Rural Transport Infrastructure in Cambodia

Rural Transport Infrastructure: Key Element to Development.


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ILO Upstream Project, Cambodia.
Introduction

- Background to Cambodia
- Cambodia's Road Network
- Roads Responsibilities
- Rural Transport Infrastructure Studies
- MRDs Policy & Department of Rural Roads
- Investments in Basic Access
- Private Sector Development
- MRDs Pro-Poor Policy
Background to Cambodia

11.4 million people
24 Provinces
180 Districts
1,584 Communes
13,272 Villages

Source - 1998 Census
♦ GDP $280

♦ Poverty Rate 36.1%
  – Rural 40.1%
  – Urban 29.9%

♦ Infant Mortality - 110 (per 1,000 live births)

♦ Access to safe drinking water - 13% of population

♦ Life expectancy - 54.4 (1996)

Road Construction and Maintenance Responsibilities

♦ The Ministry of Public Works and Transport (MPWT) is responsible for the National and the Provincial road networks.

♦ The Ministry of Rural Development (MRD) is responsible for the Tertiary and Sub-tertiary road networks.

♦ Agreed in a Memo of Understanding between the respective ministries of the 10th of March 2000.
<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Length in Total and by Condition (km)</th>
<th>Network Value (US$ x10^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Poor to Passable</td>
</tr>
<tr>
<td>National Roads – Single Digit</td>
<td>1,988</td>
<td>920</td>
</tr>
<tr>
<td>Other National Roads</td>
<td>2,177</td>
<td>1,477</td>
</tr>
<tr>
<td>Provincial Roads</td>
<td>3,555</td>
<td>2,489</td>
</tr>
<tr>
<td>Total MPW&amp;T</td>
<td>7,720</td>
<td>4,886</td>
</tr>
<tr>
<td>Tertiary Roads</td>
<td>3,380</td>
<td>1,944</td>
</tr>
<tr>
<td>Sub-Tertiary Roads</td>
<td>5,797</td>
<td>5,637</td>
</tr>
<tr>
<td>Total MRD</td>
<td>9,105</td>
<td>7,581</td>
</tr>
<tr>
<td>Total for Kingdom</td>
<td>16,825</td>
<td>4,358</td>
</tr>
</tbody>
</table>
Rural Transport Infrastructure Studies

- Household Travel and Transport Analysis
- Traffic Characteristics Around Puok Market
- A Survey of Rural Transport Businesses in Cambodia
Household Travel and Transport Analysis

Average for most households:
- A family size of 5.8 members;
- A daily travel time of six hours and 43 minutes;
- A daily travel distance of 23km;
- A daily weight carried of 180.8kg;
- A daily transport effort of 183kg-km.

The most frequently used mode of transport was on foot (> 91%), mostly by women carrying water.
### Traffic Characteristics Around Puok Market

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle</td>
<td>29.3</td>
</tr>
<tr>
<td>Motorbike</td>
<td>58.7</td>
</tr>
<tr>
<td>Remorque</td>
<td>298.9</td>
</tr>
<tr>
<td>Animal drawn cart</td>
<td>266.8</td>
</tr>
<tr>
<td>Car</td>
<td>820.2</td>
</tr>
<tr>
<td>Pickup</td>
<td>1,056.30</td>
</tr>
<tr>
<td>Koyun</td>
<td>1,564.00</td>
</tr>
<tr>
<td>Truck</td>
<td>2,548.90</td>
</tr>
<tr>
<td>Handcart</td>
<td>179.6</td>
</tr>
</tbody>
</table>
Remorque
Koyun
A Survey of Rural Transport Businesses in Cambodia
Siem Reap and Kampot Provinces

♦ Average Vehicle Travel
  – Longest distance (pick-ups) 61,452 km
  – Average 20,105 km
  – Shortest (handcarts) 2,280 km

♦ Operating Costs
  – Fuel 77%
  – Spare parts 12%
  – Tyres 7%
  – Oil 3%
Road Improvement

♦ Road Improvement and Fare Decrease
  – Average 17%

♦ Road Improvement and Trip Increase

<table>
<thead>
<tr>
<th></th>
<th>Siem Reap</th>
<th></th>
<th>Kampot</th>
<th></th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
<td>19%</td>
<td></td>
<td>Dry</td>
<td>30%</td>
<td>13%</td>
</tr>
<tr>
<td>Wet</td>
<td>2%</td>
<td></td>
<td>Wet</td>
<td>24%</td>
<td></td>
</tr>
</tbody>
</table>
Economic Impact of Rural Road Improvements

♦ Cambodian Rural Road Economic Appraisal Model
  – Consumer Surplus Model
  – Model evaluates road improvement benefits through assessing changes in vehicle operating costs
  – Information required:
    • Population Density
    • Road Length
    • Estimated Cost
## CREAM Model, Comparison of ERR

