Macro Considerations for Urban Low Carbon Mobility Plans

Prem Pangotra and P.R. Shukla
Indian Institute of Management
Ahmedabad, India

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Presentation Agenda

1. What do we mean by Low Carbon?
2. Sustainable Low Carbon Mobility Framework
3. Macro Indicators for Sustainable Low Carbon Transport
4. Aligning National and Local Policies

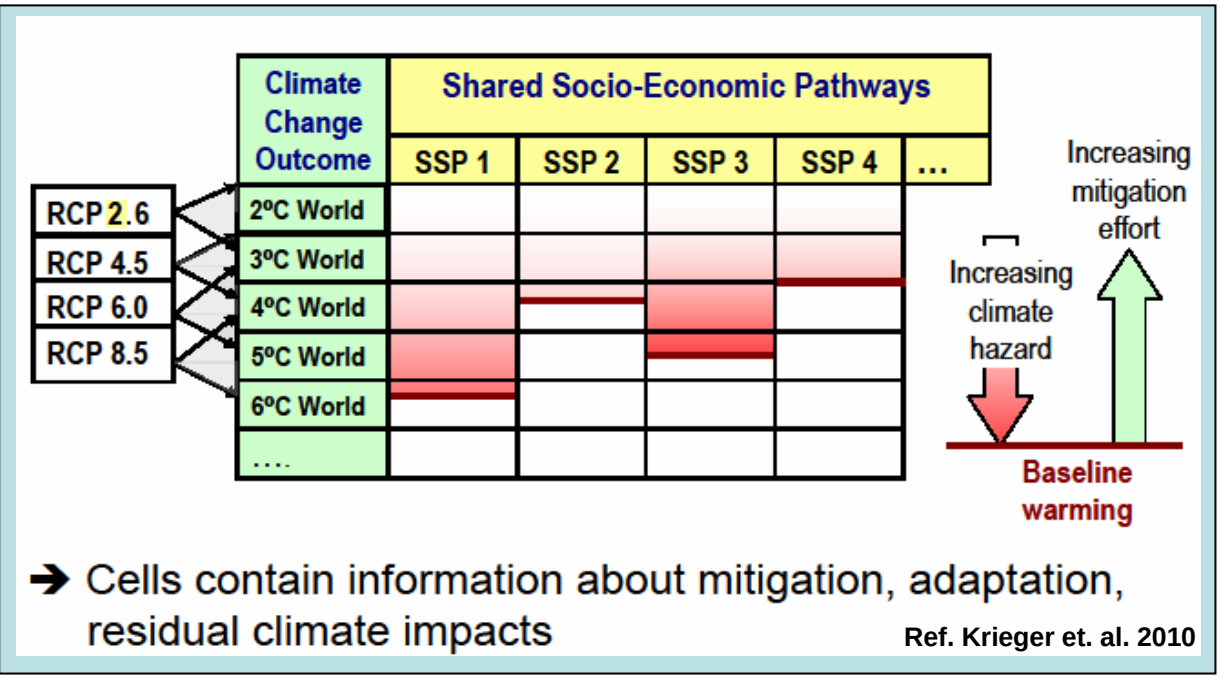
What do we mean by Low Carbon?

