForFITS Model
- The way forward
Thank you

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