Overview on transport data and MRV potential in Asia

Bert Fabian

Clean Air Initiative for Asian Cities Center (CAI-Asia Center)

Transport Sector and NAMAs: Assessing Data Readiness for MRV

Pasig, Philippines

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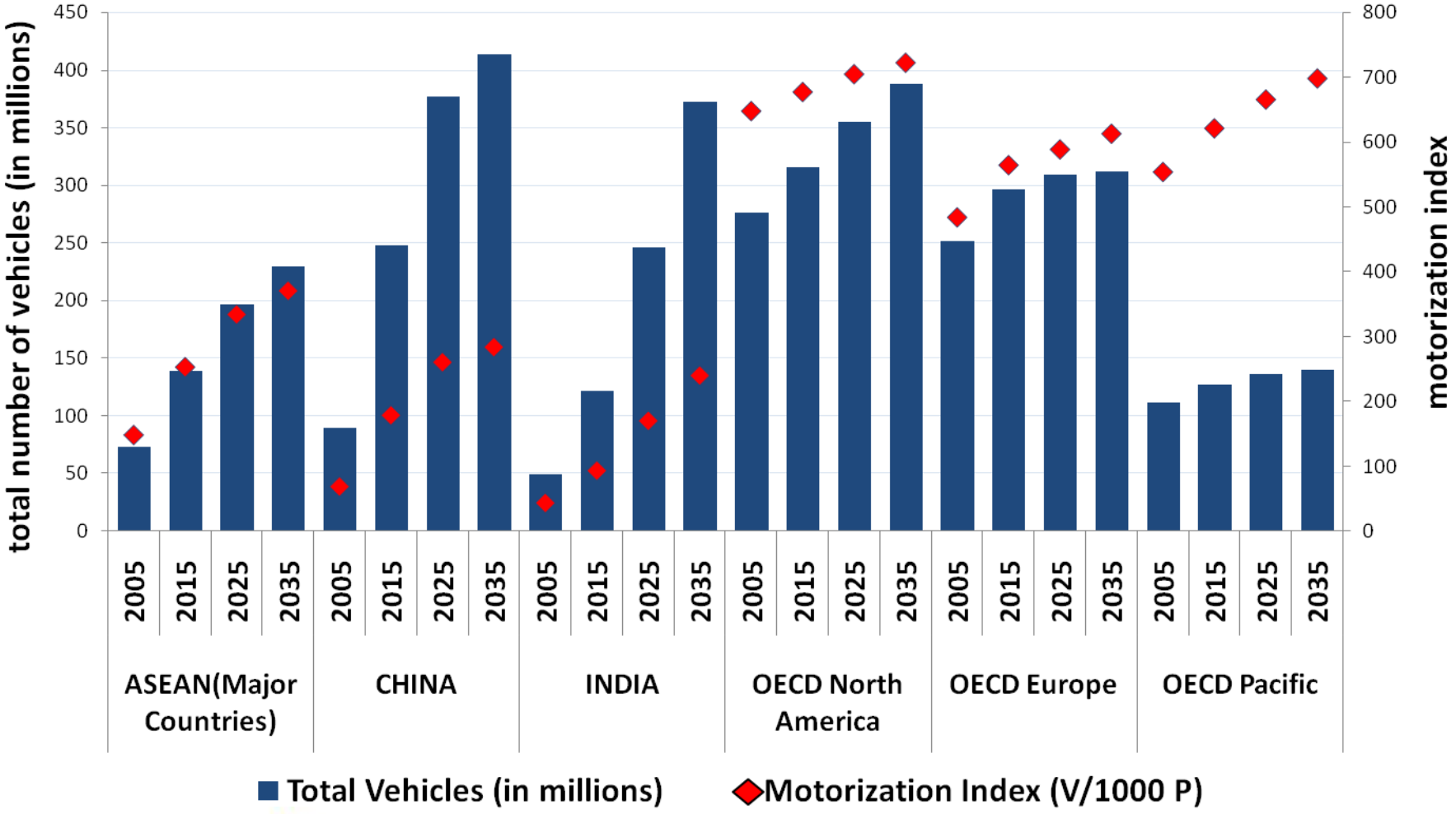
Outline

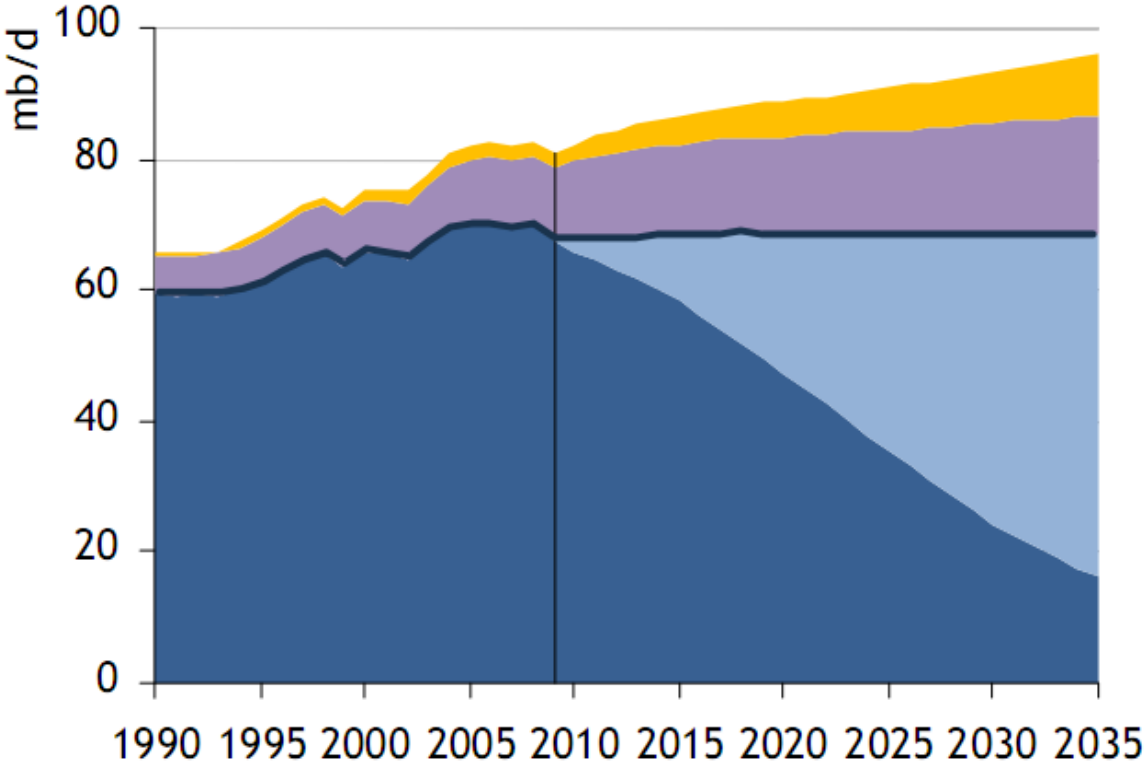
- Background and context
- Overview on transport data management in Asian countries and cities
- Parameters necessary for emissions estimation
- Transport planning – national, regional, and city plans – country experiences