Global Climate Stabilization Target

Copenhagen and Cancun Agreements

2^{O}C Temperature Stabilization Target

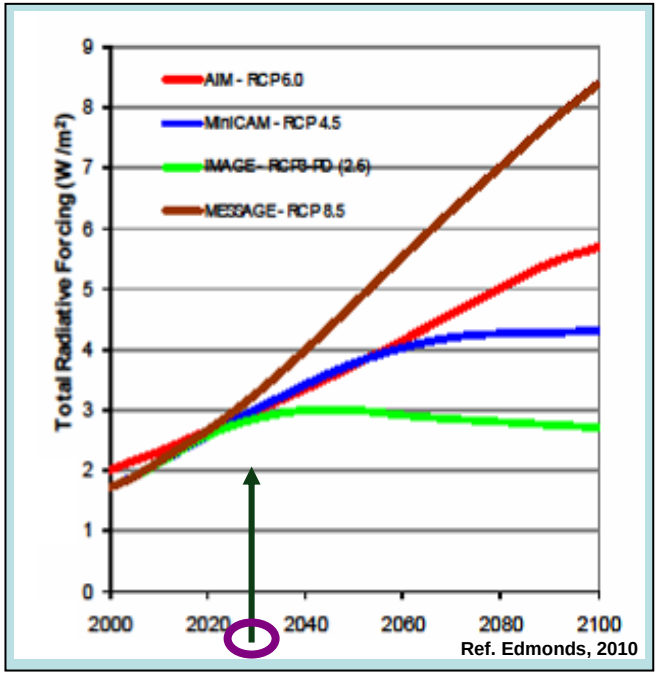
IPCC Representative Concentration Pathways (RCPs)



➔ Cells contain information about mitigation, adaptation, residual climate impacts

