



An overview given by Daniel Blank (GFA ENVEST)

## CDM/JI-POTENTIAL IN THE TRANSPORT SECTOR

### Energy and Transport

- 1997: around 28% of total emissions worldwide for transport
- 2020: around 31% of total emissions worldwide for transport
- Oil use for transport grows 3 times faster in developing than in developed countries
- By 2020 urban population will be 60%
- Often private transport grows faster than public transport

➔ Large saving potential of the transport sector

Source: IEA

## Overview CDM-Projects



- 600 registered projects\*
  - whereof only 2 in the transport sector
- 11 proposed projects in the transport sector\*
  - whereof all with new methodologies
  - whereof 5 already rejected
  - whereof 6 under second review

\*by 2007, October

## Potential Project Types in Transport



- **Fuel Switch (CDM)**
  - Biodiesel, bioethanol, pure plant oil
- **Efficiency Improvement (CDM)**
  - Bus rapid transit (BRT)
  - Mass Rapid Transit System (MRTS)
- **Modal Shift (CDM)**
  - Cable cars
  - Low GHG emitting vehicles (hybrid or electric powering)
- **Spatial and transport planning**
  - main destinations near to public transport stations
  - short distances

## Type 1: Fuel Switch Projects



### Approved Methodologies:

- 1.) Biomass and waste biomass:
  - AM0047: biodiesel based on waste oils/fats
  - AMS-III.T: plant oil for transport
- 2.) Less GHG intensive fuels:
  - AMS-III.C: electricity, hybrid, LNG
  - AMS-III.S: electricity, hybrid, LNG (CNG) for busses and trucks on fixed routes

### Rejected Methodologies:

No LCA: life cycle analysis required

## Type 2: Energy Efficiency



### Approved Methodologies:

Bus Rapid Transit (BRT)

AM0031: road based, public transport in baseline, no biofuels, entire route, reduces (other) public available transport (e.g., scrapping)

### Rejected Methodologies:

1.) Behavioural Changes

Not directly attributable to PA

2.) Static baseline

No adoption to changing baseline

## Type 3: Modal Shifts



### Approved Methodologies:

- AM0031: includes elements of modal shift
- AMS-III.U “Cable cars for Mass Rapid Transport System”: cable cars substitute road based transport trips (public transport), baseline may include various forms of transport and biofuels

## Registered Projects in Transport



- In fuel switch: 0
- In energy efficiency: 1
- In energy efficiency (combined with modal shift): 1

## First Registered Project



### „TransMilenio Bogotá“ (Colombia) (from Dec '06)

Investment cost: 2 bill US\$ (per kilometre 5 mill US\$)

Implementation until 2015

300.000 CERs/year

#### **Features characteristics of BRT:**

- dedicated lanes
- pre-ticketing
- new buses with higher emission standards
- larger capacities buses
- centralised fleet control
- synchronised traffic lights
- Includes elements of modal shift (more attractive than car or taxi)
- Good station access

## First Registered Project (cont'd)



### Baseline study:

Alternative baselines:

A) rail based public transport:

IEA, 2002	BRT	Light Rail	Elevated Metro	Underground
Investment (Mill US\$/km)	1-8	10-30	30-75	60-180
Capacity (1,000 heads/hour)	15-35	10-20	➤60	➤60
Add. space required	yes	yes	yes	no

B) organisational improvement of the existing public transport:

organisational and managerial weakness (formal and informal bus owner), enacted reduction of capacities could not be realised

## Established BRTs



- predominantly in Latin America:
  - Brazil: Curitiba<sup>1</sup> (from 1974, higher GDP/capita)
  - Ecuador: Quito (70% of investment by ODA)
  - Colombia: Bogotá
  - Partial: Sao Paulo, Goiania, Porto Alegre (all in Brazil)
- North America:
  - Ottawa<sup>1</sup>
  - several cities in the US
- Asia:
  - initiative by GTZ

<sup>1</sup> Success due to proactive urban planning

## Second Registered Project



1. „Installation of low GHG emitting rolling stock cars in metro system“ (Delhi, India) (from Dec '07):

Features:

- Baseline: cars with normal (rheostatic) brakes, only a second metro system in India installed
- Project case: cars with regenerating brakes (regenerated energy used by other rolling stocks)

40,000 CERs/year from 70 rolling stock cars

## Main Leakage Problems



### Types:

#### – Upstream:

Construction of dedicated lanes, reduced lifetime of vehicles (scrapping)

#### – Downstream:

Rebound effect: left space occupied by vehicles outside the PA  
Additional trips to the project boundary (detours)

#### – Other leakage:

Changing load factors: additional passengers due to PA  
Changing traffic conditions: e.g., from other CDM projects

## General Transport Measures



### Energy Efficiency:

- move from bus to bus competition TO licence to serve entire route competition
- important stations close to public transport
- GPS-based bus tracking
- Economic instruments (charging zones, fuel taxation)

#### Example: charging zones

- separate economic incentive from other effects (improved engine technology, fuel prices, etc.)
- detours
- additionality / sustainability

## General Transport Measures (cont'd)



### Fuel Switch:

- CNG, LPG: 25-50,000 US\$ additional investment. Refuelling infrastructure? Payback >5 years
- Hybrid buses: 75-150,000 US\$ additional investment. High maintenance cost.
- Diesel to biodiesel: 0.5 t CO<sub>2</sub> / t of Diesel (no methodology approved so far)

## Example: Sustainable Urban Transport



- Project by GTZ: policy and urban development advice
- Support to cities of:
  - Bangkok, Chiang Mai (Thailand), Vientiane (Laos)
  - Sibiu (Romania)
  - Cities in Indonesia and Malaysia

### EB decision:

Policies are not eligible under the CDM, but Programmes that implement certain policies in contrast.

## Conclusions



- A larger city dominated by private vehicles can save 50% of CO<sub>2</sub> switching to public bus transport
- Yet only a restricted number of approved methodologies
- Number of registered projects does not reflect the saving potential
- Determination of baseline costly and strong inhibitor to further dissemination
- Managerial and organisational capacities ?
- Contribution of CDM/JI sufficient (see TransMilenio) ?
- GDP/capita? Willingness to pay higher prices for faster transport?

*Thank you for your attention !*



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