Key transport Concepts: Modernization, Safety, and Cost Effectiveness Considerations of Transportation Services

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Jacob Greenstein
Office of Infrastructure and Engineering
EGAT/ Engineering Service Team

Roads and seaports accounted for most of the investment in transport, while railways and airports saw investment decline.

Source: World Bank Project Database.
Diversification of transport services: EGAT/ Infrastructure and Engineering Team (I&E)

Provision of technical support to USAID missions & other units

Priority Topics:
- Institutional Modernization;
- Cost Reliability/Effectiveness;
- Engineering Innovations Integration;
- Rural & Urban transport & road safety;
- Integrated Planning;

Support USAID Policies:
- Economic Growth;
- Feed the Future & Poverty Alleviation;
- Environmental conservation
- Private sector participation
- Security Improvements

Feed the Future;
Community project Ownership-SME
Governments, NGOs and Civil Society
Seven Priority Transport Topics

1. Institutional modernization
2. Cost effective & reliable engineering services
3. Engineering innovations
4. National & regional Integration
5. Rural & urban transport planning, including road safety and CO2 reduction as major health issues
6. Integrated and effective multi-mode transport Planning
7. Private Sector Participation & Investments (PPI)
Principal Issues: Quality of Transport Services

- **Roads:** Inadequate or very limited coverage and very bad road safety services in post conflict/natural disasters countries (Sudan, Liberia, Afghanistan, Haiti, CAR, among others).

- **Roads:** Adequate coverage, but poorly managed roads networks and poor road safety services in transition countries (Kenya, Ghana, Ecuador, Jamaica, Peru).

- **Ports:** Urgent needs for new investments and operation improvements (Peru, Liberia, Sudan, Haiti and others).

- **Airports and airstrips:** High costs of operation and urgent investment needs (Liberia, Mali).
Sudan-2006: collapsed Nile bridge could be probably averted with $1 M or less vs. over $25-$35 M to construct a new one-lane bridge

Adequate approach: Haiti-2010: With USAID support the Millet bridge in Haiti was “saved”, temporarily strengthen and would be replaced by 2012.
Issue: Nile bridge failure-Juba Sudan-November/2007
Other two principal Institutional issues:

1. **Lack of clear sectoral policies and political pressures** have resulted institutional confusions and vague responsibilities.

2. **Inadequate transparency & stakeholder participation** (corruption is an issue)

   **Adequate approach**: the Peruvian port and rural roads projects: (a) Callao port concession project; and (b) Over 15,000 km rural road project managed by 670 SME

3. **Recommendation**: Alert governments on the risks of operating defective infrastructure and please **be as clear as polite**
How-To Guide: (1) Institutional Modernization

- Including: (1) institutional decentralization and (2) cost effective project design and implementation procedures (Follow the guidelines from Section 611(e) of the Foreign Assistance Act of 1961)

- Modernization of the road sector supports: (1) improvement of highway safety; (2) development of clean and effective public transport services including pedestrians, bicycle and other non-motorized traffic services; and (3) keeping low Urban CO2 and other transportation related contaminants.
Decentralization

- Define and transfer the responsibilities including the financial resources needed to administer the roads networks to local governments.

- Remember: Activities that are best performed at the central level need not be delegated to the district level, such as road and bridge investment planning services.
A How-To Guide: (2) Support effective planning and procurement procedures

1. Planning: Feasibility (in the center)
   - Optimize roads dimensions and related investment expenditures using HDM 4 or RED programs for Cost/benefit analysis, next slide
   - Integrate social and environmental analysis

2. Design (in the district/province)
   - Use innovated engineering tools and produce detailed designs
   - **Produce bidding documents and unit cost analysis (within 5%-10% of actual costs)**

3. Construction (in the district/province):
   - Use performance-based, lump-sum contracts

4. Maintenance (in the community/municipality):
   - Use Road Management Systems (RMMS) & community-based micro-enterprises
A How-To Guide: (2) Cost effectiveness

Determining Optimum Maintenance Standards
1. **Plan for maintenance and minimize costs**

2. Risk should be borne by the party that can better control it

3. **Follow the presidential policy directive on science, technology and Innovation**
A How-To Guide: The presidential policy directive on science, technology and innovation:

“USAID will become a leading choice for those seeking cutting edge development learning, research, and best practices that produce breakthrough results”

