

# Sustainable Low Carbon Pathway for India (with focus on Sustainable Transport)

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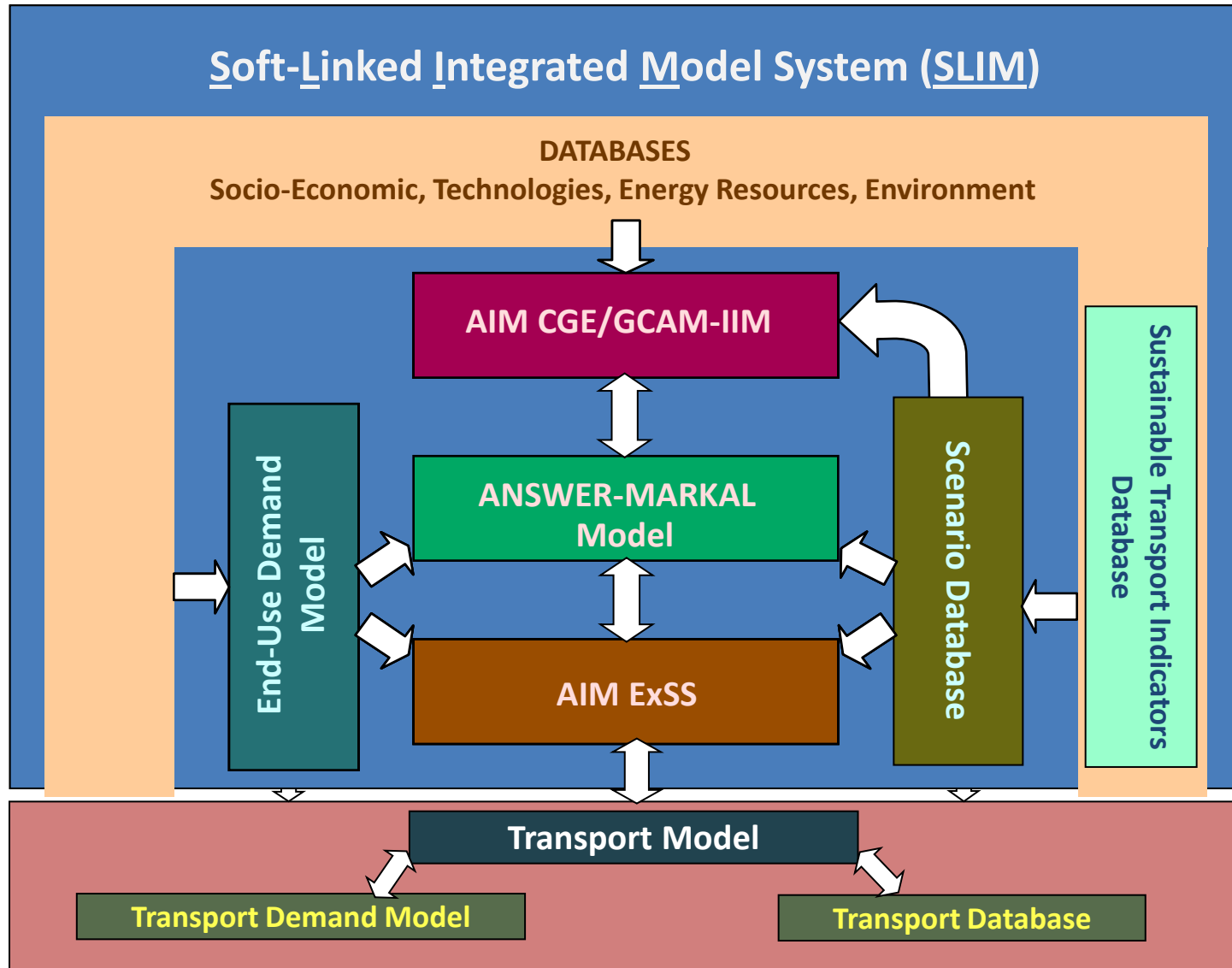
**COP19 Side-event Organized by: National Institute of Environment Studies (NIES), Japan**  
**‘Pathways towards Low Carbon Societies in Asia by 2050’**  
November 13, 2013 (16:30 to 18:00 hours, Venue: Japan Pavilion at COP19  
Warsaw, Poland



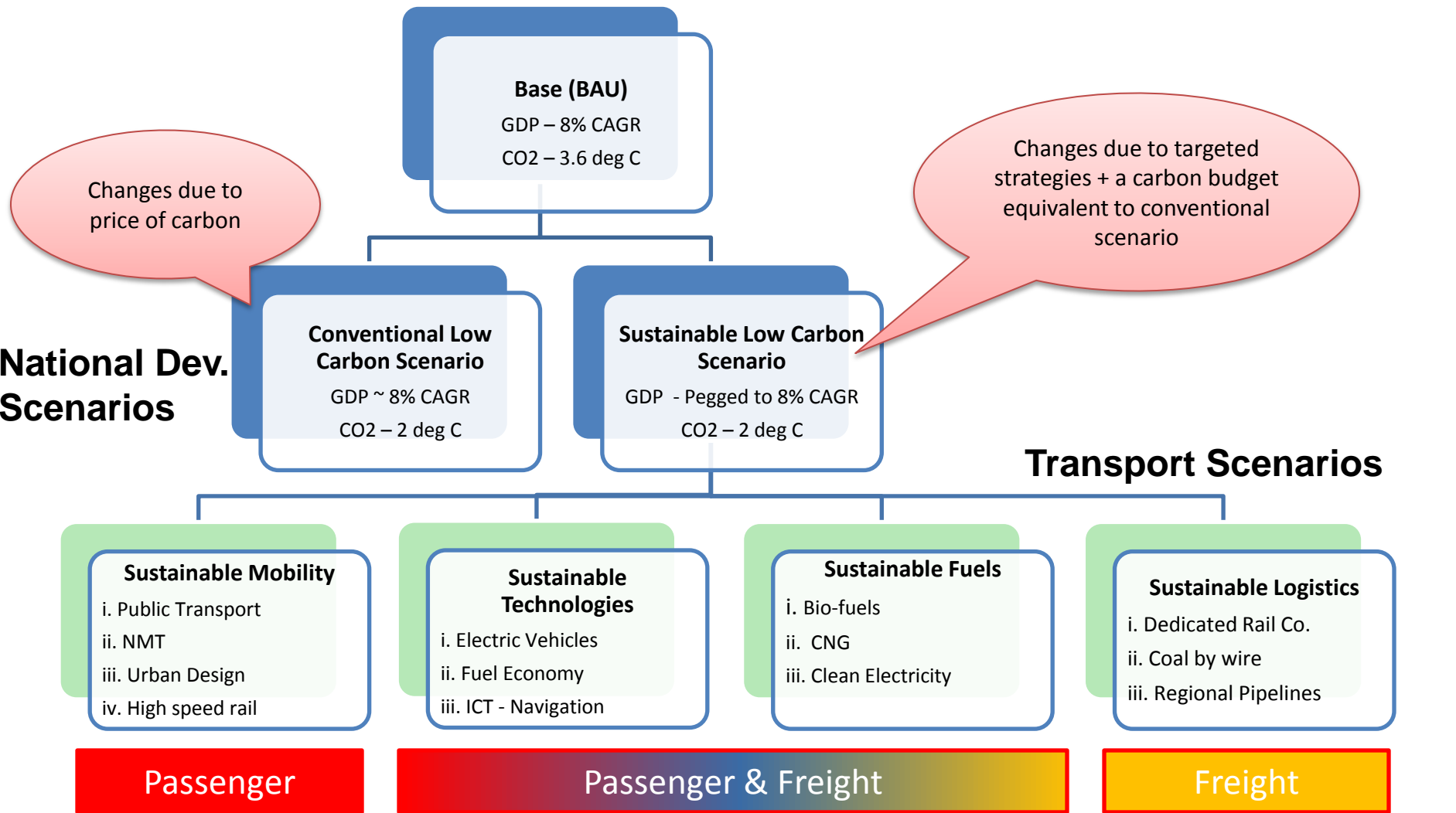
# Sustainable LC Society: Scenarios and Perspectives

- Mapping Transitions (Storyline Drivers)
  - i. Demographic (Gender/Age Profiles, Urban/Rural)
  - ii. Income (Growth, Distribution)
  - iii. Behavior (e.g. Consumption, Conservation)
  - iv. Governance/Institutions (Conventional/Green)
- Economics (Multiple objectives, Targets)
  - i. Cooperation (to vis-à-vis goals; e.g. energy access)
  - ii. Co-benefits (e.g. energy security, AQ)
  - iii. Directed finance (to meet national goals)
- Policies (Market and Non-Market Policies)
  - i. Technology (Avoid Lock-ins): Infrastructures; Targeted R&D; IPR
  - ii. Coordinated policies to gain co-benefits (e.g. CO2 & Local Pollution)
  - iii. Global carbon price/tax

