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Transport and Energy Nexus: The Challenges Ahead

Bambang Susantono, Ph.D.,
Vice President
Knowledge Management and
Sustainable Development
Asian Development Bank

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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

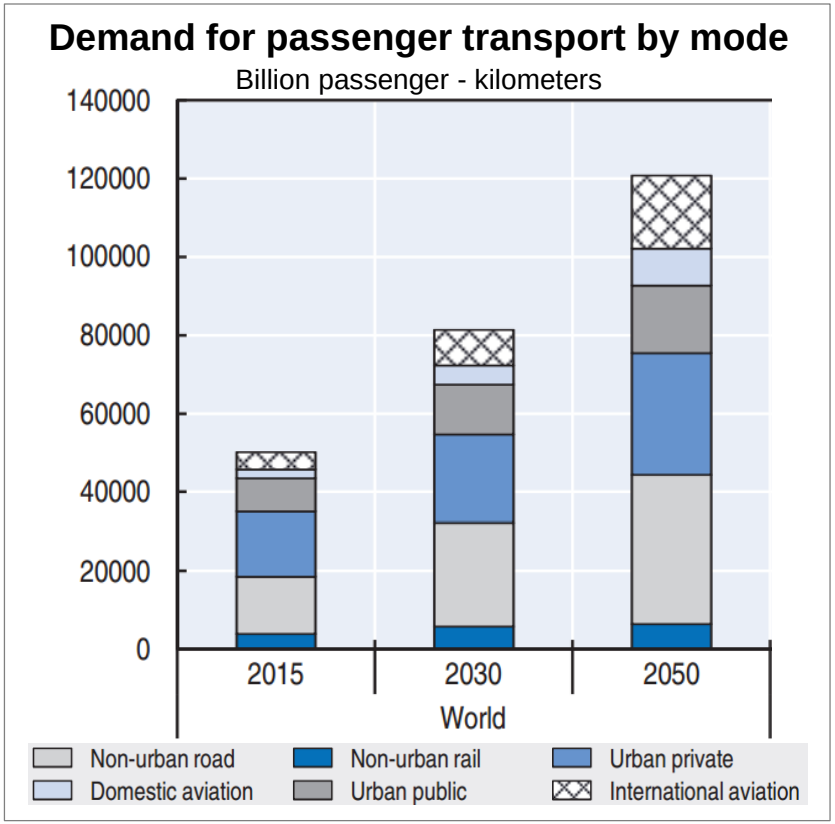
Transport trends for Asia-Pacific

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.

