

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

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

Priyadarshi R Shukla
Subash Dhar

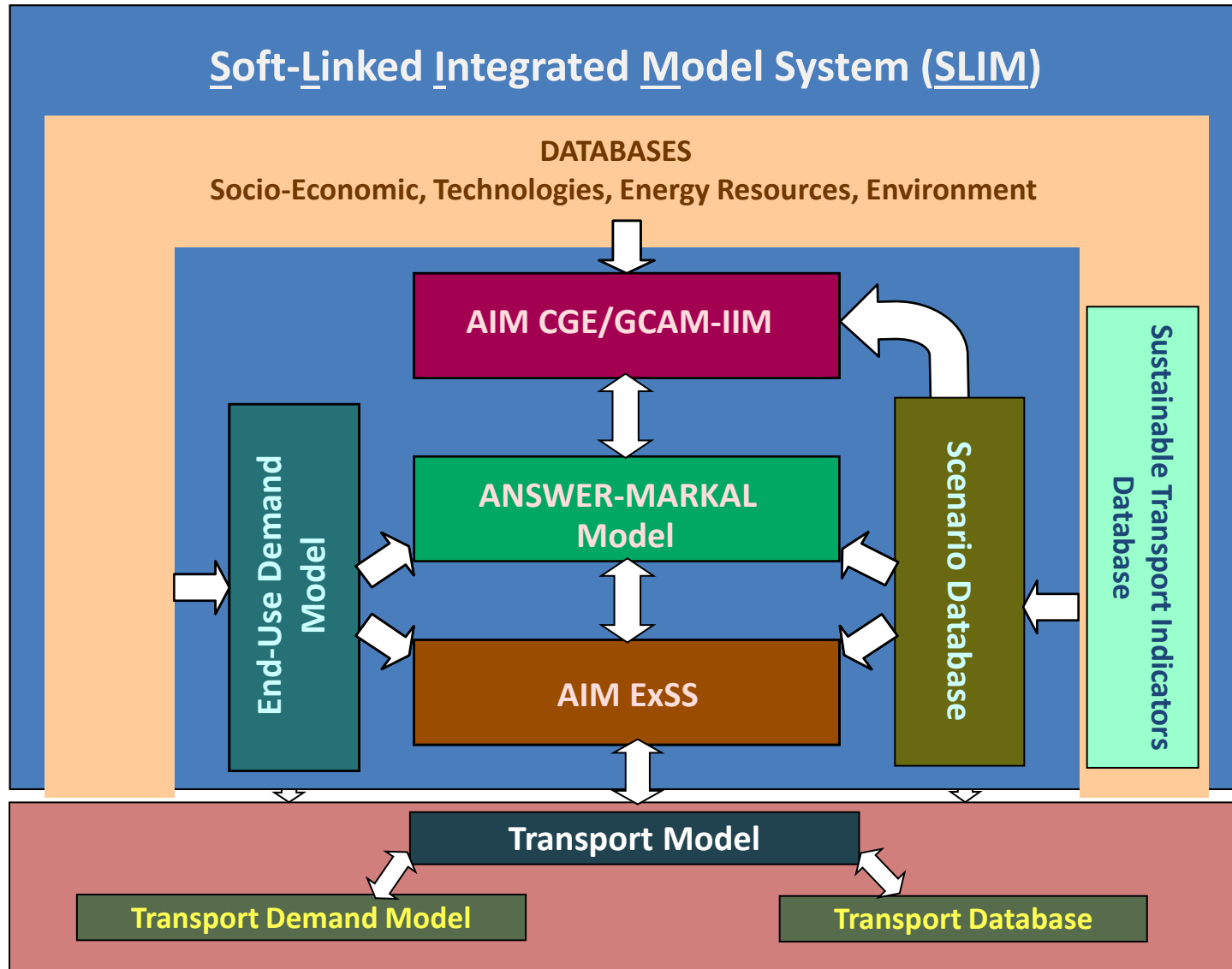
COP19 Side-event Organized by: National Institute of Environment Studies (NIES), Japan
'Pathways towards Low Carbon Societies in Asia by 2050'
November 13, 2013 (16:30 to 18:00 hours, Venue: Japan Pavilion at COP19
Warsaw, Poland



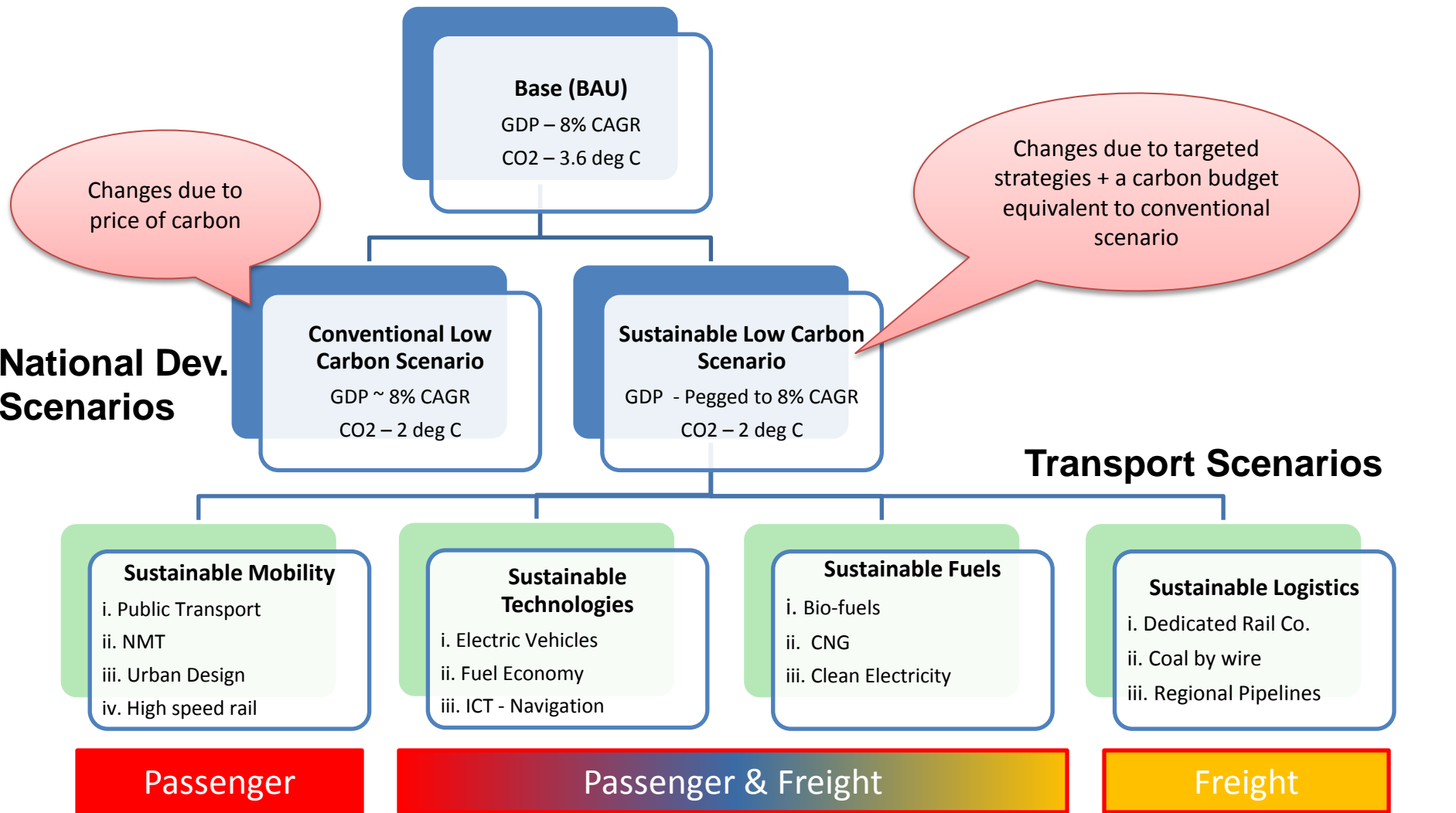
Sustainable LC Society: Scenarios and Perspectives

