Transport Needs for Green and Inclusive Growth

Marianne Fay
The World Bank
How to define *needs*?
Basic needs?

Access to Improved Water Source, % Population

2006 Rural Accessibility Index: Share of rural population living within 2km of an all weather road

Source: World Bank
Support economic growth?
And be Green and Inclusive?
SDGs - Targets

• Go beyond basic needs towards green & inclusive growth
• Of the 169 targets in the SDG framework, five are directly related to the transport sector:
  • **Target 3.6.** “By 2020, halve the number of global deaths and injuries from road traffic accidents”
  • **Target 7.3.** “By 2030, double the global rate of improvement in energy efficiency”
  • **Target 9.1.** “Develop quality, reliable, sustainable, and resilient infrastructure, including regional and trans-border infrastructure...”
  • **Target 11.2.** “By 2030, provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations...”
  • **Target 12.c.** “Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions...in a manner that protects the poor and the affected communities”
SDGs - Indicators

- But well-defined, broadly available indicator(s) of access are work in progress

  - **Indicator 3.6.1**: “Death rate due to traffic injuries” – **Tier 1**
  - **Indicator 7.3.1**: “Energy intensity measured in terms of primary energy and GDP” – **Tier 1**
  - **Indicator 9.1.1**: “Proportion of the rural population who live within 2km of an all-season road” – WBG Rural Accessibility Index - **Tier 3**, *work in progress*.
  - **Indicator 9.1.2**: “Passenger and freight volumes, by mode of transport” – **Tier 1**
  - **Indicator 11.2.1**: “Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities” – **Tier 2**, *Work in progress* with UN-Habitat
  - **Indicator 12.c.1**: “Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels” – **Tier 3**, *Work in progress* with World Bank
The “needs” measurement frontier...

- **Accessibility**
- **Sustainability**
Accessibility
The Rural Accessibility Index

- Share of population living within 2 kilometers of an all-season road

- 2006 results:
  - 1 bn people unconnected to the good quality road network

- Limitation:
  - Based on survey data
  - Costly
  - Not spatially representative
  - Not operationally relevant

Roberts et al. 2006, World Bank
The Rural Accessibility Index – new version

- Geospatial data:
  - WorldPop
  - Digitized road network & conditions
  - At disaggregated level
The Rural Accessibility Index – remaining challenges

• **Scaling up:**
  • Remote analysis of road condition
  • Machine learning

• **What standard?**
  • 2 km? 5km?
  • Passability for what – IMT or truck?
  • Connectivity as a binary choice?
  • A universal standard could result in overinvestments in underused tertiary roads
Urban Accessibility

Combines estimated travel times and job location data (or other opportunities) to calculate the accessibility of every point in the city, for different travel modes (auto, transit, walking, and biking).
Improving Planning with the Urban Accessibility Tool
Accessibility indicators – some results from Latin America

Source: courtesy of T. Peralta, World Bank
Sustainability
Sustainable (clean) Transport Need not Cost More

Investment needs may well be less for a 2°C scenario than for a 4°C one

But good representation of transport infrastructure in integrated assessment models is work in progress

**Limitation of current transport modeling:**

- Identify pass/km and tons/km from which infrastructure needs are derived
- Maximization based on total costs – applicable to social planner, rather than individuals
- Does not usually allow the system to invest in infrastructure or demand-side management (especially non-price) – ITF an exception
- Very limited underlying data
### Table 3: Data availability

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- **Annual data**
- **Some data**
- **Estimated data**
- **Frequent data**
- **Limited data**
- **n/a**
- **Non-applicable**

Planning for sustainability (resilience) may require new tools.

"Predict Then Act"

What will the future be?  
What is the best near-term decision?  
How sensitive is our decision to our predictions?

Decision Making Under Uncertainty (DMU)

What are the available strategies?  
Identify vulnerabilities of these strategies  
Develop strategy adaptations to reduce vulnerabilities.
The Peruvian road network is often highly affected by disruptions caused by floods and landslides.

The economic consequences can be high:
- Detours of hundreds of kilometers for some routes
- Disruption of the export corridors
- High costs of reconstruction

Expanding to Bangladesh, India, Nepal, Mozambique, Pacific Islands, Tanzania
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