Ref. Krieger et. al. 2010

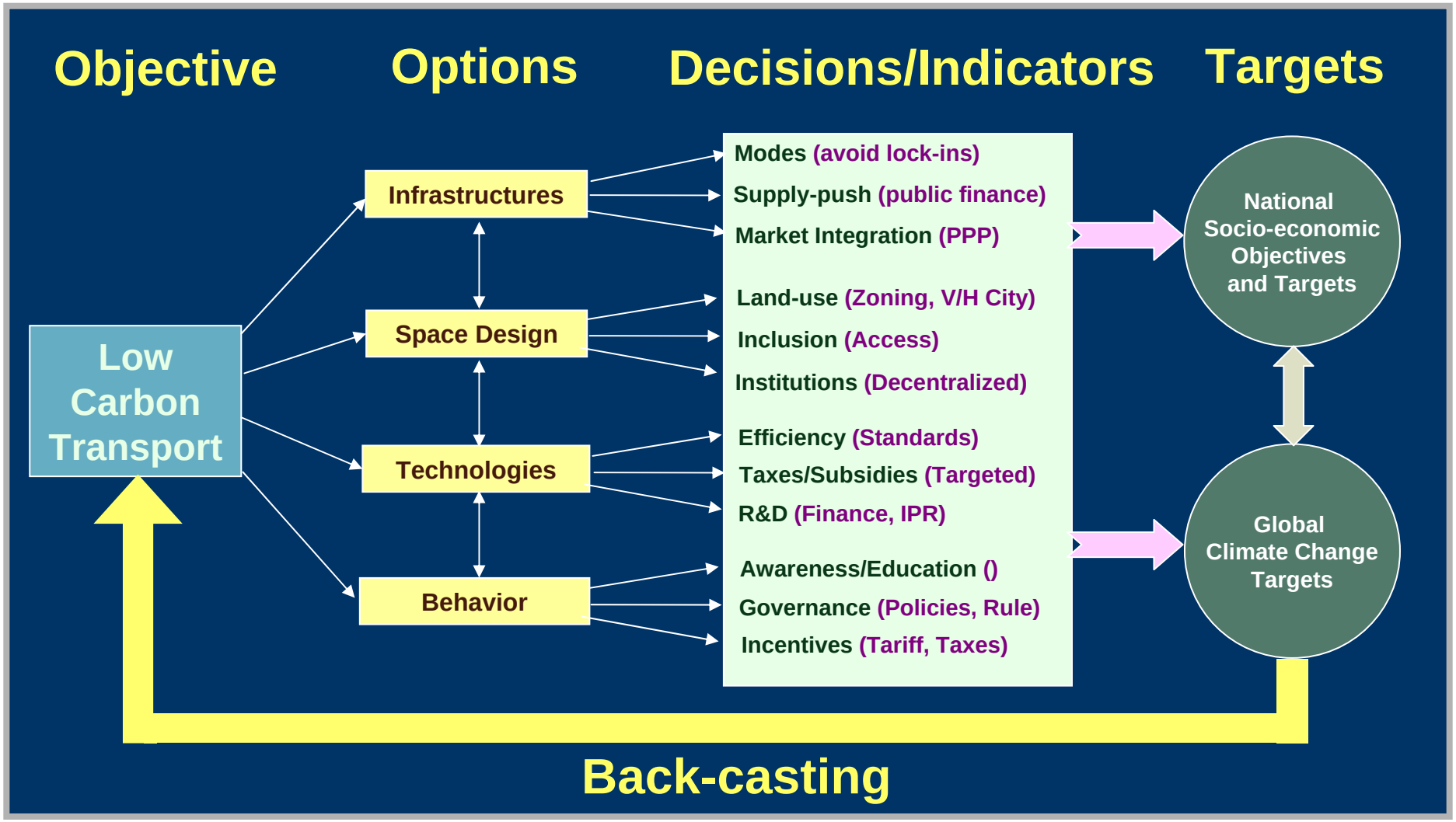
Emission Paths for RCPs



Ref. Edmonds, 2010

Available online (August 2011) in 'Climatic Change', Springer

Sustainable Low Carbon Mobility Framework



Copenhagen Commitments and Strategy

Copenhagen Commitments

- 20 to 25% Emissions Intensity Reduction from 2005 to 2020 (1.5 to 1.9% decoupling)
- Per Capita Emissions Below OECD Average (for ever)

National Climate Change Action Plan

Implementation Strategy: 8 National Missions

1. Solar Energy (22000 MW PV + Thermal by 2022)
2. Enhanced energy efficiency (Avoided Capacity 19000 MW by 2014-15)
3. Sustainable habitat
4. Water Sector (20% water use efficiency improvement)
5. Sustaining the Himalayan eco-system
6. A "Green India" (20 Mil. Hectare Forestation; Forest cover from 23 to 33%)
7. Sustainable agriculture (Micro irrigation promotion in 40 m ha)
8. Strategic knowledge for climate change

