Improving Monitoring and Evaluation in Transport Projects

Arturo Ardila-Gomez
The problem

Based on real urban transport projects

• Project Development Objective (PDO) is to assist the Borrower's Municipality to enhance mobility for passenger trips within and to the central area of the city in an environmentally sustainable, integrated and safe manner.
### PDO Indicators

<table>
<thead>
<tr>
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<th>YR2</th>
<th>YR3</th>
<th>YR4</th>
<th>YR5</th>
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<td></td>
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<td></td>
<td></td>
<td>42</td>
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### The problem

### Indicator Description

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Issues with the PDO

• Project Development Objective (PDO) is to assist the Borrower's Municipality to enhance mobility for passenger trips within and to the central area of the city in an environmentally sustainable, integrated and safe manner.
The Problem

Some Observations

1. Indicators stated expected direction of change which turned them into objectives.
2. Clients could not replicate methodology: indicators where not measurable!

2.1 Same for subsequent task teams: no replicability!
3. Clients did not own the Results Framework – it was a World Bank internal exercise!

3.1 But imperfect internal exercise because of lack of replicability
The Risk

Example using Travel time indicator

• At baseline
  1. Morning peak
  2. Schools are in session
  3. Rain
  4. One trip by bus

• At outcome
  1. Off peak
  2. Schools are on vacation
  3. No Rain
  4. GPS data on buses
The Consequence

Low-Quality Results Frameworks

- Modest and below, 73%
- Substantial and above, 27%
“You only need one word as per prior examples: Surveys”
"I do not need to specify the methodology as I will be here in 5 years to explain it to the team that writes the ICR"
Why the low quality?

“The Client will be overburdened because they do not have the M&E capacity”
"I don’t use sub-indicators, because I should have as few indicators as possible."
The Solution

In five steps

1. Theory of change:
The Solution

**THEORY OF CHANGE**

**Activities/Components**
- Construct two metro stations of the Quito Metro Line One
- Construct a 23-km tunnel; construct another 13 metro stations and a yard and maintenance shops at one metro station; provide and install metro system-wide facilities (incl. the permanent way, power supply, signaling, fare collection) for the operation of the PLMQ. Establish feeder bus routes.
- Provide Train Sets to Operate in the Quito Metro Line One
- Carry out technical studies to support project implementation, implementation of the SITP, and of safeguards

**Output Activities/Components**
- Constructed 15 metro stations
- Constructed a 23-km tunnel linking the Quitumbe and El Labrador metro stations and provided and installed metro system-wide facilities (the permanent way, power supply, signaling, fare collection) for the operation of the PLMQ. Feeder routes established.
- Procured 18 six-car trains, with four automotive cars per train and auxiliary vehicles for track maintenance and yard work, and workshop equipment.
- Carried out studies to support: project implementation, implementation of the SITP, and safeguards implementation

**Outcomes**
- Improved Urban Mobility [serving the growing demand for public transport]:
  - More trips by metro
  - Reduced travel time
  - Better access to jobs (better connectivity)
  - Users more satisfied with overall Metro service, security and comfort
  - Adequate passenger capacity in metro trains
  - Lower operational costs of vehicle fleet
  - Lower GHG emissions from transport

**LT outcomes**
- Labor market in Quito can work better for the bottom 40%
- City can be more competitive

**Critical Assumptions**

| A1  | Financing from co-financiers and counterpart needs to materialize in time. |
| A2  | Fare collection for metro is integrated with city-wide fare collection. Bus routes are restructured and PLMQ has feeder buses. SITP is established. |
| A3  | A capable operator for the metro is in place, be it private or public. |
Improved Urban Mobility [serving the growing demand for public transport]:
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- Better access to jobs (better connectivity)
- Users more satisfied with overall Metro service, security and comfort
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A2

Labor market in Quito can work better for the bottom 40%

A3

City can be more competitive
The Solution

In five steps

2. PDO Statement indicates the:
   • Target Group
   • Benefits
   • Expected Change
   • Geographic boundary
The Solution