Increasing motorization



Source: 2009. ADB, CAI-Asia, Segment Y Ltd., and IEA

Decreasing conventional oil production



Global oil production reaches 96 mb/d in 2035 on the back of rising output of natural gas liquids & unconventional oil, as crude oil production plateaus

Source: OECD/IEA, 2010. In Fulton, L. Global modal shift scenario -complementing Energy and CO2 benefits through implementing the Bangkok 2020 Declaration. Presented at UMI-EST, 4-6 December 2011, New Delhi, India

Transport Data Availability

Data Availability by Mode and Attributes in Selected Asian Countries

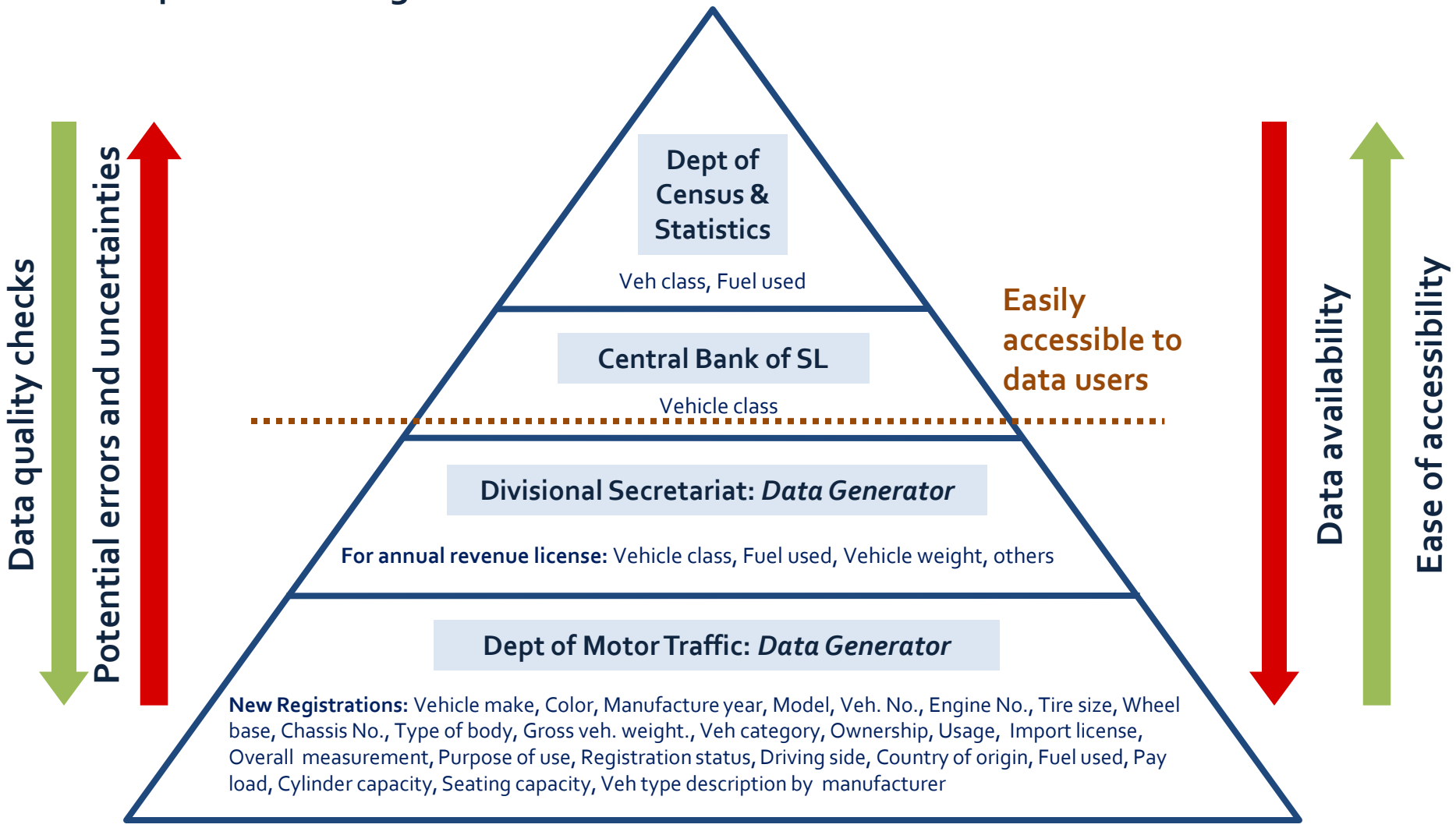
MODE	Transport Fuel	Vehicle Type	Spatial Scope	Purpose	Vehicle Property	Operation	ALL ATTRIBUTES
Walk	-	-	13%	13%	-	-	**13%**
Bike	-	-	8%	13%	26%	-	**16%**
Road	64%	79%	92%	44%	66%	63%	**68%**
Rail	71%	81%	83%	34%	88%	50%	**68%**
Pipeline	100%	-	75%	-	69%	19%	**63%**
Conveyor	67%	-	38%	-	50%	13%	**39%**
Water Domestic	57%	75%	88%	-	71%	50%	**68%**
Water International	57%	88%	88%	-	88%	50%	**74%**
Air Domestic	100%	88%	100%	-	75%	69%	**72%**
Air International	100%	88%	88%	-	88%	63%	**71%**
ALL MODES	**75%**	**83%**	**67%**	**26%**	**69%**	**47%**	**55%**

Source: CAI-Asia and ADB. Transport Data in Asia Study (2011, Unpublished)