Aligning National and Local Policies

- **Indicators are key to link Low Carbon Actions and Development Targets**

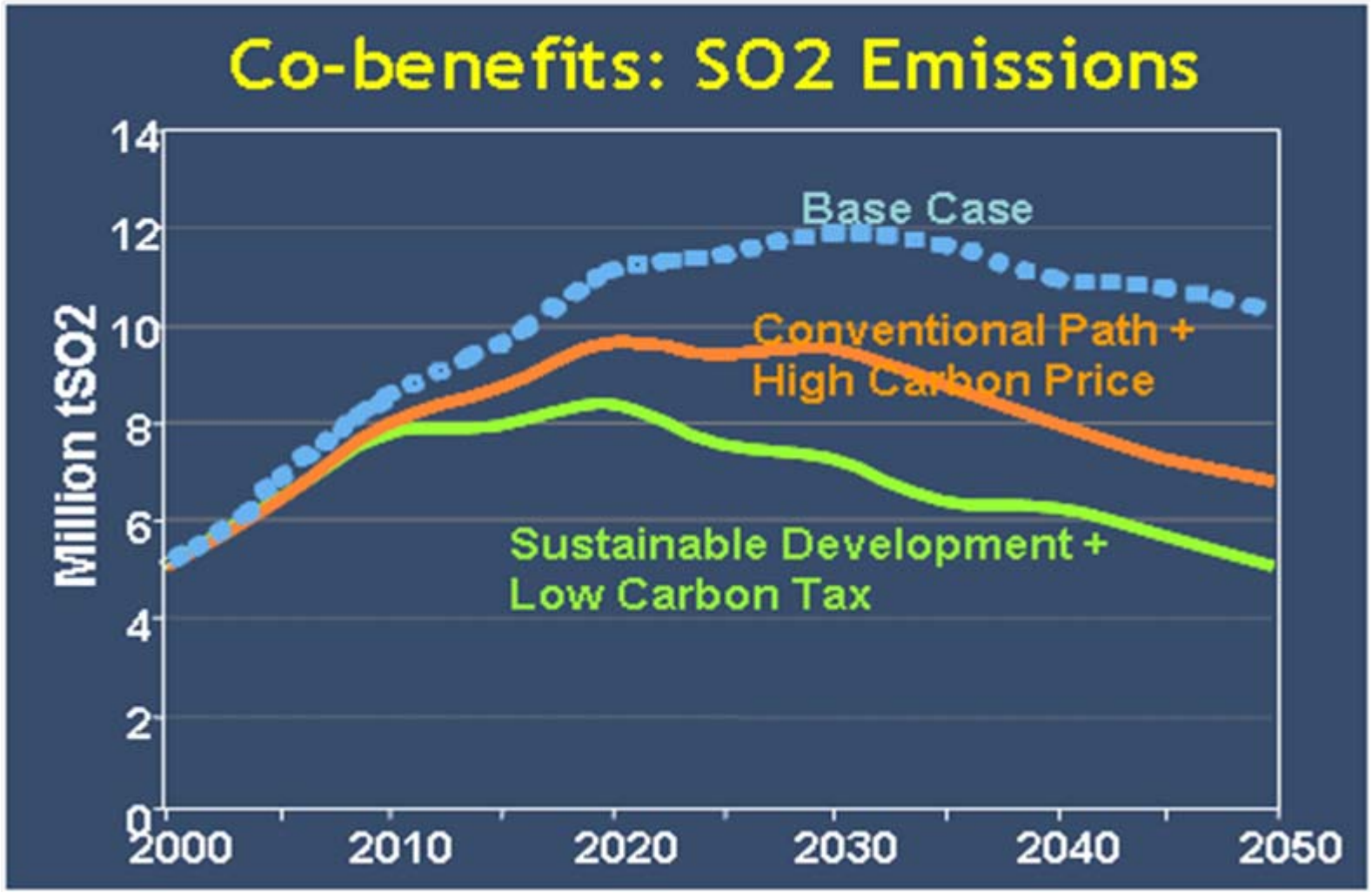
- **'Paradigm Shift towards 'Co-benefits' and 'Complementarity'**
  - **Co-benefits** reduces welfare losses
  - Deliver LCS at **Low Effective Carbon Price**

- **Transport Policy Assessment Methodologies should link:**
  - **MACRO Indicators:** Aggregate, National, Long-term Indicators
  - **MICRO Indicators:** Sectoral, Local, Short-term