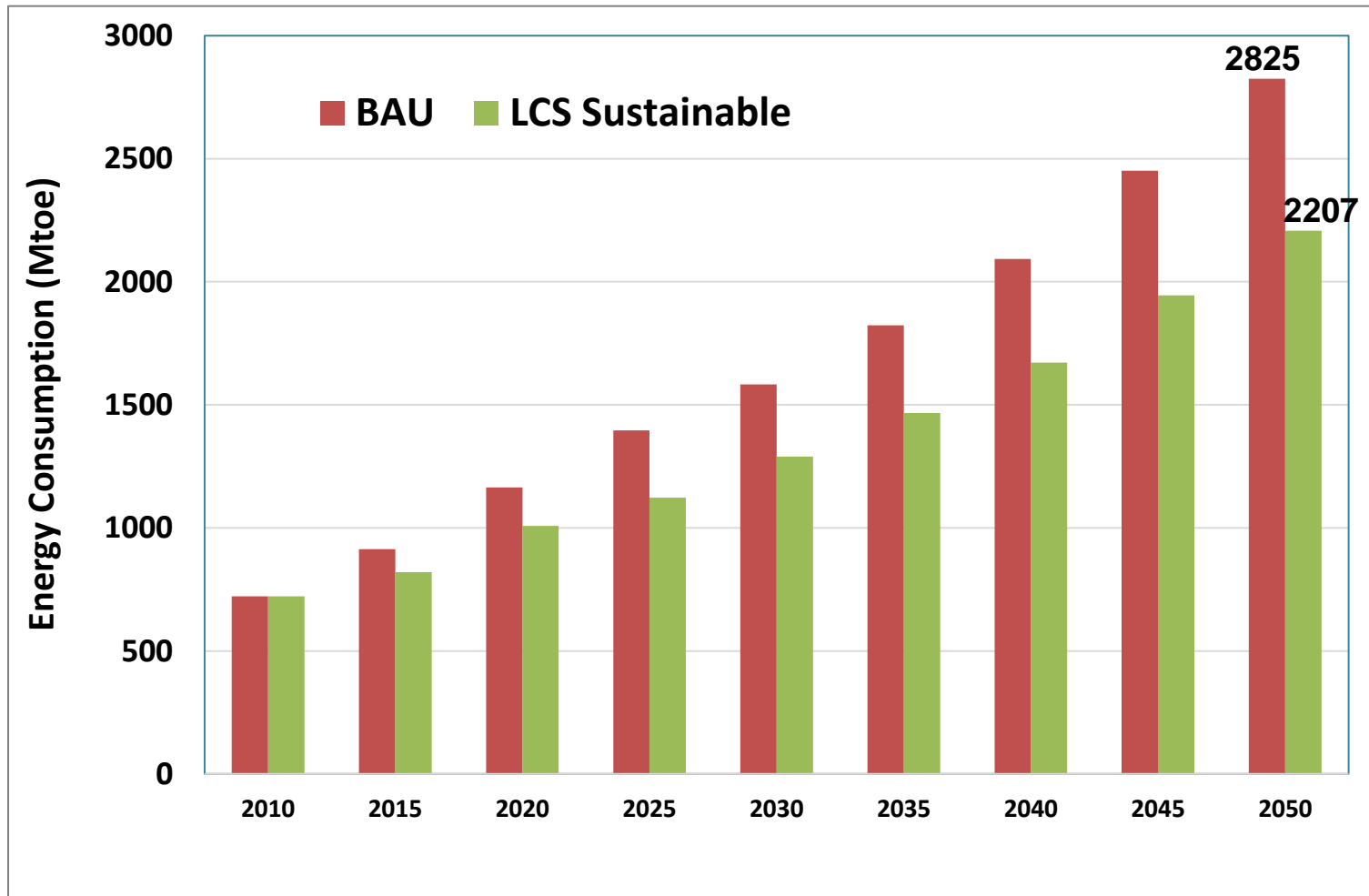
# Soft-Linked Integrated Model



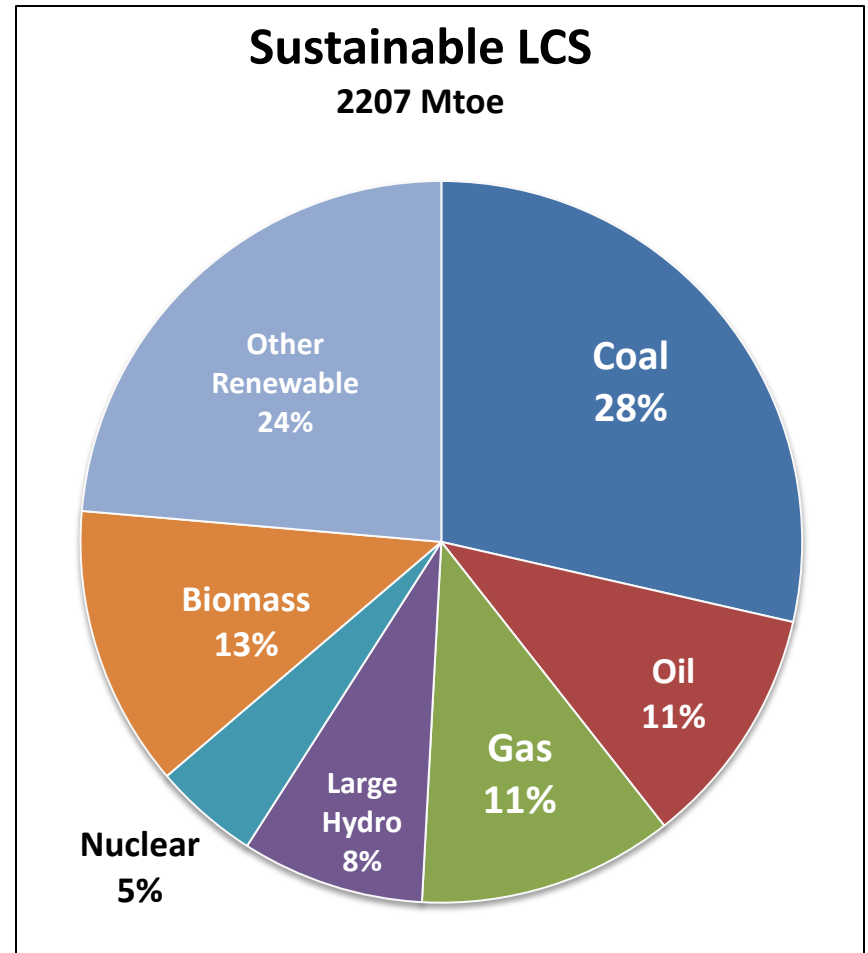
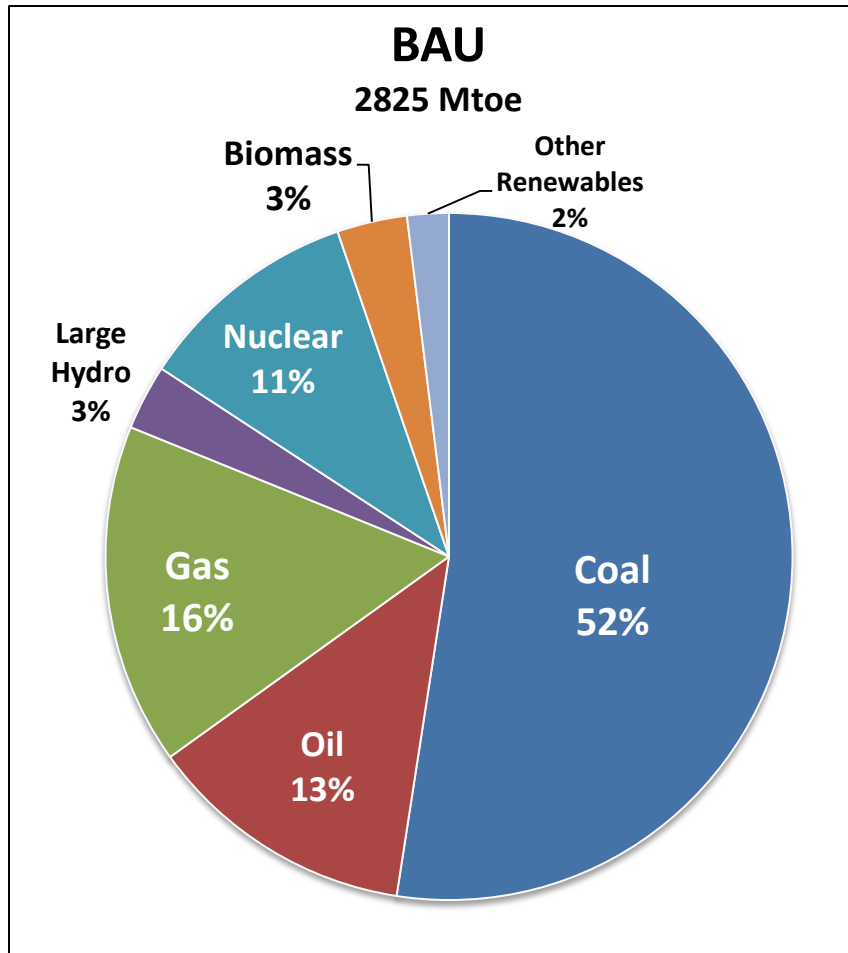
# National Development and Transport Scenarios