- 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

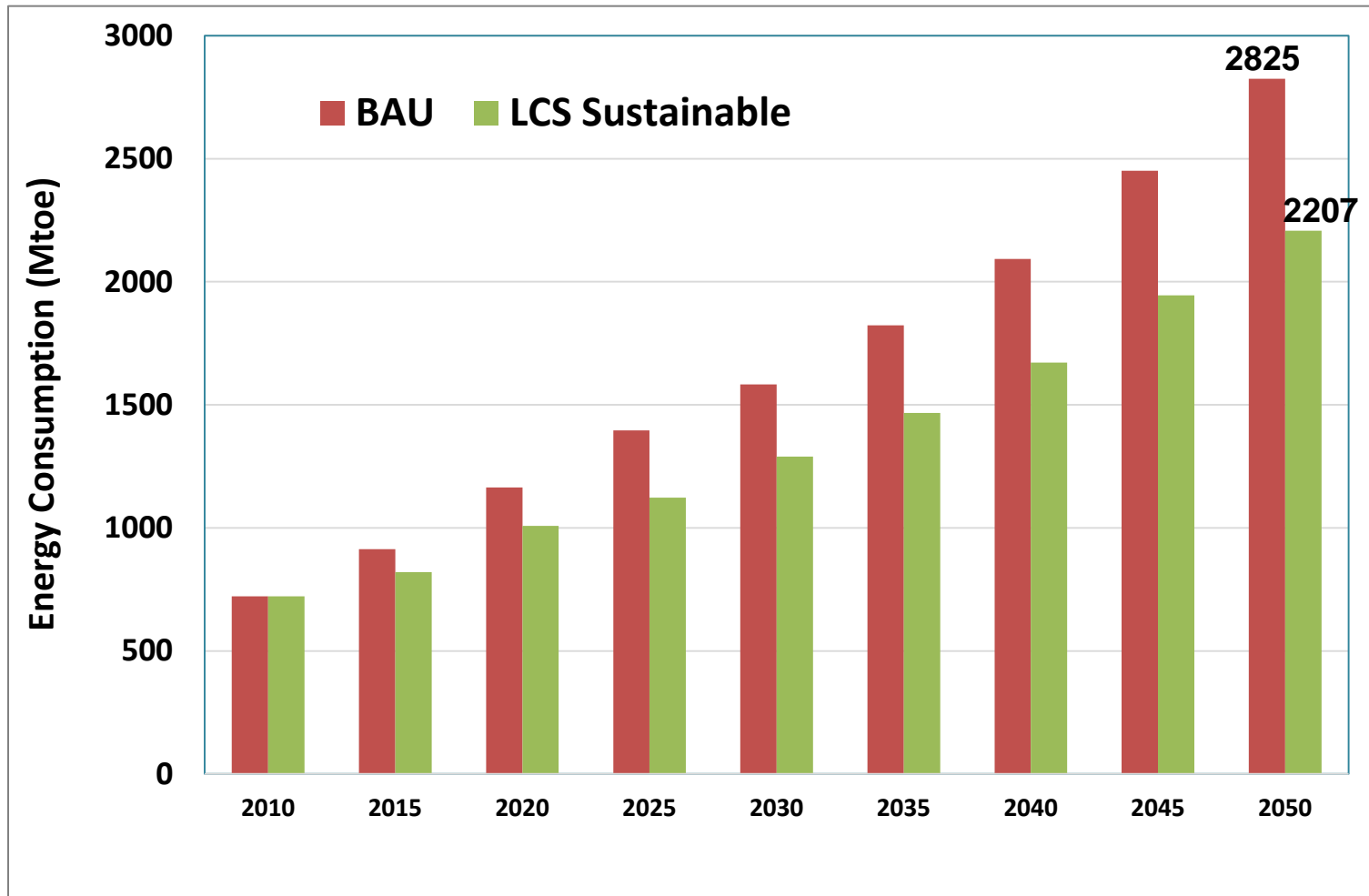
Soft-Linked Integrated Model



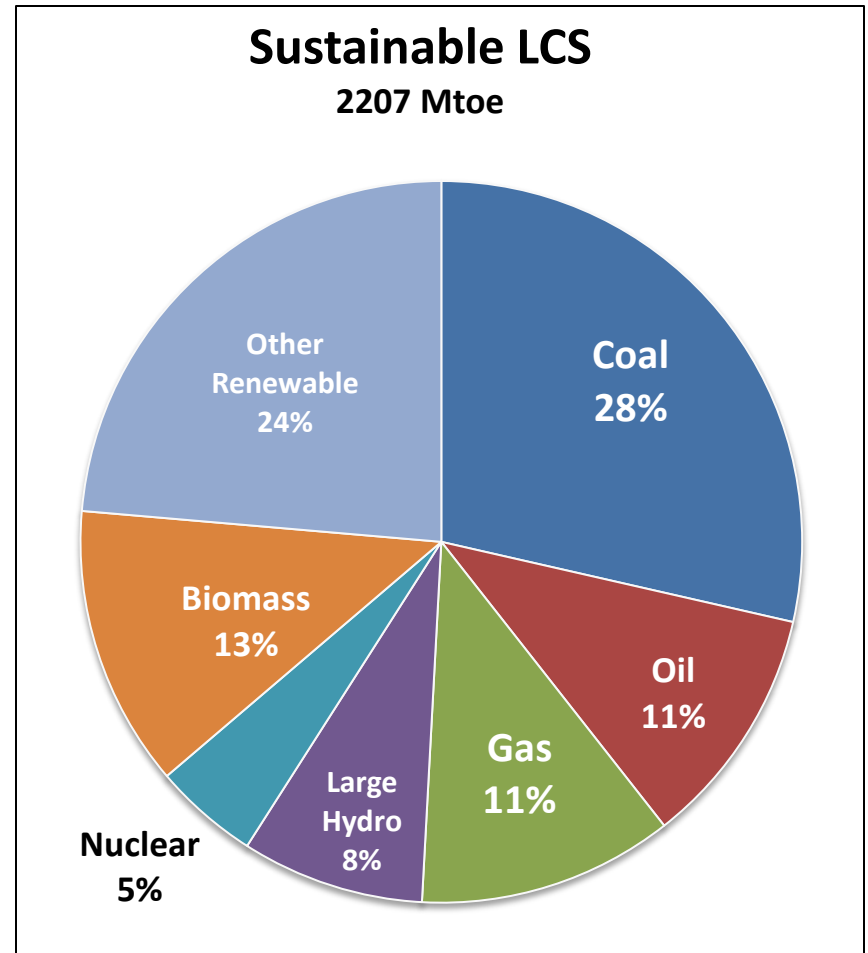
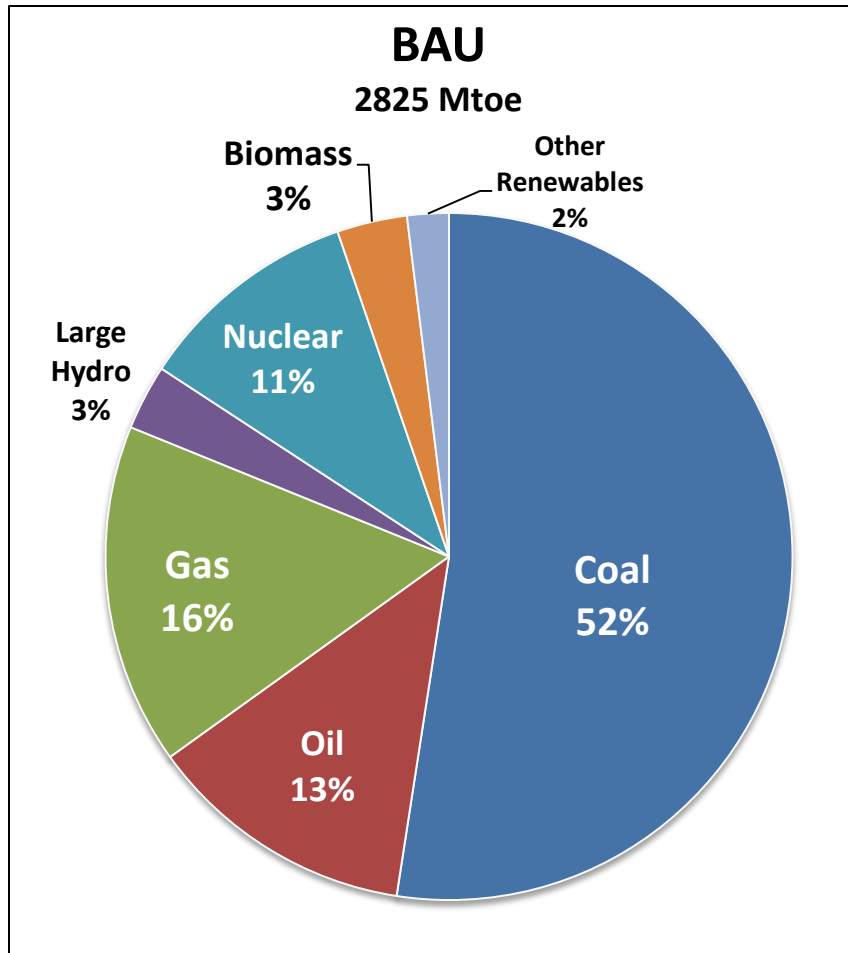
National Development and Transport Scenarios