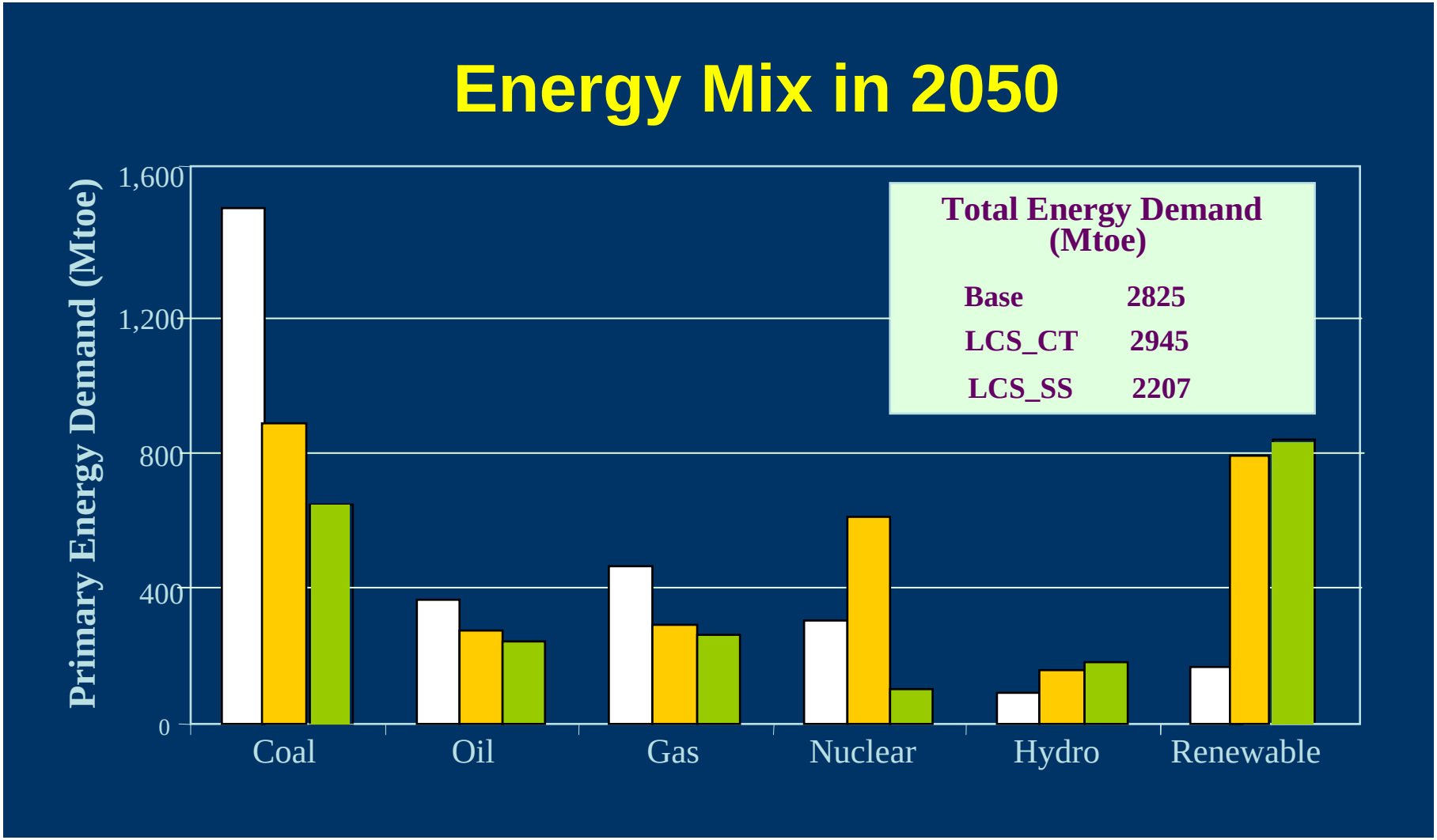
Macro Indicators (17): Summary

Economic (4)	Carbon Intensity of Transport	Energy Security	Transport Infrastructure Investment	Total Cost of Transport
Social (3)	Access to transport	Transport Subsidies	Food Security	
Environmental (3)	Air Pollution	Water: Pollution & Stress	Safety	
Technical (4)	Vehicle (fleet) Energy & Emissions Efficiency	Carbon Content of Electricity	Transport demand substitution	Operational Efficiency of Transport Infrastructure
Meta (3)	Sustainable Urban Form and Structure	National Logistics Grid	Investment in Transport Sector Innovations	