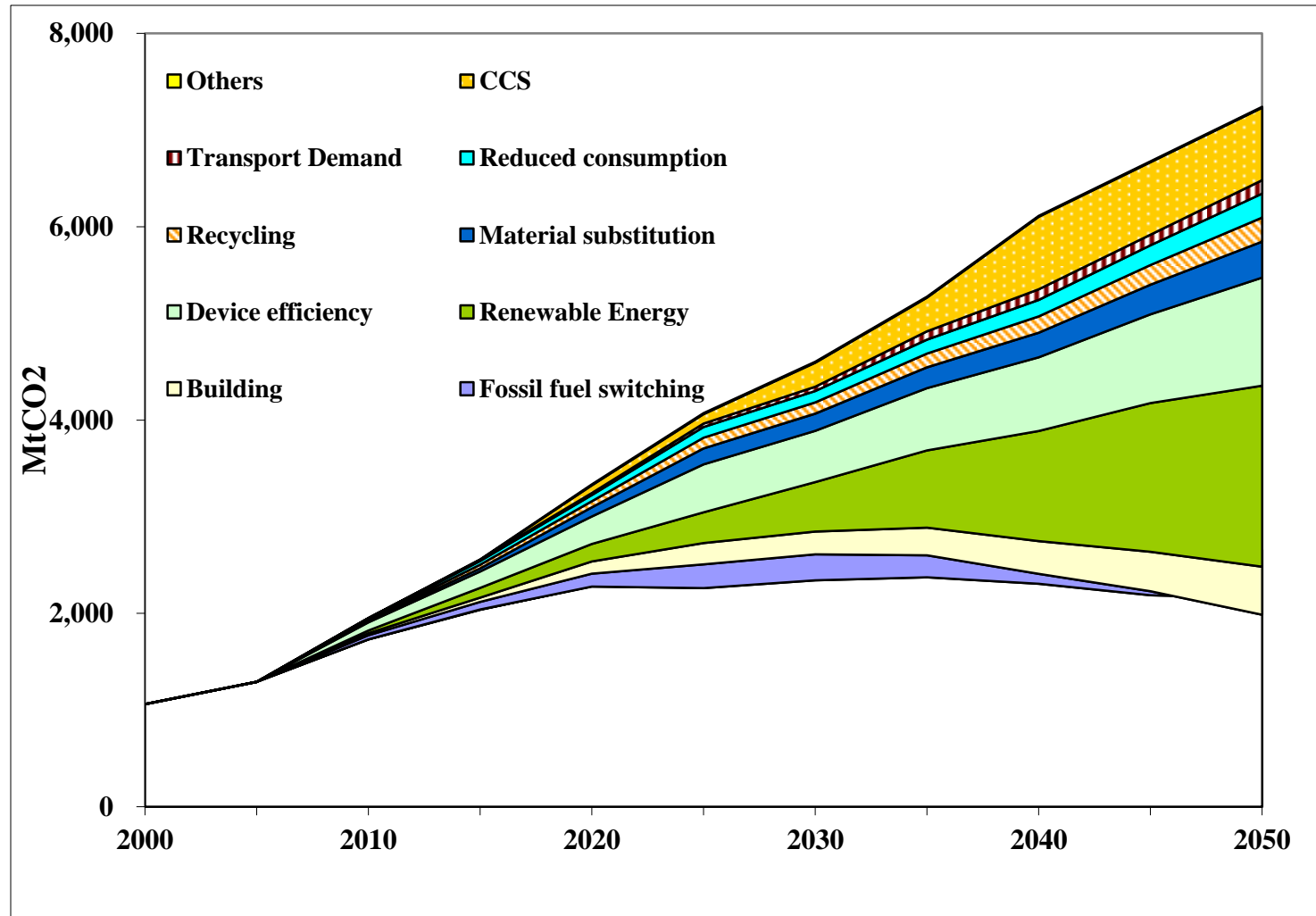
# INDIA: Primary Energy



# INDIA: Primary Energy Mix (2050)



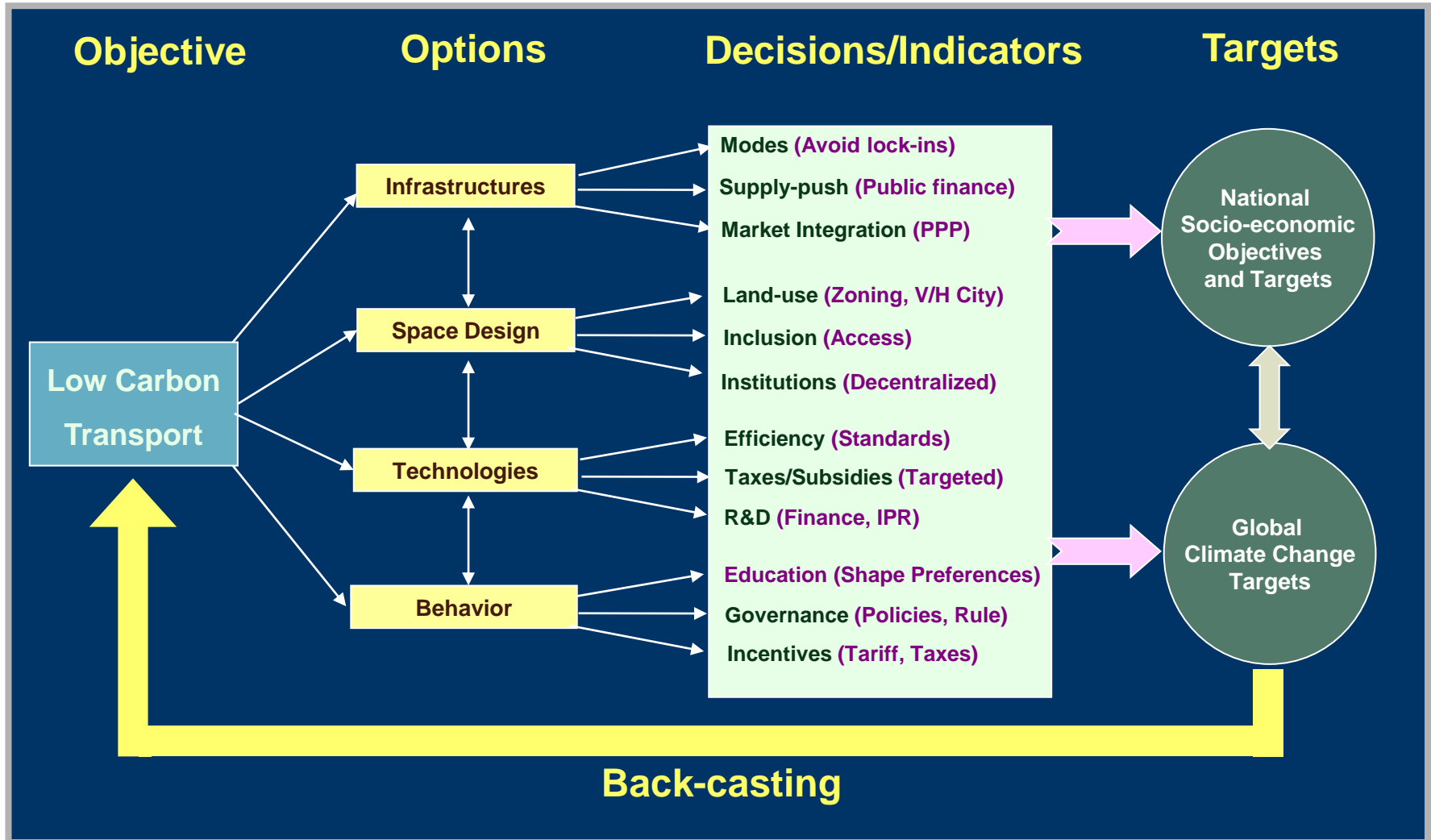
# CO<sub>2</sub> Reduction: Sustainable Low Carbon Scenario