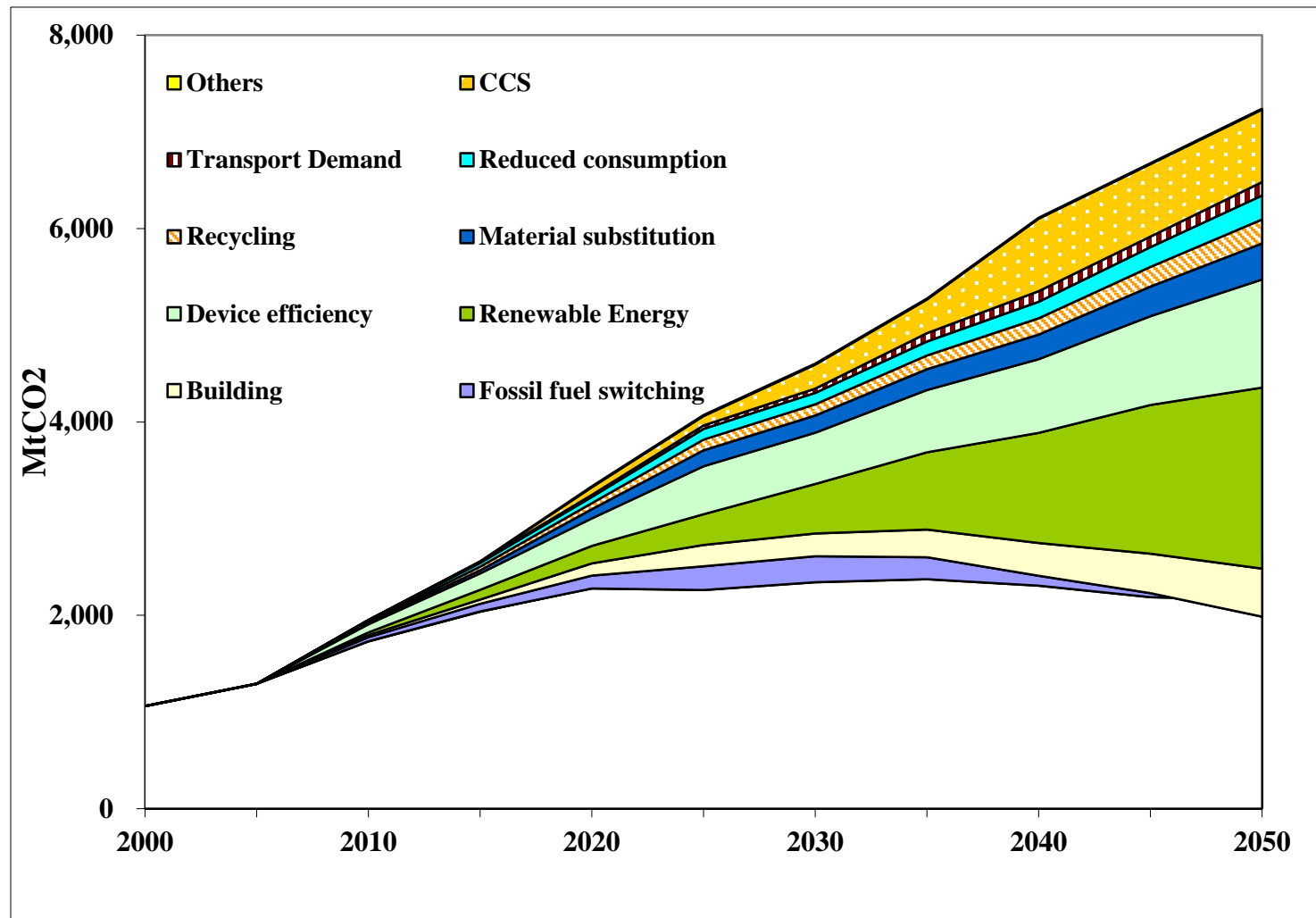
INDIA: Primary Energy



INDIA: Primary Energy Mix (2050)

