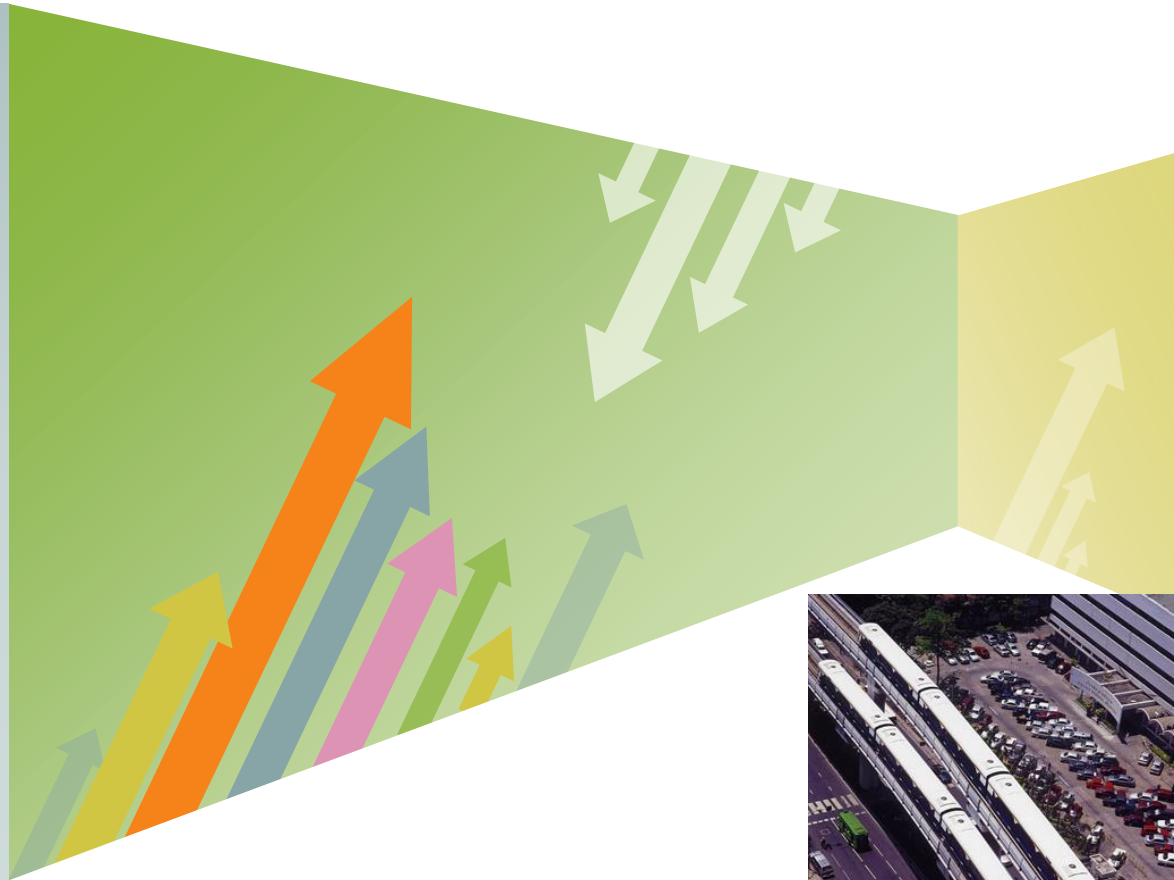


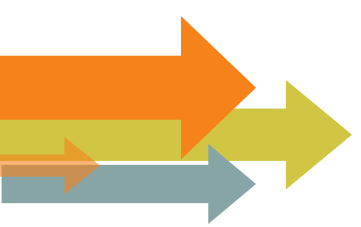
Project Preparation – building the resilient city through sustainable transport

by David Bray and Philip Sayeg (October 11-12, 2017, AIT, Bangkok)
with Nikola Medimorec (SLoCaT) & Chanin Manopiniwes (World Bank)

- Show how transport contributes to global agendas & implications
- Describe key aspects of transport project development – also relevant to other sectors
- Provide an understanding of the role of different actors
- Understanding risk assessment and role of public and private sectors

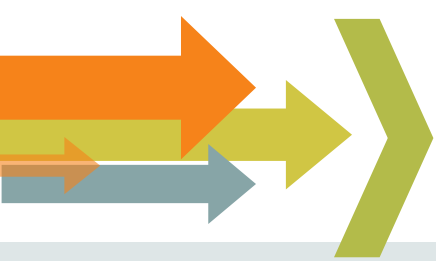


Project Preparation – building the resilient city through sustainable transport



Timetable

Day/ time	Topic
Wednesday 11 October	
12.30-12.45	Introduction
12.45-13.00	Transport and the global agendas
13.00-13.45	How are projects prepared? - Overview
13.45-14.15	Why is concept important?
14.15-15.00	Innovative approaches
15.00-15.30	Break
15.30-16.30	Closer look at project preparation
16.30-17.00	Exercise: putting your team together
Thursday 12 October	
09.00-10.30	Demand and economic appraisal
10.30-11.00	Break
11.00-12.00	Identifying risks and potential role of private sector
12.00-12.30	Wrap-up



Transport and the Global Agendas



Source: ITD

Nikola Medimorec

Senior Researcher

Partnership on Sustainable, Low Carbon Transport (SLoCaT)

Regional EST Policy Dialogue and Training Workshop for South Asia and South-East Asia

October 11, 2017



SLoCaT Partnership

90+ Members: International Organizations – Governments – Development Banks – NGOs – Private Sector – Academe

Diamond Supporter



Platinum Supporter



Gold Supporter



Mission: Integrate Sustainable Transport in Global Policies on Sustainable Development and Climate Change and Leverage Action in Support of the Implementation of the Global Policies.

Global Agendas Relevant for Transport

2010



Global Decade of Action on Road Safety

2015



Financing for Development

2015



2030 Sustainable Development Goals

2015



Sendai Framework for Disaster Risk Reduction

Global Processes on Sustainable Development and Climate Change present Transport Sector with Opportunities and Responsibilities

2015



Paris Agreement on Climate Change

2016



14th United Nations Conference on Trade and Development

2016



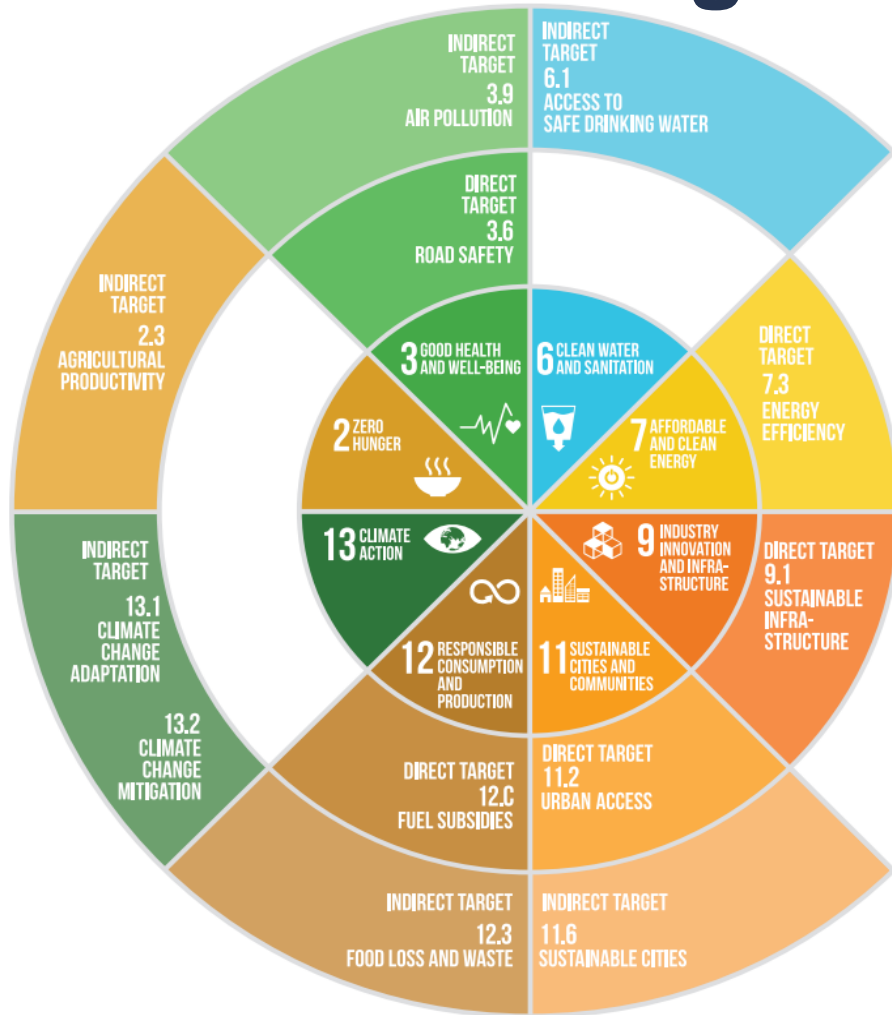
Habitat III

Global Agendas Have Strong Co-Benefits

Themes	Poverty Alleviation & Food Security	Social Inclusion & Equity	Urban/ Rural Access/ Regional Connectivity	Climate Change Mitigation	Climate Change Adaptation	Road Safety
2030 Agenda	High	High	High	High	Medium	High
Paris Agreement	Medium	Low	Low	High	High	None
New Urban Agenda	High	High	High	High	Medium	High
Addis Ababa Action Agenda	High	Medium	Medium	Medium	Medium	None
Global Decade of Action on Road Safety	Medium	Medium	Low	None	None	High
Sendai Framework 2015-2030	Medium	Medium	Medium	None	High	None
Nairobi Mandate	Low	None	High	Low	High	None

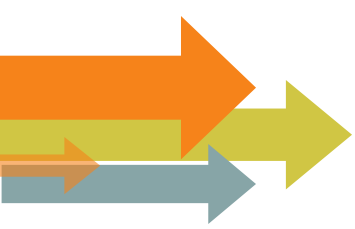
Level of Contribution
High
Medium
Low
None

Transport Connected to Several SDG Targets



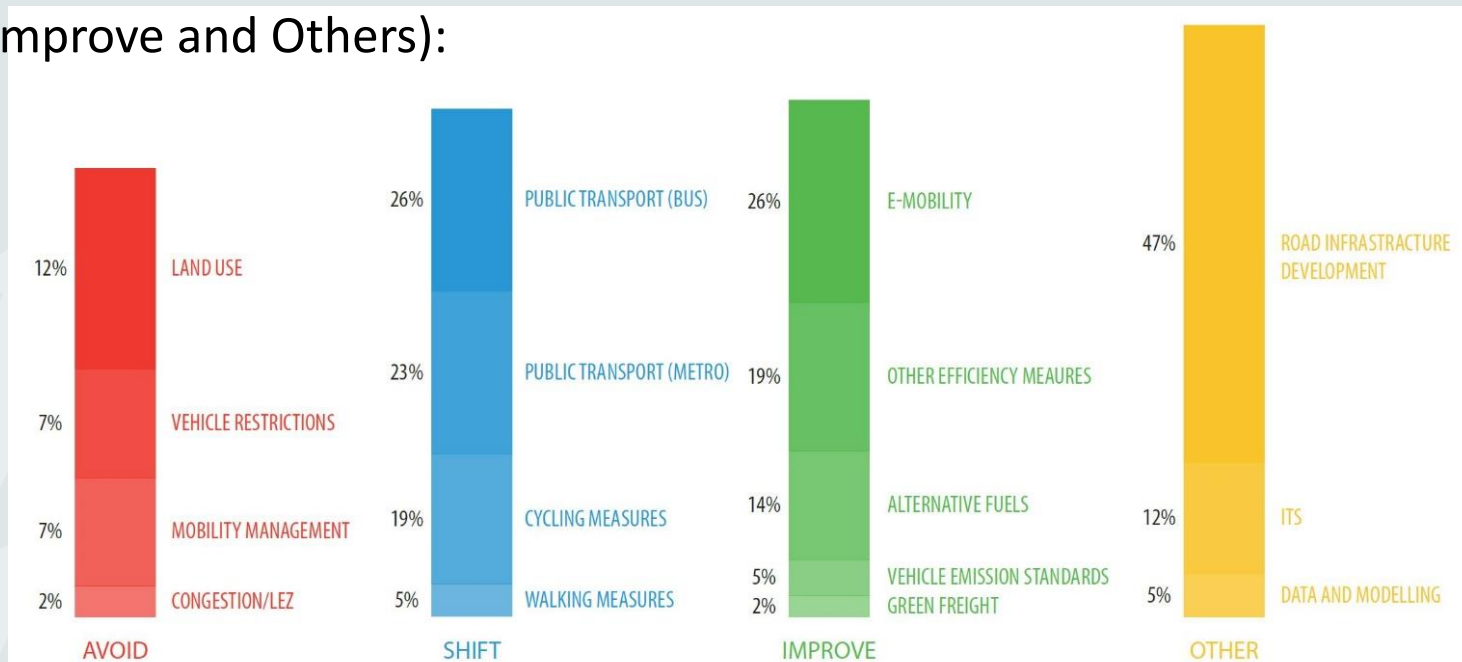
- Transport contributing to 8 SDGs and several targets
- SDG target 13.1 calls for Climate Change Adaptation and SDG target 9.1 on resilient transport infrastructure
- 22 countries in 2016 and 43 countries in 2017 have submitted Voluntary National Reviews (VNRs) to the High-level Political Forum (HLPF)

Source: SLoCaT Sustainable Development Goals & Transport

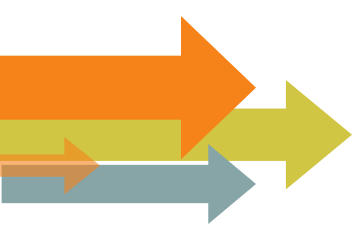


Transport in the SDG Review Process

- In 2017, 98% of the 43 submitted VNRs have some degree of reference to the transport sector
- 35% of VNRs in 2017 give specific examples to link transport with sustainable development impacts
- Adaptation in transport sector only included by Kenya in 2017 VNRs
- Overview of included transport measures (divided into Avoid, Shift, Improve and Others):