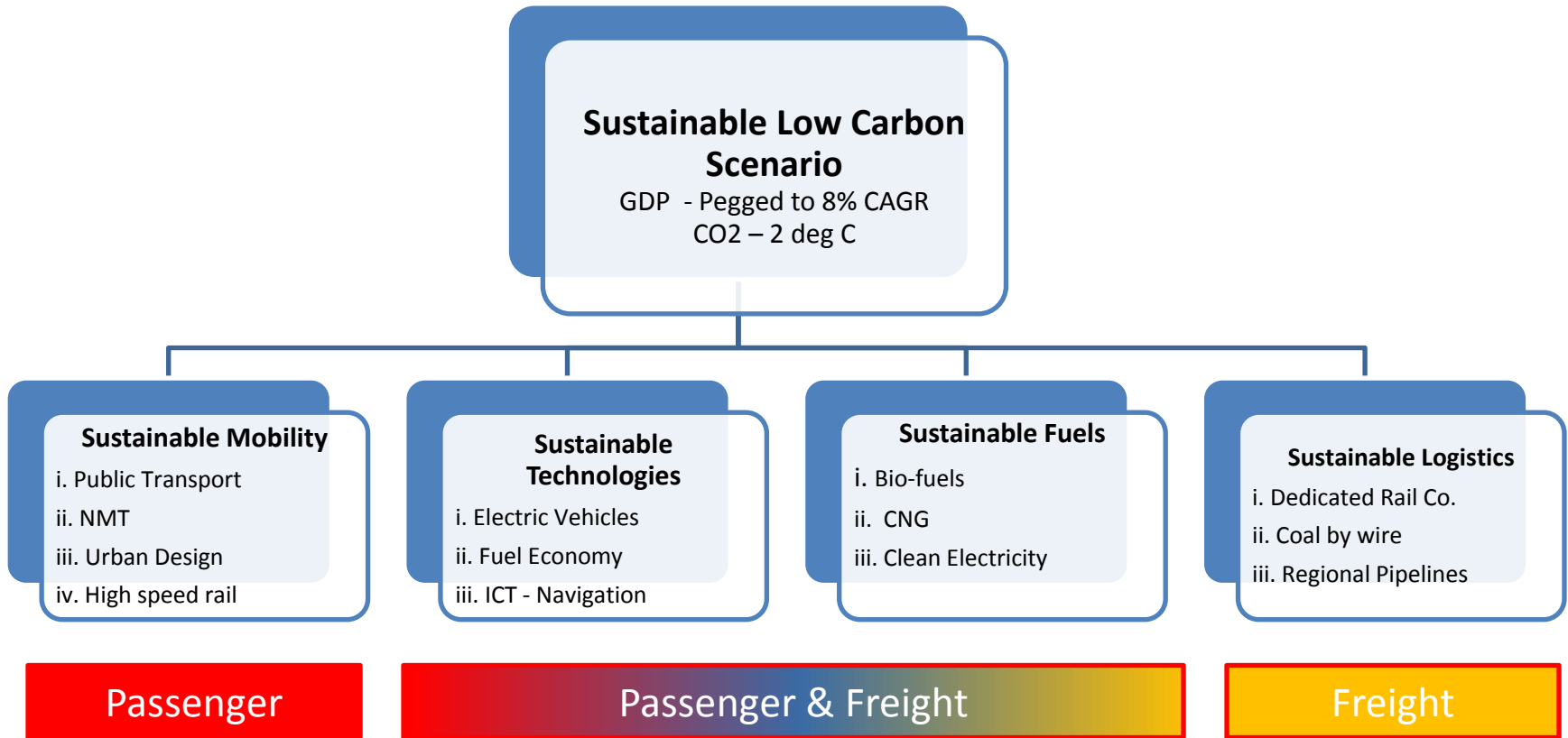
# Sustainable Low Carbon Transport: Scenario Architecture and Results



# Sustainable Low Carbon Mobility Framework



# Sustainable Low Carbon Transport Scenarios



# Sustainable Mobility Storyline

- Improved NMT (**Non motorised transport**)
- Public Transport (PT): Improved access to **buses** (& para-transit), **BRT, Metro**
- Urban Design : Changes in **design, density and diversity**
- Intercity : faster inter city rail connections (incl. **High Speed Trains**)
- Use of IT : e.g., **Video teleconferencing, websites** to facilitate car pooling , etc.

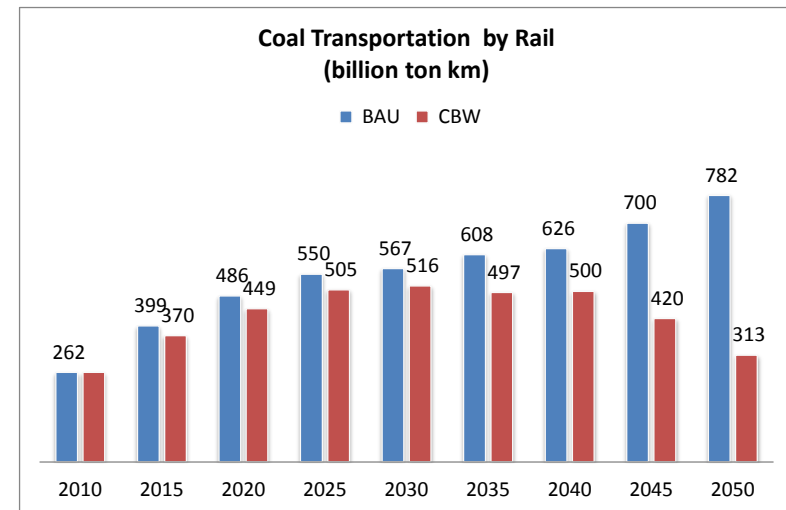
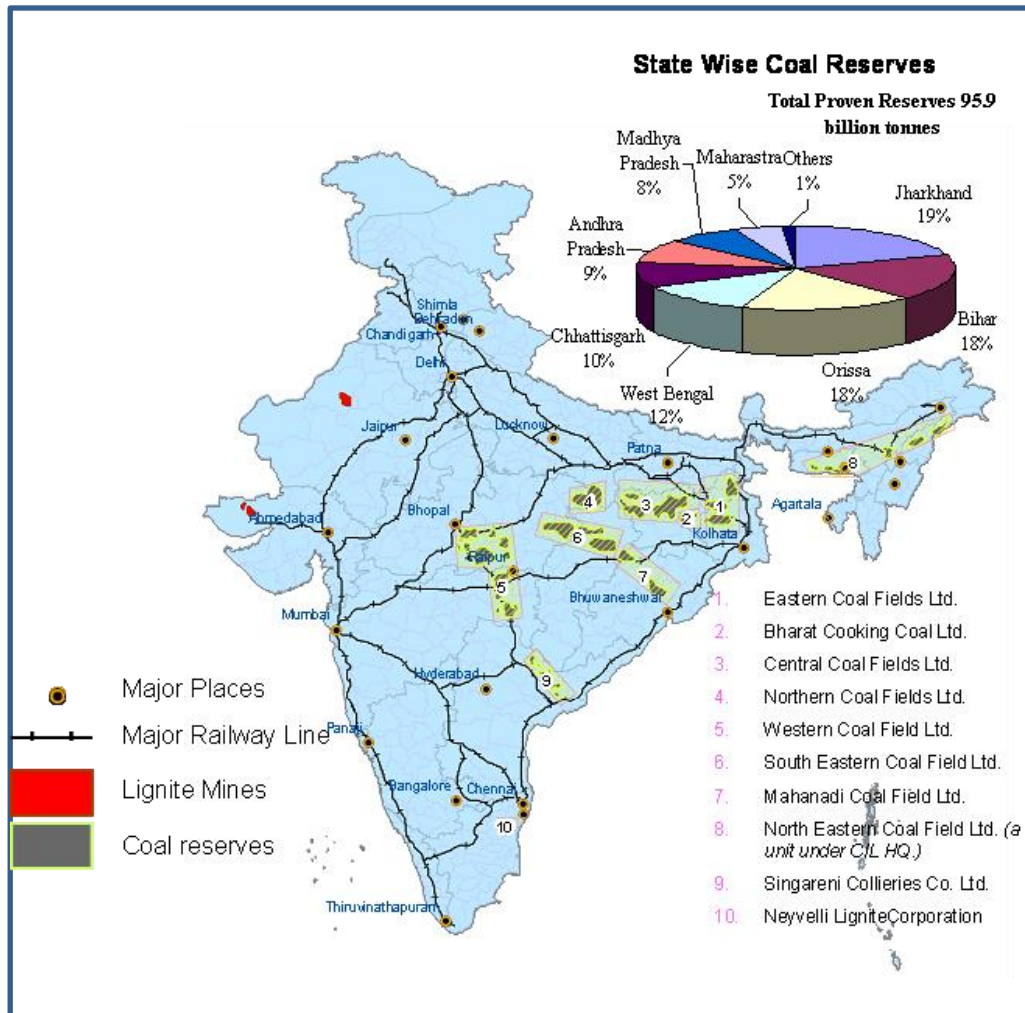