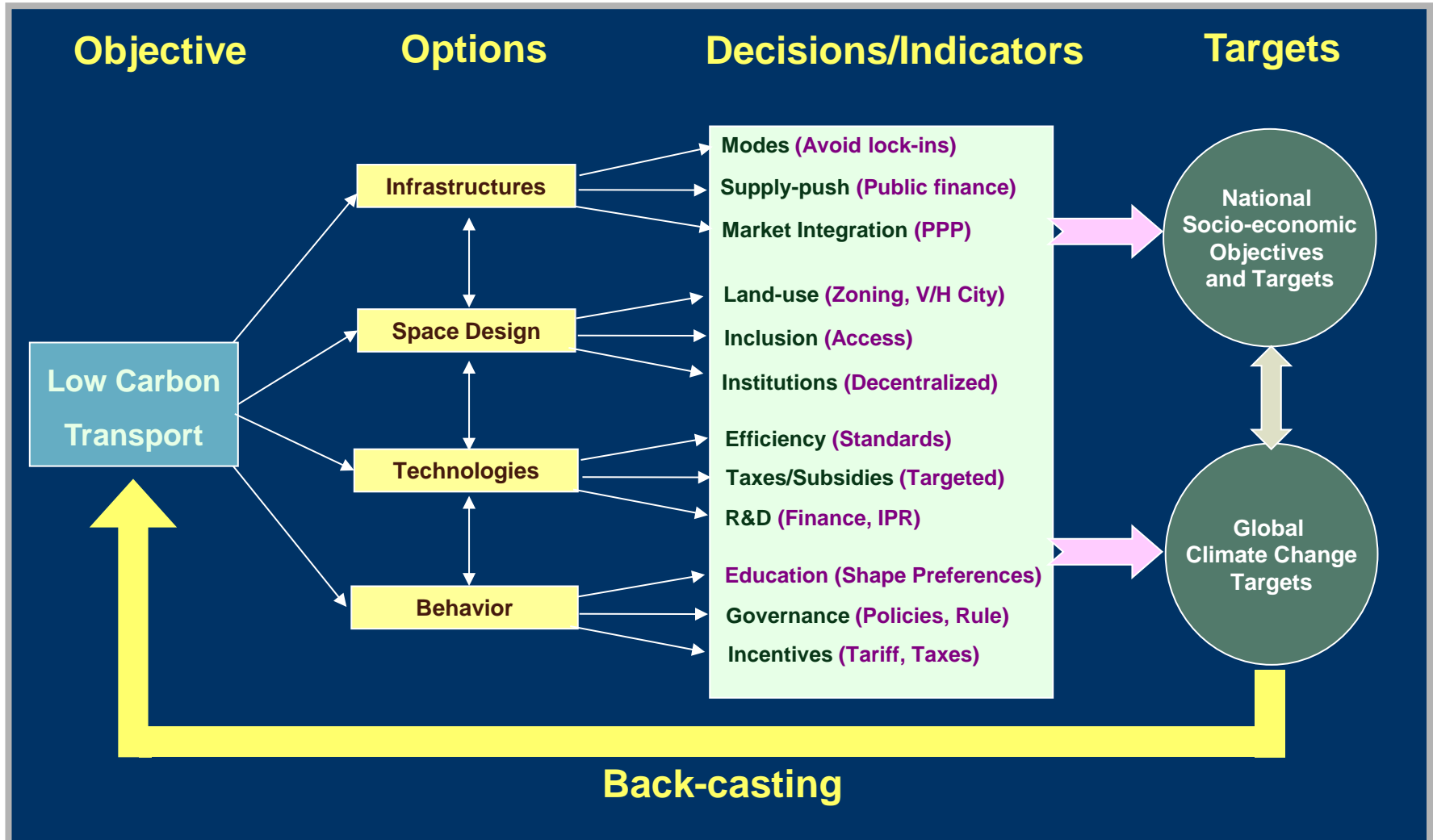


CO₂ Reduction: Sustainable Low Carbon Scenario

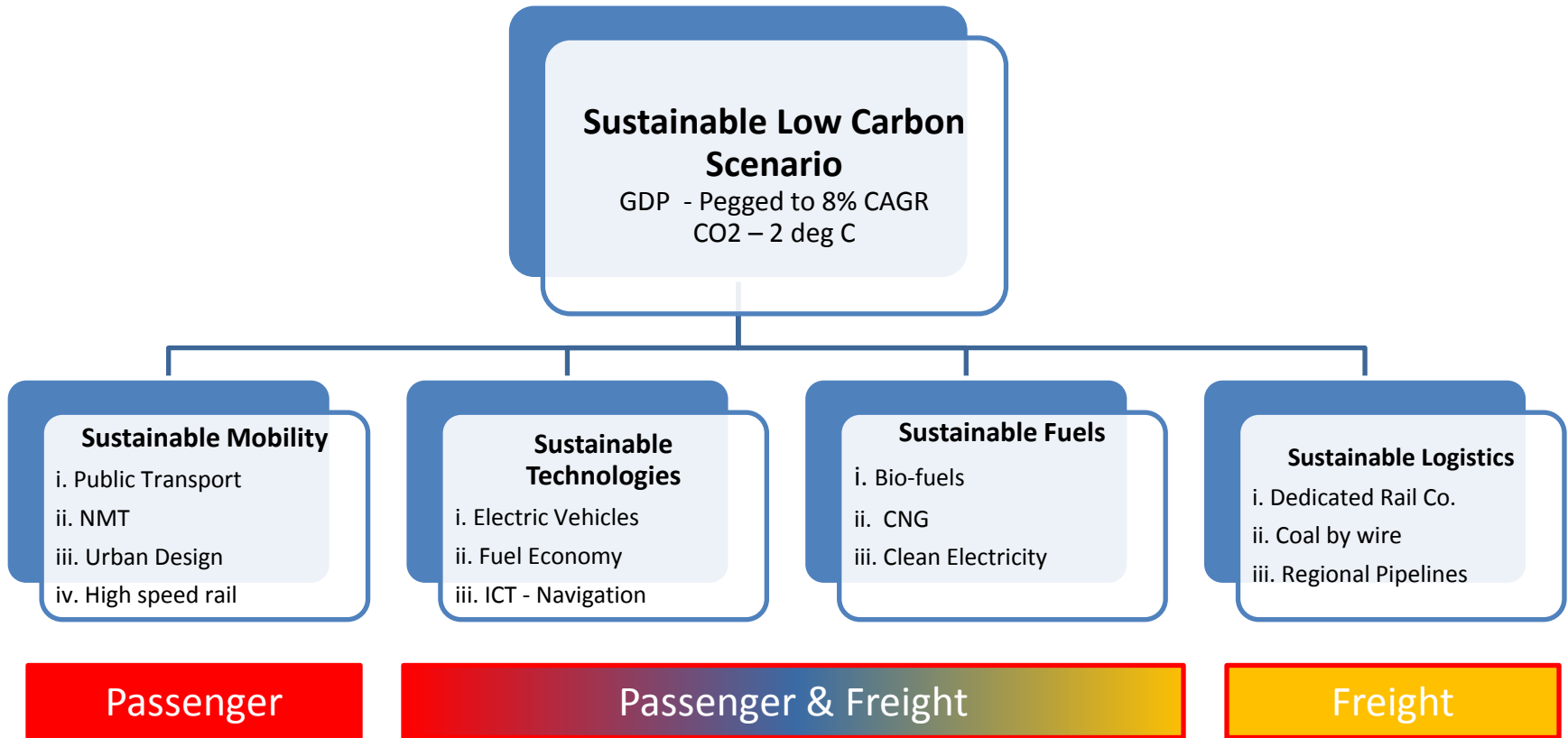


Sustainable Low Carbon Transport: Scenario Architecture and Results

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.

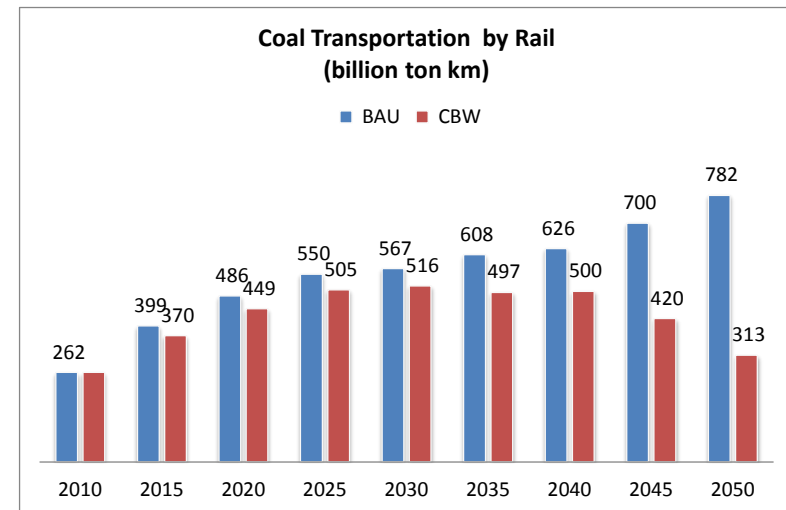
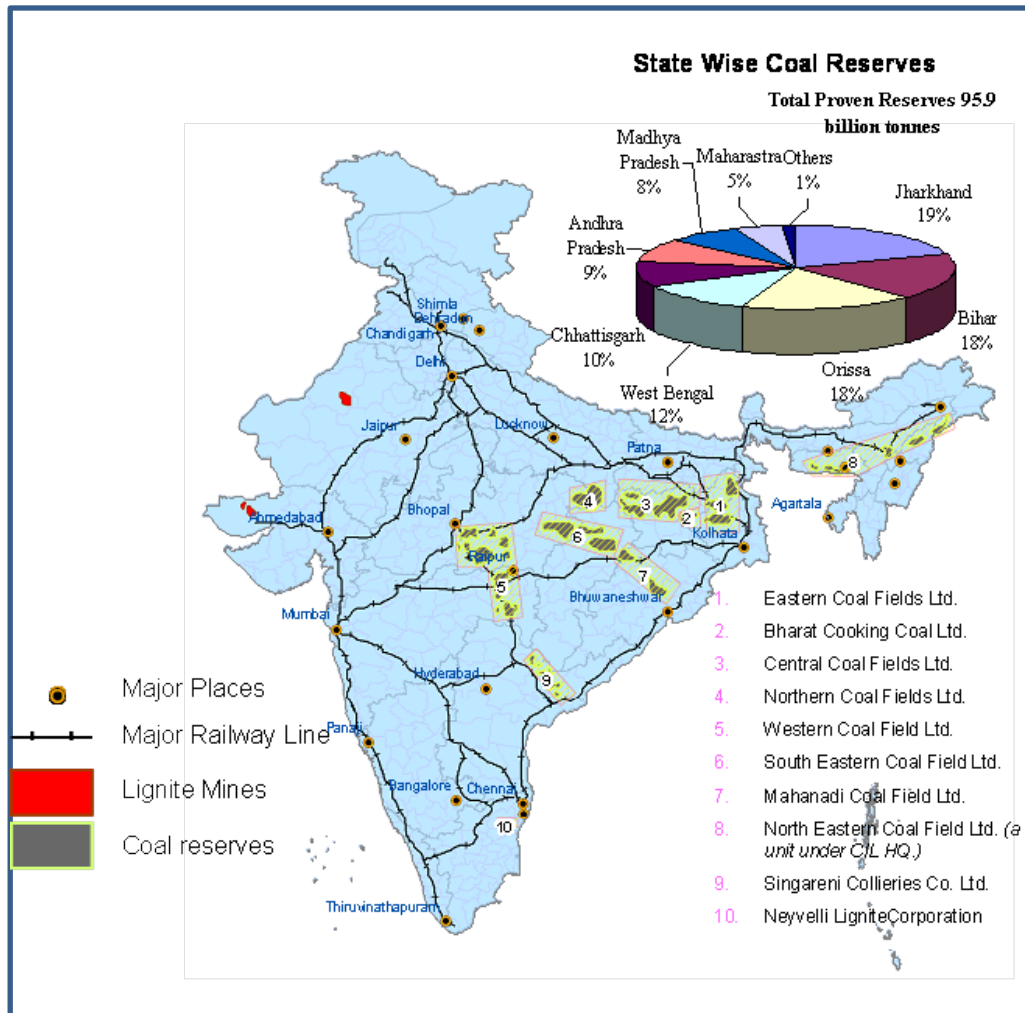