Source: SLoCaT High Level Political Forum Report

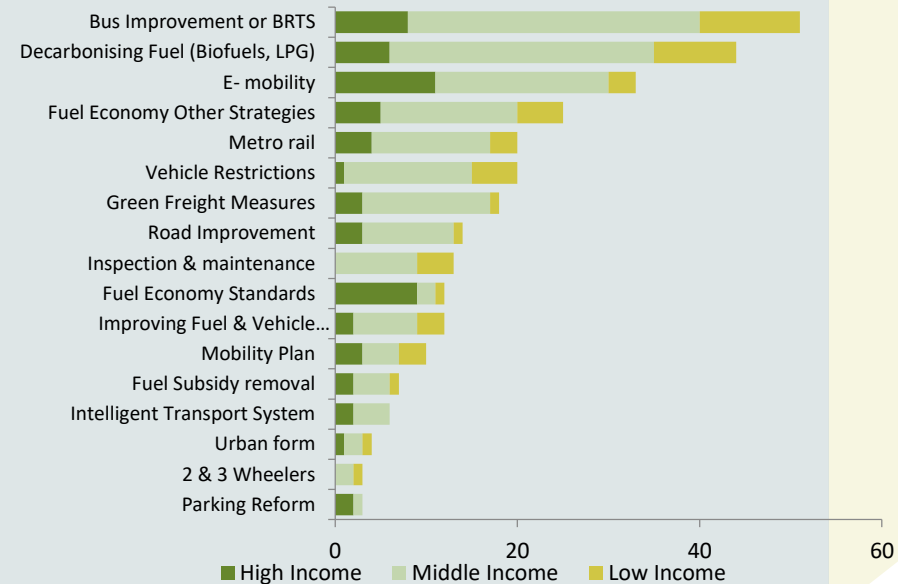


Transport Plays Strong Role in Paris Agreement

- The Paris Agreement was adopted by all 196 Parties to the UNFCCC at COP21 on 12 December 2015
- Agreed targets:
 - limiting global temperature rise to well below **2 degrees Celsius**,
 - and to strive for **1.5 degrees Celsius**.
- Countries submitted mitigation and adaptation measures through Nationally Determined Contributions (NDCs)
- 75% of NDCs highlight transport as mitigation source
- 5% of NDCs have adaptation measures for transport



Source: UN



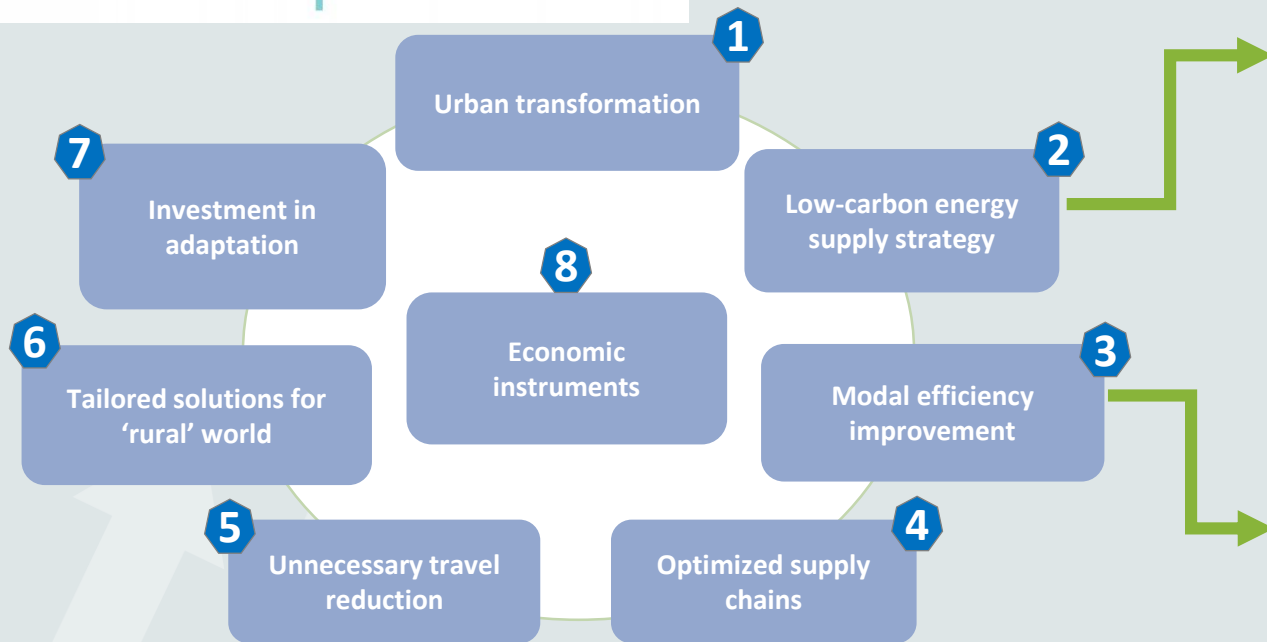
Source: SLoCaT NDC Analysis

Paris Process on Mobility and Climate (PPMC)



PARIS PROCESS
ON MOBILITY AND CLIMATE

Climate Focus within context of Sustainable Development



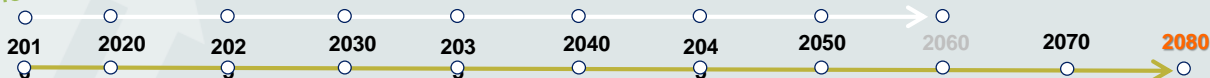
Climate Change:

- Zero Net Emissions
- Resilience

Sustainable Development:

- Access
- Road Safety
- Air Pollution
- Congestion

Front Runners



Fast Followers

Source: PPMC Global Macro-Roadmap

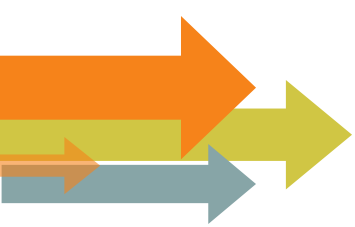
Declaration on Adaptation

- COP22 Declaration on Accelerated Action on Adaptation in Transport
- Within a week signed by 395 individuals and by 55 organizations including:

- World Bank
- International Energy Agency
- Global Environment Facility
- Islamic Development Bank
- International Road Federation
- PIANC
- International Union of Railways
- UN-ECE
- Nordic Development Fund
- International Association of Public Transport



Read more about it here: <http://www.slocat.net/news/1780>



Mitigation and Adaptation Action to be Leveraged in Cities

- Cities at forefront of climate action
- Mitigation and adaptation have to be tackled together
- SLoCaT continuing focus on urban transport, participating in World Urban Forum in 2018
- contributing to Global Centre of Excellence on Climate Adaptation

Global Centre of Excellence on



Climate

Adaptation

FORUM BANDAR SEDUNIA



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Thank you for your attention!

For more information, visit our website:

<http://slocat.net/>

<http://www.ppmc-transport.org/>

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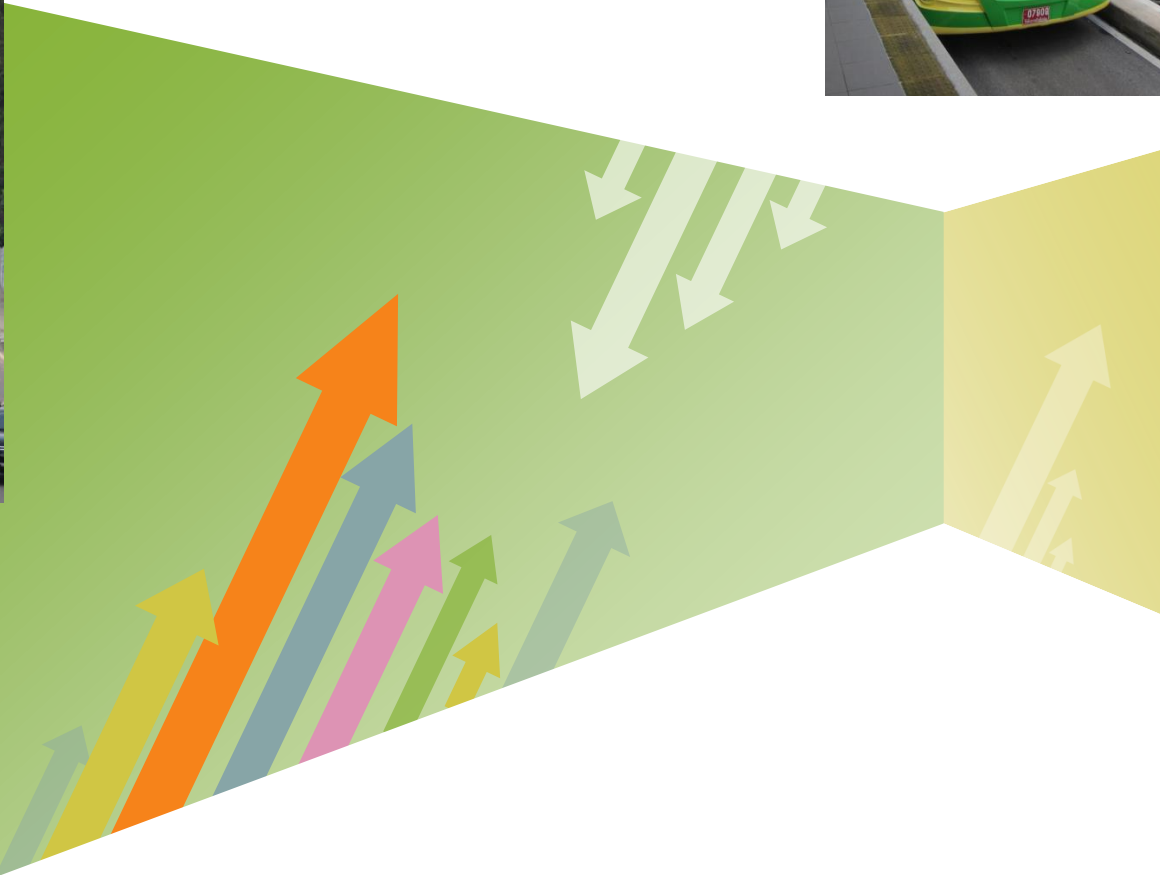
[facebook.com/SLoCaTOfficial/](https://www.facebook.com/SLoCaTOfficial/)

Follow us on Twitter:

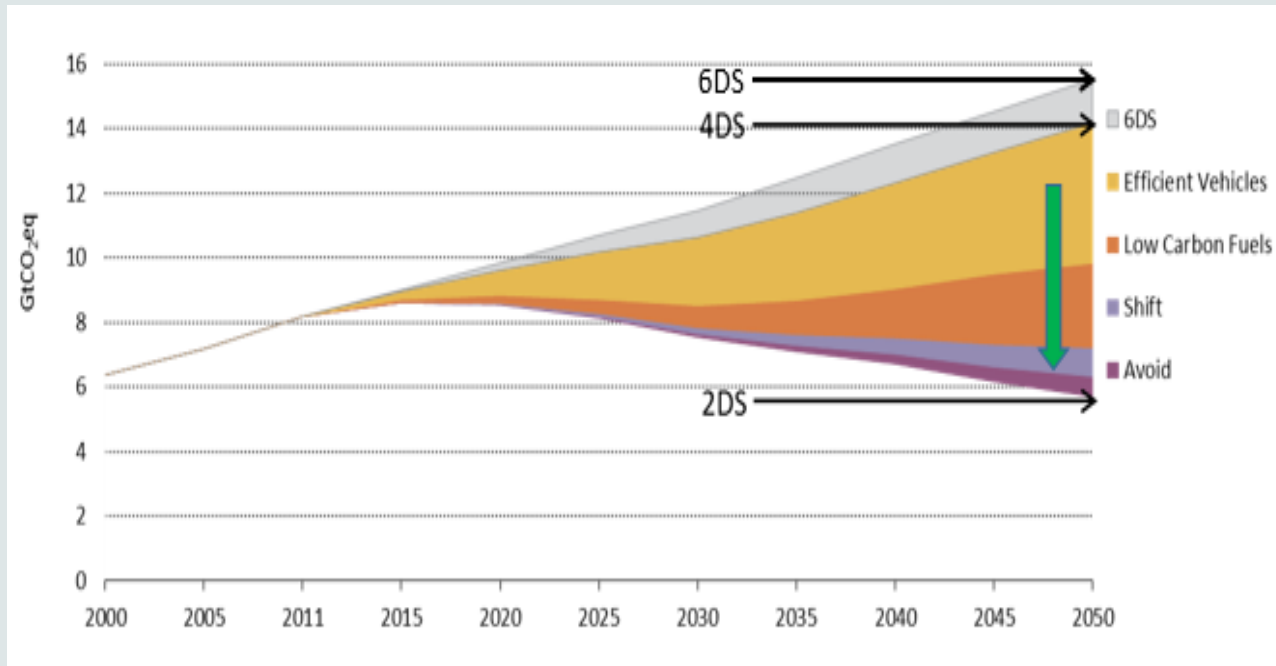
[@SLOCATCornie](https://twitter.com/SLOCATCornie)



Session 2: How are projects prepared? An overview



Transport needs to do its share for Paris Climate Agreement



Source: IEA 2012, *Energy Technology Perspectives 2012*. OECD

Examples of BRT





Large investment need & enough finance but...



Infrastructure

Many projects are needed; but
There is not enough finance



Finance Sector

There is money looking for opportunities; but
There are not enough projects

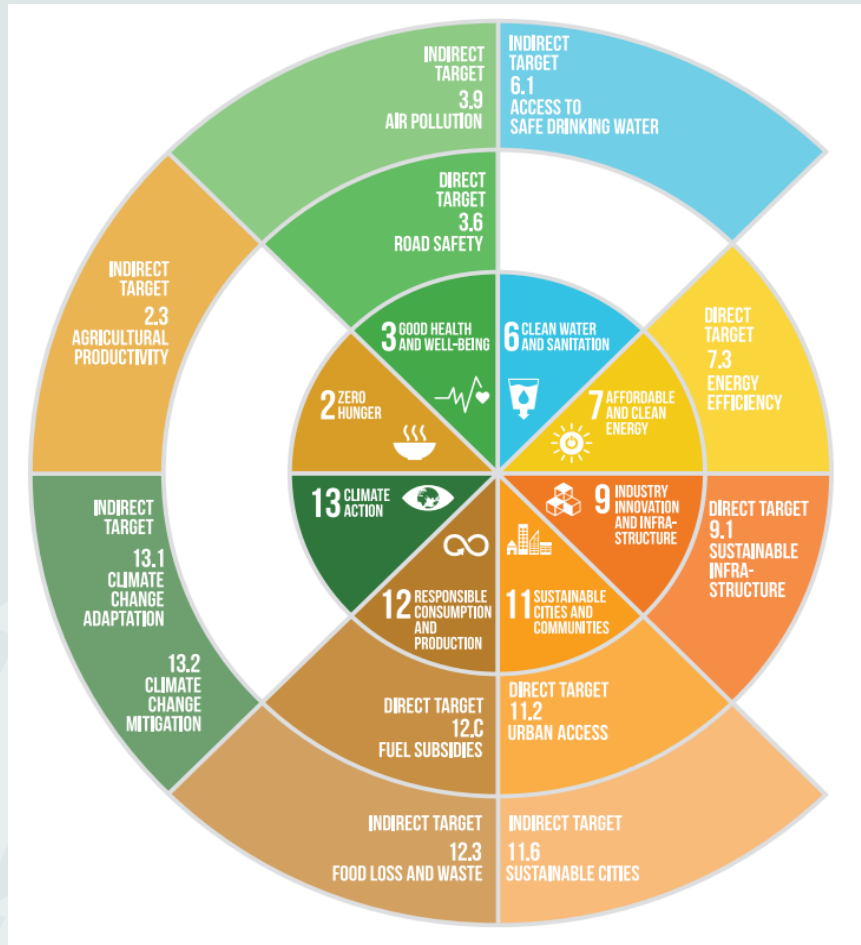
Why this dichotomy?