# Sustainable Freight Storyline

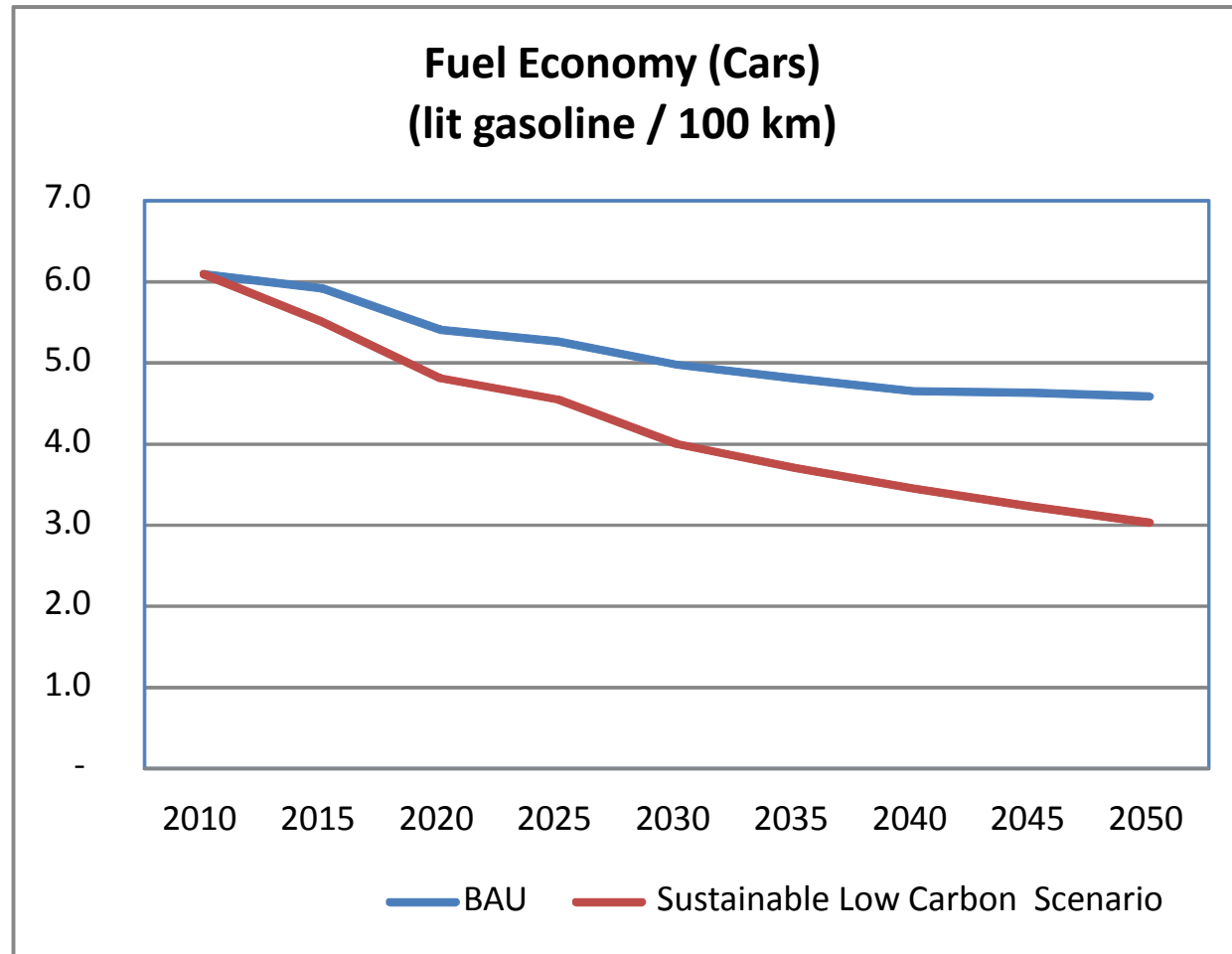
- **Rail Freight: Dedicated freight corridors (DFC), shift of fuels from rail to pipelines, etc**
- **Ports & Inland Water ways: Greater investments in small ports and water ways**
- **Coal by Wire (CBW):**
- **Regional Cooperation: International Gas pipelines, Electricity grids reduce demand for coal**



# Infrastructure Alternatives: Coal by Wire

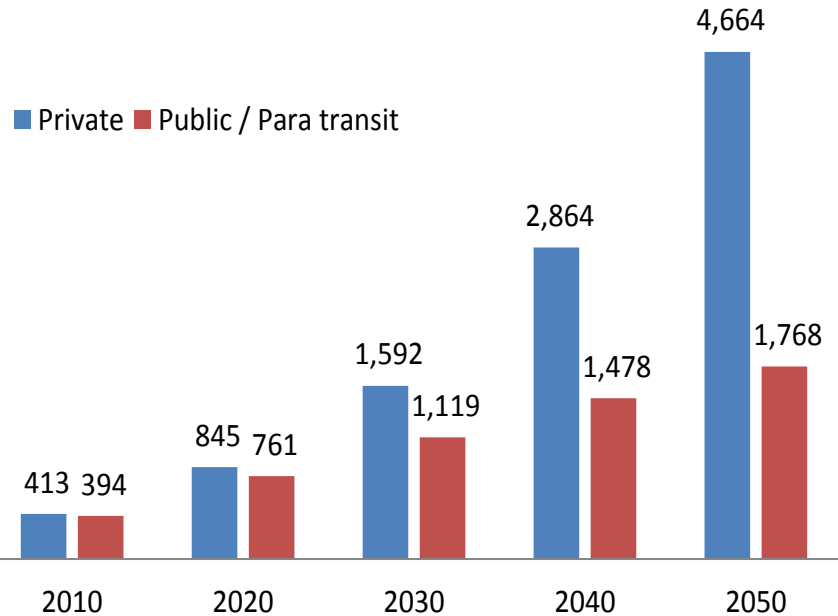


# Fuel Economy: BAU and Low Carbon

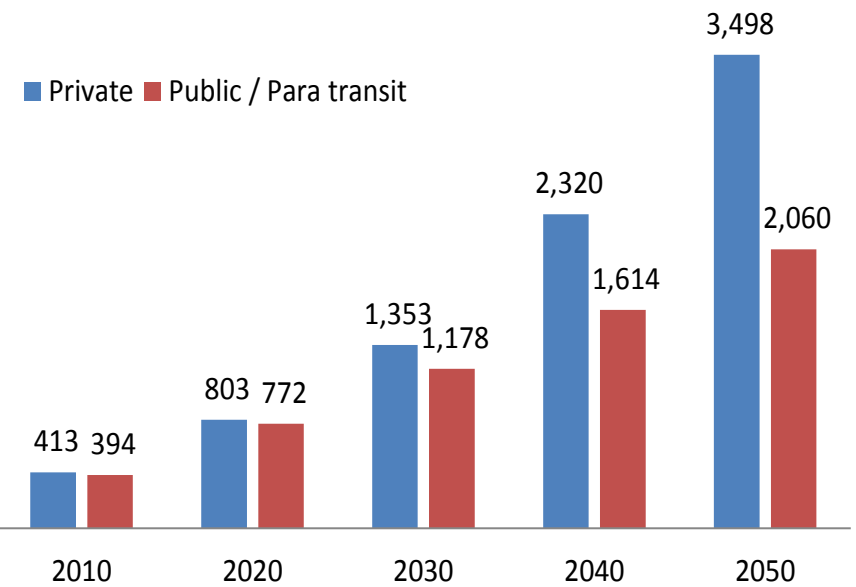


# Demand for Urban Transport in BAU & Sustainable Mobility

Passenger Transport Demand - Urban BAU (Bpkm)