Note: Assessment included China, India, Indonesia, Nepal, Philippines, Pakistan, Sri Lanka, and Vietnam

Data Quality and Accessibility

Example: Vehicle Registration Data Flow in Sri Lanka



Reasons: Need-based Data Collection

ENFORCEMENT & REGULATION
Data Requirements for inspection & regulation of motor vehicles

Veh registration by type of vehicle-registration; by type of ownership-registration; by type of vehicle-fuel; by type of technology; by type of vehicle
Vehicle registration transactions
Vehicle make ,Motor number, Series, Type of body, color, serial/chassis no., Plate no., Body no. , Fuel used, No. of door, Year model, Drive type, Accessories, shipping weight, Passenger capacity, Gross weight, Net weight, Weight empty, No. of axle, Max height

Routinely monitored

POLICY & PLANNING
Route Re-validation Survey (assess demand-supply condition)

Average frequency of buses
Number of trips
Classified bus count
Routes and number of units & operators
Companies in weekend-day
Bus trip origin-destination weekend-day
Average travel time
Average trip length
Average total passengers
Average load factor
Pattern shift
Sample load profiles
Bus operating characteristics
Passenger load vs. capacity

On demand

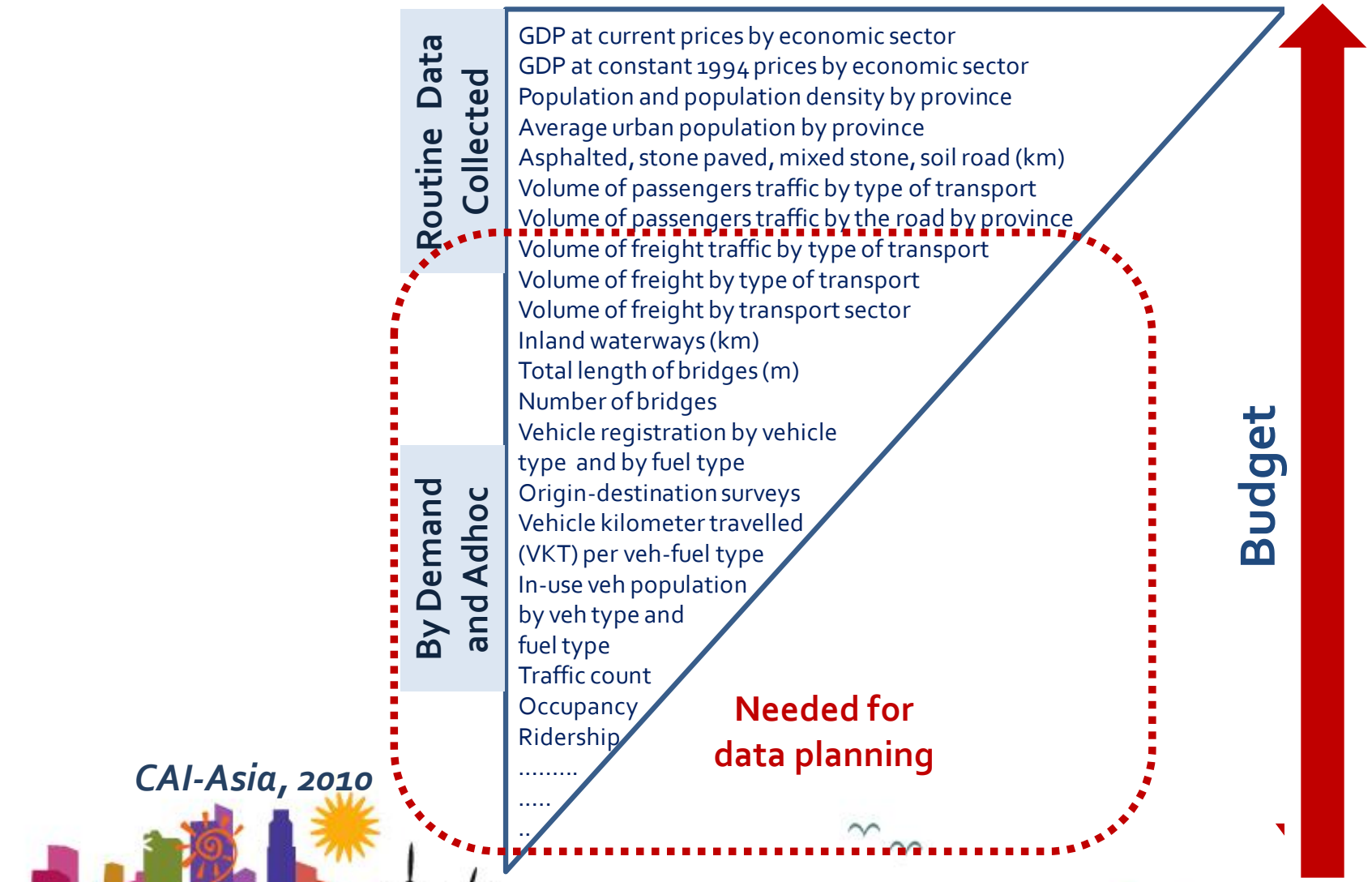
ESTIMATING EMISSIONS
Data Requirements

Vehicle Population
Vehicle Imports
Traffic count
Trip length
Average vehicle km travelled
Travel speed - average
Passenger km
Trip mode share
Freight ton transported per km
Freight mode share
VKT per vehicle-fuel type
Fuel efficiency by vehicle-fuel type
Emission factor
Ridership/occupancy
Population, GDP
% Urban Population
% Biofuel blend in gasoline, diesel