- The wrong projects
- The wrong design
- The wrong structure

That is, the wrong project preparation

Transport recognized in the SDGs

Many SDG targets rely on transport



Positives

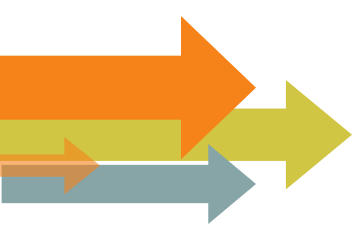
- Access
- Connectivity
- Efficiency

Negatives

- Air pollution
- Fatalities/ injuries
- Greenhouse gas emissions

Mitigation/ adaptation

Source: Partnership on Sustainable, Low Carbon Transport



Successfully address transport, climate benefits follows

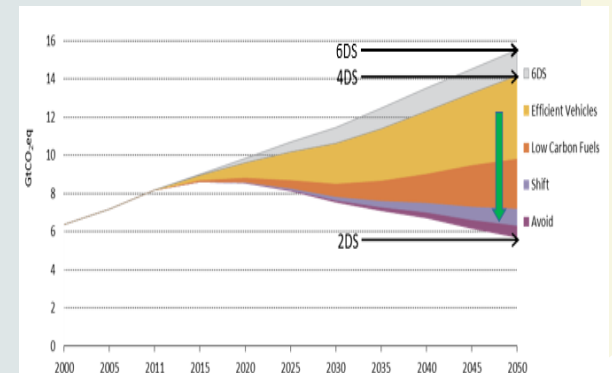
Table 4

Present value of wider economic benefits of four BRT schemes (in 2012 million US\$)

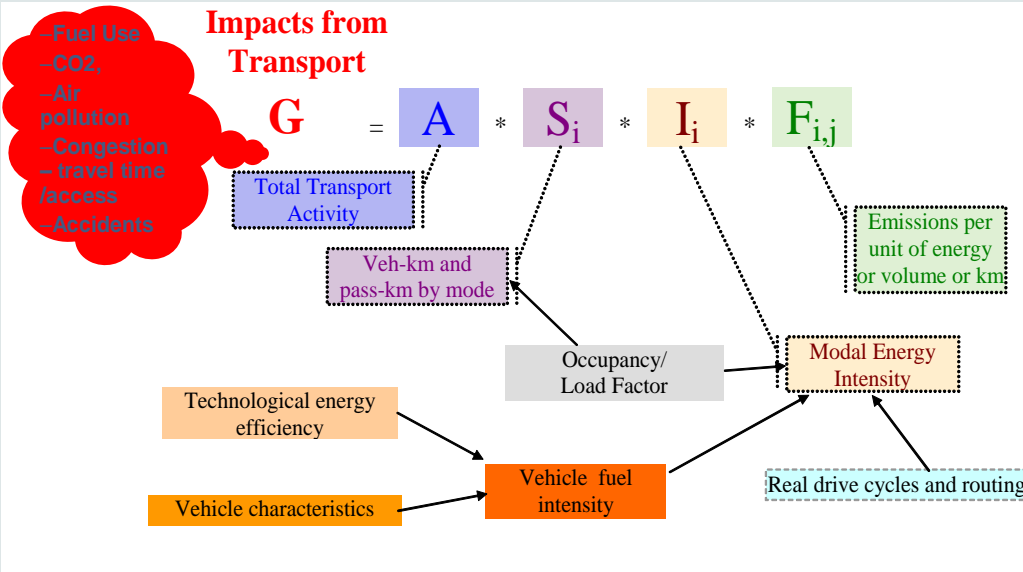
Component of benefits	TransMilenio, Bogota (Phase 1 & 2)	Metrobús, Mexico City (Line 3)	Rea Vaya, Johannesburg (Phase 1A)	Metrobús, Istanbul (Phases 1-4)
Travel time savings	1,830	142	331	6,369
Operating cost savings	1,393	38	170	2,154
Improved road safety	288	23	268	881
Health benefits of Increased physical activities	99	7	141	392
Benefits from Carbon emissions reduction	239	10	18	152

Source: Carrigan et al. 2013

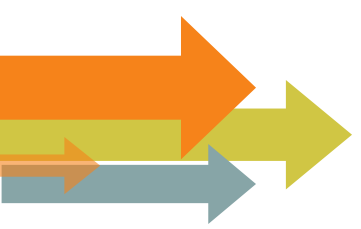
Carrigan, A., King, R., Velasquez, J. M., Raifman, M., Duduta, N. (2013). *Social, environmental and economic impacts of BRT systems*, EMBARQ - WRI.



Conceptual framework: Activity, Share, Intensity, Fuels



Schipper, L., C. Marie-Lilliu and R. Gorham. *Flexing the Link between Urban Transport and CO₂ Emissions: A Path for the World Bank*. International Energy Agency, 2000.



Need for a strategic framework

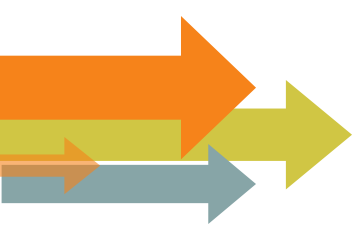
A goal e.g. for Cebu: *“The Project Development Objective (PDO) is to improve the over-all performance of the urban passenger transport system in the Project Corridor in Cebu City in terms of the quality and level of service, safety, and environmental efficiency.”*

Higher Level Objectives to which the Project Contributes: *“The project’s link to the CPS is through support under Engagement Area 3 of Rapid, Inclusive and Sustained Economic Growth where the project will contribute to the Government’s target of increasing the ratio of public investment to GDP, and provide one urban corridor with improved public transit services.”*

Key results indicators:

- *Increase in the number of people using improved public transport services*
- *Increase in the number of women using improved public transport services*
- *Reduction in average travel times for BRT users during PM peak from Ayala to Bulacao*
- *Reduction in the greenhouse gas (GHG) emissions of transport in Cebu City*
- *Reduction in number of road accidents in Cebu City.*

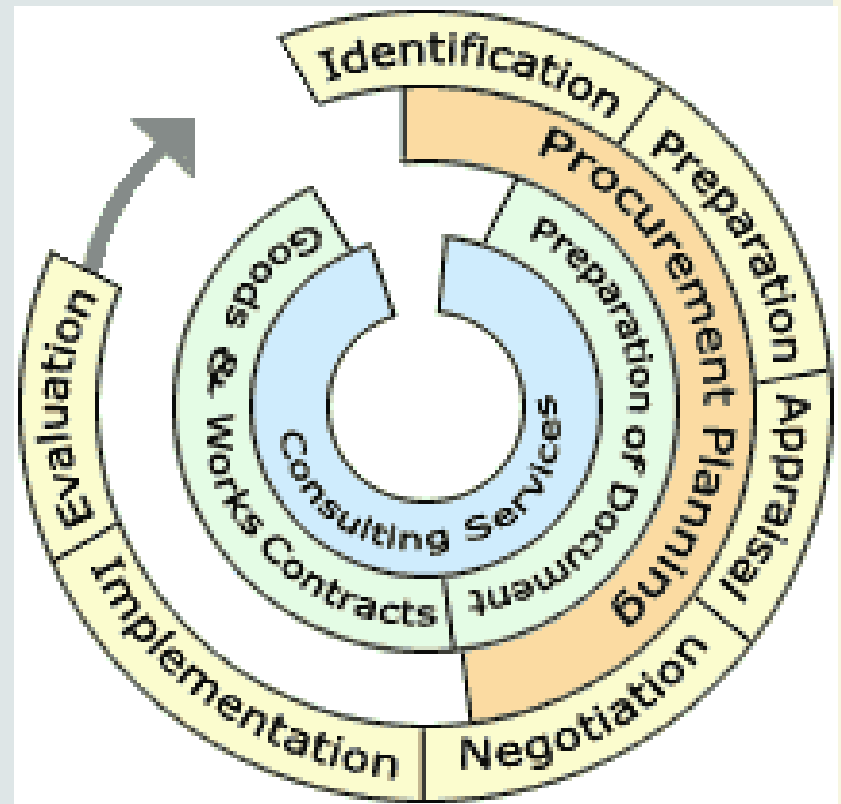
For definitions of PDO etc: http://siteresources.worldbank.org/INTISPMA/Resources/383704-1184250322738/3986044-1250881992889/04_WorldBank_Results_Terminology.pdf



Overview of the project cycle

The Project Cycle is the framework used by development agencies with clients to design, prepare, implement and supervise projects

- Identification
- Preparation (also known as business case)
- Appraisal
- Negotiation/Approval
- Implementation
- Evaluation





The basics

Stage	Scope	Responsibility	Duration
Identification	Based on sector work and country strategies, the MDB etc. and borrowing countries jointly identify projects that support development goals – identification leads to the Concept	Joint	1 year +
Preparation	“bankability” - studies and impact assessments that refine the objectives, components, schedule, institutional responsibility and implementation plan of the project.	Government	1 year +
Appraisal	review all the studies conducted in previous stages, including the types and amounts of equipment, goods, civil works and services that will be purchased. Results in what WB call the PAD	MDB	6 months
Negotiations	MDB and borrowing country will agree on the terms of the loan supporting the project	Joint	2 months
Implementation	Purchase agreed infrastructure, goods and services	Government	1-10 years
Evaluation	Self evaluation & potentially independent evaluation of achievement of outcomes	MDB & desirably government also	6 months

MDB loan stops at end of implementation

What does this mean for operations and monitoring?



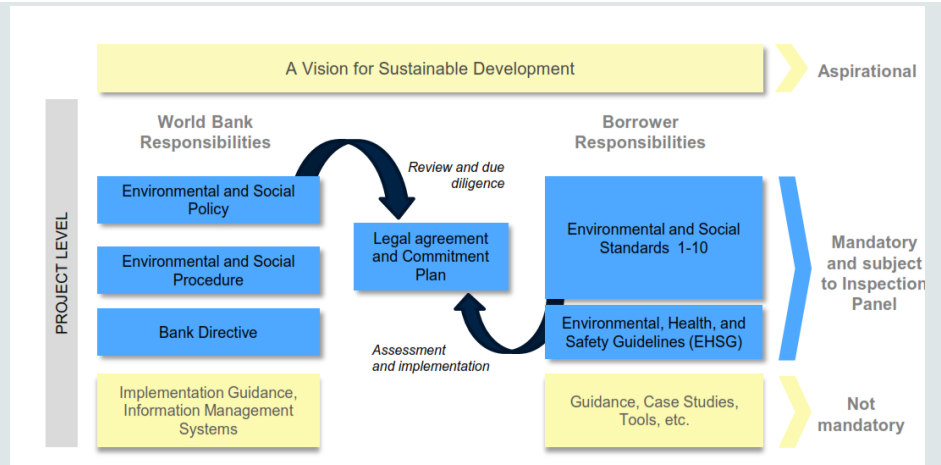
What if government has a proposal already?

- Governments or private proponents may have done their own feasibility studies/ project preparation and seek MDB support – as in the HCMC urban rail example
- MDB may then conduct due diligence:
 - Do technical audits – engineering, demand, economic & finance
 - Do safeguards assessment (social, environmental – risk management)
 - Common approach for MDB involvement in non sovereign lending operations

World Bank E&S Framework (Sep 16)

10 Standards

- Assessment and Management of Environmental and Social Risks and Impacts
- Labor and Working Conditions
- Resource Efficiency and Pollution Prevention and Management
- Community Health and Safety
- Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities
- Cultural heritage
- Financial Intermediaries
- Stakeholder Engagement and Information Disclosure



Source: [<https://consultations.worldbank.org/consultation/review-and-update-world-bank-safeguard-policies>] accessed October 19, 2016

Refer Integrated Safeguards Sheet Cebu BRT
<http://documents.worldbank.org/curated/en/219141468288002477/Integrated-Safeguards-Data-Sheet-Appraisal-Stage-Cebu-Bus-Rapid-Transit-BRT-Project-P119343>

The Cebu BRT – more later



Indicative Project Cost (US\$ million)

	TOTAL COST	IBRD	CTF	GoP
1. BRT Infrastructure and System	162.0	80.2	8.8	73.0
2. Traffic Management	15.6	-	13.2	2.4
3. BRT Concept Dissemination and Development	7.0	4.0	-	3.0
4. Urban Realm Enhancements	3.0	3.0	-	-
5. Project Outcome Monitoring	5.0	3.9	1.1	-
6. Project Management	6.1	6.1	-	-
Base Cost Total	198.7	97.2	23.1	78.4
Price contingency	11.1	7.2	0.8	3.1
Physical contingency	18.7	11.6	1.1	6.0
TOTAL	228.5	116.0	25.0	87.5

2014 cost estimate based on FS level – conceptual only

- Refer PID (concept)