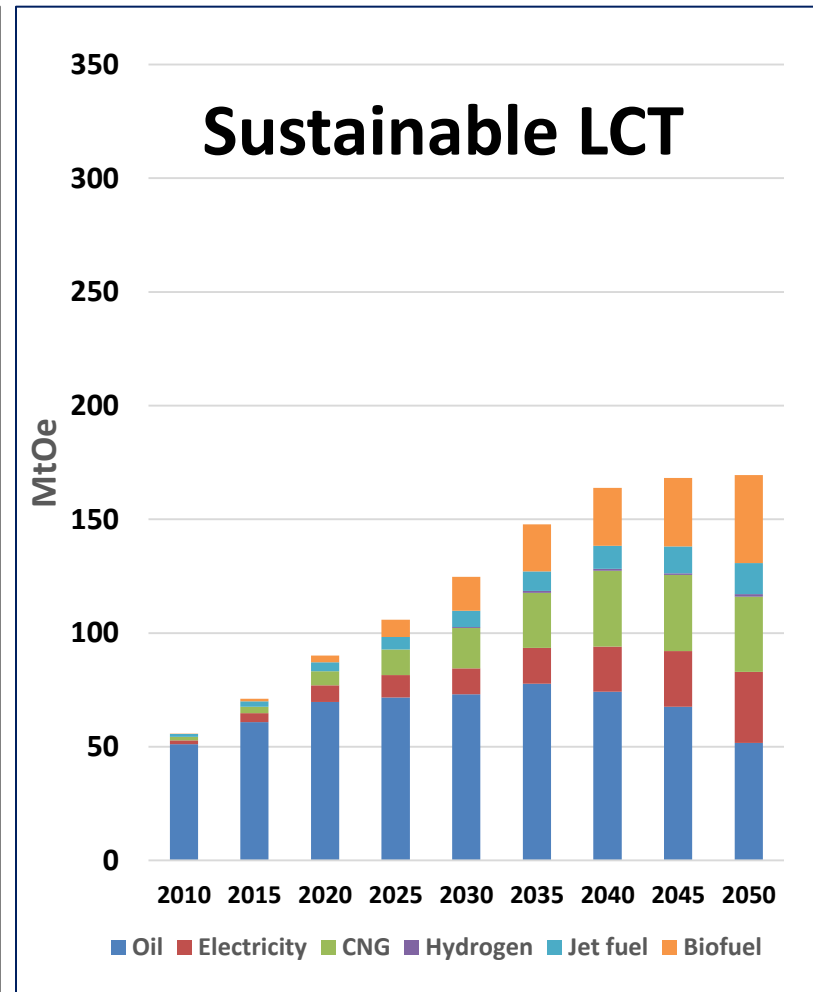
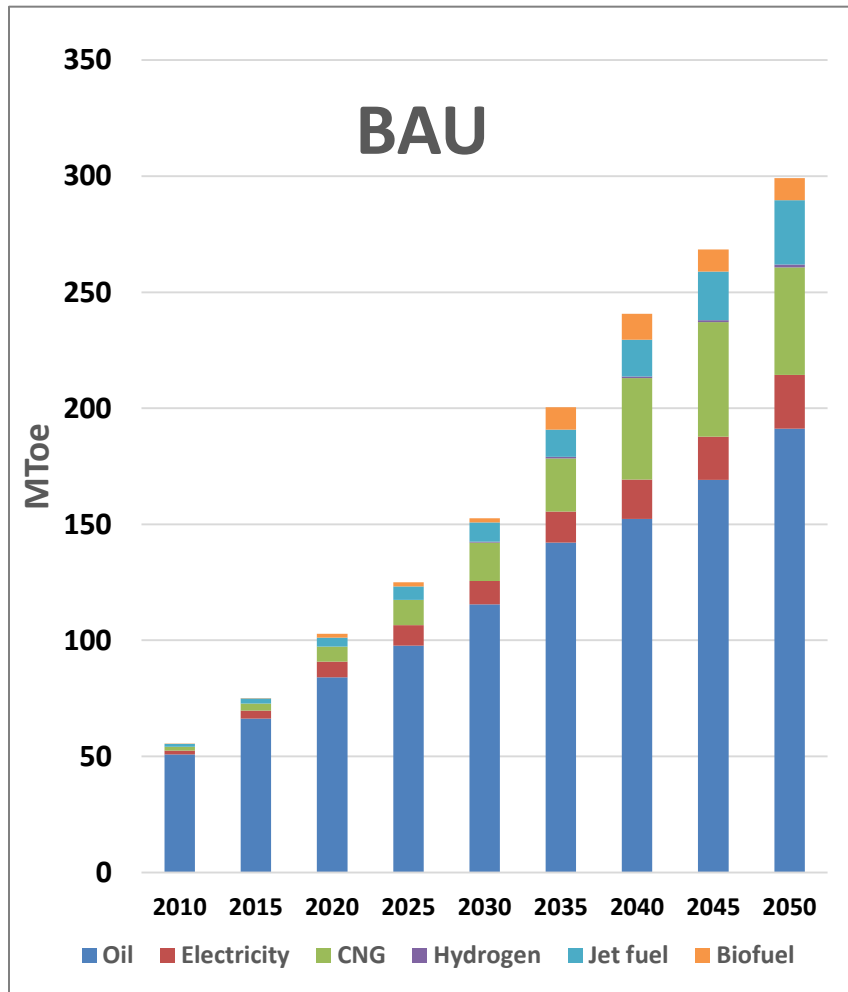
Passenger Transport Demand - Urban Sustainable Mobility (Bpkm)



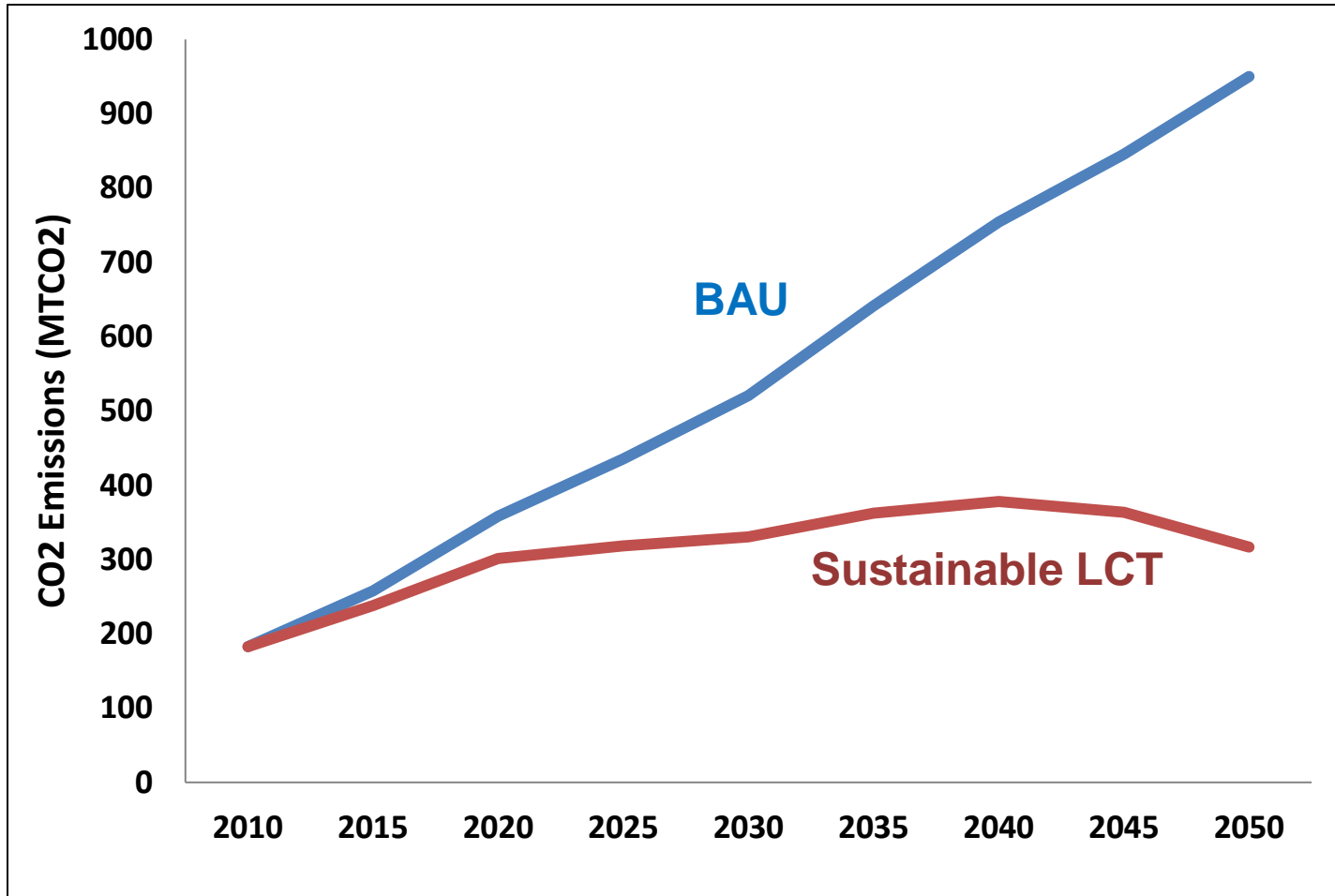
# Sustainable Low Carbon Transport: Results of Modeling Assessment