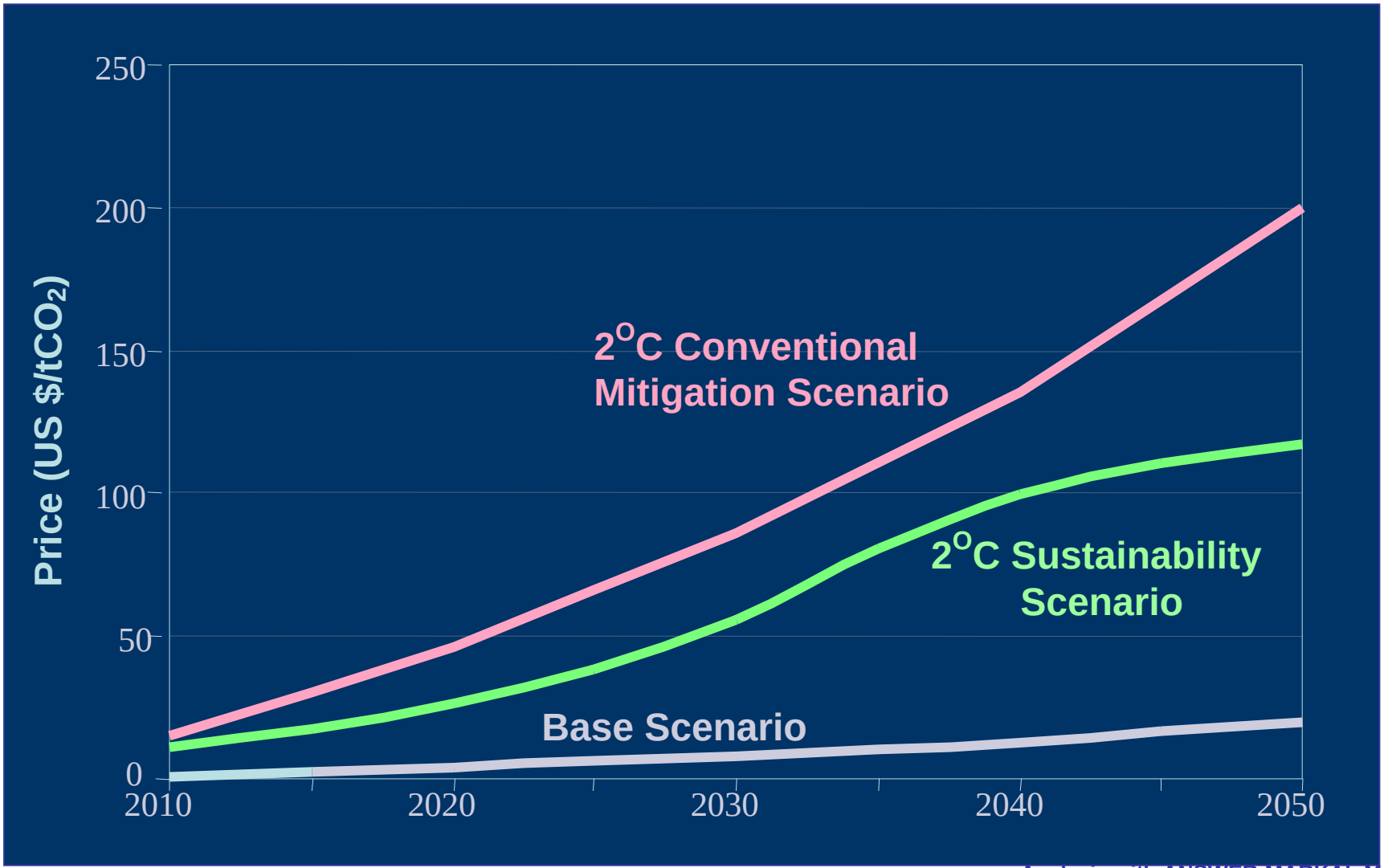
Air Quality Co-benefits of LCS



Energy Security Co-Benefits of LCS



LCS with Lower Social Value of Carbon



Analysis with ANSWER-MARKAL Model

Urban Transport

Four ways to reduce GHG Emissions

1. Reduce emissions per Km
2. Reduce Emissions per unit transported
3. Reduce distances
4. Reduce number of trips

LCMP Methodology & Macro Considerations

- Technological choices
- Matching travel demand to technological choices
- Access / Affordability
- Investment requirements

Challenges of Alignment

- Importance of long-term perspectives due to long-life of transport assets
- The alignment of policies in order to realize co-benefits and avoid adverse lock-ins
- The key is alignment of
  - Local – National – Global
  - Short-term – Long-term
  - Top-down – Bottom-up
  - Macro - Micro