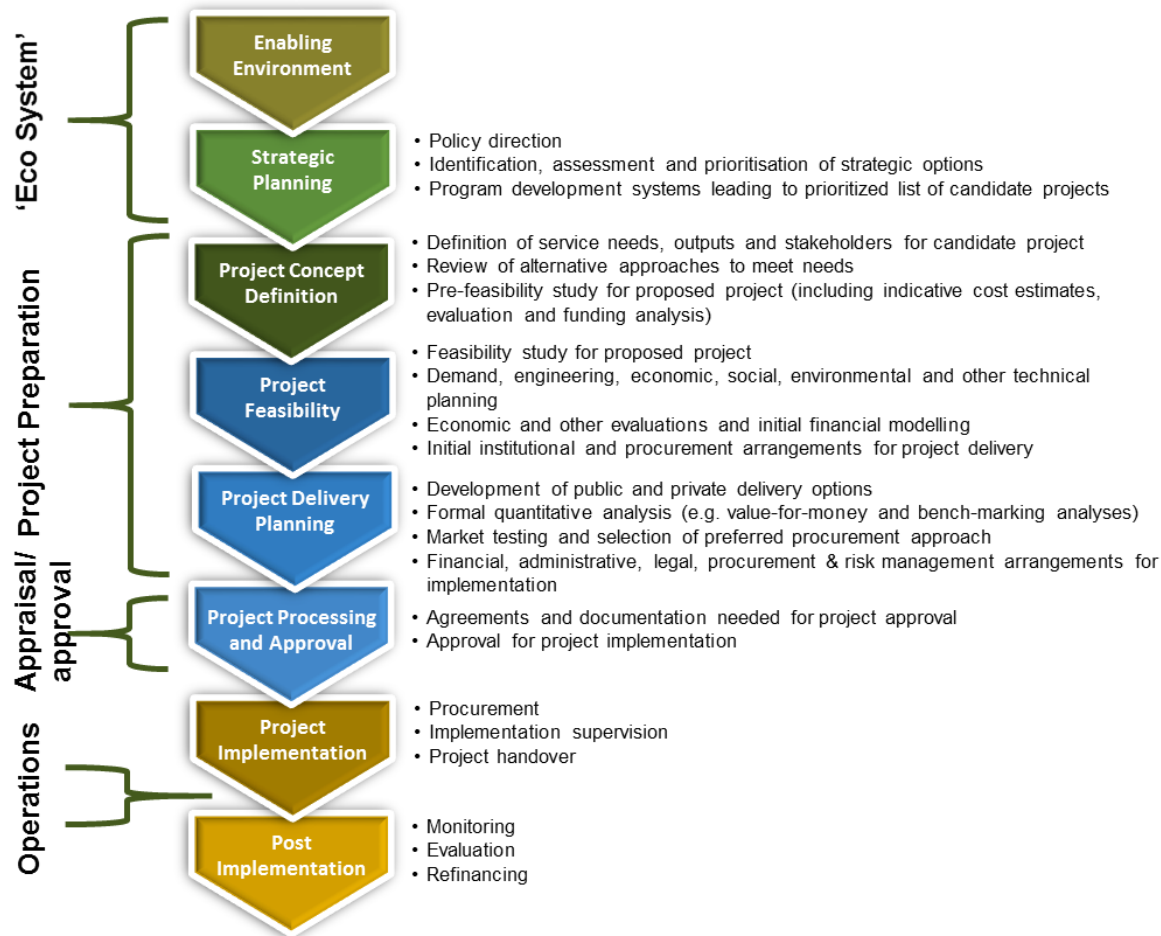
<http://documents.worldbank.org/curated/en/919581468063530689/Project-Information-Documents-Appraisal-Stage-Cebu-Bus-Rapid-Transit-BRT-Project-P119343>

- PAD (appraisal document)

<http://documents.worldbank.org/curated/en/849741468094766681/Philippines-Cebu-Bus-Rapid-Transit-Project>

- Key point is this is a sovereign loan project (\$116m) although there is a CTF concessional loan (\$25m) + GoP is a significant financier

Project preparation in context



- **Preparation/ feasibility – engineering, demand, economic, financial, environmental and social (+ve and –ve not just compliance)**
- **Costs include everything in Results Framework**
- **PPP / Govt. financing are just methods of delivery**
- **Cover demand and economics later**

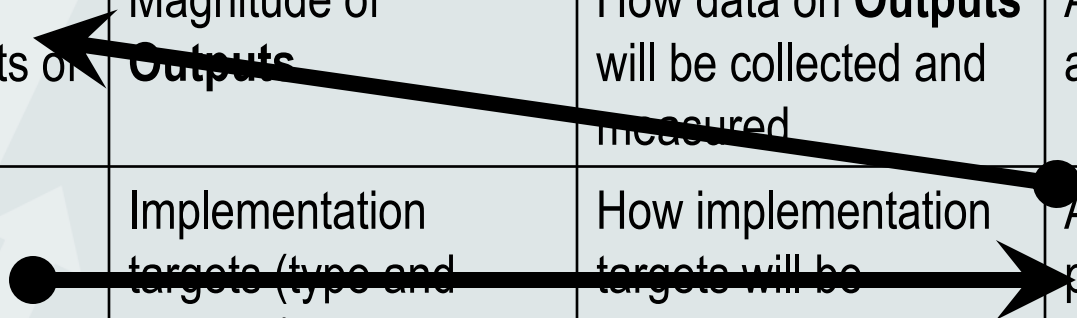
Source: Adam Smith International (2014), *Assessment of the Effectiveness of Project Preparation Facilities in Asia*. Report prepared for the G20 Working Group. September + Author's additions

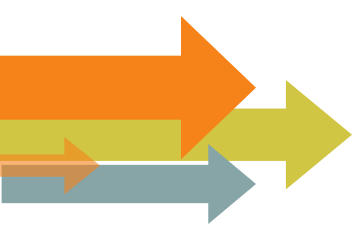


Results measurement

Issue: what happens after implementation? Refer Cebu BRT results framework (Appendix 1 of PAD)

Narrative Summary	Objectively verifiable indicators	Means of verification	Important assumptions
Goal: Higher order objective to which the project contributes	Indicators of Goal achievement	How data on Goal will be collected and measured	Assumptions for achieving Goal targets
Purpose: Primary reasons for the project	Conditions that will indicate Purpose has been achieved	How data on Purpose will be collected and measured	Assumptions for achieving Purpose
Outputs: Direct measurable results of the project	Magnitude of Outputs	How data on Outputs will be collected and measured	Assumptions for achieving Outputs
Inputs: The resources made available to the project	Implementation targets (type and quantity)	How implementation targets will be monitored	Assumptions for providing Inputs





What happens in UK, EU & Australia?

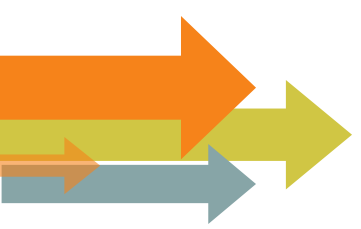
Content	Comment
1. Description of the Proposal	
Description	A description of the physical characteristics of the proposal, including linkages with other related projects.
Cost	Capital and operating cost over the life of the project, or some equivalent. Indication of confidence level.
Implementation schedule	Delivery time from time of approval. Indication of confidence level.
2. Proposal Context	
Strategic context	The transport strategic context, as indicated in a Transport Plan and other similar documents.
Objectives	Articulate the principal objectives for the proposal. Good practice is to establish principal and secondary objectives to give a better understanding of priorities.
Relationship to Government policy	Link with broader government policy (ie beyond transport).
Links to other projects	Describe links with other related projects and actions.
Alternatives considered	Describe the alternatives that were considered and the basis for the choice of Base Case.
Demand analysis	Describe estimated demand for the project for at least several future years, with and without other related projects (eg other MRT lines), the period for patronage ramp-up, and the probability of alternative demand forecasts. Describe the effect of key underlying assumptions on demand, eg state of the economy, fares, etc.
Consultation	Extent of consultation on the proposal within Government and with business and the community stakeholders.
3. Proposal Justification	
Summary of Proposal Appraisal	Report the results of financial analysis, economic analysis, environmental appraisal and social impacts as required for the proposal.
Risk analysis	Establish areas of risk, (eg individual risks within broad categories such as project design, project implementation, maintenance and operations, revenue, concessioning, etc), the extent of the uncertainty, the party best able to manage the risk, measures to manage risk, and the potential to minimize risk.
Required impact statements	eg Environmental Impact Statement etc
4. Project Financing	
Sources of finance	Review of financing options, including PPP and other sources of finance, and recommendation.
Budget impacts	Cost of the project as reflected in Government budget.
5. Project Implementation	
Contracting/concessioning arrangements	Review proposed contracting/concessioning arrangements and makes a recommendation. Ensure that data used in proposal appraisal and financing in previous sections are consistent with proposal contractual arrangement.
Implementation arrangements	Review issues related to project implementation, including project design, implementation programming, impact on the community, ensuring linkages with other project and programs, and other matters needed to ensure that project objectives are achieved.
Risk management	Describe measures to be taken by the government to manage uncertainty.

e.g. UK Treasury (2015):
Public Sector Business Cases Using The Five Case Model Green Book Supplementary Guidance On Delivering Public Value From Spending Proposals.



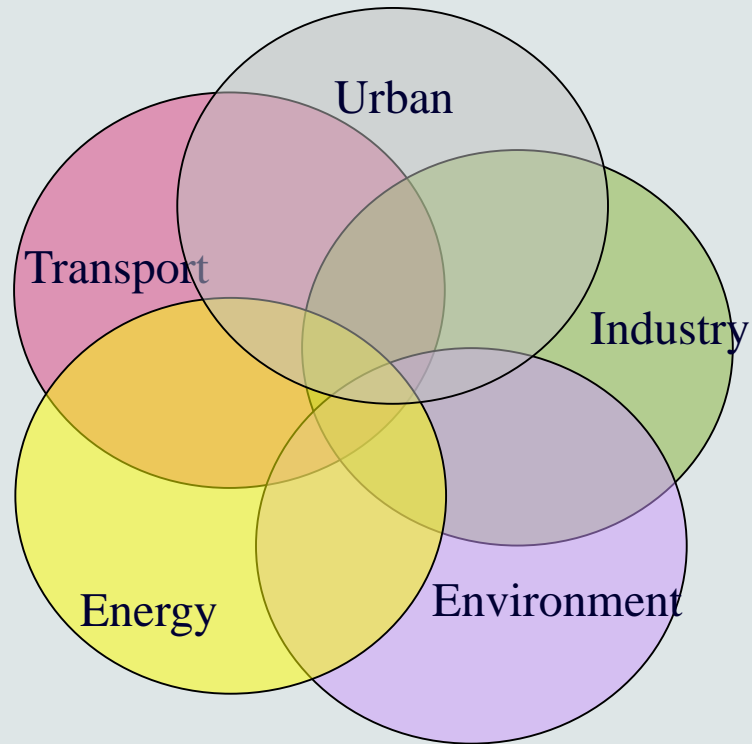
The context: be mindful of what you cannot control

- We don't live in a command & control economy
- Projects sit within a broader context
- A robust strategy will guide, influence and provide the right framework for other “actors” to do their part e.g. private sector & individuals
- Flexibility is of course required



Some basics

**Transport interacts
with other sectors**

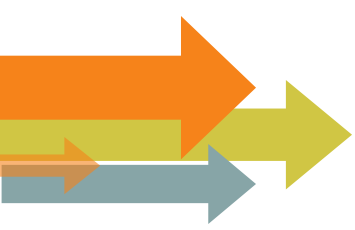




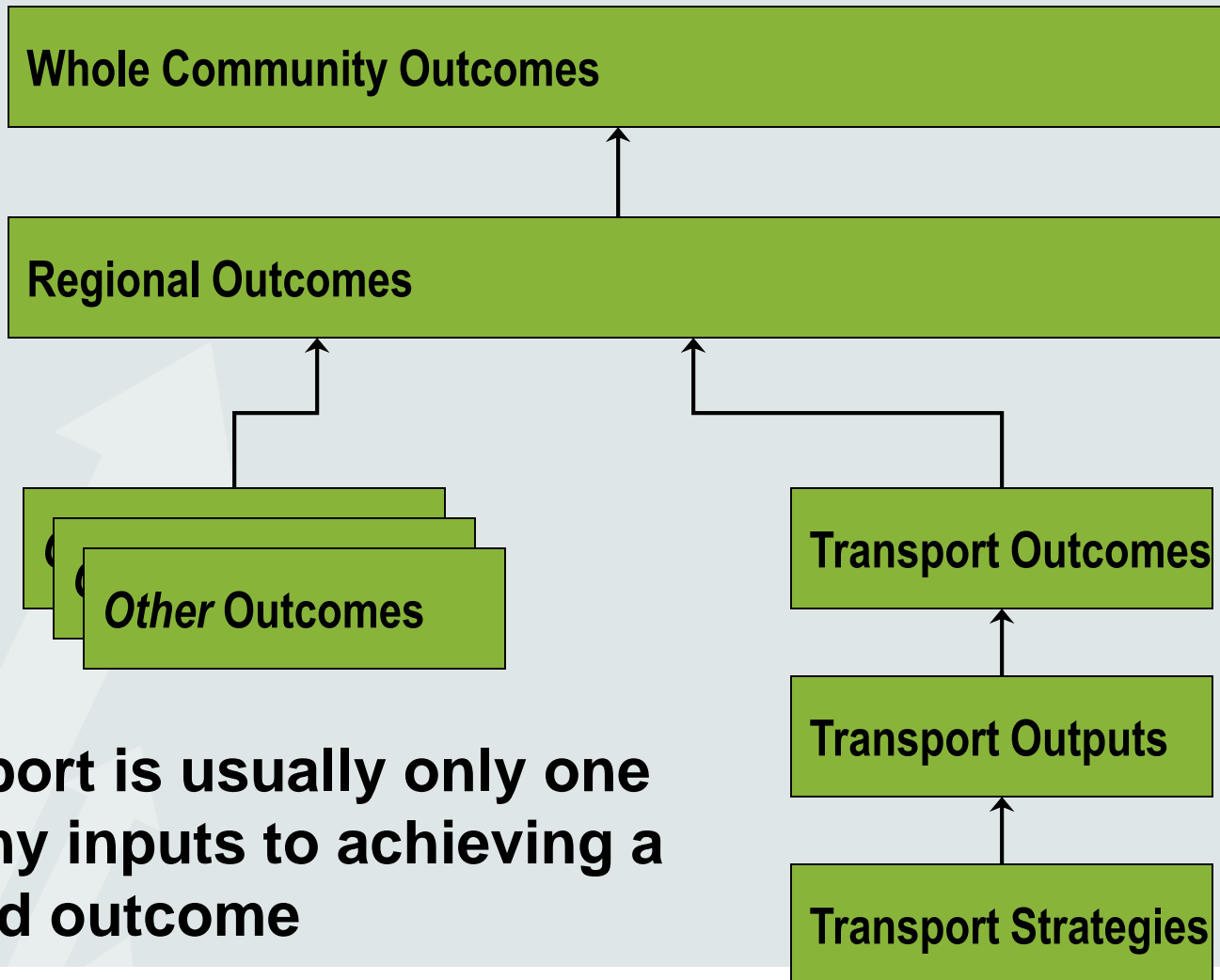
Transport is a derived demand



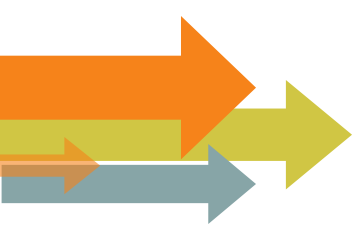
Transport is a means to get to your office, school etc



Transport contributing to community outcomes

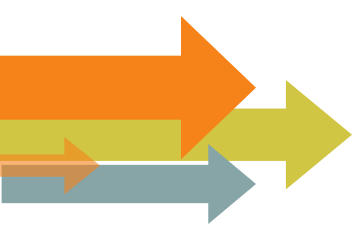


Transport is usually only one of many inputs to achieving a desired outcome



Desirable eco-system

Instrument	Content	Time Frame
Policy	Directional intent e.g. reduce road fatalities, achieve certain urban air quality levels, limit GHG emission from transport, create universal rural, urban and national level access	Long term
Strategy and Plan	Strategy/ long term plans integrated with land use (10 to 50 years) – directional in nature, sub-sectorial/ spatial priorities, broad sequencing of land use, transport	10 – 50 years
	Medium term plans – detailed project identification, priority setting	
Program	Investment programs (on rolling basis), consisting of projects and other initiatives including TA and capacity building.	1-2 year committed projects, 3-5 year indicative investments awaiting funding approval
Project	'Ready to implement' projects identified in programs	Once implemented projects have a long life



One Plan – desirable for integrated interventions

Cebu BRT is one project of what should be a bigger comprehensive approach

Funding & Responsibility	Policy	Road	Public Transport	Other
Agency 1	A	A	A	A
Agency 2	B	B	B	B
Agency 3	C		C	C
Agency 4	D		D	D
Agency 5	E			
Funding X				
LG funding Y				
	\$20M	\$1,100M	\$670M	\$80M



Challenges

- Corruption
- Bureaucratic inertia
- Weak local government
- High demand on scarce resources (\$ & capable people)
- How to harness market forces?
- Any more?