Sustainable Freight Storyline

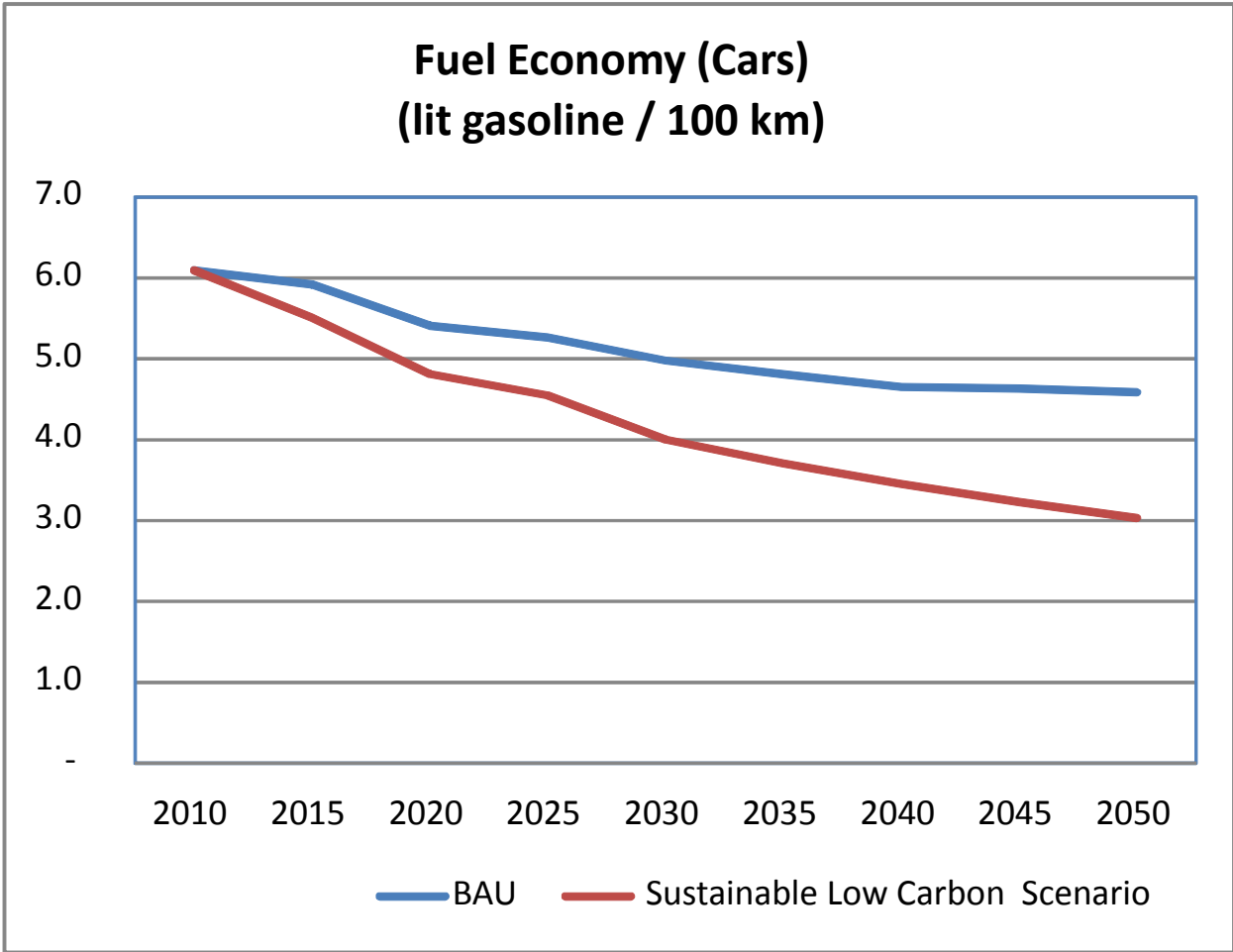
- **Rail Freight: Dedicated freight corridors (DFC), shift of fuels from rail to pipelines, etc**
- **Ports & Inland Water ways: Greater investments in small ports and water ways**
- **Coal by Wire (CBW):**
- **Regional Cooperation: International Gas pipelines, Electricity grids reduce demand for coal**



Infrastructure Alternatives: Coal by Wire

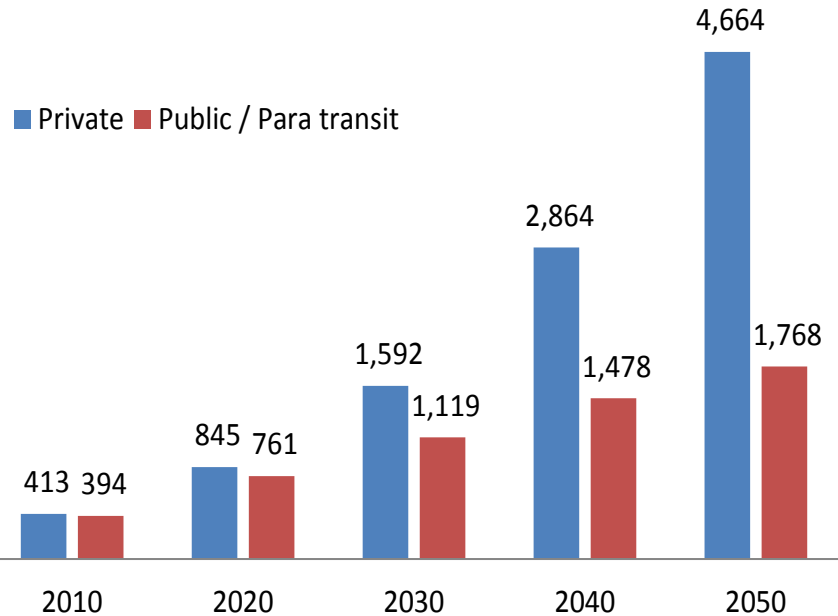


Fuel Economy: BAU and Low Carbon

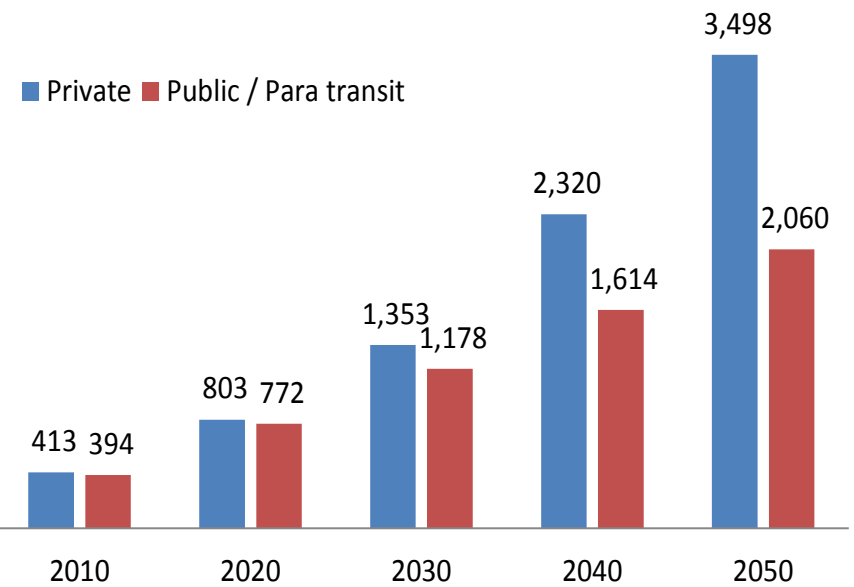


Demand for Urban Transport in BAU & Sustainable Mobility

Passenger Transport Demand - Urban BAU (Bpkm)