Adhoc

CAI-Asia, 2010

Reasons: Budget Limitations



CAI-Asia, 2010

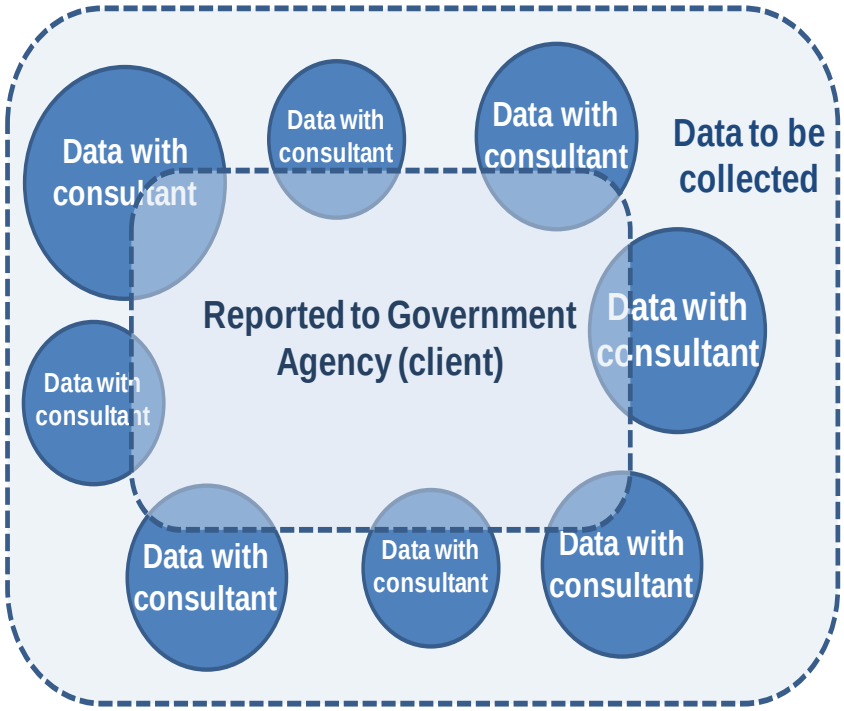
Reasons: Lack of Coordination

Ministry	Data
Transport	• Motor vehicle registration • Licenses issued • Passenger and freight kilometers
Rail	• Length of railways • Passenger and freight kilometers
Public Works	• Length of roads • Surface type and paved roads • Number and length of bridges • Road accidents
Energy	• Fuel consumption by volume and by type of fuel • Fuel pump price
Environment	• Emissions inventories
Economy/ Trade/ Customs	• Economic growth – , etc. • Volume of trade; Vehicle imports
Finance	• Economic growth and infrastructure growth • Transport investment
Census	• Population

Source: Based on author's research for Transport Data in Asia Study (2011, Unpublished).

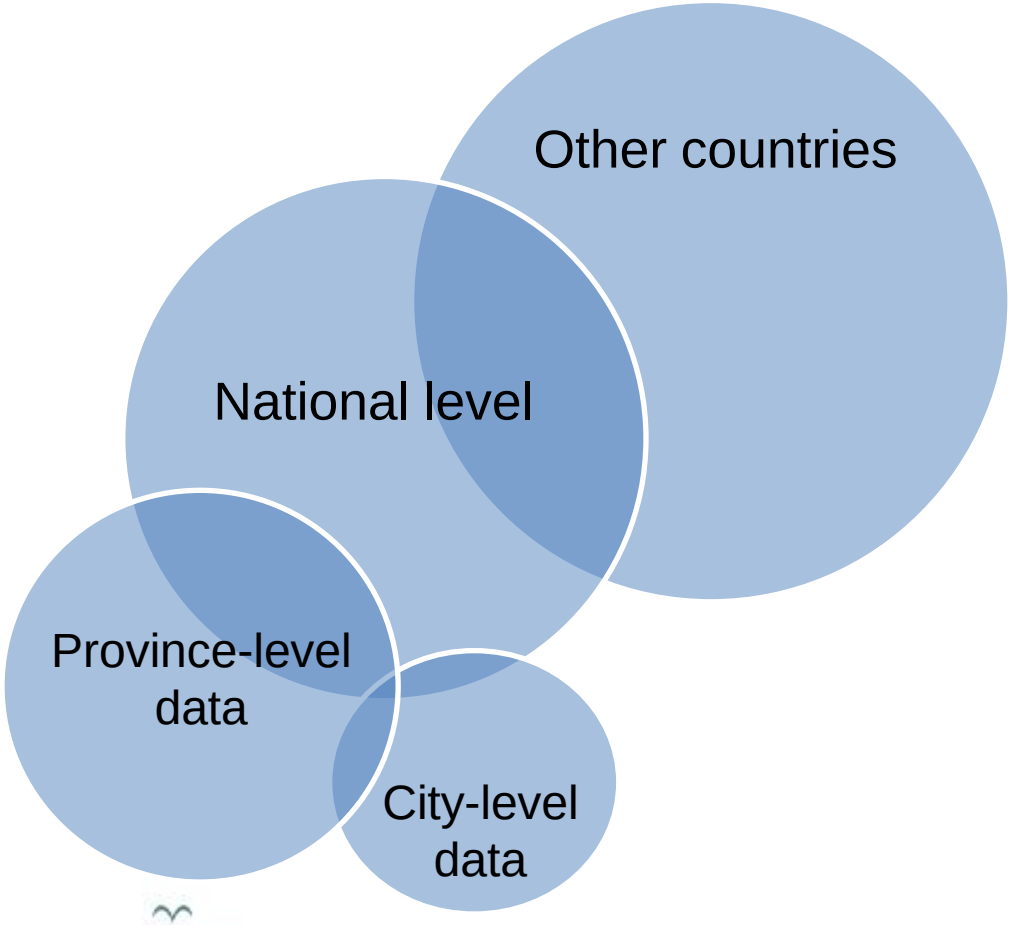
Reasons: Lack of Harmonized Methodologies and Limited Data Sharing