Examples of market response



MC taxis, Bangkok

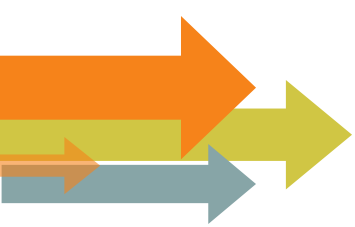


FX Manila

Thai - Cambodia border goods crossing



Policy:
Single toll per vehicle crossing of the border at Aranyaprathet
Outcome:
Overloaded vehicles



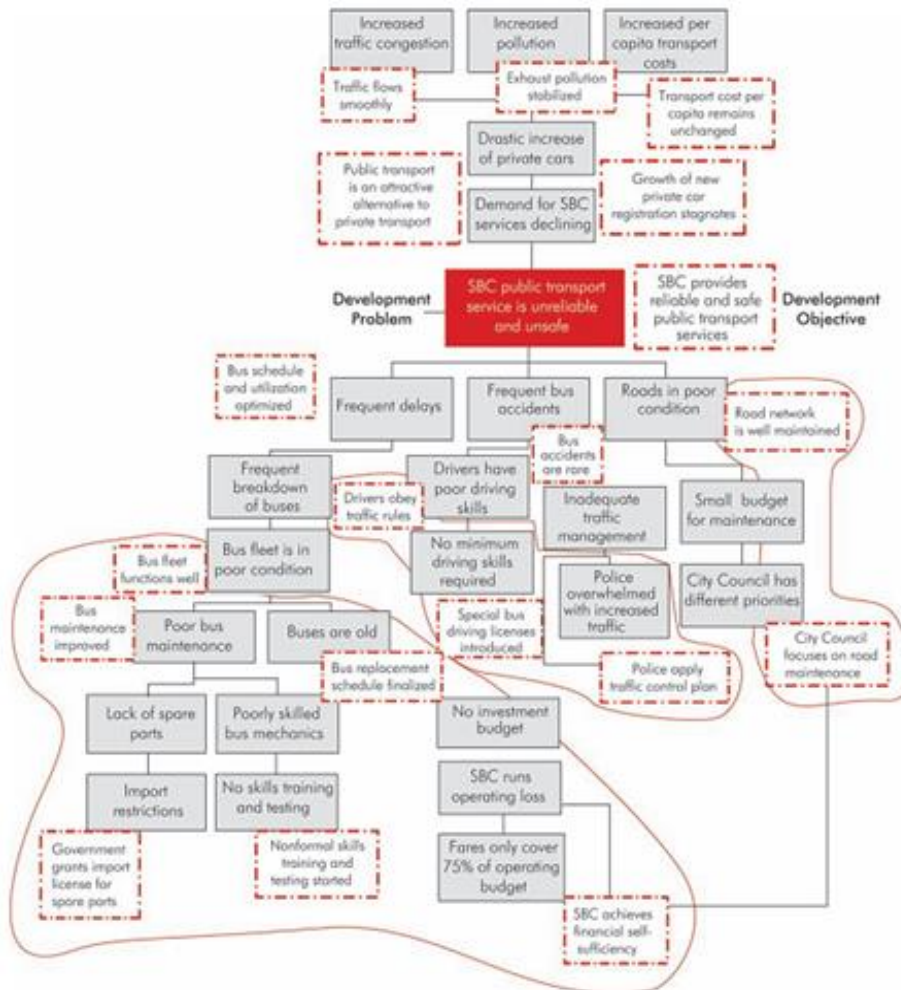
Strategies/ plans/projects should be market-oriented

- Facilitating appropriate responses by firms and individuals
- What government & development institutions do may only be the minor part of what needs to be done
- Besides government agencies are often slow moving & part of the “problem”
- Local government may need to be strengthened as a primary method of delivery

Session 3: Why is concept important?



Identification / concept in theory



- *Nice to think thorough diagnosis always done*
- *Goals/ objectives first – strategic framework*
- *Then problem identification approach – alone may not fit with desirable strategy*
- *So ‘bottom up/ top down’ approach is likely best*

Source: ADB 2007. *Guidelines for preparing a design and monitoring framework. A toolkit for developing a participatory design and monitoring framework.*

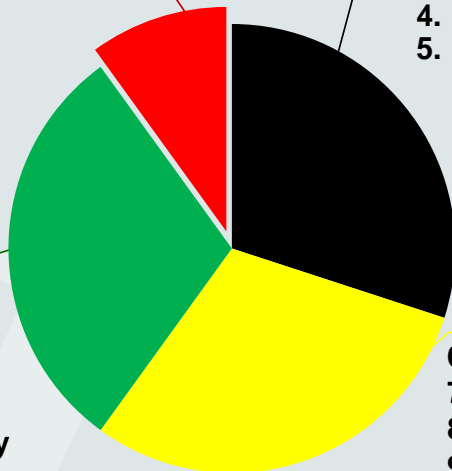
Another approach: ADB's STAR

Risks to Sustainability

- 17. Design & evaluation risk
- 18. Implementation risk
- 19. Operational risk

Environmental

- 12. GHG Emissions
- 13. Air pollution
- 14. Natural & built environment
- 15. Resource efficiency
- 16. Climate resilience

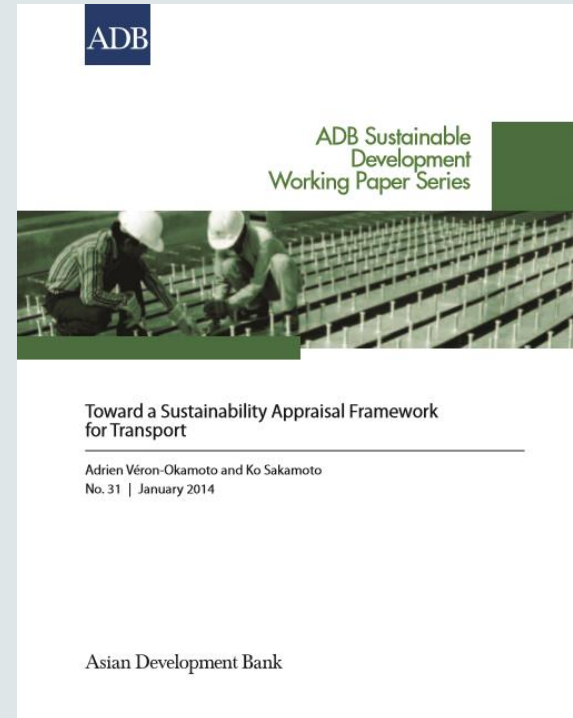


Economic

1. Efficiency: people & businesses
2. Quality & reliability
3. Fiscal burden
4. Employment
5. Wider economic benefits: cross-border, urban, rural

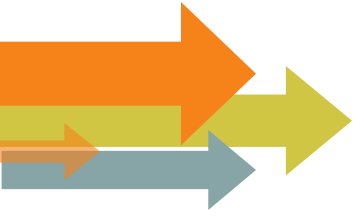
Social

6. Basic accessibility
7. Safety
8. Affordability
9. Inclusion
10. Social cohesion
11. Employment



ADB 2014. *Toward a Sustainability Appraisal Framework for Transport*. Working Paper 31. January.

Role of Evaluations



Strategy
development

Strategic planning

Project selection

Project
development

Project design

Peer reviews

Original aim was to
move it upstream

STAR used here at
present

Portfolio analysis

Program and
Project
Monitoring

MDB commitments

Implementation
monitoring

Evaluation

Ex post evaluation



Another approach: A-S-I approach

AVOID/REDUCE

SHIFT

IMPROVE

Reduce or avoid travel
or the need to travel

- Integration of transport and land-use planning
- Smart logistics concepts
- ...

Shift to more environmentally
friendly modes

- Transport Demand Management
- Mode shift to Non-Motorized Transport
- Mode shift to Public Transport
- ...

Improve the energy
efficiency of transport
modes and vehicle
technology

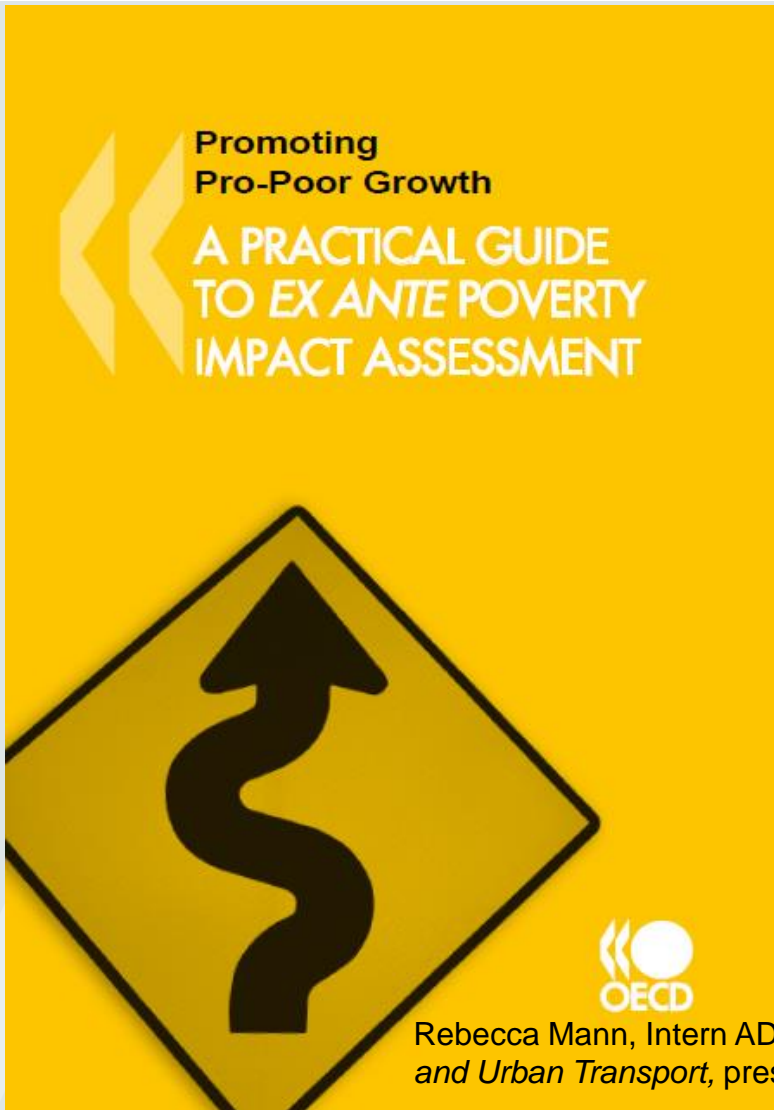
- Low-friction lubricants
- Optimal tire pressure
- Low Rolling Resistance Tires
- Speed limits Eco-Driving (Raising Awareness)
- Shift to alternative fuels
- ...

- *Simpler version of ASIF – presentation 1*
- *Developed from a climate-perspective*
- *Not focused on user needs but can be aligned*

GIZ (2010), “Transport and Climate Change” Module 5E of Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities.



Another proposed approach for needs and design



Rebecca Mann, Intern ADB 2011. *Social Sustainability and Urban Transport*, presentation 2011

Tool adapted from OECD proposed for ADB Urban Transport – not implemented

- Poverty and spatial analysis
- Stakeholder and institution analysis
- Transmission channels
- Aggregate impacts



1. Detailed poverty/spatial analysis

Issue	Observations
Where do the poor live?	Do the poor live in high-density inner city housing? In outer-urban areas? How is this projected to change (if at all) in the medium to long term?
Employment opportunities	Where are formal and informal opportunities for low, medium and high-skilled work located? Where are opportunities likely to develop in the medium to long term?
Employment (all)	Where do the poor work? How do they get there (ie. motorized vs non-motorized, public v private transport)? At what times do they travel? How long do they spend travelling and waiting? How many transport modes and interchanges are required to reach their destination?
Employment (Women)	Where do poor women work? How do they get there? At what times do they travel? Do they travel with children or goods? How long do they spend travelling and waiting? How many transport modes and interchanges are required to reach their destination?
Basic needs	Where do poor people buy food and other necessities? How do they travel there? How do they transport goods?
Education	Where do poor children go to school? How do they get there? Does this differ by gender?
Health services	Where are clinics and health services located? What difficulties do the poor experience in travelling to them?
Cultural/Religious/Social	What specific places do the poor travel to socialise and worship? What social opportunities are the poor currently unable to access due to transport constraints?
Young people	Where do young people socialise? How do they get there? Does this differ by gender?
Vulnerable social groups	What are other specific places the elderly, women or girls, ethnic minorities or other vulnerable social groups need to travel, if any?
Intermediate travel	Do the poor need to use intermediate travel modes (walking, bicycle, non-motorised transport) to access public transport?
Inter-urban travel	Do the poor travel outside the city for employment or other reasons? How do they travel?
Barriers	Does transport infrastructure (i.e. roads and railways) create obstacles to accessing employment and other places the poor need to go?