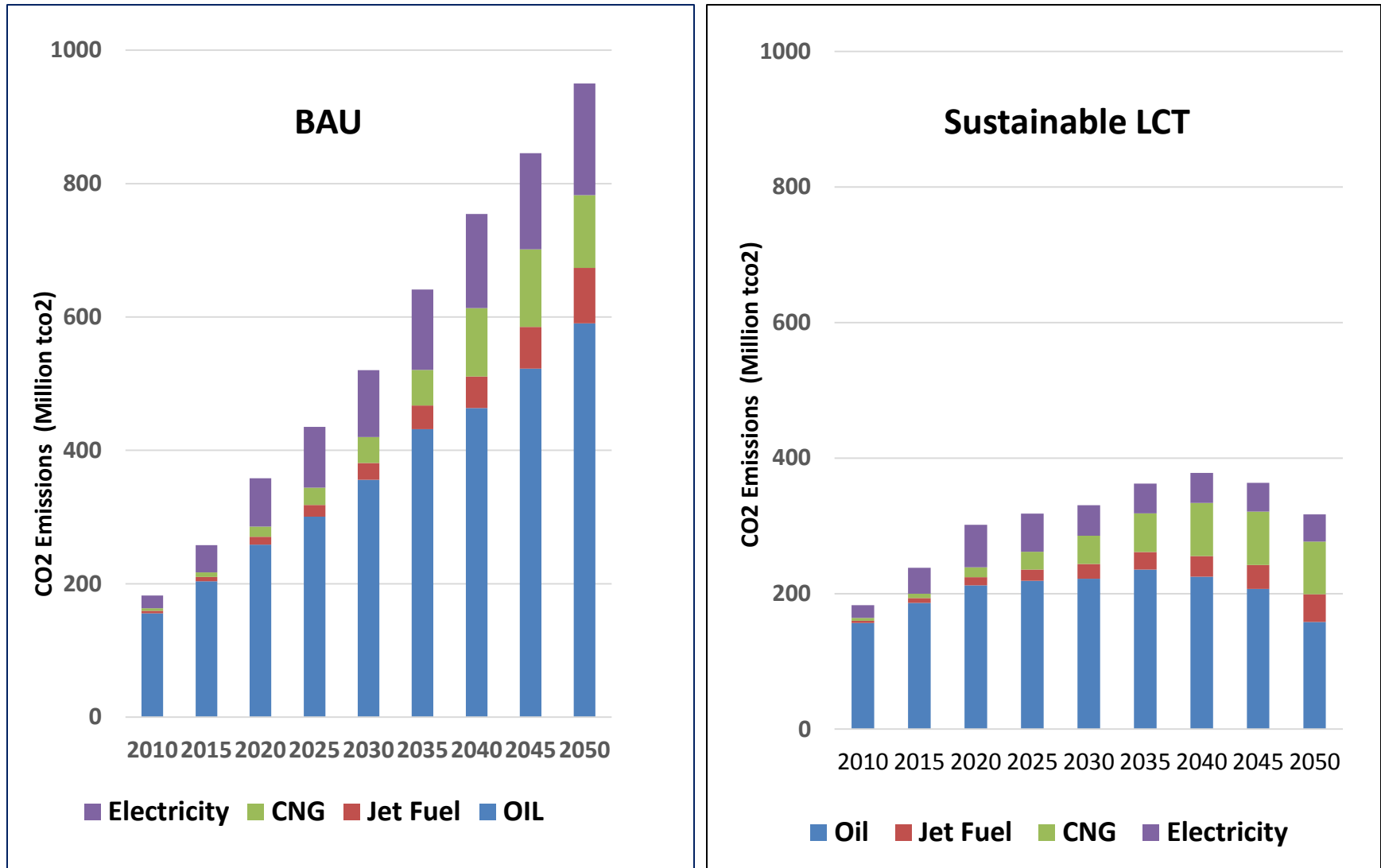
# Energy Mix for Transport



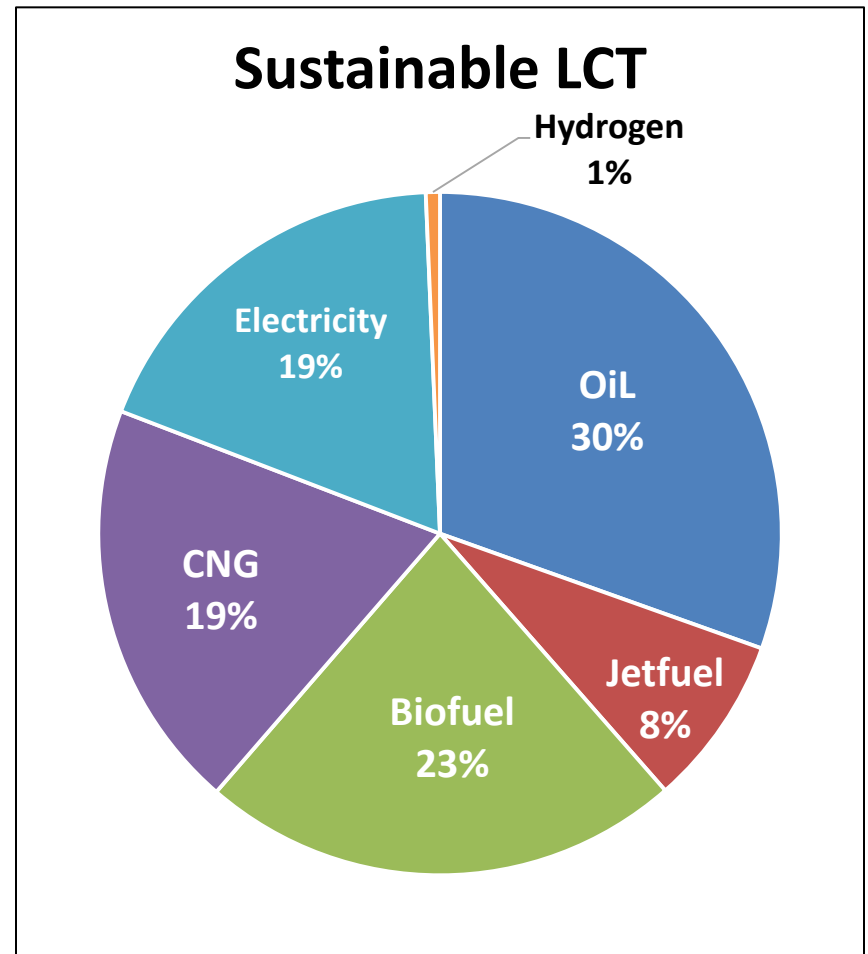
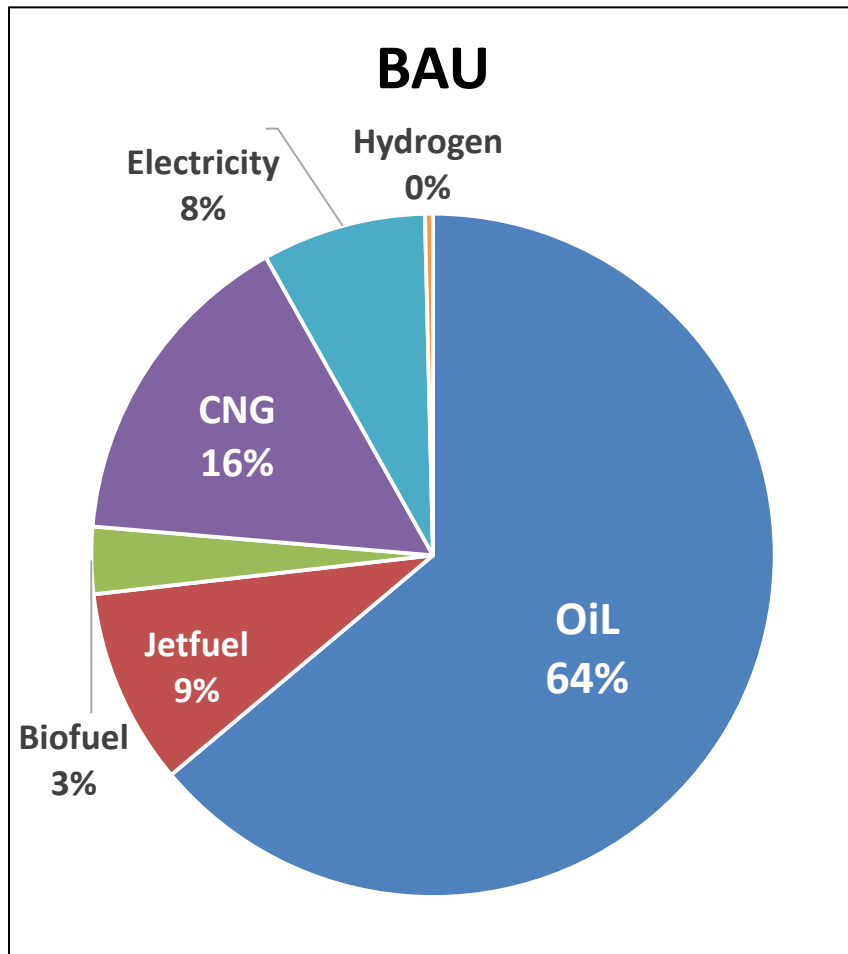
# Transport Sector CO<sub>2</sub> Emissions



