Transport and Energy Nexus: The Challenges Ahead

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Asia-Pacific region is growing at an unprecedented rate

- Asia is **highest populated** continent with 60% of world population

- Economically, Asia is the continent with the **largest and fastest growing economy**

- Economic outlook for the region is positive with projected **growth** of 5.7% for next 2 years

Source: Asian Development Outlook 2016
Need to achieve a sustainable growth

- Due to this strong economic growth, transport and energy needs are increasing rapidly.
- Governments face enormous challenges to expand transport and energy.
- Significant inequalities in availability of transport and energy – so many governments now prioritize access for all.
- Transport and energy are also having adverse environmental and other side-effects – more sustainable options need to be prioritized.
Transport trends for Asia-Pacific

According to ITF projections, **global passenger demand** will more than **double** between 2015 and 2050.

**Most of the growth** will be in **Asia**, which will represent a **third** of all passenger transport demand in 2050.

**OECD** will only represent **25%** of travel demand in **2050**, compared to **45%** in 2015.

Global **freight transport demand** is expected to **triple** by 2050.

Source: ITF Transport Outlook, 2017
Transport trends for Asia-Pacific

Source: ADB and IEA, 2011
Energy trends for Asia-Pacific

- **BAU**: energy increases 1.7x (over 2010), electricity increases 2.3x
- **ALT**: 15% reduction in both energy demand and electric generation
- **Fossil fuels high** in both scenarios = 76% BAU and 67% ALT

Source: ADB Energy Outlook 2013
Sectoral Energy trends for Asia-Pacific

- **Transport Sector** energy demand is grows the fastest in both scenarios
- **ALT**: 10% reduction in transport energy demand compared to BAU

Source: ADB Energy Outlook 2013
ADB’s involvement in the sectors

AVOID-SHIFT-IMPROVE FRAMEWORK FOR SUSTAINABLE TRANSPORT

Avoid
the need to travel
- e.g. co-locate housing with workplaces, transit oriented development to avoid/reduce/shorten trips and make it convenient to walk/cycle, telecommuting

Shift
to sustainable modes
- e.g. shift passengers from cars to public and nonmotorized transport, shift freight from trucks to multimodal using rail, inland waterway

Improve
efficiency of all modes
- e.g. energy efficient and safer vehicles/locomotives/vessels, ITS to optimize route/mode choice

LOWER transport costs, congestion, emissions, air pollution, road accidents, respiratory & other health problems
ADB’s involvement in the sectors

URBAN PUBLIC TRANSPORT PROJECTS

**Hubei-Yichang Sustainable Urban Transport, China ($150m ADB loan)**
- Bus rapid transit corridor in Yichang
- Pedestrian and bicycle facilities
- Opened in 2015, now has 19 lines
- Around 260,000 people use the BRT daily

**Vientiane Sustainable Urban Transport, Lao PDR ($35m ADB loan, $50m cofinancing)**
- Introduction of BRT
- Electronic fare collection system
- Traffic management improvement
- Paid parking system and national vehicle registration system
ADB’s involvement in the sectors

ENERGY EFFICIENT TRANSPORT TECHNOLOGIES

Railway Rolling Stock Project in Bangladesh

- Improve the performance and efficiency of rolling stock
- To improve services on railways running between Dhaka and Chittagong, and Dhaka and Khulna.

Railway Energy Efficiency Project in India

- Improve fuel efficiency of all diesel locomotives.
- Improvement of environmental and financial sustainability of Indian Railways.
ADB's involvement in the sectors

**CLEAN ENERGY PROJECTS**

*ReNew Clean Energy Project, India*

- Solar and wind projects in several states of India.
- Acceleration of private sector investments in clean energy infrastructure
- $390 million ADB loan + cofinancing

*Access to Clean Energy Program, Pakistan*

- Install renewable energy power plants including the construction of 1,000 micro-hydropower plants
- $325 million ADB loan
Future opportunities

MULTIMODAL TRANSPORT HUBS

**Passenger hubs**
- Ensure ease of passenger transfer between modes.
- Create complementary commercial opportunities
- Railway hub projects in China – E’mei-Miyi, Yuxi-Mohan

**Freight hubs**
- Change how production is organized in countries
- Develop multi-modal logistic chains
- Chongqing Integrated Logistics Project, China ($150 million ADB loan)
Future opportunities

IMPROVED LAND USE BY INTEGRATING PLANNING AND TRANSPORT

- **Integrated urban spatial planning and urban transport** – co-location, mixed-use development, car-free zones, nonmotorized facilities, greenways

- **Transit oriented development** – high density residential and commercial development based around mass transit corridors, incorporating pedestrian and cycling facilities
Future opportunities

CLEAN VEHICLE TECHNOLOGIES AND FUELS

- Electric vehicles
- Clean diesel
- Bio-diesel
- CNG
- Bio-methane
- LPG
- Hybrid-electric
- Plug-in electric
- Electric trolley
- Hydrogen fuel cells
- Hydrogen gas
Future opportunities

CREATING SMART GRIDS

Smart grids, through the improvement of improved electricity supply chain, will allow:

- Access to affordable and reliable energy supply.
- Provision of clean energy, increased efficiency and reliability.

Smart Grids can leverage the benefits of renewables, charging infrastructure, and e-vehicles
Challenges of expanding use of cross-sectoral approaches

**Economic development**
- Accessibility to goods and services
- Equality

**Energy**
- Energy-efficient technologies
- Renewable energies

**Technology**
- Clean vehicle technologies and fuels
- Intelligent transport systems

**Land-use**
- Mixed-use development
- Area generation

**Mobility**
- Urban transport
- Multimodal transport hubs

Cross-sectorial approach to transport and energy nexus
Thank you!

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