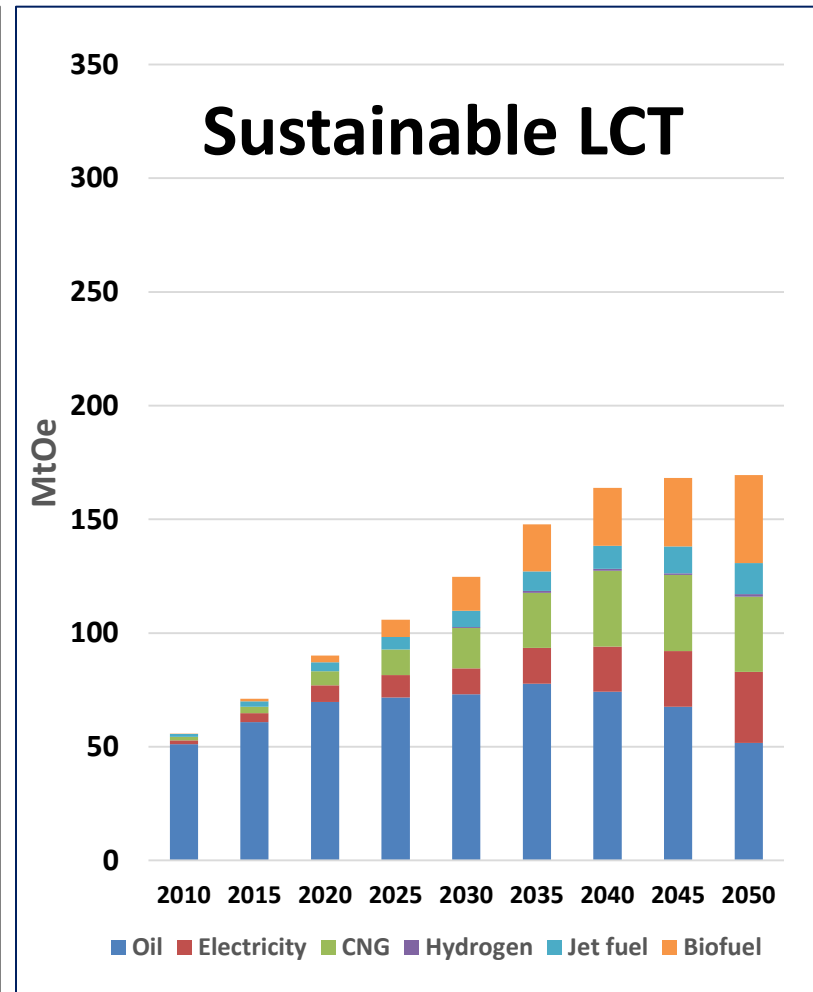
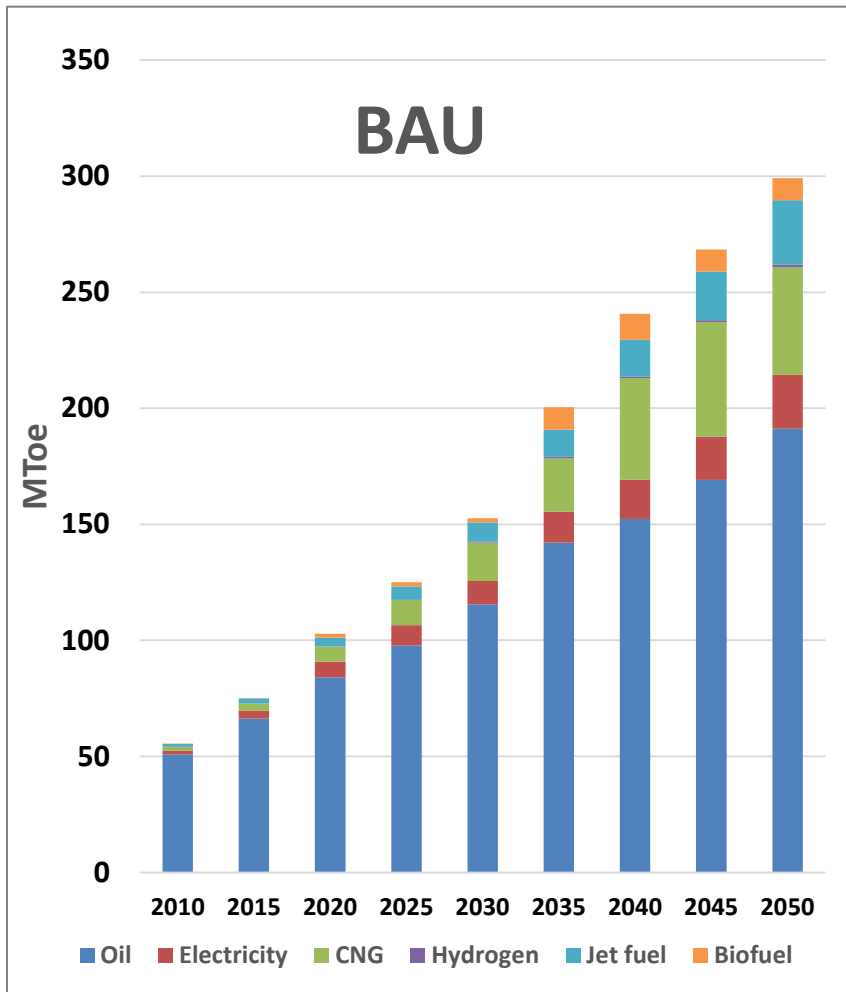


Passenger Transport Demand - Urban Sustainable Mobility (Bpkm)