<table>
<thead>
<tr>
<th>Density</th>
<th>Economic Rates of Return. Shaded Area = Economically Viable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Road cost: Low cost</td>
</tr>
<tr>
<td></td>
<td>Per km</td>
</tr>
<tr>
<td>50 persons km²</td>
<td>$10,500</td>
</tr>
<tr>
<td>70 persons km²</td>
<td>4.8</td>
</tr>
<tr>
<td>100 persons km²</td>
<td>11.5</td>
</tr>
<tr>
<td>120 persons km²</td>
<td>19.8</td>
</tr>
<tr>
<td>150 persons km²</td>
<td>24.9</td>
</tr>
<tr>
<td>170 persons km²</td>
<td>32.3</td>
</tr>
<tr>
<td>200 persons km²</td>
<td>37.1</td>
</tr>
<tr>
<td></td>
<td>44.2</td>
</tr>
</tbody>
</table>
Ministry of Rural Developments Policy

The MRD describes its over-arching policy objective as follows:

"The Ministry of Rural Development is responsible for facilitating improvement of rural social and economic conditions."

It further describes its mission statement for the sub-sector as follows:

♦ "The MRD Department of Rural Roads (DRR) will contribute to this goal by increasing rural access through cost-effective investment in the maintenance and development of rural roads"
Rural Roads under MRD

♦ 28,000 km of rural roads (historical estimate)
  – 4,000 km Tertiary
  – 24,000 km Sub-tertiary

♦ 5 Year Socio-Economic Development Plan
  – Rehabilitate & Maintain 21,195 km
    • 15,195 Laterite (gravel)
    • 6,000 Earth
  – US$ 56,944,000
Rural Roads Program

- Department of Rural Roads (national)
  - Office of Rural Roads (provincial)
    - Groups of Rural Roads (district)

- Accessibility
  - MRD has decided to use IRAP as the tool for guiding their Rural Roads investment program

- Technology
  - MRD plans to rehabilitate and maintain rural roads relying to a large extent on Labour-Based Appropriate Technology
Employment Creation

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Workdays</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>4,017,137</td>
</tr>
<tr>
<td>KfW</td>
<td>2,331,283</td>
</tr>
<tr>
<td>WFP</td>
<td>19,010,237</td>
</tr>
<tr>
<td>ILO</td>
<td>3,400,000</td>
</tr>
<tr>
<td>Total</td>
<td>28,758,657</td>
</tr>
</tbody>
</table>

Since 1992 until end of 2001
Rural Road Maintenance

- MRD Budget
  - 2000 - $50,000
  - 2001 - $500,000

- Not sufficient to maintain all the roads, but a trend signals the importance of taking formal steps to ensure policy reform and implementation

- At present, the MRD has funds for maintenance for 41% of the 3,308 km of laterite roads
Reduction in Asset Value

- A survey in on Cambodian province of the investments made in rural infrastructure from 1996 to 2000:
  - 170 km of rural roads in a maintainable condition in 1998
  - 112 km in 2000
  - Average cost to construct a rural road = $15,000
  - Value of the asset in 1998 was $2,550,000.
  - Value of the asset in 2000 was $1,680,000.
Annual and Cumulative Expenditure Compared to Asset Value, Battambang Rural Roads.
Economy Suffered due to lack of Maintenance of the Asset

- US$ 4.5 M invested since 1998, the total value of the stock declined by 35%
- Ample resources were available for maintenance
- Why:
  - Desire to build new roads
  - Decentralising to too low a level for investments such as roads - rural roads belong to a larger network
  - Assumption that communities will contribute
Disadvantages of laterite

- Wasting
- Regravelling requirements
- Laterite Dust

- Investigations are on-going under the “Low Cost Road Surfacing Project” funded by DFID
Private Sector Development

- 22 Small Scale Contractors trained in LBAT so far with 11 more just recently completed initial training
- A recent survey has shown the 22 existing contractors are thriving
Pro-Poor Steps taken by MRD in the Rural Roads Sector

♦ Creating opportunities by improving
  – access to markets,
  – transport infrastructure
  – Economic growth

♦ Facilitating Empowerment By
  – Consulting all stakeholders during the policy formulation
  – Using the IRAP tool
Pro-Poor Steps taken by MRD in the Rural Roads Sector

♦ Enhancing Security
  – Providing rural roads which allows for a reliable transport system
  – Facilitating the movement of food from areas of surplus to areas of deficit
  – Creating jobs

♦ Meeting the Challenge of Development
  – Establishing a dedicated rural roads maintenance budget
  – Creating an attractive environment for investment
  – Establishing the Rural Roads Department
  – Allocating ownership of roads to the appropriate levels