- *These issues usually covered as part of project poverty analysis by World Bank or ADB*
- *They are usually assessed in response to a project concept not as an input*

Rebecca Mann, Intern ADB 2011. *Social Sustainability and Urban Transport*, presentation 2011



3. Transmission channels & results

Transmission Channels		Details of the change initiated by the intervention	Results by Transmission Channel		Risks that the results will not be achieved
			Short Term	Medium Term	
Prices (affordability)	Transport service provision (by mode)				
	Transport service use (by mode)				
Transfers (affordability)	Subsidies				
Access	Primary Schools				
	Secondary Schools				
	Employment				
	Hospitals and health services				
Health and Safety	Road safety				
	Level of crime				
	Congestion				
	Pollution				
Employment in transport sector	Formal				
	Informal				

Rebecca Mann, Intern ADB 2011. Social Sustainability and Urban Transport, presentation 2011

Example

Module 3: Transmission channels²⁰ used and overall results by channel

Transmission Channels	Details of the change initiated by the intervention	Anticipated Results		Risks that the results will not be achieved	Possible mitigation measures
		Short Term	Medium Term		
Access	Employment and income sources				
	Health and public services				
	Schools				
	Mode share				
	Congestion and barriers				
Prices	Transport service provision (by mode)				
	Transport service use (by mode)				
	Land, housing and other prices				
Transfer payments	Subsidies				
	Tolls and taxes				
Health and Safety	Pollution and emissions				
	Transport user safety				
	Pedestrian safety				
Employment in transport sector	Jobs created/lost				
	Wages				

Transmission Channels	Details of the change initiated by the intervention	Anticipated Results		Risks that the results will not be achieved	Possible mitigation measures	
		Short term	Medium term			
Access	Employment and income sources	Spatial analysis shows three main categories of workers use non-motorised and informal transit services to access CBD and will need to find alternate transport: security and retail, domestic workers and street vendors.	Large increase in number of pedestrians, increased use of buses, possible overcrowding at public transport stations in CBD at peak hours.	Small growth of inner urban residential population: relocation closer to work	-	Cross-city bus services designed to complement bus rapid transit routes, safe-road crossing infrastructure to accommodate pedestrians.
	Schools	Three schools are within the CBD and can no longer be reached by non-motorised transport	Limited – few children attending these schools use non-motorised or informal transport	More traffic around schools at peak hour: higher risk to children when crossing roads	-	Traffic calming measures in school proximity
	Health and public services	One public hospital and three nursing clinics are within the CBD and can no longer be reached by non/motorised informal transport	Immobile face increased cost to access health services as there is no bus or rail route near the hospital: will need to use taxis or walk	CBD nursing clinics experience small decline in patient numbers	-	Nursing clinics and hospital operate a bus shuttle from central bus depot
	Mode share	Regulation requiring shift to motorised and pedestrian modes				
	Congestion and barriers	Restrictions imposed within an area of six square miles, four full-time traffic police allocated to enforcement of ban.	Average trip time across CBD reduced by 6 minutes.	Limitation on other modes induces higher number of car and bus trips: congestion may return to original levels over the long term.	Transport ban is not enforced by traffic authorities, penalties do not deter informal transport operators who continue to enter the CBD.	Measures to increase enforcement and compliance with ban introduced concurrently with ban

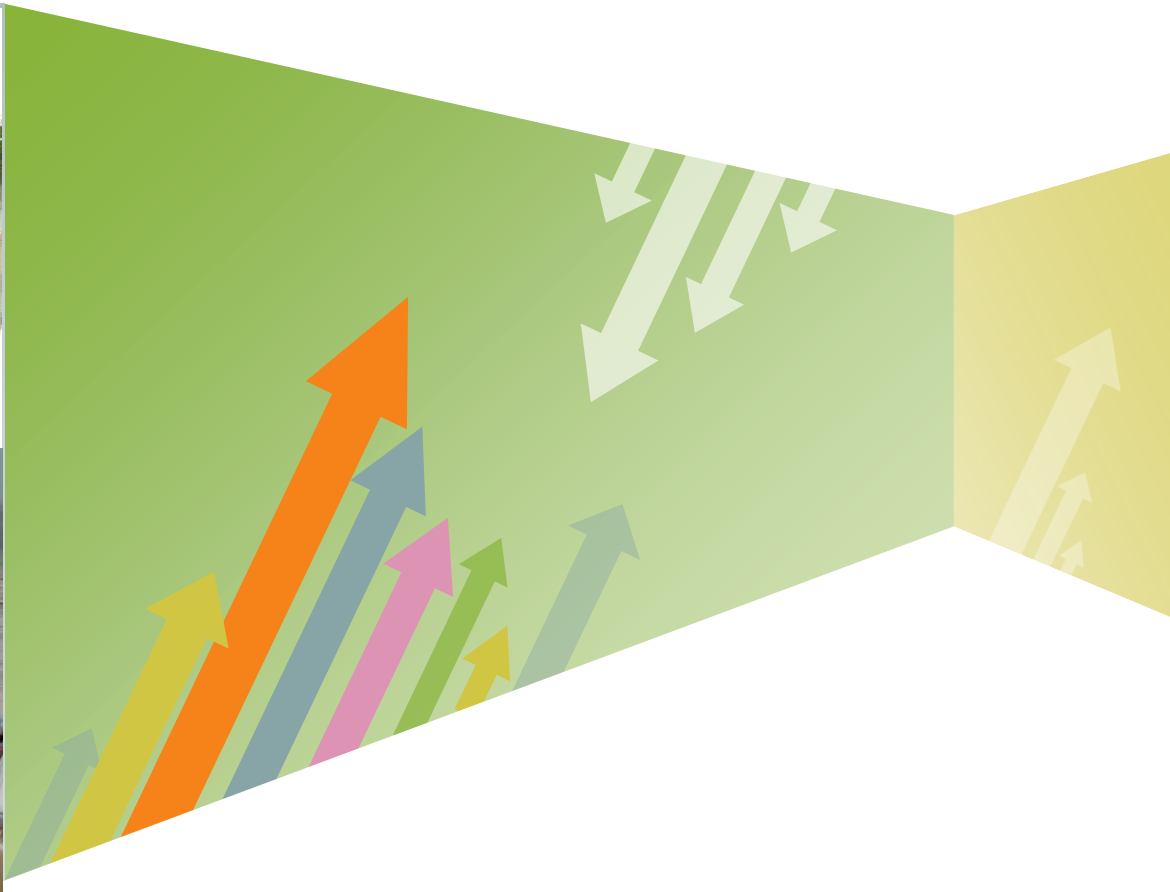
Rebecca Mann, Intern ADB 2011. Social Sustainability and Urban Transport, presentation 2011



Discussion

- Needs of whom? To where? from where?
- When? Why?
- How to respond – options, channels?
- Impacts & incidence?
- Minimize/ avoid negatives
- Compatibility with strategies? Future users?
- What don't we know?
- Where do we get the information from?
- Strengths & weakness of tick box approach?

Session 4: Innovative approaches



1. China-GEF-World Bank Urban Transport Partnership Program



- Instead of going project by project – do a program and incentivize cities
- 14 cities + 1 province 2007-2013
- GEF climate funds (\$20m) to sub-national governments via National Development and Reform Commission – for studies, project preparation and policy/ standard setting
- Similar programs in India and Latin America
- Outcomes – see over

Refer World Bank 2015. *Implementation Completion Report*, Report No: ICR00002509, June



Outcomes – China GEF

Estimated CO2 emissions over 10 years and Marginal Abatement Cost

City	Details	Investment (USD million)	CO2 Emission Reduction (million ton)	Marginal Abatement Cost (USD/ton)
BRT				
Urumqi	4 corridors	340.4	0.51	665
Zhengzhou	8 corridors	120.0	0.63	191
Jinan	5 corridors	220.7	0.21	1,068
Nanchang	1 corridor	50.0	0.15	336
Sub-total		731.1	1.50	489
Integrated PT/NMT Improvement				
Changzhi	4 corridors	111.2	0.01	8461
Weihai	3 corridors*	114.6	0.32	361
Sub-total		225.8	0.55	682
Travel Demand Management				
Guangzhou		10.0	2.10	5
Sub-total		10.0	2.10	5
Total		967	3.93	246

2. Case study on building local government capacity, Indonesia

- National road agencies given money to build regional city bypasses (ie new primary roads)
- Money & authority for planning & construction given to local governments for “Quality of Life” improvements
- Local governments had freedom to meet local needs as long as specified criteria were met eg:
 - Prepare structure plans
 - Local road network plans (secondary & local roads)
 - Pedestrian, non motorised transport, amenity, traffic management & drainage improvements on integrated basis





3. Taxi liberalization, Bangkok

- **Problem:** in 1991 12,000 very old Taxis in Bangkok
- Controlled by small group of influential people
- Fares relatively high & taxi quality & availability low
- **Challenge:** how to reform/ modernize?
 - Alternative 1: offer scrap incentives (e.g. like in proposed Motorcycle Upgrade Program)
 - Alternative 2: liberalize/ open up taxi market to anybody with vehicle of certain quality



Taxi liberalization

- **What actually happened?**
 - Taxi market was liberalized in 1992
 - Within one year there were 30,000 new taxis on the road
 - By 2005, there are in excess of 50,000 taxis on the road with high availability & fares lower in real terms than in 1992

4. Transit route associations

- Problems of small transit vehicles – congestion at stops etc, unruly driving, pollution
- Traditional government response is to replace with state-run bus enterprises
- Alternative approach: create a new “community of interest” in having small operators work together to manage driving behavior, match supply to demand etc





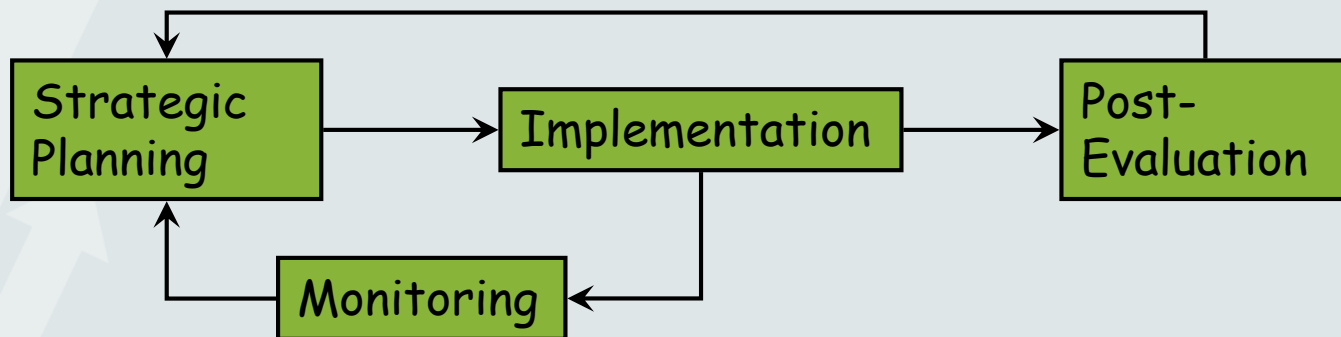
Route associations

- Route associations exist in Thailand, Philippines, other Asia, Pacific Islands, South America & many other countries
- General principles:
 - Leadership (eg Mayor, Chief of local Dept of Land Transport office)
 - New incentive structure – eg based on revenue for route rather than revenue collected per vehicle
 - Penalties
 - Quality NOT quantity competition
- Tends to work best in low demand situations – regional cities where “people know each other”

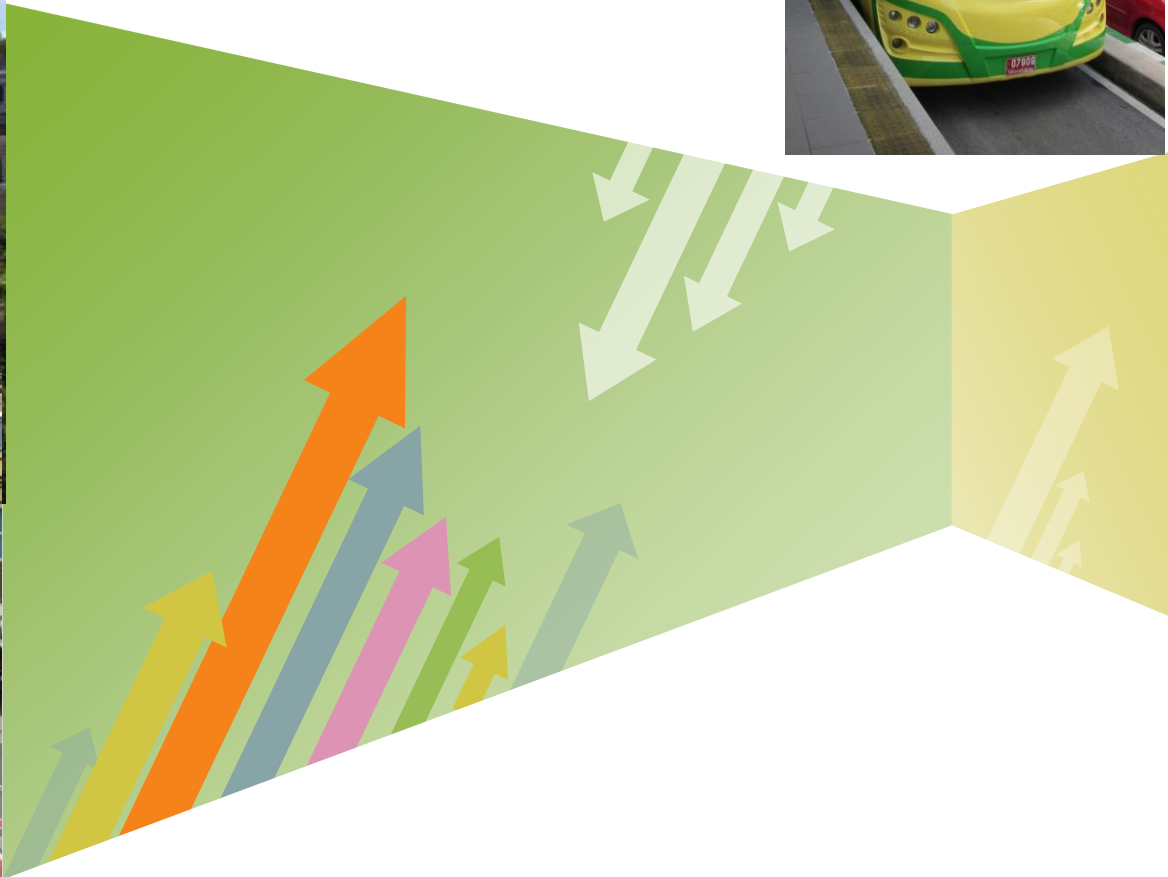
Would route associations have been a solution in Cebu?

