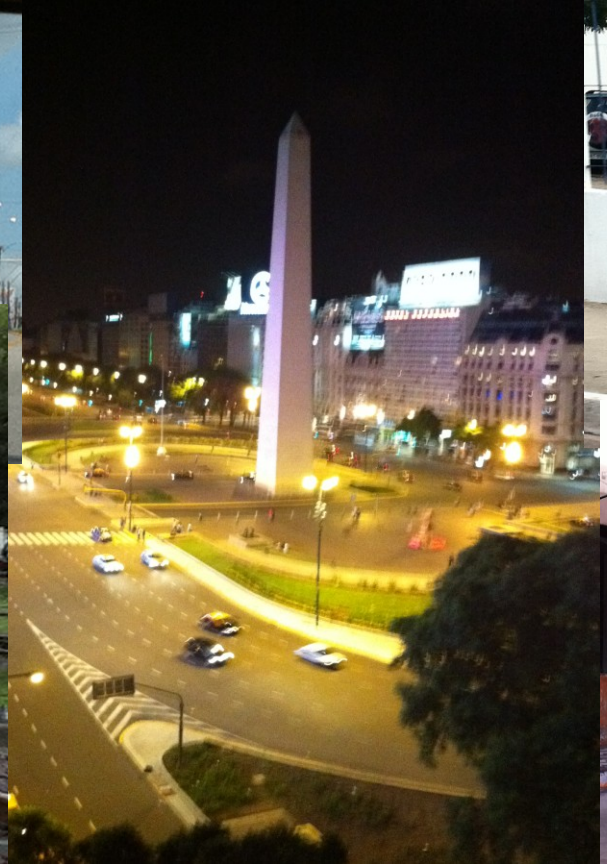

Existing Methodologies for Evaluating Greenhouse Gas Emission Reductions from Transportation Projects

Rosario Argentina May, 2011

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Methodologies for Calculating GHGs

- A methodology is procedure for measuring potential and/or actual changes to GHG emissions resulting from the implementation of transportation projects in order to receive financing for the project.
- Each methodology contains a process with pre-defined methods, tools and techniques used to estimate GHG emissions. All of the carbon finance methodologies reviewed here are based on the "ASIF" framework:

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Selected Methodologies for Calculating GHGs

1. UNFCCC: CDM AM0031 Bus Rapid Transit
2. UNFCCC: CDM AMC0016 Mass Rapid Transit
3. UNFCCC: CDM ACMIII.U Cable Cars for Mass Rapid Transit
4. Clean Technology Fund Guidelines for Calculating GHG Benefits of CTF Investments in Transport Sector
5. Inter-American Development Bank guidelines on the calculation of gross GHG emissions from transport projects
6. Manual for calculating GHG benefits of GEF transport projects

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Selected Methodologies for Calculating GHGs

1. UNFCCC: CDM AM0031 Bus Rapid Transit

Applicability
The BRT methodology is used for the construction of new bus rapid transit projects or expansions of existing BRT systems in cities with existing transit systems.

Main strengths
Rigorous data collection requirements, ensuring accuracy in estimation and monitoring.

Barriers for Implementation
AM0031 requires a large amount of data not always readily available in developing countries, making it an unlikely financing option for many urban transport projects.

Additionality requirement is a significant barrier for many projects to be registered as CDM.

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2. UNFCCC: CDM AMC0016 Mass Rapid Transit

Applicability

- AMC0016 can be used for construction of mass rapid transit systems (MRTS); specifically, rail lines or physically separated bus infrastructure.
- Recommended when the project under CDM financing consideration is a BRT trunk line without feeder routes, as AM0031 cannot be used in that instance.

Main strengths

Rigorous data requirements promoting accuracy

Barriers of Implementation

- Strict additionality requirements, ensuring that the project wouldn't be implemented in absence of project funding

- Up front costs are estimated at US$300,000 to USD$500,000.
- Monitoring surveys ("1 large and 1 re-test each year") cost about USD$150,000 annually.

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3. UNFCCC: CDM ACMIII.U Cable Cars for Mass Rapid Transit

Applicability

ACMIII.U can only be applied on new cable car transit system and is best used where public transport activity data is readily available or can be easily collected, based on local transport and economic studies.

Main strengths

ACMIII. U is used for very specific projects, and cannot be used for measures that reduce more than 60 kt CO_2e annually.

Barriers for Implementation

Very specific projects that are not likely to replicate at a high rate and do not present significan emission potential

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5. Inter-American Development Bank guidelines on the calculation of gross GHG emissions from transport projects
6. Asian Development Bank Methodology for Transport Emissions - Evaluation Model for Projects (TEEMP)

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Selected Methodologies for Calculating GHGs

4. Clean Technology Fund Guidelines for Calculating GHG Benefits of CTF Investments in Transport Sector

Applicability

useful for transit projects of varying sizes as the boundary of the project is not fixed (e.g. 'daily pax ridership for public transport etc'), instead, the boundary is determined by the scope of emissions.

