This working paper outlines a set of indicators at the outcome and impact level for the roads sector. It does not focus on implementation (e.g. output level indicators such as kilometres of road), or indicators at the global level (e.g. economic growth and poverty reduction) but aims to improve the development of indicators between these two levels (i.e. the 'missing middle').

It is hoped, by setting out a clear set of indicators, that this work can be used to guide the development and monitoring of programming level tools, such as CSP's. These indicators should also increase our ability to understand the wider impact of development assistance.

This work builds upon existing international best practices.
ROAD SECTOR: OUTCOME AND IMPACT INDICATORS

Introduction

This short paper outlines a key set of effects and indicators covering expected outcomes and impacts of country support to the roads sector. It is designed to assist country teams to develop a set of indicators for the programming level and guide the production of documents such as Country Strategy Papers (CSP). It also aims to fill, as much as possible, the 'missing middle' between implementation indicators (e.g. kilometres of road) and global impact indicators (e.g. poverty reduction).

Methodology

This paper is based on intervention logic that outlines a chain of expected effects (outputs, outcomes and impacts) for a successful intervention. For each outcome and specific impact, a set of indicators has been identified that can measure their achievement. A full set of effects is outlined in the intervention logic diagram on page 3 and the indicators are summarised in Annex A.

For full details on the methodology used for this working paper, please see the 'methodological approach' paper.

Output Clusters

Support for road infrastructure has been arranged into five output cluster areas. Output clusters cover products resulting from development interventions:

a) Infrastructure: "More effective and efficient methods to take forward the development and implementation of road construction and to ensure sustainable road maintenance"

b) Institutional Reform: "Strong government reforms to improve its capacity, accountability and responsiveness to develop and enforce policies and regulation in the management of road construction and maintenance"

c) Economic: "Increased public and private investment in the economy, as a outcome of road construction and maintenance"

d) Environment: "Enhanced considered and mitigation of environmental issues in taking forward road construction and maintenance"

e) Social: "Improved links to education, safety and health activities in road construction and maintenance"
ROAD INTERVENTION LOGIC

OUTPUT CLUSTERS

- Infrastructure (construction/maintenance)
- Institutional Reform
- Economic
- Environment
- Social

OUTCOMES

- Lower Road Transport Time
- Lower Road Transport Costs
- Improved Institutional Management of Road System
- Increased Employment

SPECIFIC IMPACTS

- Greater Economic Accessibility
- Greater Accessibility to Social Services

INTERMEDIATE IMPACTS

- Improved Conditions for Economic Growth
- Environmental Impacts of Roads Minimised
- Enhanced Safety & Health Linked to Roads

GLOBAL IMPACTS

- Economic Growth
- Poverty Reduction
- Social Development

Enhanced Human Capacity

Strong Effect
Weak Effect
Strong Link
Weak Link

Inputs: financial, human and material resources etc. Activities: funding, planning, monitoring, technical assistance, construction etc.
Outcomes

Outcomes relate to the likely or achieved short-term and medium-term effects of an intervention’s outputs:

**Lower Road Transport Time**

1. Travel times
   Examples: Public transportation travel time
   Commercial travel time

**Lower Road Transport Costs**

2. Transportation costs
   Examples: Cost of public transportation fares
   Commercial transportation operating costs

**Improved Institutional Management of Road System**

3. Implementation and enforcement of laws related to roads
   Example: Number and type of prosecutions related to road offences
   Number and type of approved laws related to roads

**Increased Employment**

4. Employment resulting from road construction and maintenance
   Example: Number of people directly and indirectly employed in road construction and maintenance projects

**Specific Impacts**

Specific impacts cover positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended:

**Greater Economic Accessibility**

5. Access to roads
   Example: Population living within x kilometres of a road network

6. Use of public transportation
   Example: Number of people using public transportation

7. Business productivity
   Examples: Market return for traded goods
   Transfer to higher-value goods

Falls in public transportation times from Songea to primary schools due to improved roads:
- Kitanda down from 8 to 2 hours
- Magagura down from 5 to 2 hours
- Mpitimbi down from 1.30 hours to 45 minutes

EC Tanzania evaluation 2006

Population living close to an all weather road:
An all weather road is defined as a road that suffers closure for less than 2 weeks each year. Currently 11% of the rural population is within 2km of such a road, with this target rising by 1% each year for the period up to 2011 (i.e. to 16%)

EC Mozambique evaluation 2007
Greater Accessibility to Social Services

8. Access to social services
Examples: Number of people who live within x time of a:
- school
- health centre
- local government office
Number of visits by government officials to towns/villages

Environmental Impacts of Roads Minimized

9. Environmental effects of road system
Examples: Soil erosion directly related to roads
          Lead and carbon monoxide pollution
          Market share for unleaded petrol
          Number of vehicles meeting x environmental quality standard

Enhanced Safety & Health Linked to Roads

10. Road deaths and injuries
Examples: Number of road deaths
           Number of road injuries

11. Disease transmissions influenced by improved mobility
Example: HIV/AIDS and TB infection rate

Intermediate Impacts

Intermediate impacts are similar to specific impact but are longer-term in nature and are the last cause and effect chain level that can be monitored effectively and at the same time demonstrative sufficient attribution to the output clusters:

Improved Conditions for Economic Growth

12. Employment
Examples: Employment opportunities within x travel time
          Increase in employment within x area

13. Trade
Examples: Volume of trade between y and z regions
          Value of trade between y and z regions

Enhanced Human Capital

14. School attendance
Example: School enrolment and completion rates

15. Health attendance
Examples: Number of visits to health centres
          Number of supervised births
          Child immunisation rates

Global Impacts

Finally, the effects of support to the road sector should contribute to the longer term global impacts of social development, economic growth and poverty reduction. However, due to the complexity of their achievement and the numerous factors influencing them, it is not possible to draw a direct cause and effect link to the road sector. As a outcome, no road sector related indicators have been identified for this level.
Annex A: List of Key Indicators for Road Sector

Outcomes

1. Travel times
   - Public/commercial transportation time
2. Transportation costs
   - Cost of public transport fares; commercial operating costs
3. Implementation and enforcement of laws related to roads
   - Number/type of approved laws related to roads; number/type of prosecutions related to road offences
4. Employment resulting from road construction and maintenance
   - Number of people directly and indirectly employed in road construction and maintenance projects

Specific Impacts

5. Access to roads
   - Population living within x kilometres of a road network
6. Use of public transportation
   - Number of people using public transportation
7. Business productivity
   - Market return for traded goods; transfer to higher-value goods
8. Access to social services
   - Number of people who live within x time of a school, health centres, or local government offices;
     Number of visits by government officials to towns/villages
9. Environmental effects of road system
   - Soil erosion directly related to roads; lead and carbon monoxide pollution; market share for unleaded petrol; number of vehicles meeting x environmental quality standard
10. Road deaths and injuries
    - Number of road deaths; number of road injuries
11. Mitigation of disease transmissions influenced by improved mobility
    - HIV/AIDS infection rate; TB infection rate

Intermediate Impacts

12. Employment
    - Employment opportunities within x travel time; increase in employment within x area
13. Trade
    - Volume of trade between y and z regions; value of trade between y and z regions
14. School attendance
    - School enrolment; school completion rates
15. Health attendance
    - Number of visits to health centres; number of supervised births; child immunisation rates