Learn from experience

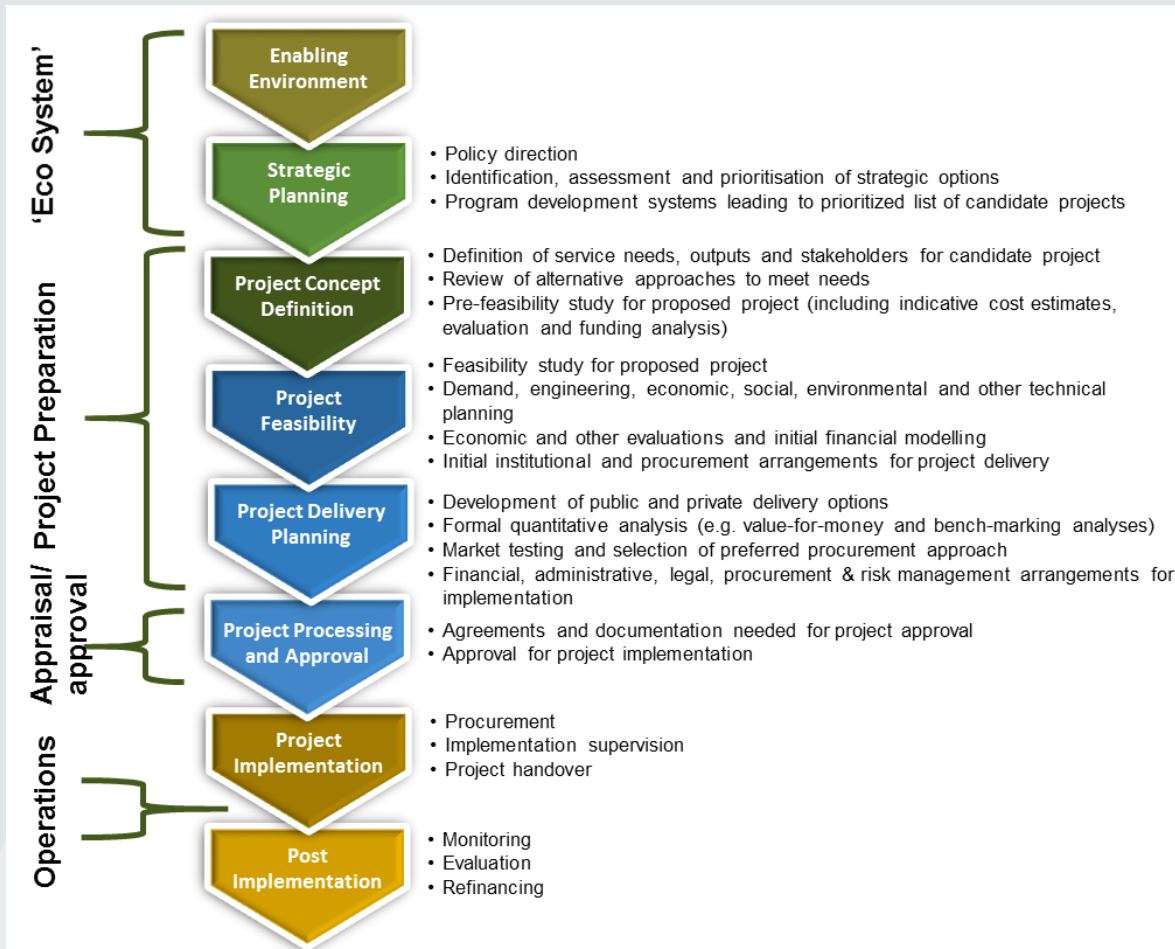
- Why review: post-evaluate & monitor...encompasses
- Post-evaluation process - aims & objectives, strategy & plan, data collection & analysis, reporting
- Monitoring – integral to strategy design
- Performance measurement
- Data collection



Session 5: Closer look at project preparation



Project preparation in context

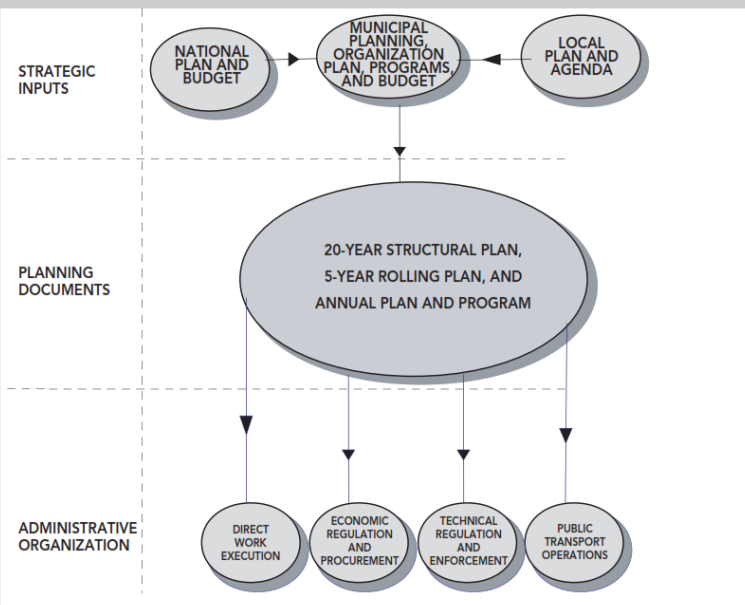


- **Preparation/ feasibility – engineering, demand, economic, financial, environmental and social (+ve and –ve not just compliance)**
- **Often called ‘business case’**
- **Cover demand and economics later**

Source: Adam Smith International (2014), “*Assessment of the Effectiveness of Project Preparation Facilities in Asia.*” Report prepared for the G20 Working Group. September + Author’s additions

Desirable eco-system (revisited)

FIGURE 11.2 A TYPICAL METROPOLITAN PLANNING PROCESS



World Bank, 2002. *Cities on the Move*.

- *Does it exist for Cebu BRT?*
- *What about where you come from?*

Instrument	Content	Time Frame
Policy	Directional intent e.g. reduce road fatalities, achieve certain urban air quality levels, limit GHG emission from transport, create universal rural, urban and national level access	Long term
Strategy and Plan	Strategy/ long term plans integrated with land use (10 to 50 years) – directional in nature, sub-sectorial/ spatial priorities, broad sequencing of land use, transport	10 – 50 years
	Medium term plans – detailed project identification, priority setting	
Program	Investment programs (on rolling basis), consisting of projects and other initiatives including TA and capacity building.	1-2 year committed projects, 3-5 year indicative investments awaiting funding approval
Project	'Ready to implement' projects identified in programs	Once implemented projects have a long life



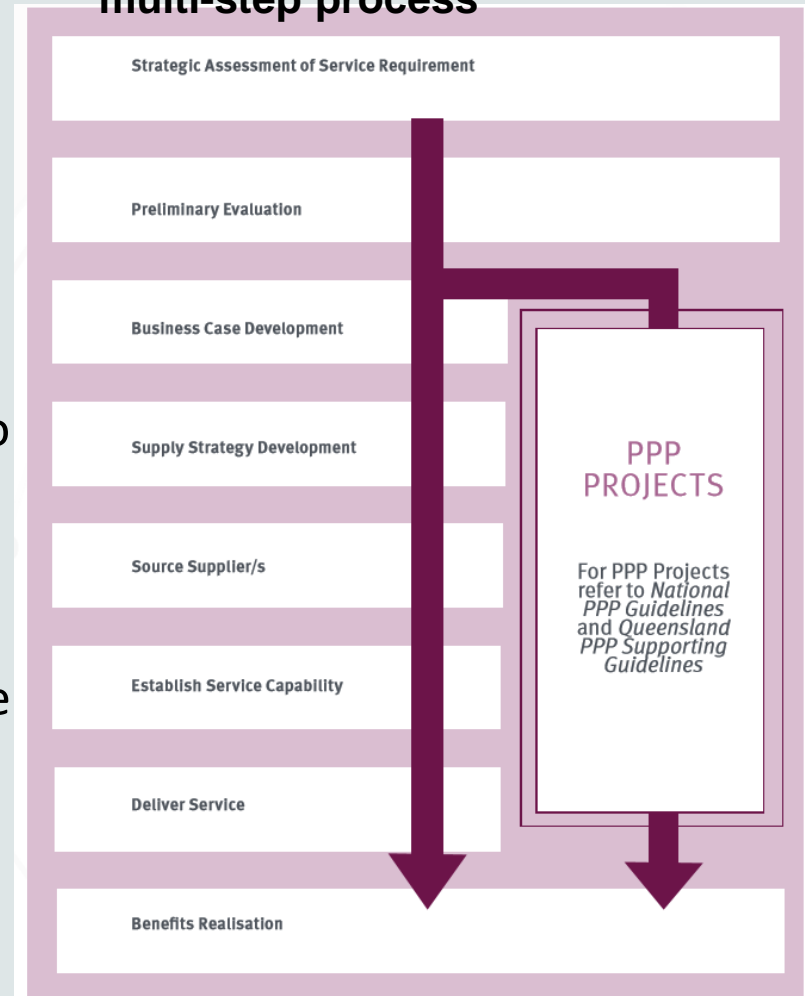
Project preparation purpose and form

- Formal presentation of information to support decision to proceed with a proposal and to secure necessary approvals
- May be a self-standing document so that all information is in one place
- Supporting documentation would include options analysis, engineering designs, land acquisition requirements, cost estimates, economic and financial appraisals and social and environmental assessments

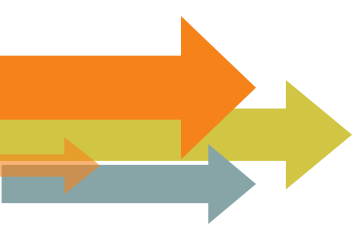
Scope

1. Project decision - project context, problem addressed, service requirements, the options considered & justification for the recommended solution, i.e. including all appraisals (demand, economics etc.)
2. Financing decision - how the project is to be financed including consideration of a PPP if appropriate, and considering ongoing costs, not just initial capital.
3. Implementation decision - how it is to be delivered, e.g. institutions, contracts, schedule
4. Monitoring and review – have expected benefits been realised?

Project Assessment in Australia – multi-step process



Source: <https://www.treasury.qld.gov.au/publications-resources/project-assessment-framework/paf-policy-overview.pdf>

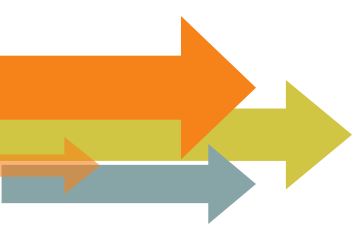


Key Aspects (1)

- Project decision:
 - Needs
 - Options generation
 - Base case definition
 - Project case definition
 - Demand analysis – effect on project design and project viability
 - Economic/ other analysis – priority
 - Risk identification
 - Optimization – scaling project to level of benefit

Contrast with WB PAD

- *Discussion of needs*
- *Discussion of options*



Key Aspects (2)

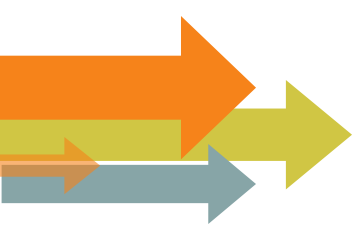
- Financing decision:
 - Risk allocation – management of risk
 - Affordability – are funds available from relevant sources (public/private) to meet costs?
 - Value for Money assessment
 - Procurement strategy e.g. PPP & modality
- Implementation decision:
 - Institutional arrangements
 - Governance

Word of caution: is this the best way to spend the money to solve the problem? – real life problem is the project has a life of its own.



Chronology of Cebu BRT

- 2011 and before pre FS
- 2011/12 project preparation at FS level by DOT with WB support
- Initial WB project appraisal document prepared but not approved – 2012
- National Economic Development Authority was concerned that land acquisition costs had been underestimated – ‘initiated value engineering’ review of FS (January-June 2014)
- WB project appraisal document prepared but not approved – September 2014 – cost estimates and other details almost unchanged from 2012
- In second half of 2016, detailed design underway and completed by end 2016



The Cebu BRT



- Refer BRT overview – handout (limited copies)
- PID (concept)/ PAD
- Key point is this is a sovereign loan project (\$116m) although there is a CTF concessional loan (\$25m) + GoP is a significant financier

Indicative Project Cost (US\$ million)

	TOTAL COST	IBRD	CTF	GoP
1. BRT Infrastructure and System	162.0	80.2	8.8	73.0
2. Traffic Management	15.6	-	13.2	2.4
3. BRT Concept Dissemination and Development	7.0	4.0	-	3.0
4. Urban Realm Enhancements	3.0	3.0	-	-
5. Project Outcome Monitoring	5.0	3.9	1.1	-
6. Project Management	6.1	6.1	-	-
Base Cost Total	198.7	97.2	23.1	78.4
Price contingency	11.1	7.2	0.8	3.1
Physical contingency	18.7	11.6	1.1	6.0
TOTAL	228.5	116.0	25.0	87.5

Contingency about 13%

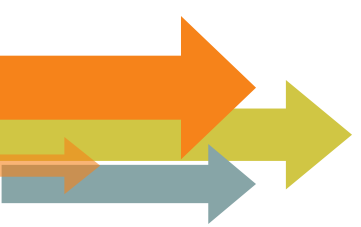
2014 cost estimate based on FS level – conceptual only

UK Capital Expenditure Optimism Bias* Uplifts

Category of Project	Types of Project	Applicable Uplift	
		P50	P90
Roads	All roads	15%	45%
	Bus lanes		
	Bus Rapid Transit		
	Other non motorized transport		
Rail	Metro	40%	68%
	Light Rail		
	Guided bus		
	Conventional rail		
Fixed links	Bridges	23%	83%
	Tunnels		

(*) includes risk. Based on typical level of detail in business cases with no detailed design

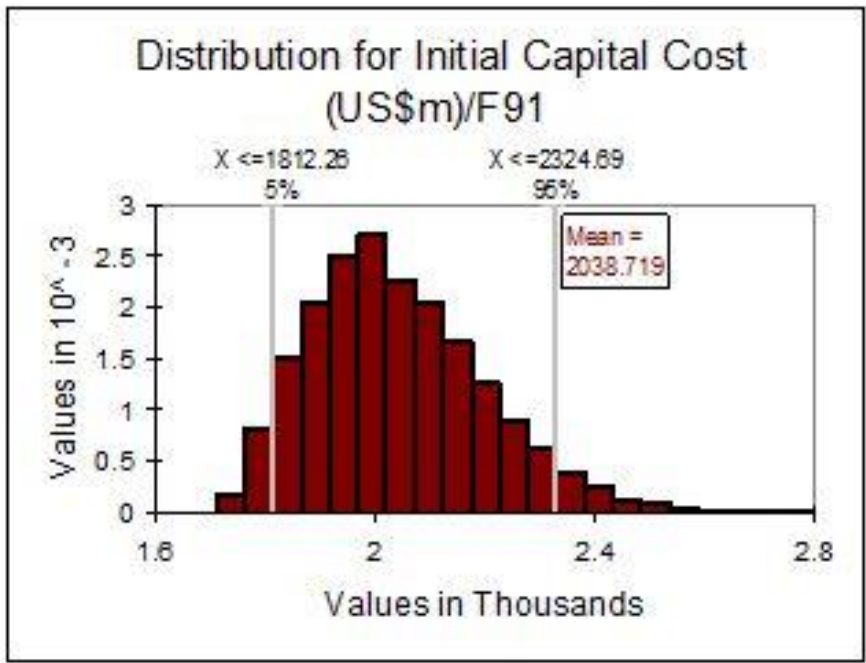
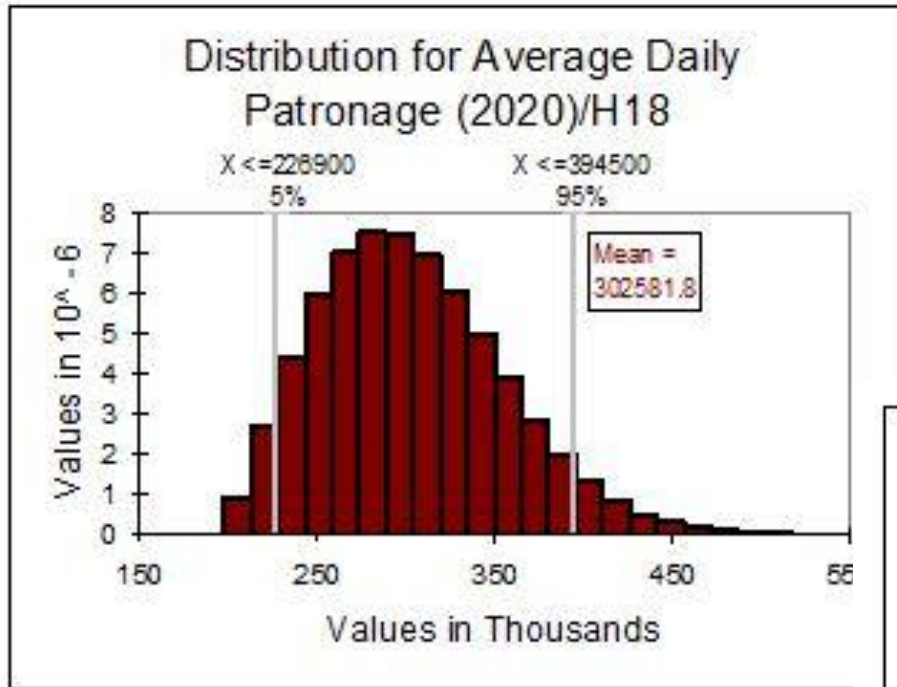
Source: Summarized from B. Flyvbjerg, 2004. Procedures for Dealing with Optimism Bias in Transport Planning, Guidance Document. Published by the Department for Transport, UK. Page 32.