Private sector databases not shared with government

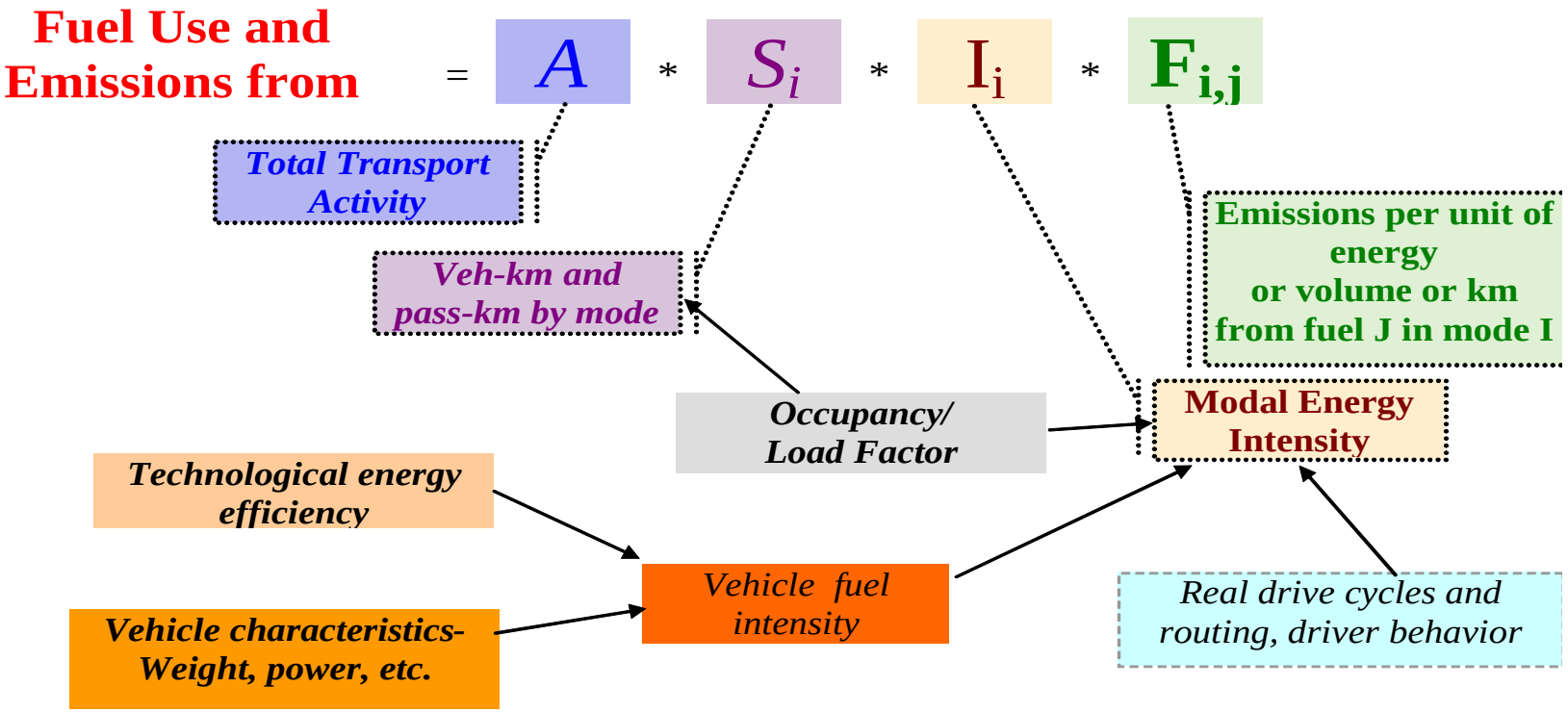


CAI-Asia, 2010

Inconsistent government data



Important parameters for emissions estimation – Schipper's Activity-Structure-Intensity-Fuel



Measure each component for making better decisions in future. The current emphasis on CO_2 measurement allows a window of opportunity to generate better data and more logical project decision making !!

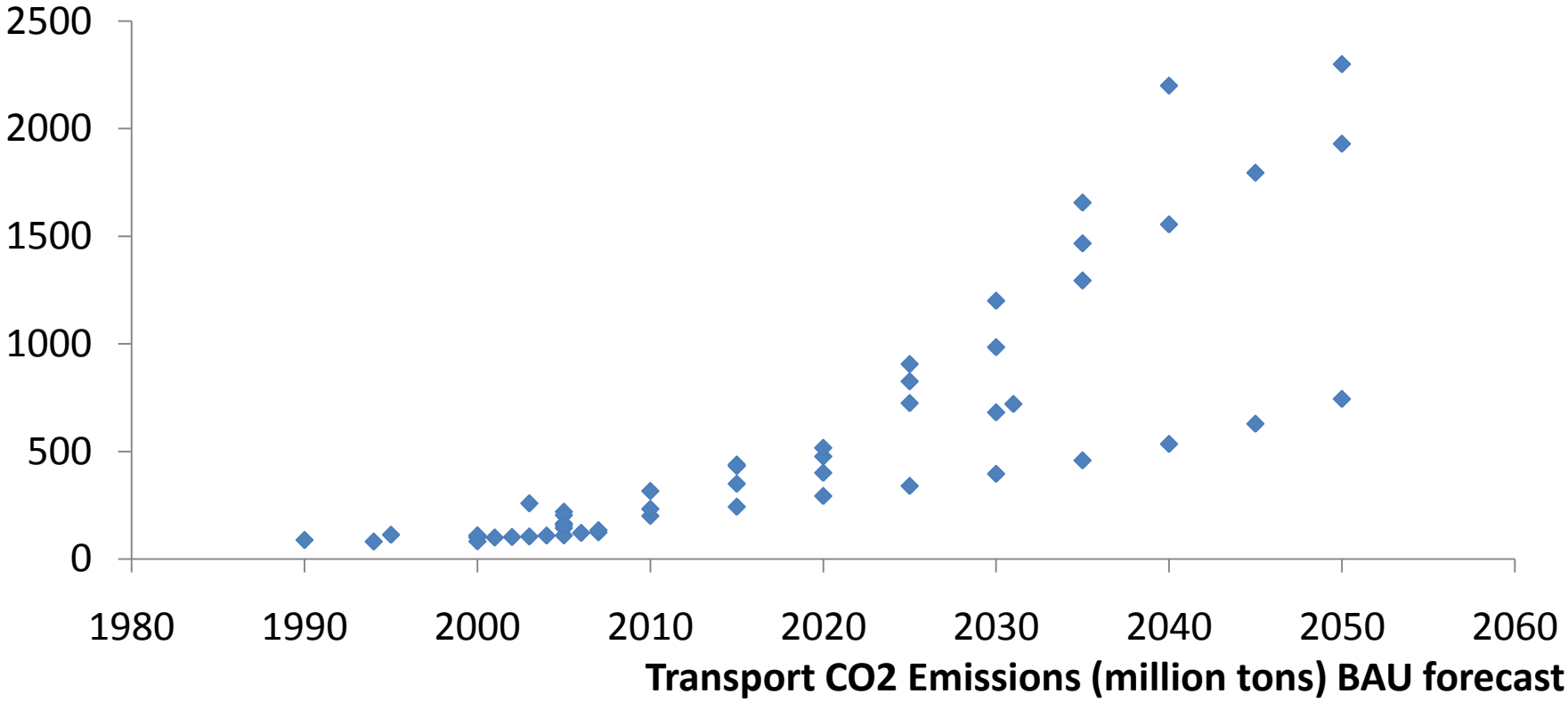
Source : Schipper, et.al., 1992

Activity and vehicle data availability

	Parameter	National Level Availability	Local Level Availability
Vehicle	Registered vehicles	Yes	?
	PARC data (vehicles on road)	No	No
	Fuel split	No	No
	Technology split	No	No
	Average age	No	No
	Emission factor	Yes	Yes
Activity	Average VKT/Year	No	Yes
	Average VKT/Corridor type	No	Yes
	Average speed per Corridor	No	Yes
	Average occupancy	No	Yes
	Average loading	Yes (at corridor level)	At corridor level