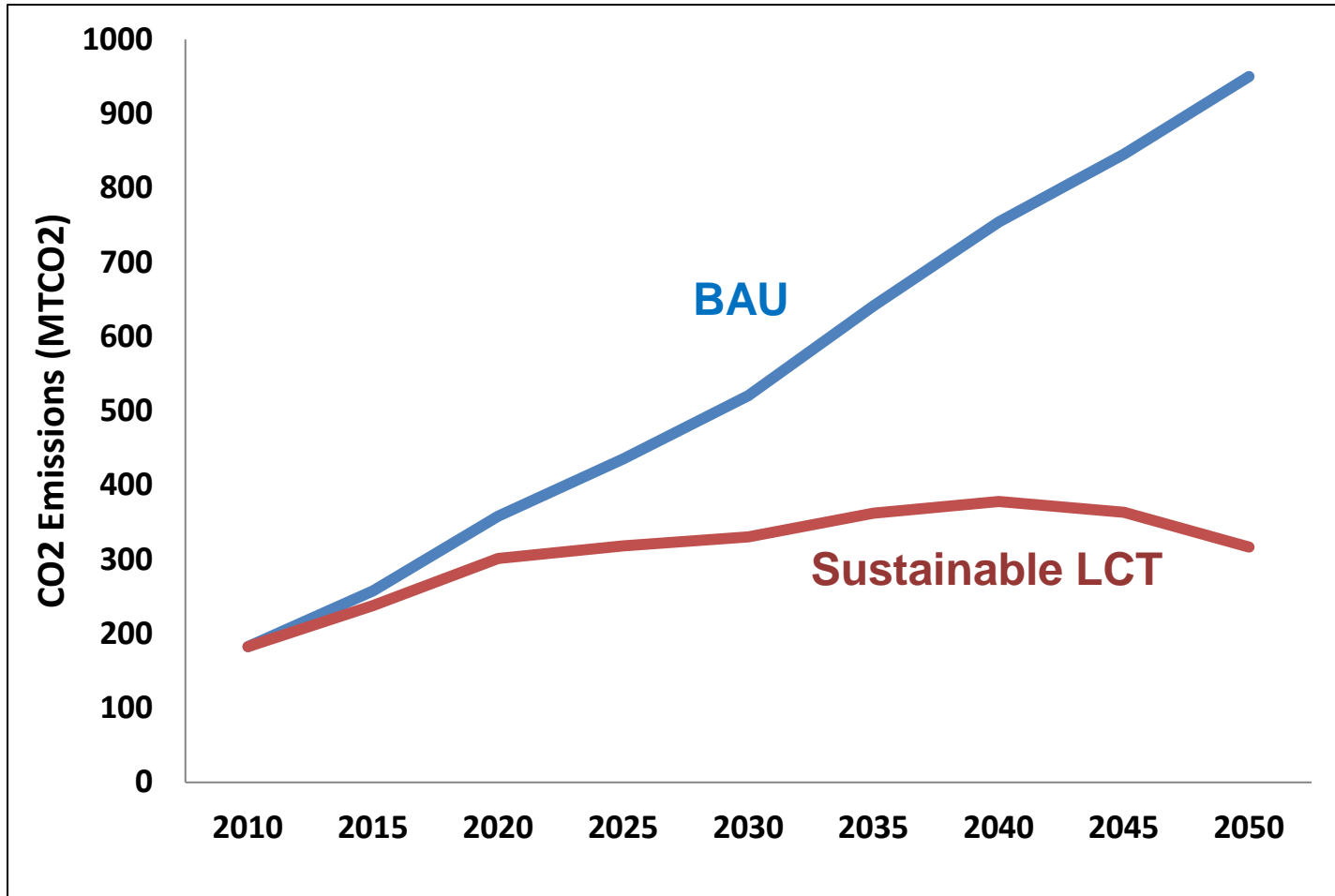


Sustainable Low Carbon Transport: Results of Modeling Assessment

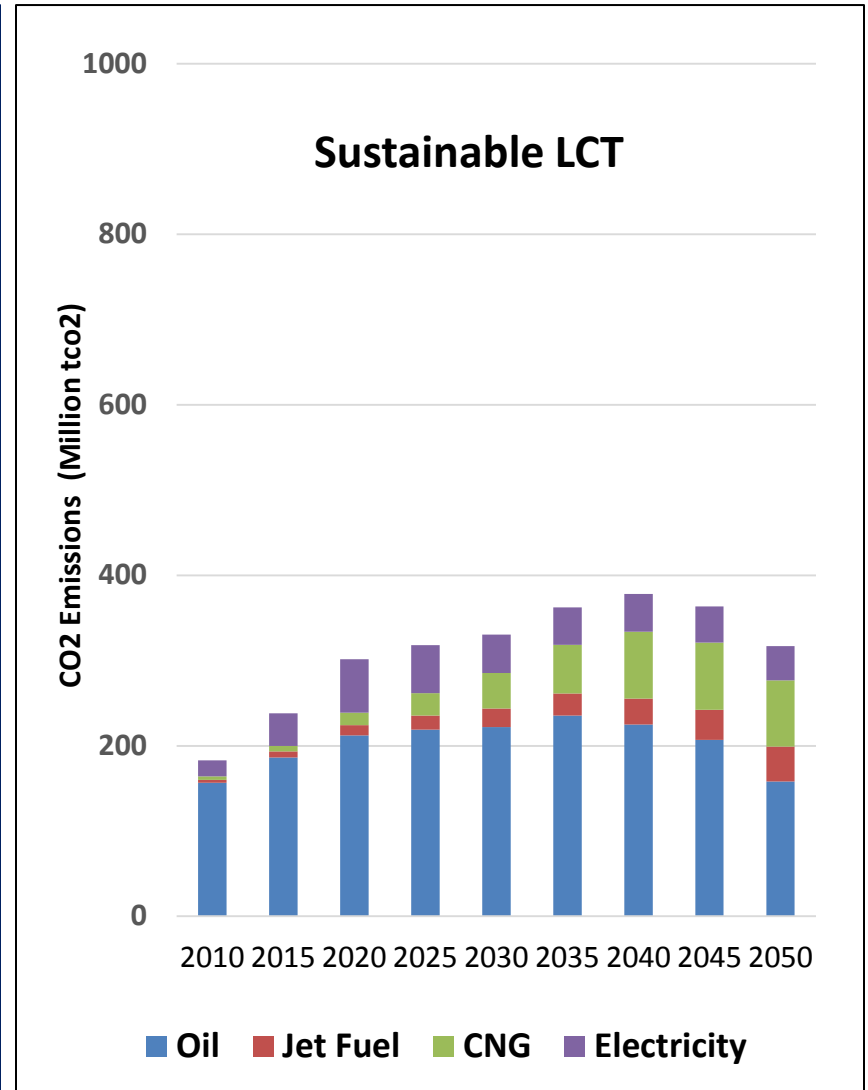
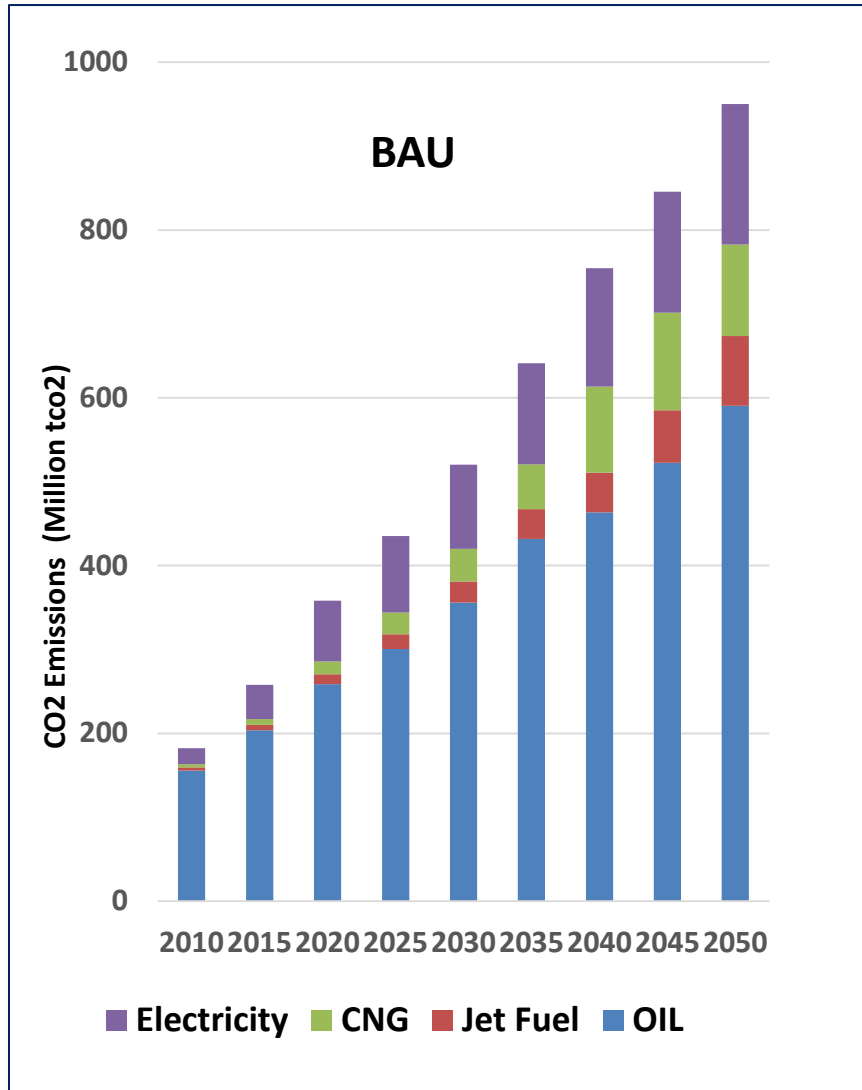
Energy Mix for Transport



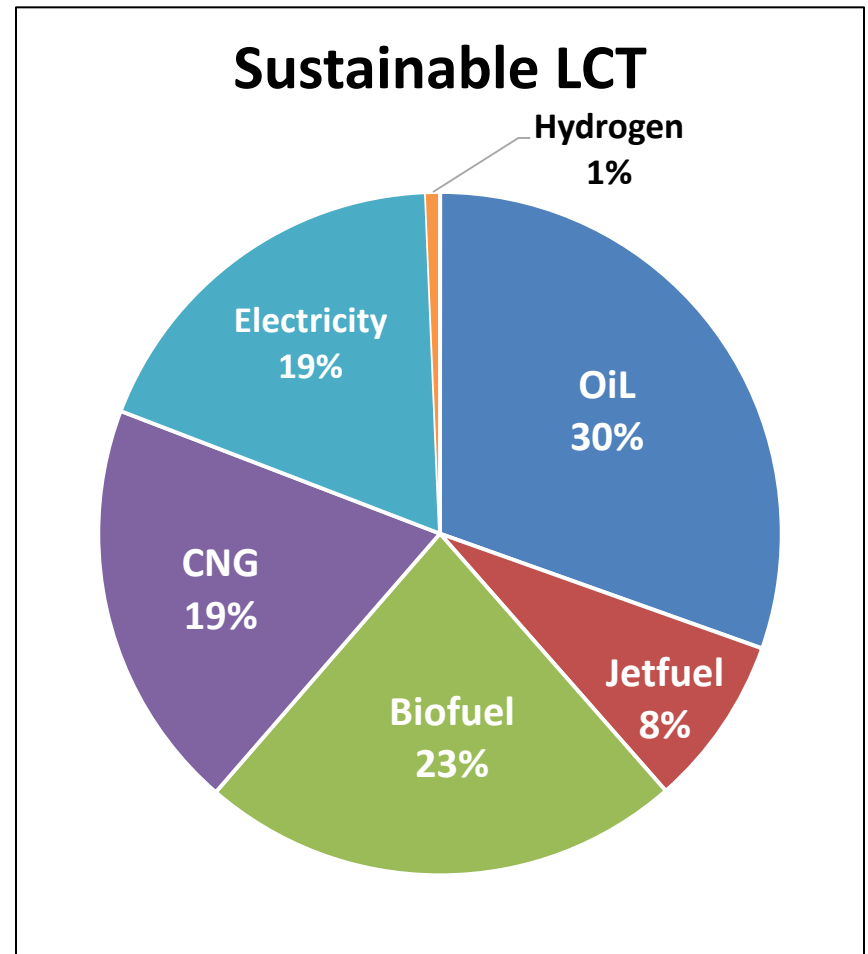
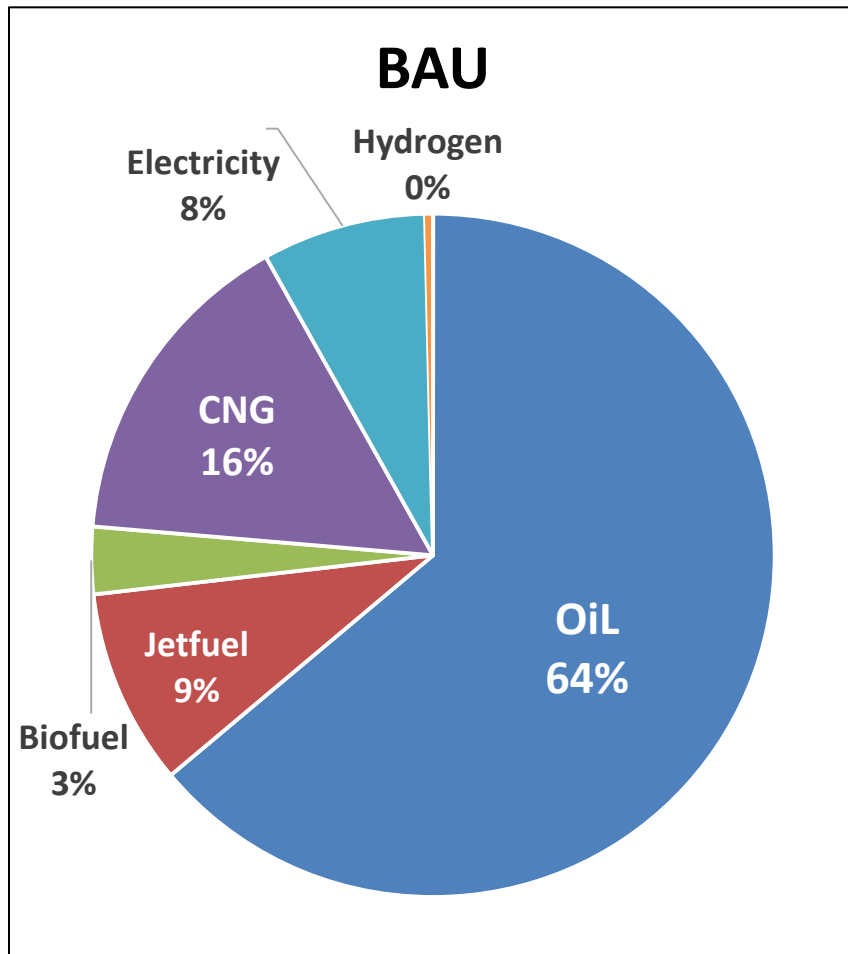
Transport Sector CO₂ Emissions