In five steps

2. Development Objective (PDO) is to assist the Borrower's Municipality to enhance mobility for passenger trips within and to the central area of the city, improve road safety, and reduce GHG emissions in an environmentally sustainable, integrated and safe manner.
3. Indicators are variables that change as a function of the project;
   a. Indicators must not say expected direction of change because they become objectives;
   b. Theory of change explains cause and effect;
   c. One indicator for every part of PDO.
The Solution

In five steps

BLOOD PRESSURE

not: Decrease in blood pressure
The Solution

In five steps

3. Indicators

1. Increased Travel time of public transport users during the peak hour on the project corridor (minutes)
2. Increased Daily ridership for buses in mixed traffic on the project corridor (number)
3. Reduction in Greenhouse Gas emissions from transport (tons)
4. Killed and injured people (number)
The Solution

In five steps

4. Description of indicator
   a. States what indicator measures
   b. States relationship to PDO
The Solution

In five steps

Key questions for the description:

1. What is being measured and why?
2. In what unit is the indicator measured?
3. What aspect of the PDO is the indicator measuring?
4. Are sub-indicators used? What are the sub-indicators for? (suggested: income, gender, disability, specific corridor)
## PDO Indicator Name | Description (indicator definition etc.)
--- | ---
1. Travel time of public transport users | The indicator measures “the improvement of urban mobility” part of the PDO through reduced travel times. It is the average door-to-door travel time in minutes of public transport users of the metro, once the metro is operational including the walking, waiting, in-vehicle, and transfer times on the project corridor. Sub-indicators by gender and income.
The Solution

In five steps

5. Methodology: must be replicable by client and subsequent task teams.

Must measure change in variable due to project entering operation.
The Solution

In five steps

5. Key questions for the Methodology for Travel time

• Is it door to door travel time including all modes of PT together (metro, bus, bikes, walking to/from bus stops etc.)?

• Is it the travel time only spent riding one mode of PT? If so, does the travel time start as soon as the passenger boards, or when the bus/metro starts running?

• Is time spent on stops and delays disaggregated?

• Is it travel time measured by car on a select road corridor— if so, what is the starting and ending points of the travel time measurement, does it include only the running time or stops times at intersections.)
5. Key questions for the Methodology

• How and when was the baseline value calculated? (i.e. if there has been construction work on the road/junction, how is this taken into consideration when measuring travel time?)

• When is the indicator measured: How long after the project activity is completed? What time of the year? Will schools be in session? Is it during regular work days or during holidays? Exactly which days – because even on regular workdays Monday through Friday, the travel behavior is different on Mondays and Fridays. Is it during rush hours? What is the rush hour?
5. Key questions for the Methodology

How will the data be collected and analyzed? The sampling needs to be statistically significant.
5. Key questions for the Methodology

At baseline, there were buses in mixed traffic.
At target, there is a metro.

Therefore, different methodology for target and for baseline.
1. Travel time of public transport users

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<td><strong>Baseline or without-project situation:</strong> demand studies conducted for the Metro stated that the equivalent average trip of 9.8 km made by bus at time of appraisal (2013) takes 38.5 minutes; by 2020 the trip is expected to take 42.5 minutes. This baseline is the without-project situation and projects travel time to 2018.</td>
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# The Solution

## In five steps

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<td>1. Travel time of public transport users</td>
<td><em>With-project situation: three to six months after the Metro begins commercial operations, this indicator will be measured by timing a 10.7 km trip on any stretch of the Metro from origin to destination during a weekday rush hour. The indicator is the average of five workdays in a typical week when schools are in session and there are no holidays. To recognize the need for walking to and from Metro stations, add six minutes to this time. The travel time in the Metro will be obtained from reports by the Metro operator. The Metro will have signaling that tracks the location of each train.</em></td>
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Thank You