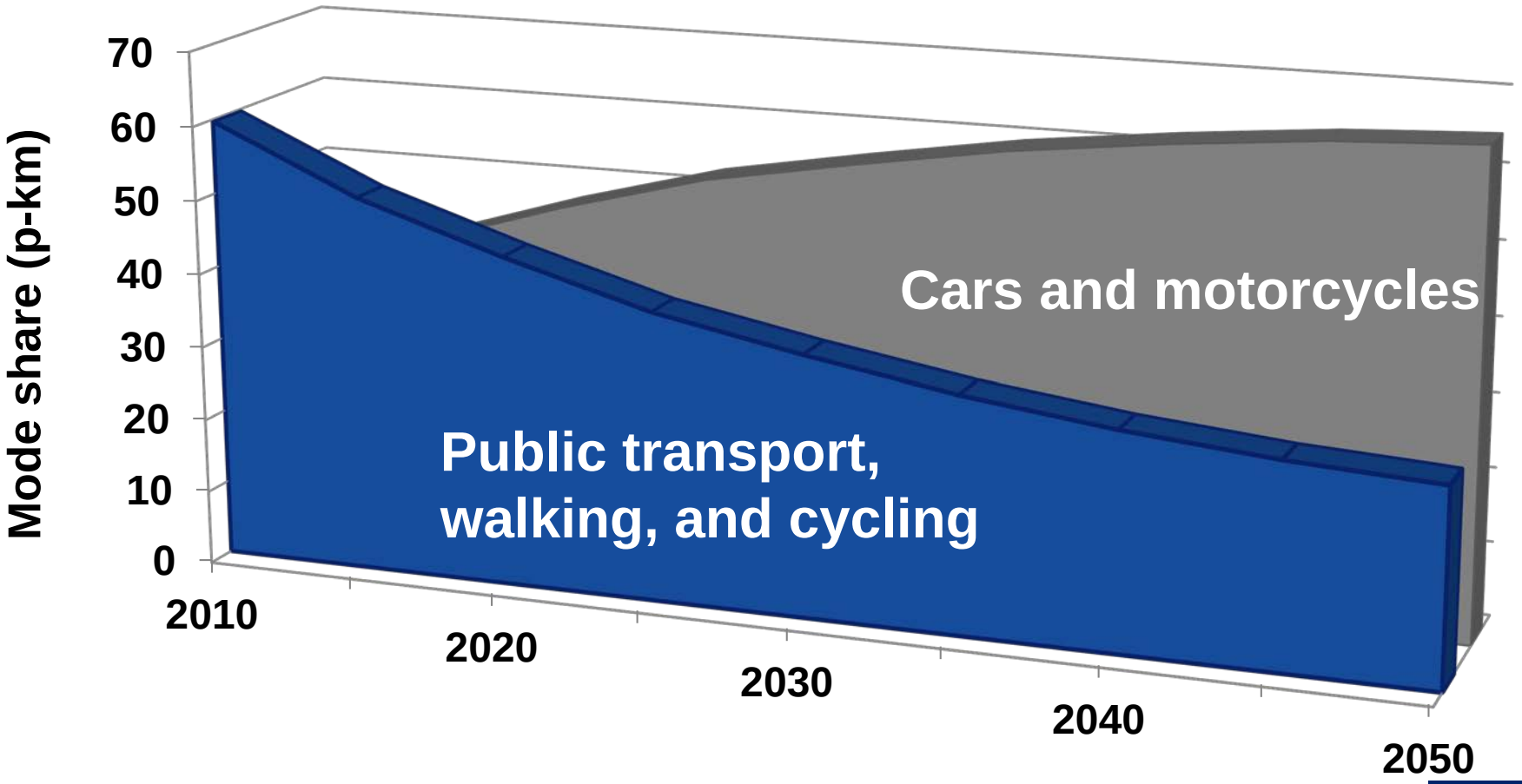
OECD will only represent **25%** of travel demand in **2050**, compared to 45% in 2015