Source: Gota. S. (Unpublished) Crunching numbers

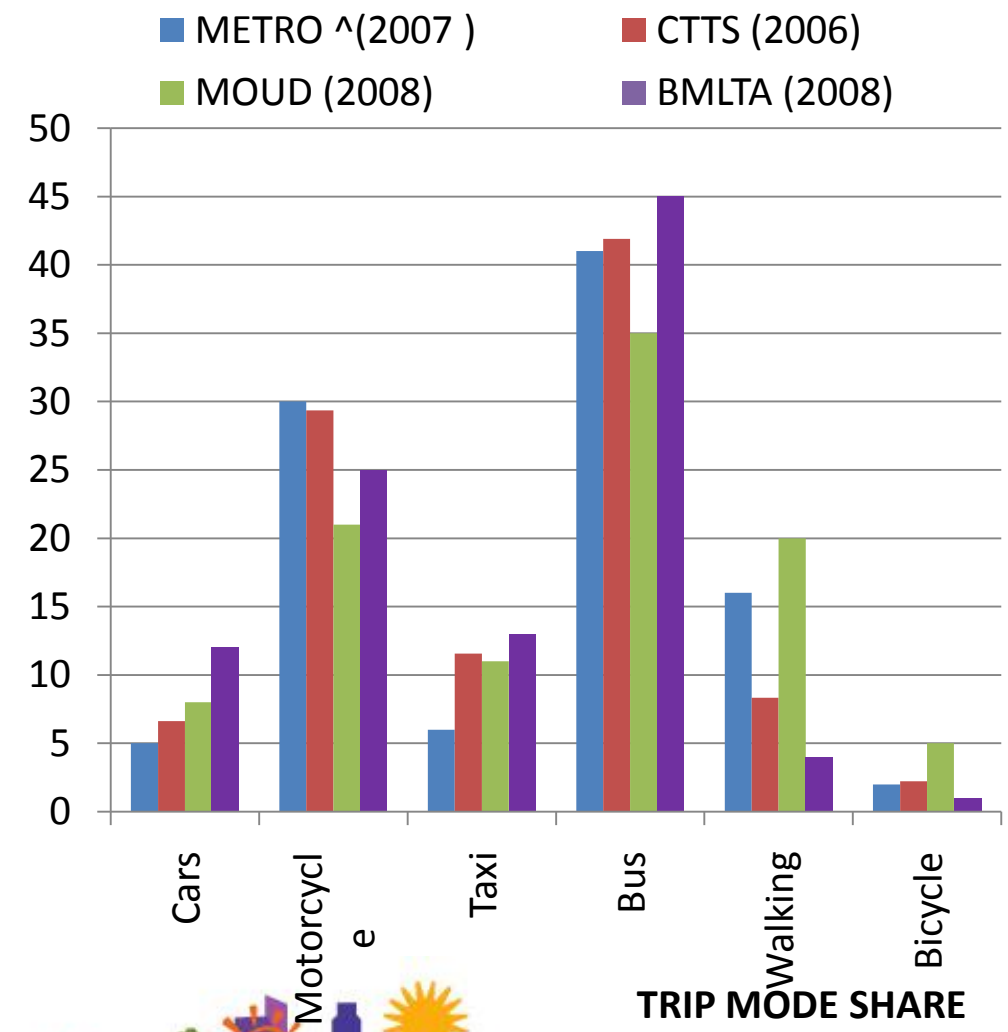
High Variability of Emissions Estimates National Level: Case of India

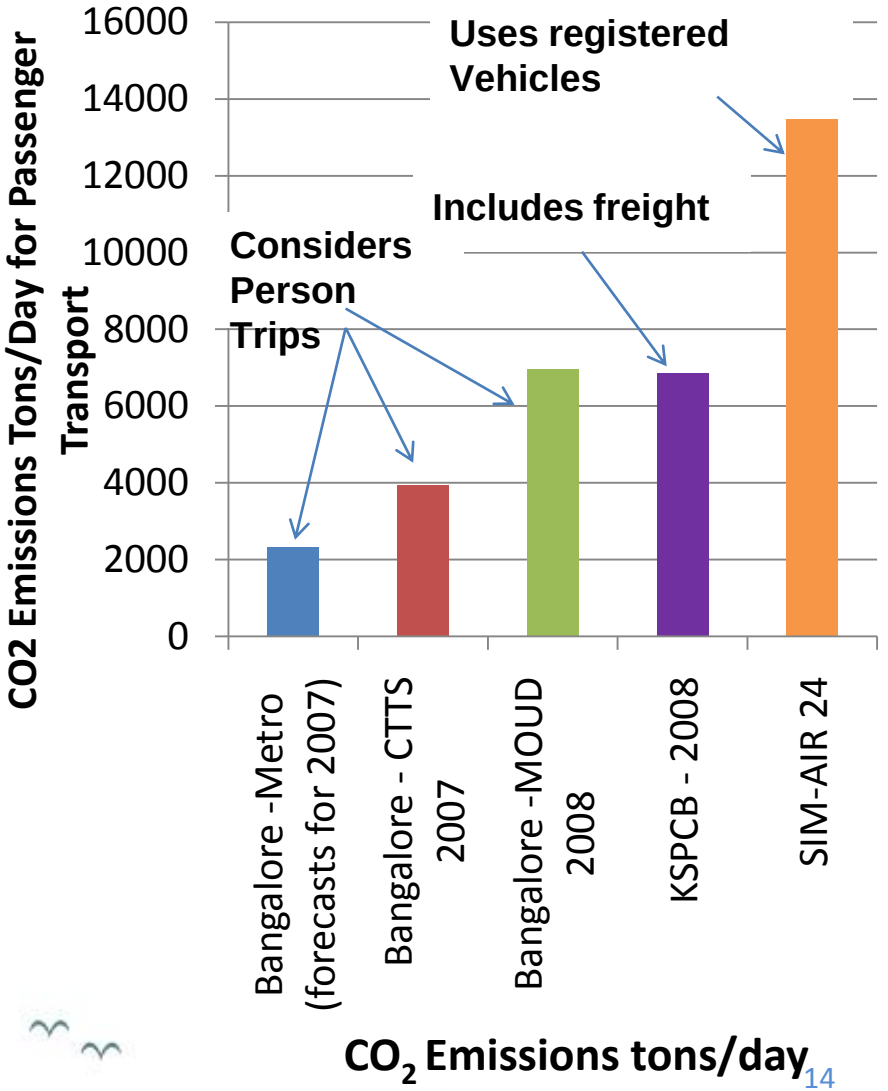


India transport emissions baseline and forecast done by more than 20 reputed institutions and publications

