Sustainable mobility within and beyond existing urban and spatial planning boundaries

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Outline

1. Transport’s health costs in cities
2. The need for integration in transport:
   – Narrow (transport) policy agendas lack momentum
   – Narrow supply side responses
3. The need for integration with other policy departments
4. The need for integration across jurisdictions
5. Towards integration of transport, city and regional policy and planning
Transport’s health costs in cities

• Safety costs of mobility are very high
  - 1.5 million deaths annually
  - 79.6 million health years of life lost annually
• A high share of the costs occur in cities
  - 35% of fatalities are pedestrians
  - >50% in Sub-Saharan Africa
  - Even larger in some advanced economies, e.g. Korea
Transport’s health costs in cities

- Costs from local air pollution, (Global Burden of Disease 2010)
  - 184,000 deaths globally
    - 91,000 from ischemic heart disease
    - 59,000 from strokes
    - 34,000 from lower respiratory infections
- Costs are likely to be underestimated
  - Effects are local down to the corridor level
  - Identification problem with respect to transport
  - GBD uses coarse satellite imaging
The need for integration:
Narrow (transport) policy agendas lack momentum

- Fragmented transport policy agendas lead to inertia (example of concentration on climate change)
  - Measures look ineffective, neglecting synergies
  - Isolated infrastructure investment responses may be counter productive
Carbon pricing induces behavioral change...

Carbon price paths depend on biofuels and CCS
...and still transport becomes the main emitter, even with carbon pricing leading to a greenhouse gas concentration of 450 ppm.

Source: Clarke and Calvin (2008).
Fiscal implementation helps to make the transition self-financing and public finance more efficient

- **Implementation of fiscal incentives will lead to fiscal surplus: GHG emissions**
  - Implementing the carbon price suggested by the Stern report ($300 per t carbon) will change pump prize of gasoline only by $0.70.
  - Implementing a carbon tax could yield $10, 24 or 145 billion with a carbon price of $20, 30, 300 per ton of carbon in the US.
Reduction of GHG emissions in transport requires a broad reform agenda

High cost-benefit ratios and uncertainty are barriers to transport access to climate finance

- Transport has been neglected by carbon finance
  - CDM: 31 of more than 7414 registered projects are in transport, investment share lower than 0.4 percent
  - GEF approved 28 transport projects in 20 years, attracting 6.4 percent of all resources
  - Country programs of Clean Technology Fund have 16.7 percent investment in transport on average
Reduction of GHG emissions in transport requires a broad reform agenda

- Other external costs are more important than GHG emissions

Summary of External Costs in Transport, Washington Example

Marginal external costs

<table>
<thead>
<tr>
<th>Fuel-related costs</th>
<th>cents/gallon</th>
<th>cents/mile</th>
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</thead>
<tbody>
<tr>
<td>Greenhouse warming</td>
<td>6</td>
<td>0.3</td>
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<tr>
<td>Oil dependency</td>
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<td>0.6</td>
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</table>

Distance-related costs

| Local pollution                     | 42           | 2          |
| Congestion                          | 105          | 5          |
| Accidents                           | 63           | 3          |

Source: Parry et al. 2007 (RFF)
Planning response: redirect investment

Supply measures alone can even be counterproductive

- Energy intensity by mode, USA 1970 – 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>Passenger car btu/pm</th>
<th>Passenger LT btu/pm</th>
<th>Transit bus btu/pm</th>
<th>Cert. air carrier btu/pm</th>
<th>Rail transit btu/pm</th>
<th>Freight HT btu/vm</th>
<th>Rail btu/tm</th>
<th>Water btu/tm</th>
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<td>100</td>
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<td>100</td>
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<td>75</td>
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<td>67</td>
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<td>2000</td>
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<td>2005</td>
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<td>4874</td>
<td>73</td>
<td>na</td>
<td>na</td>
<td>3264</td>
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</table>
Planning response: densify cities

**Individual emissions from transport (kg per capita)**

- Marseilles
- Atlanta
- Johannesburg
- Kuala Lumpur
- Frankfurt
- Harare
- Los Angeles
- Berlin
- Paris
- Cape Town
- Curitiba
- Berlin
- Cairo
- São Paulo
- Singapore
- Santiago
- Delhi
- Shanghai
- Bogotá
- Seoul
- Mumbai

**Source:** World Bank 2009b.
**Note:** The figure does not correct for income because a regression of transport emissions on density and income reveals that density, not income, is a key factor. Data are for 1995.
The need for integration with other policy departments

- Urban planning based on health policy arguments leads to conflicting recommendations
- Greening of cities, “green lungs” to improve air quality and provide opportunities for outdoor activities
- Zoning to disentangle (manufacturing) production and residential location
- Preservation of historical urbanization patterns
- Architectural aesthetic “Leitbilder”
The need for integration with other policy departments

- Planning goals lead to land use regulation
  - Minimum lot sizes
  - Subdivision restrictions
  - Height restrictions
  - Septic and wetland restrictions
- Regulation induces path dependence of urban development
- Regulation reduces construction and density increase
The need for integration with other policy departments

• Both policy and planning responses have consequences for urban development through *land rent increases*
  – Higher transport costs lead to denser cities
  – Supply restrictions and limits on density lead to higher land rents.
• Higher land rents might induce relocation of business and housing to the outskirts inducing longer commutes and/or shopping trips.
The need for integration across jurisdictions

• Spatial process might lead to higher transport needs and health costs
  – Land rent pressure around business districts inducing relocation
  – Decentralization policies to
    • reduce land rent pressure,
    • spatially distribute economic activity
The need for integration across jurisdictions

• Competition between cities may make dysfunctional use of relocation processes
  – “Race to the bottom”: reducing health costs is perceived to weaken competitiveness
  – “Cream skimming”: Try to attract industries with low health costs
Towards integration of transport, city and regional policy and planning

1. Assess the internal and external costs of city development across policy departments

2. Make the physical consequences comparable by turning them into monetary accounting values

3. Add efforts to change behavior that is costly to others to supply side policies and planning.

4. Integrate with fiscal policy providing incentives to avoid health costs

5. Design credible public expenditure plans locally and as part of fiscal federalism.
Summary

1. Transport has strong effects on public health.

2. Transport systems shape urban form, the internal structure of cities and competition between them.

3. Narrow intra-departmental planning leads to conflicting policy initiatives.

4. Coordination between transport, environmental and health policies lead to strong synergies.

5. Fiscal implementation provides opportunities for a double dividend by tax reform.
Thank you!