Main Strengths

CTF methodology contains very thorough transportation modeling which suggest accurate baselines and projections within the project boundary.

The wide applicability of the methodology allows for use in multiple project types.

Barriers of Implementation

The cost for deploying CTF's methodology would be comparable to the CDM methodologies; the cost when used for a suite of city-wide or national projects could be significantly higher.

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Selected Methodologies for Calculating GHGs

5. Inter-American Development Bank guidelines on the calculation of gross GHG emissions from transport projects

Applicability

IDB methodology is used when estimating emissions from construction of BRT project (not the baseline emissions or emissions over time).

Main Strengths

- IDB methodology does not require extensive data collection beyond certain project details, making it making it ideal for projects without existing data collection activities.
- The key strength of this methodology is that it estimates construction emissions, which is left out of other methodologies.
- IDB methodology does not require additional emissions modeling or transportation modeling beyond the worksheet that is provided, which makes it simpler to use and more user-friendly (requiring less expertise) than other methodologies and thus making the process less costly

Barriers of Implementation

- Does not estimate emissions from project operations
- Default values are not available for different paving treatments

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Selected Methodologies for Calculating GHGs

6. Manual for calculating GHG benefits of GEF transport projects (TEEMP)

Applicability

The Transport Emissions Evaluation Model for Projects is useful for projects where local data is not available and cannot be easily collected, due to its extensive default values available for use.

Projects that can be analyzed with TEEMP:

- Bike Sharing projects
- Bus Rapid Transit projects
- Metro Rail Transportation Systems (MRTS)
- Bikeway projects
- Pedestrian Improvements projects
- Parking Pricing projects
- And others

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Selected Methodologies for Calculating GHGs

6. Manual for calculating GHG benefits of GEF transport projects (TEEMP) – Continued

Main Strengths

•Very little new data is needed, making this methodology well-suited to locations that do not have existing data or resources for data collection.
•The methodology strongly suggests building improvements in data collection into the project plan to support future planning and monitoring processes.
•TEEMP is one of the lowest cost carbon finance methodologies available.

Barriers of Implementation

•Quality of emissions estimates are a function of data quality.
•TEEMP does not assess interactions between projects.

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Selected Differences Among Methodologies

Methodologies presented vary significantly in the way they account for GHG emissions:

- Selection of a geographical boundary
- Applicability of leakage
- Treatment of additionality
- Data requirements and collection methods and modeling requirements;
- Requirements for verification and monitoring

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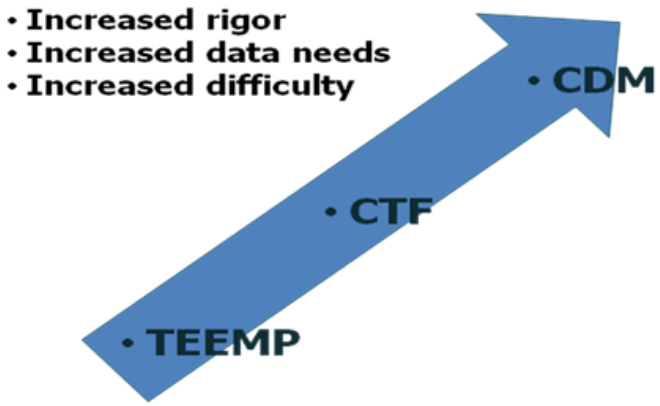
Selected Differences Among the Methodologies

•CDM and IDB methodologies are meant to be used for very narrow types of projects.
•The CDM methodologies have additional limiting factors, like whether the city has existing transit (if not, the CDM methodologies cannot be used.)

•CTF and CDM methodologies are highly data intensive and require a large amount of recent, local data from transportation models or Origen-destination surveys.

•TEEMP methodologies, on the other hand, contain large amounts of default data which can be used in the absence of local data.

• The GEF methodology explicitly allows CDM processes to be used for data collection, which is a useful tool for project managers who plan to seek funding through both mechanisms. The graphic below illustrates the increasing rigor and data needs among some of the carbon finance methodologies.



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Selected differences among the methodologies

•CTF and CDM methodologies require full transportation modeling imputs, while the TEEMP and IDB methodologies contain spreadsheets which can be used in lieu of transportation modeling.

•For determining baseline emissions, the CTF and all CDM methodologies require extensive scenario development

• TEEMP requires just one scenario (the likely future without the project). The baseline can even be calculated within the spreadsheets provided for GEF, a positive for entities without the technical capacity to perform the analysis on their own or with the sufficient funds to hire consultancies for the baseline estimations

•The three CDM methodologies require different boundaries:

- •AM0031 - “commuting field” of the city to the geographical area of passengers using the mode.
- •ACMIII.U - much smaller than the city’s overall commuting field.
- •CTF - much more fluid (anything from a corridor to a country, based on the emissions “reasonably attributable” to the project.)
- • TEEMP boundaries are calculated by the model itself and is different for each type of project.

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