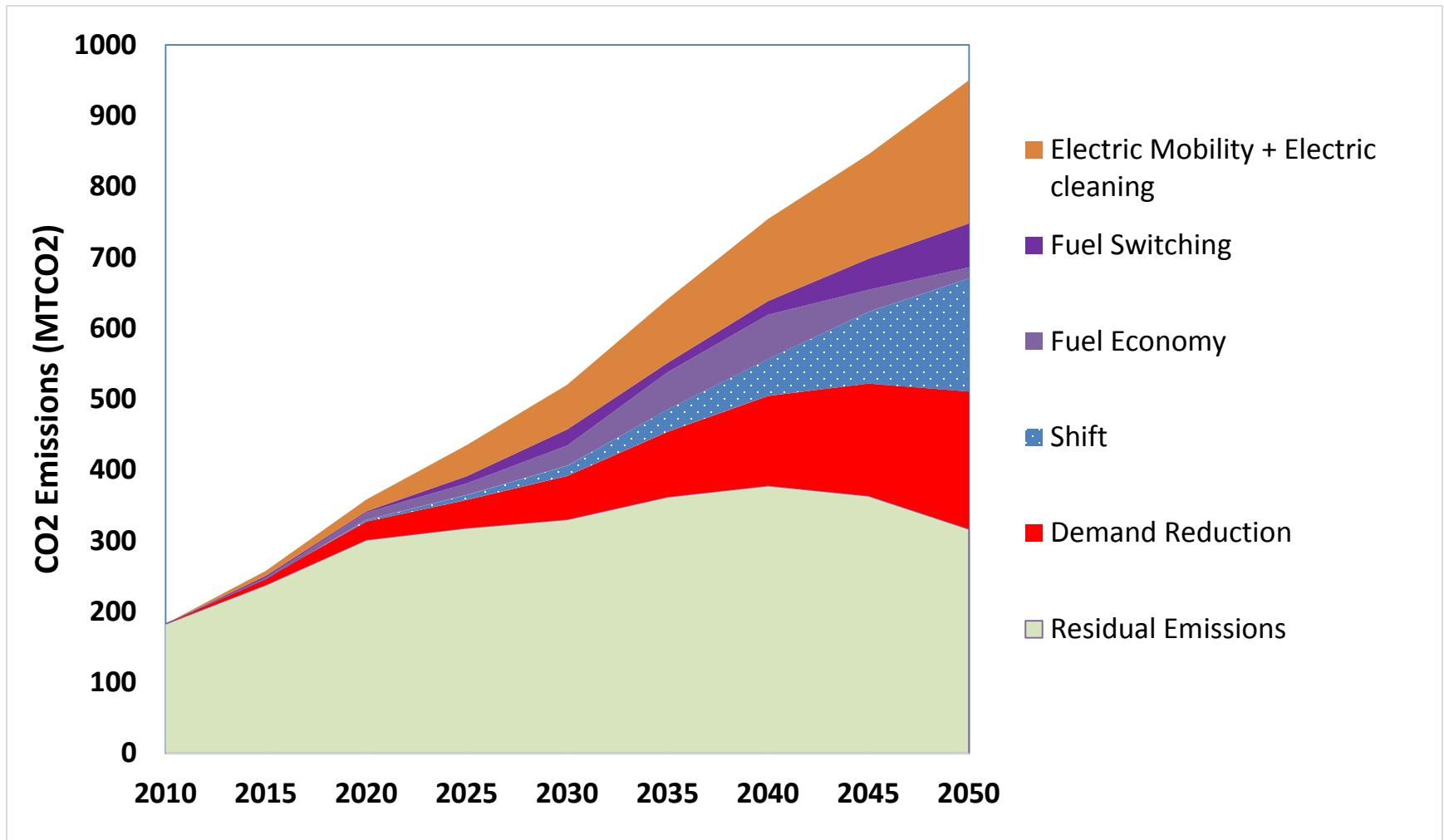
CO₂ Emissions- Transport



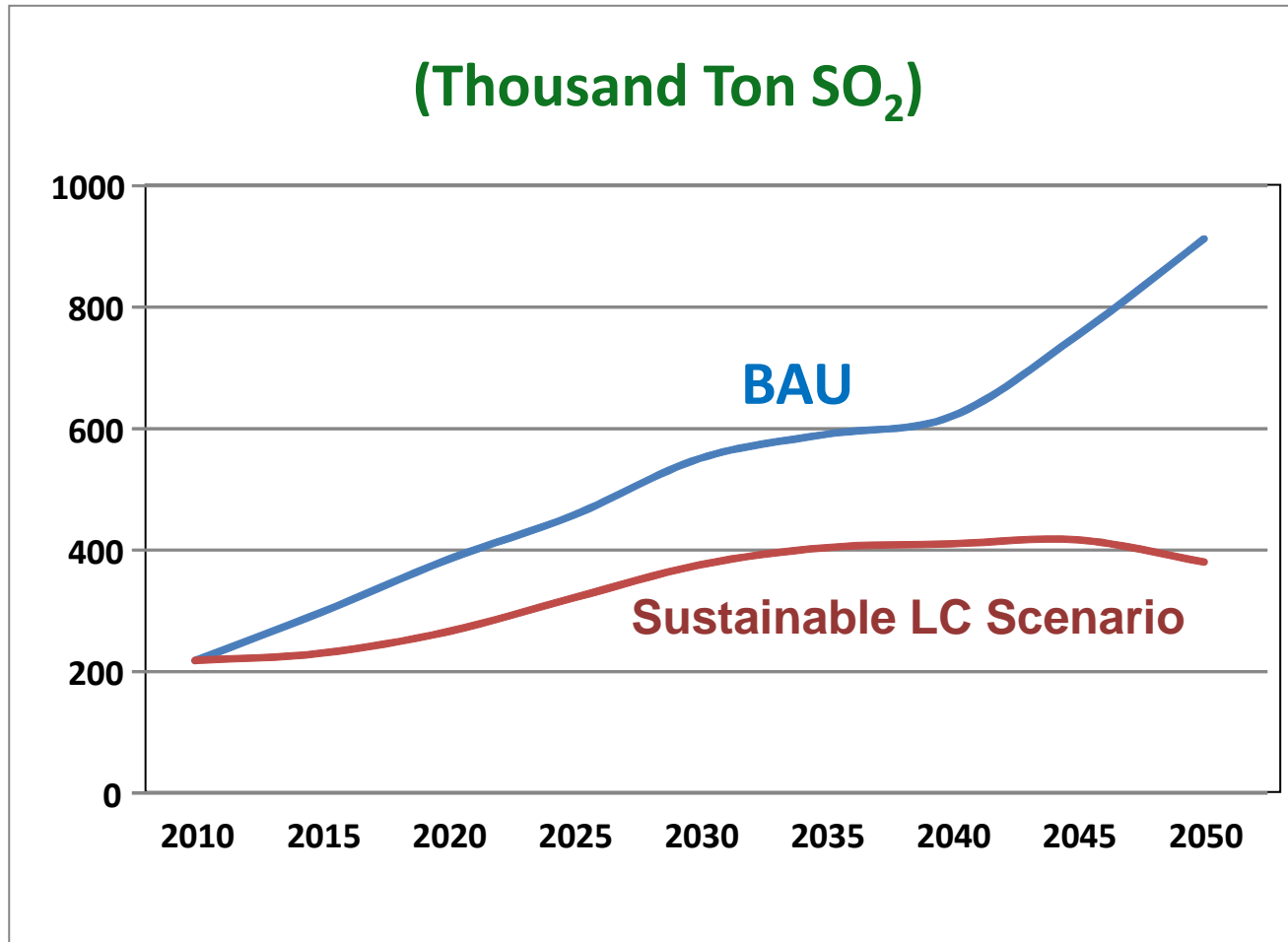
Transport Fuel Mix in 2050



CO₂ Mitigation: Sustainable LCT Scenario



SO₂ 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. **CO₂ 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

AIM Website: www-iam.nies.go.jp/aim/