Source: Gota. S. (Unpublished) Crunching numbers

High Variability of Emissions Estimates City Level – Case of Bangalore, India





Source: Gota. S. (Unpublished) Crunching numbers

TEEMP City - Evaluating impact of city investments

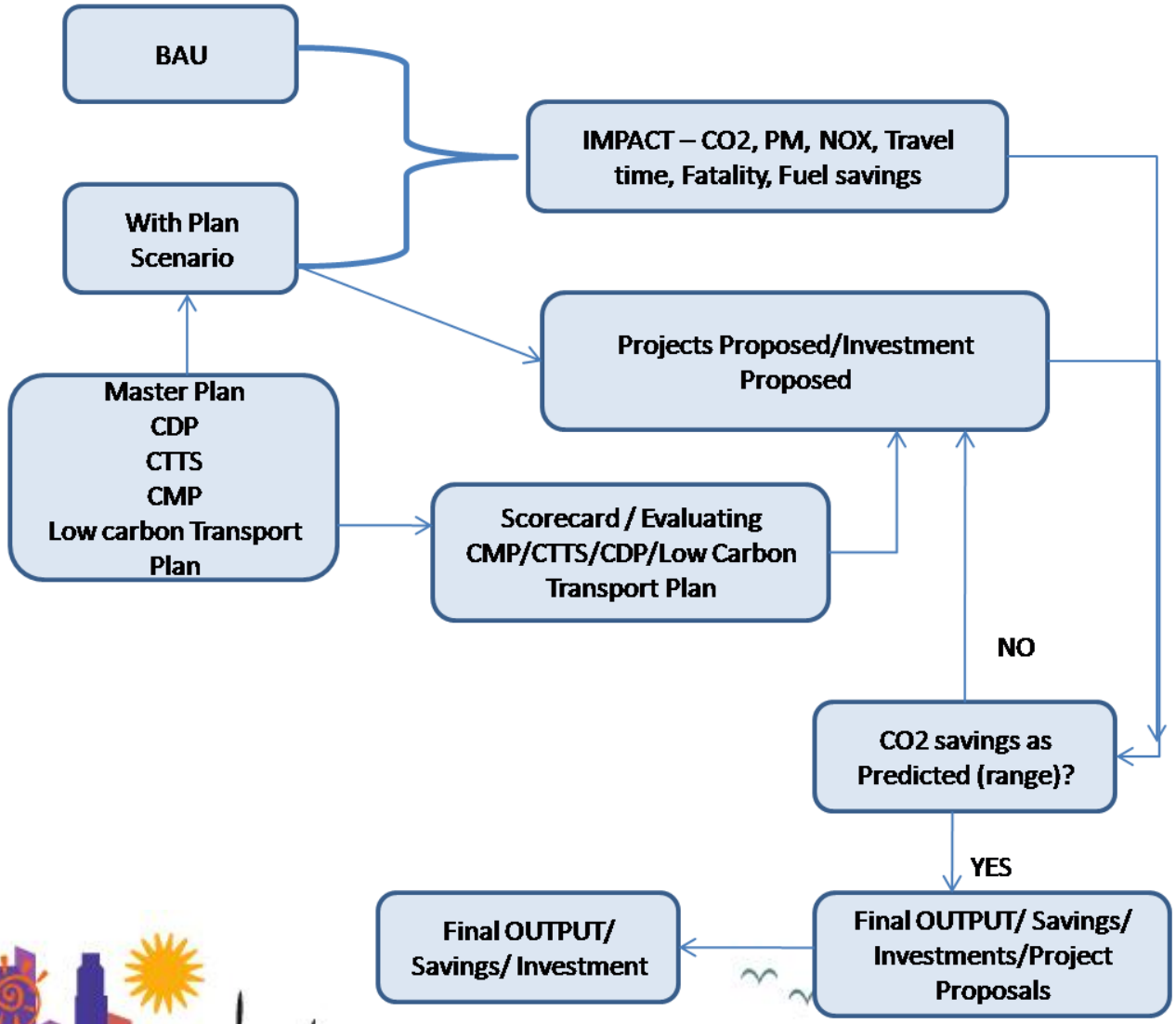
TEEMP city is an assessment tool to provide guidance on CO_2 and air pollution emissions including fuel consumption and other co-benefits to the policy makers while preparing the mobility plans/low carbon transport plans.

TEEMP city is being developed by CAI Asia and ITDP and financed by Veolia Environnement Institute (would be released in 2012)

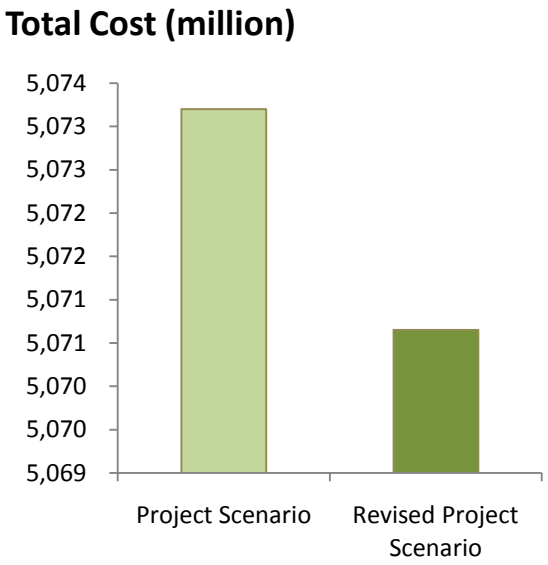
It is a simple bottom-up excel spreadsheet (with defaults) tool to:

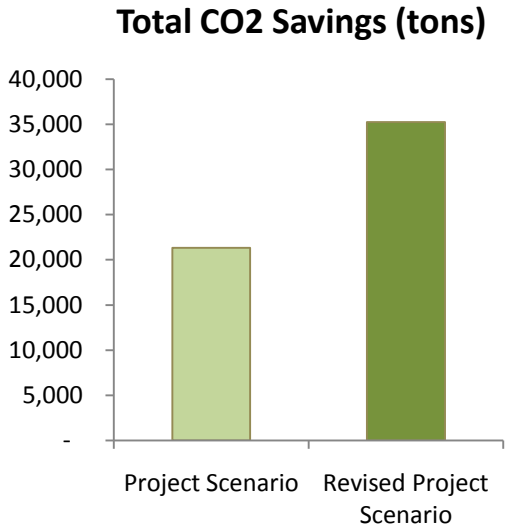
1. Evaluate the impact of mobility plans/ low carbon transport plans on CO_2 emissions
2. Quantify the cobenefits of implementing such transport plan (fuel consumption, air pollution, safety benefits and travel time savings)
3. Assess the adequacy, comprehensiveness and governance related issues with respect to the mobility plan proposal /implementation and possible impact of such a measure.
4. Provide guidance on investment packages i.e. shift in investment pattern impact, increasing/decreasing the investment impact/ changing the proposal schedule etc.

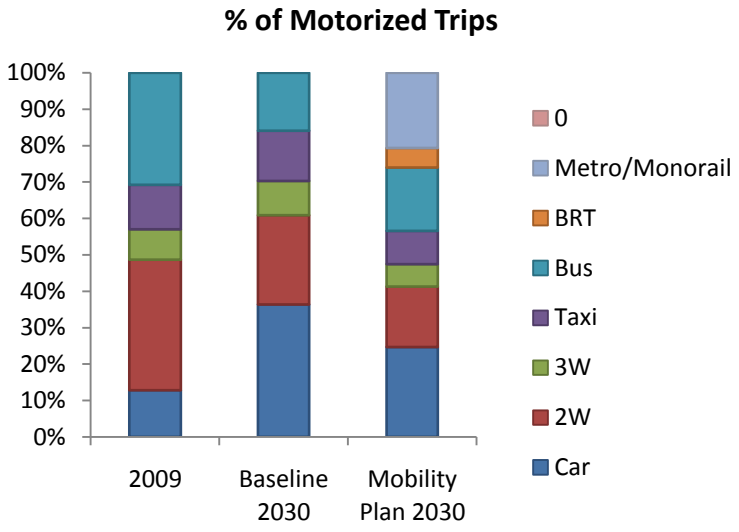
TEEMP City - Evaluating impact of city investments

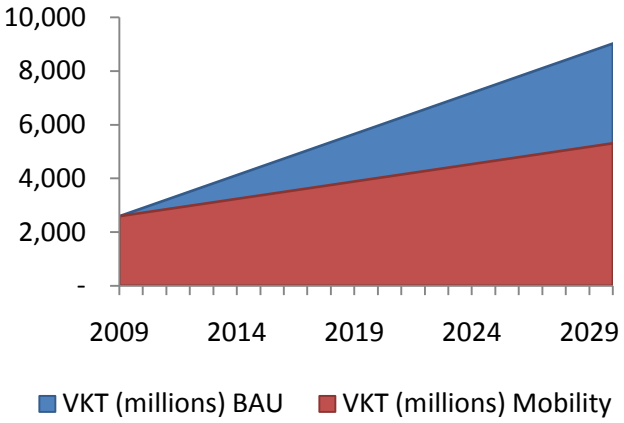


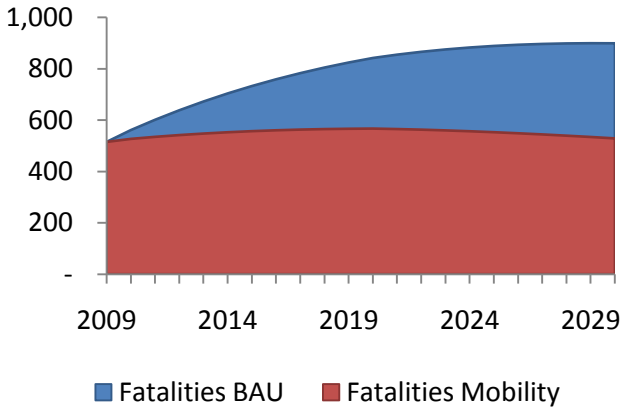
TEEMP City - Evaluating impact of city investments (Case of Jaipur, India)

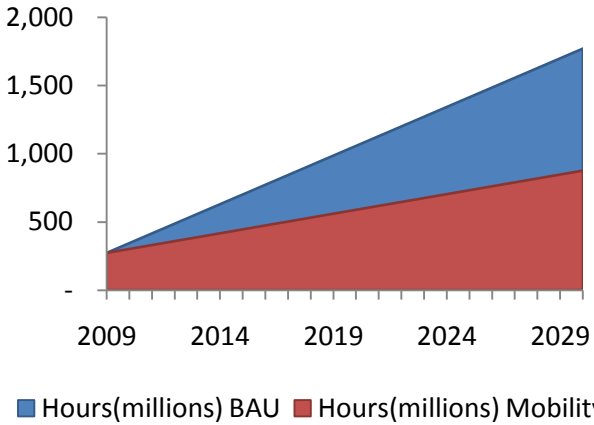












Key issues

- Improve transport data collection and management
  - Need for consolidated transport database
  - Better coordination among various government agencies
  - Harmonization of methodologies and definitions
- Use ASIF as a basis for measuring and monitoring emissions – transparent, practical, and logical methodology
- Evaluating implications of city transport plans on emissions and other co-benefits

For more information

www.cleanairinitiative.org

CAI-Asia China Office

cpo@cai-asia.org
901A Reignwood Building,
No. 8 YongAnDongLi
Jianguomenwai Avenue Beijing
China

CAI-Asia Center

center@cai-asia.org
Unit 3505 Robinsons-Equitable Tower
ADB Avenue, Pasig City
Metro Manila 1605
Philippines

CAI-Asia India Office

india@cai-asia.org
Regus Elegance
Elegance Tower, Mathura Road,
Jasola Vihar, New Delhi
India

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