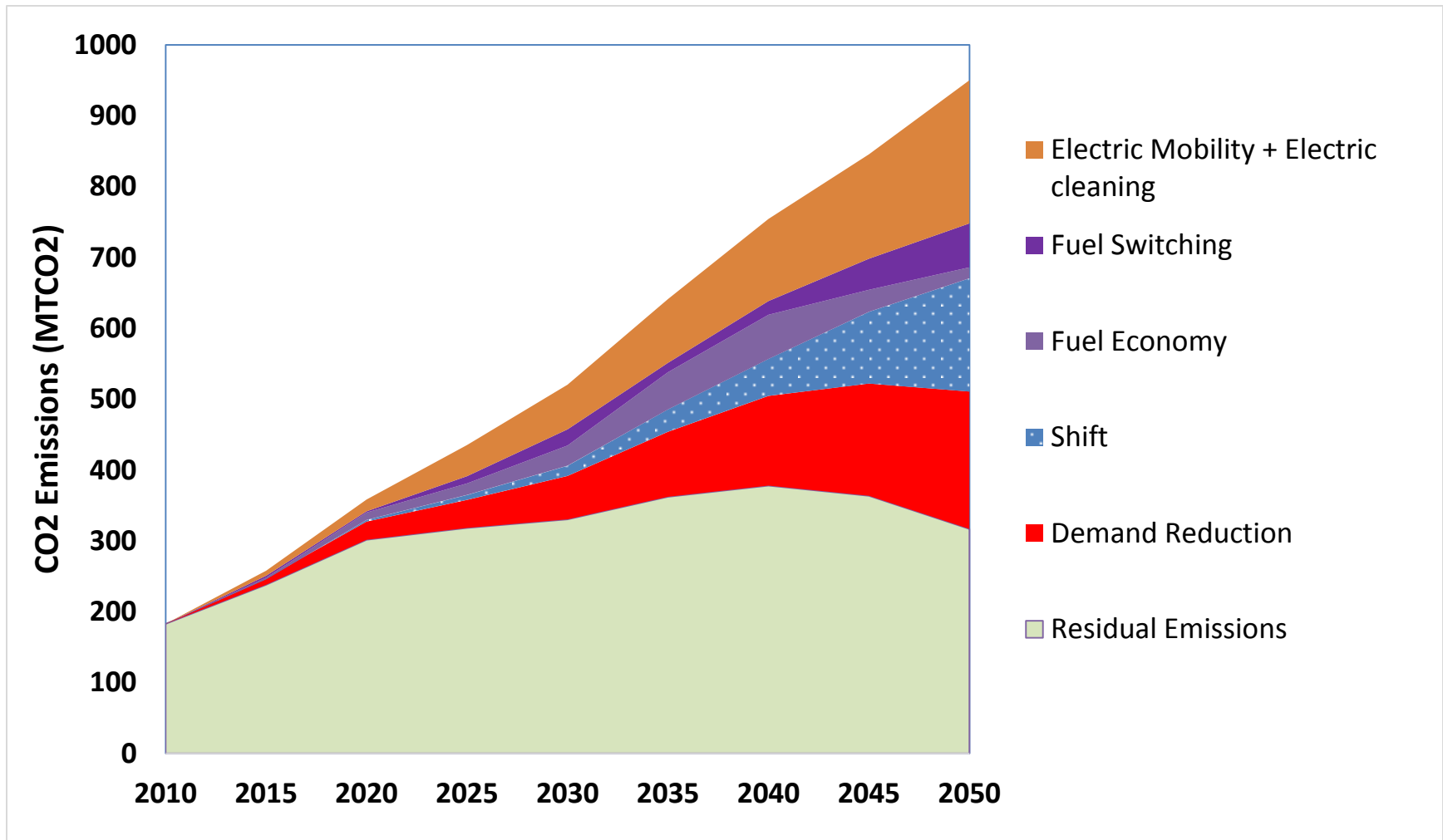
# CO<sub>2</sub> Emissions- Transport



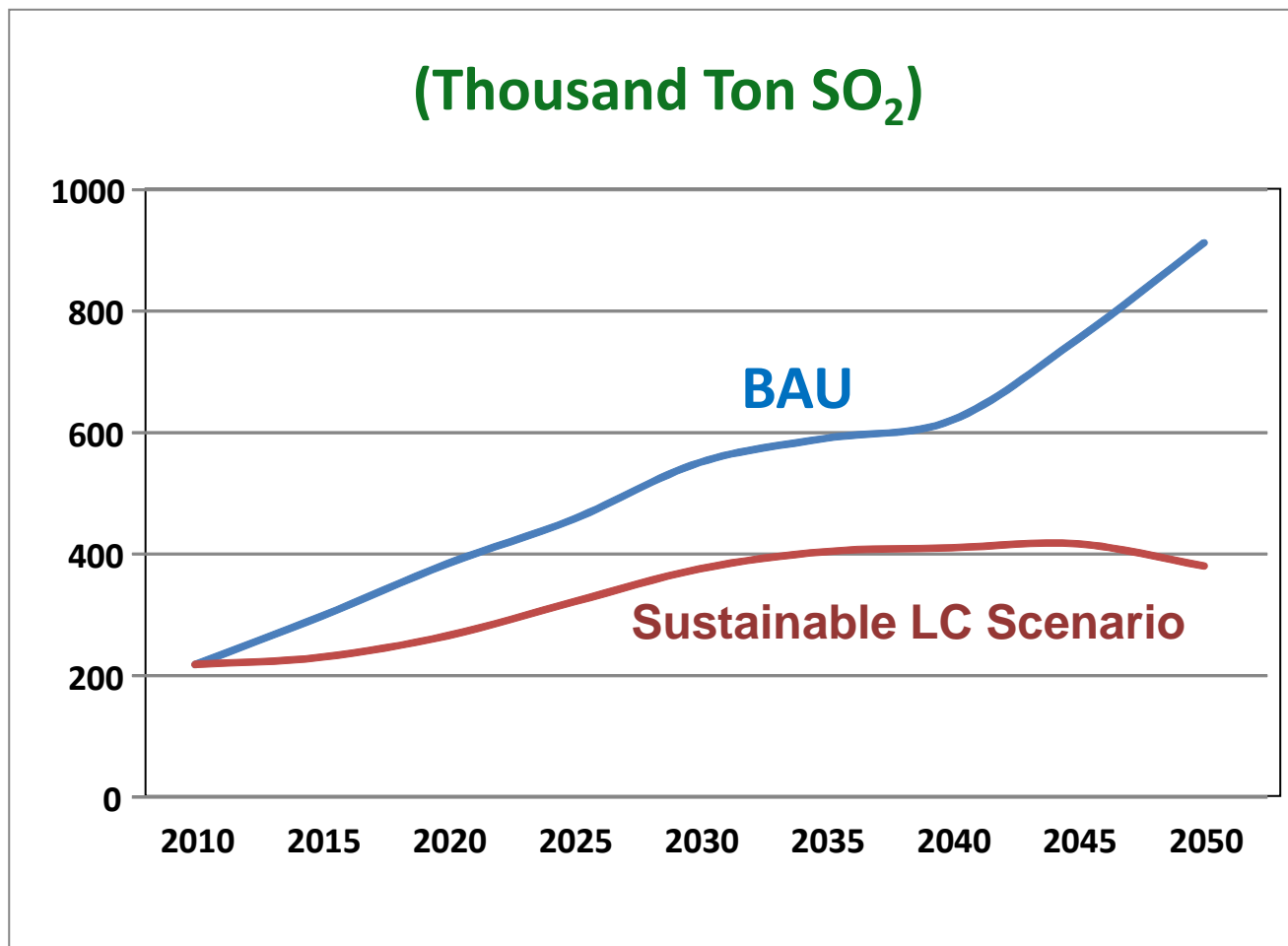
# Transport Fuel Mix in 2050



# CO<sub>2</sub> Mitigation: Sustainable LCT Scenario



# SO<sub>2</sub> Emissions from Transport



# Conclusions: Sustainable Low Carbon Development

1. **Scenario Storyline**: Multiple Objectives, Goals and Targets, Downscaled Strategies, Long-term and global perspective
2. **Framing and Method**: Back-casting from explicit targets
3. **Primary Energy and Technologies**: Portfolio; No silver bullet
4. **Policies and Measures**: Market and Non-market instruments
5. **CO<sub>2</sub> Emissions**: Direct and indirect measures
6. **Sector Policies (e.g. Transport)**: Modal shifts, Demand reduction, Technology efficiency; Fuel mix
7. **Co-benefits**: Coordination for co- benefits, e.g. air pollution, energy security, energy access; Lower social value of carbon
8. **Implementation**: Missions Approach; Strategic orientation

# Thank You

**UNEP Project Website:** [www.unep.org/transport/lowcarbon](http://www.unep.org/transport/lowcarbon)

**AIM Website:** [www-iam.nies.go.jp/aim/](http://www-iam.nies.go.jp/aim/)