Using innovative engineering procedures is needed to optimize costs and identify implementation risks:
A How-To Guide: (3) Engineering Innovations
Modern Technology YonasPMS.Video System

YonasPMS.Video no precisa un vehículo dedicado para la ejecución del relevamiento. El soporte de la cámara con controles de rotación se puede colocar en cualquier tipo de vehículo.
A How-To Guide: (3) Engineering Innovations: Prediction of road performance
A How-To Guide: (4) National and International Integration-including farm to market roads

- **Evaluate political priorities and financial affordability** (all-mode transport services)

- **Support:** (a) road-corridor improvement (Sudan: Nimule-Juba; (b) Bouson to Bossangoa in the Central African Republic ); (c) Peru-Pacific rim to the Amazons region.
Key roads for economic integration with neighboring countries & peace & security

- Juba-Waw: USAID 185km segment
  WB, USAID, EU

- Juba-Nimule 192km

- **Rural:** Use SME for farm to market road investment & maintenance works

- **Urban:** Support rapid & safe motorized & non-motorized transport services, including rapid bus services (RBS).
A How-To Guide: (5) Rapid Bus Systems

Megabús
Pereira, 2006

Guayaquil,
Metrovía-2005
A How-To Guide: (5) Rapid Bus System Planning Considerations

1. Optimize capital costs that vary from 1.3 to 13.0 $M/ KM and use fares similar to those of pre-existing services

2. Create a special purpose agency (PROTRANPORTE-Peru)

3. Maximize the use of the existing ROW to avert land acquisition and non voluntary human resettlement

4. Estimate future impacts on the reduction of CO2 and other transportation related contaminants
A How-To Guide: Reduce CO2 and use alternative vehicles and fuels

- The EU Green Car Initiative is intended to stimulate the renewal of the car industry to increase competitiveness and to meet the climate challenge.

- Swedish manufacturers are working with the authorities to enhance development in this field.
A How-To Guide: Support sustainable transport systems that address climate changes issues

- Transportation accounts for a huge and increasing share of accumulated climate gas emissions

- **Goal**: eliminate the use of fossil fuels for transportation

- **The urgent challenge**: Foster planning of efficient and **safe** transport systems that will stimulate growth and jobs, using new transportation technologies and services:
A How-To Guide: improve freight transport and logistics system

• Growing cities (Lima, Nairobi, Accra, etc) need new and sustainable systems for freight distributions.

• Sweden is trying to introduce “Green Corridors” for freight transport within the European Union and there are similar ideas in the USA.

• **And always support road safety services:**
A How-To Guide: (5) Rural & Urban Transport
Highway and road safety issues
WB: Road safety is a priority health issue:

1. World Bank: The sheer scale of the health losses from road crashes (1.3 million fatalities per annum in developing countries) makes road safety a development priority.

2. Improving road safety in developing countries concerns investments in infrastructure, governance and institutions, and the related health of individuals. Specifically, it addresses the vulnerability of citizens to catastrophic death and injury, especially the poor and also those thrust into poverty as a consequence.
The road safety performance gap between rich and poor countries is widening. It is estimated that by 2020 the fatality rate will decrease by 30% in high-income countries and increase by 80% in low and middle-income countries, with regional variations.

Over the first 50 years of this century we can anticipate around 75 million road deaths and 750 million serious injuries, unless new measures are taken to prevent them.
The gap between rich and poor countries is widening

<table>
<thead>
<tr>
<th>World Bank Region</th>
<th>% change 2000 - 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Asia</td>
<td>144%</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>80%</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>80%</td>
</tr>
<tr>
<td>Middle East &amp; North Africa</td>
<td>68%</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>48%</td>
</tr>
<tr>
<td>Europe &amp; Central Asia</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Sub-total poor countries</strong></td>
<td><strong>+ 83%</strong></td>
</tr>
<tr>
<td><strong>High-income countries</strong></td>
<td><strong>- 28%</strong></td>
</tr>
<tr>
<td>Global total</td>
<td>66%</td>
</tr>
</tbody>
</table>

Road crash deaths and injuries in low and middle-income countries are projected to be the 4th largest cause of healthy life years lost by the total population in 2030, compared with tuberculosis (26th) and malaria (15th).