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



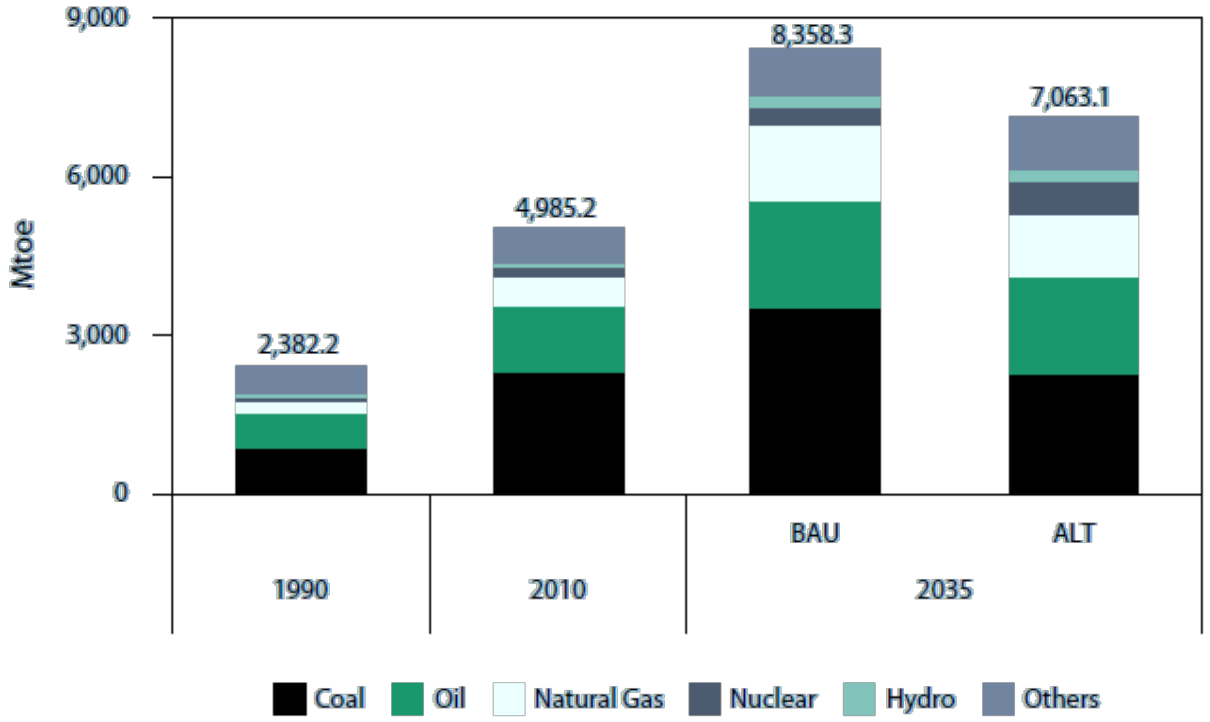
Source: ITF Transport Outlook, 2017

Transport trends for Asia-Pacific



Source: ADB and IEA, 2011

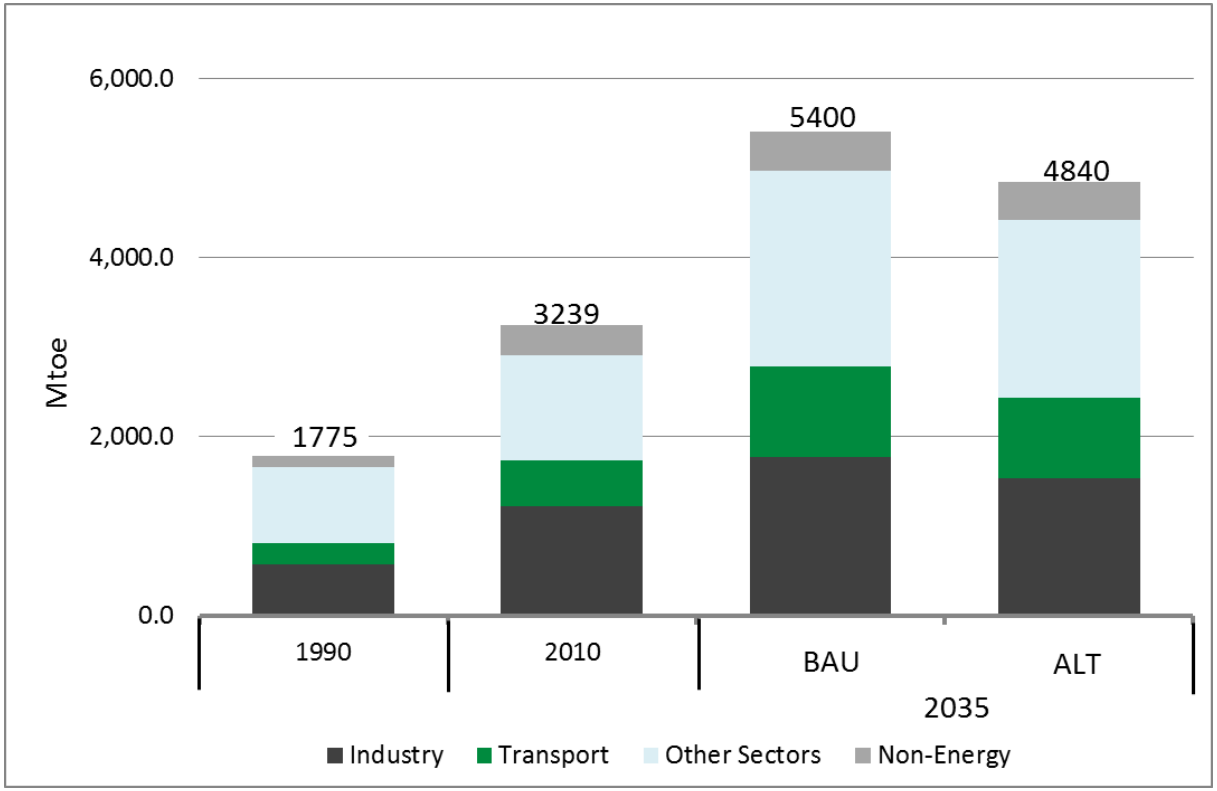
Energy trends for Asia-Pacific



- **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



Note: Other includes residential, commercial, agriculture and fishery sectors

- **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 SUSTAINBLE 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

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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

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Challenges of expanding use of cross-sectoral approaches

Cross-sectorial approach to transport and energy nexus

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

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Thank you!

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