Road crashes are on course to become the leading cause of disability and premature death for children in developing countries aged 5-14 by the year 2015, and the second cause of health losses for men by 2030.
The critical speed for a survival for an unprotected pedestrian hit by a vehicle is 30km/h.

For the survival of a properly restrained motor vehicle occupant, the critical impact speed is 50km/h for side impact crashes and 70 km/h for head-on crashes.
Holland: The bicycle in 2010 is the means of transport used most often in Amsterdam. Over the period 2005-2007 inhabitants of Amsterdam used their bikes on average 0.87 times a day, compared to 0.84 for their cars. This is the first time that bicycle use exceeds car use.
A How-To Guide (5): Guyana road safety improvements project:

Compromising of road safety is due to:

1. Lack of historical accident data Information on: network accidents, demographics, vehicle miles Traveled, etc.
2. Lack of enforcement of current laws with respect to pedestrians, drivers and vehicles.
3. Lack of safety education for all categories of road users.
4. Inadequate information of safety “Pay-Off”
What is needed or what is the challenge?

1. Develop **quantitative priorities, based on the economic analysis of highway safety**.

2. **Engineers must strive to design a roadway and its environment (within budgetary constraint) such that if a person were to make a mistake he/she should not pay with his/ her life.**
The challenge is how to target the safety of the entire road network-and identify the unsafe road sections

Conclusion: The bulk of deaths and injuries are usually incurred on a small portion of the network where there are high traffic volumes and high speeds.
Targeting the network is the main challenge:

20% of roads account for 79% of traffic and 87% of social cost of crashes

10% of roads account for 56% of traffic and 74% of social cost of crashes

Source: *Road Safety Strategy 2010, National Road Safety Committee, Wellington, New Zealand, October 2000*
The challenge of the UN international Decade of Action for road safety improvement:

Make roads safe and follow the “Decade of Action for Road Safety 2010 – 2020”, targeting a 50% reduction in fatalities

Support for this proposal has been gaining global momentum, including USA recent House Concurrent, Resolution 74.

The goal is that every person that enters the urban or rural rights-of-ways using vehicles, bicycles, and pedestrians “must feel and be safe”.
A How-To Guide: (5) How to support the International Decade of Action for road safety improvement, seven initiatives:

1. Establish an Inter-institutional working group
2. Develop road accident database
3. Train and monitor the police force
4. Update transport policy and improve quantitative planning
5. Improve driver licensing code and strengthen the regulatory capacity
6. Develop a school road safety education curriculum
7. Implement critical road improvement works (see Guyana)
A How-To Guide: (6) Integrated Multi-Mode Planning

**Air Transport**: (1) Modernize civil aviation agencies and improve the operation of airsides and landsides of airports and airstrips; (2) upgrade security and safety services (Afghanistan, Sudan, Guyana & Bamako Mali)

**Inland Water transport**: (1) Improve national and international river navigation services; (2) Improve facilities including security and safety services (Sudan-Juba, Peru-Amazonas).

**Maritime Transport**: Modernize maritime administration directorates and improve the facilities and operations of Sea and Dry ports including security and safety services.

- **Container ports are in greatest demand as more and more goods are being transported via container** (Callao, Monrovia)

**Rail**: Support realistic and cost effective projects with solid demand.
A How-To Guide: (6) Integrated Planning of transport services

Five principal Considerations:

1. **Diagnose the problem:**
   - Define the problems that the project will solve and the sectoral context including future adequate maintenance funding
   - Determine the root causes of the problems, i.e. insufficient investment funding & ineffective institutional capacity
   - Identify the stakeholders who would benefit from (road users), or be harmed by the project (affected communities)
2. **Priority**: Is the project a clear priority in relation to other needs and is there enough political support?

3. **Viability**: Have you analyzed the viability of affordable engineering alternatives that can solve the problem?

4. **Best Practice**: Have you considered lessons learned from international best practices?

5. **Consistencies**: Have you verified the project’s internal and external consistencies?
Possible technical support to USAID missions
Six priority transportation topics

1. Planning and Institutional modernization

2. Use innovative engineering procurement tools

3. Implement SME road maintenance services

4. Promote private sector participation

5. Leverage Donor funding support

6. Provide technical assistance to governments
Integrated road planning and safety considerations
Integrated road planning and safety considerations
Beautiful integrated road planning
Beautiful integrated road planning
Thank you very much

Comments and questions?

Jacobgreenstein@usaid.gov