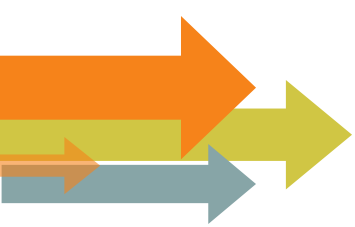


Optimism bias

Tendency for demand to be overestimated & cost to be underestimated and the time frame to be much longer in practice

By this stage, even if there is information to indicate a project is not viable – project usually continues





Scope for technical optimization – value engineering - HCMC

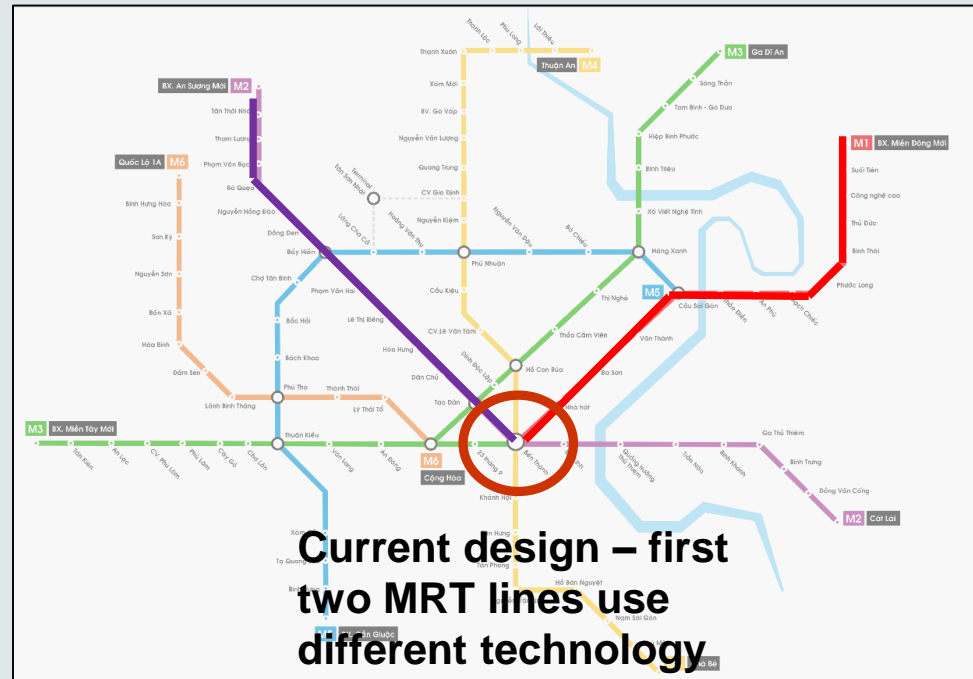


Terminal station inappropriate for modern MRT



Often huge scope for optimization – but institutional barriers as in HCMC

Or where bus services stop at municipal boundaries – common in Asia even though metro area has overspilled its boundary



Current design – first two MRT lines use different technology – must transfer



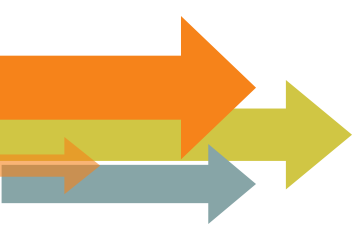
Current implementation risk assessment (June 2017)

Systematic Operations Risk-rating Tool

Risk Category	Rating at Approval	Previous Rating	Current Rating
Political and Governance	--	● Substantial	● Substantial
Macroeconomic	--	● Moderate	● Moderate
Sector Strategies and Policies	--	● Substantial	● Substantial
Technical Design of Project or Program	--	● High	● High
Institutional Capacity for Implementation and Sustainability	--	● High	● High
Fiduciary	--	● Moderate	● Moderate
Environment and Social	--	● Substantial	● Substantial
Stakeholders	--	● Substantial	● Substantial
Other	--	--	--
Overall	--	● High	● High

Results

Cuttaree, Vickram; Cuttaree, Vickram. 2017. *Philippines - Cebu Bus Rapid Transit (BRT) Project : P119343 - Implementation Status Results Report : Sequence 06*. Washington, D.C. :World Bank Group.
<http://documents.worldbank.org/curated/en/139641496384385116/Philippines-Cebu-Bus-Rapid-Transit-BRT-Project-P119343-Implementation-Status-Results-Report-Sequence-06>

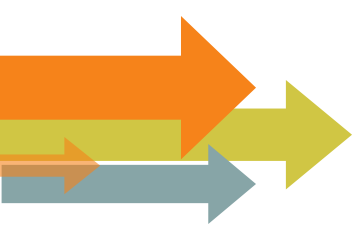


Discussion

- For the Cebu BRT – identification likely to have been adequate? Assuming it is, what would you think would have been essential to be sure of?
- What residual risks may there be to the revision to detailed design is not completed in terms of:
 - Costs/ scope of design
 - Demand
 - Safeguards incl. land acquisition
 - Other
- What would you suggest to improve the WB proposal? Or alternatives?
- What about view of a private investor

Readings for later:

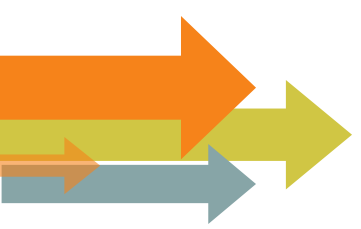
- *PAD – scan through only*
- *Integrated safeguards sheet – scan through only*
- *Implementation Status Reports*



Exercise: putting your team together

You are the Cebu Project Owner's representative

- What are some basic things that are essential to have decided before hiring the project preparation consultants?
- How would you respond if the World Bank task manager suggested you needed an output contract (as opposed to an input contract)?



Some key things

- Clear objective & timeline
- Describe issues & provide relevant information – don't let consultants have to guess – tell them the budget
- Activities – but don't be too prescriptive, define deliverables
- Team – avoid precise team descriptions – describe skills needed
- International/ regional/ national mix – don't specify? Or if you do, only to ensure you have local skills?

Enhancing environmental outcomes - why target jeepneys

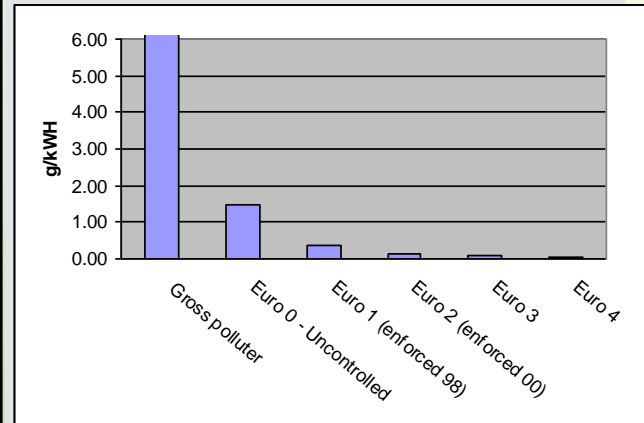
- Major source of fossil energy use, air pollution and greenhouse gas emissions
- Outdated technology
- Poor maintenance practices
- Poor vehicle design (mass, ergonomics and drag)
- Inefficient driving behaviour
- Traffic congestion contribution



Target gross polluters from air pollution point of view (PM)

Jeepneys

		Average Speed					Average Speed					Average Speed		
		10	20	30			10	20	30			10	20	30
		Light Duty Vehicles					Heavy Duty Buses					Heavy Duty Trucks		
HC	Pre-1994	0.52	0.32	0.25	Pre-1995	2.35	1.31	0.93	Pre-1995	1.46	0.93	0.71		
CO		1.88	1.32	1.07		10.17	6.59	5.11		13.12	10.35	9.02		
NO_x		2.97	2.34	2.03		19.68	12.00	8.98		15.02	10.44	8.44		
CO₂		414.74	317.95	272.17		1299.06	843.09	654.71		1163.51	921.26	803.67		
PM		216.18	187.54	172.59		1319.11	962.30	800.18		2445.90	1859.44	1583.94		
HC	1994-96	0.36	0.24	0.20	1996-97	1.81	1.10	0.82	1996-97	1.65	1.18	0.96		
CO		1.51	1.09	0.90		17.40	16.02	15.26		4.24	3.46	3.08		
NO_x		3.37	2.60	2.24		22.45	13.30	9.80		14.24	10.88	9.30		
CO₂		409.56	322.43	280.32		1317.69	999.87	850.79		1185.70	980.67	877.59		
PM		153.14	155.50	156.90		1928.59	1759.84	1668.06		933.68	880.38	850.62		
HC	1997-99	0.34	0.21	0.16	1997-2000	0.85	0.46	0.32	1997-2000	1.83	1.22	0.97		
CO		1.83	1.08	0.79		18.21	15.42	13.99		4.24	3.46	3.08		
NO_x		2.87	2.23	1.93		19.68	12.00	8.98		15.02	10.44	8.44		
CO₂		437.58	342.34	296.56		1789.18	1154.76	893.83		1401.33	1127.40	992.71		
PM		169.94	166.20	164.05		835.09	620.84	522.00		1283.03	925.60	764.66		
HC	after 2000	0.27	0.19	0.16	after 2001	1.83	1.05	0.76	after 2001	0.83	0.55	0.43		
CO		1.70	1.37	1.21		6.36	3.72	2.72		5.40	3.61	2.85		
NO_x		1.45	1.14	0.98		13.50	9.47	7.70		15.07	10.03	7.91		
CO₂		420.66	342.25	303.35		1474.90	1038.44	845.75		1438.36	1009.98	821.27		
PM		138.24	145.44	149.83		1116.67	982.14	911.09		447.67	410.40	390.06		



World Bank 2009. *Draft Report. Developing Integrated Emissions Strategies for Existing Land Transport (DIESEL)*. Bangkok, Thailand

Enhancing environmental outcomes



Rough CO2 estimates:

- 8,300 jeepneys – PUJs in Cebu, Low load factors in off peak
- Many with pre-Euro technology – next slides
- AM peak forecast for BRT – 26,000 pax of which 90% from jeepneys – so around 2,600 jeepneys potentially replaceable in short term
- Jeepney – about 20 tonnes of CO2 per year
- So, rough estimate of CO2 saving of 50,000 tonnes p.a. (Tables 7.4 and 7.6 of Annex 7 of PAD shows saving of 60,000 tonnes p.a. from jeepneys of city-wide total of 70,000 tonnes p.a.)



Regulatory and financing options

Options	Challenges
Let jeepney licenses expire (assumed for Cebu BRT)	Substantial illegal operations – many owners drivers feel they have ‘grand fathered rights’ – need a detailed analysis of ‘political economy’
Emission standards	Apply to new vehicles – in-use vehicle testing lax – difficult to fix
Buy back	Cost US \$6-10k per vehicle* – need to ensure does not re-enter operations, cost of administration of scrap program
Upgrade incentives (technology options/ financing)	See next slides

(*) vehicle assumed to be worth little. The license represents most of the value.



Technology options

**Savings pf \$880-
1,600/p.a. = average of
\$1,240p.a.**

\$23,000

Technology	Capacity in seats	Replace-ment ratio	Investment cost (PHP)	O&M cost / month (Php)	Savings / month (Php)	Yearly greenhouse gas emission reductions (Tons CO ₂ e)
Euro 4 Diesel Jeepney			1,100,000.00	6,302 to 16,195	3,523 to 6,321	4.24 to 7.95
Euro 4 LPG Jeepney	20	1:1	850,000.00	10,560 to 28,061	(733) to (5,545)	1.41 to -1.26
Electric Jeepney			950,000.00	8,797 to 48,456	1,028 to (1,806)	6.99 to 10.26
Diesel-Electric Hybrid Jeepney			1,574,000.00	4,114 to 22714	5,712 to 5,894	6.36 to 7.84
Euro 4 Diesel Minibus	40	1:2	1,800,000.00	9,066 to 23,236	10,586 to 21,795	11.14 to 21.13
Euro 4 Diesel Bus	60	1:4	4,500,000.00	24,232 to 64,072	15,072 to 25,990 30,003 to 46,341 (with Fare Adi.)	16.91 to 28.20

Source: Jose Bienvenido Manuel Biona, undated. *Shift to Cleaner Jeepneys in Metro Manila: Cost and Benefits.*

Rough financing assessment

Item	Interest rate		
	@ 7%	@ 15%	@ 25%
PV of O&M savings	\$8,700	\$6,200	\$4,450
Financing gap per vehicle	\$14,300	\$16,800	\$18,600
% of new vehicle cost defrayed	38%	27%	19%

PV of \$1 over 10 years		
7.0 times (at 7% p.a.)	5.0 times (at 15% p.a.)	3.6 times (at 25% p.a.)

↑
This is probably how most owners perceive their O&M savings – risky, uncertain!



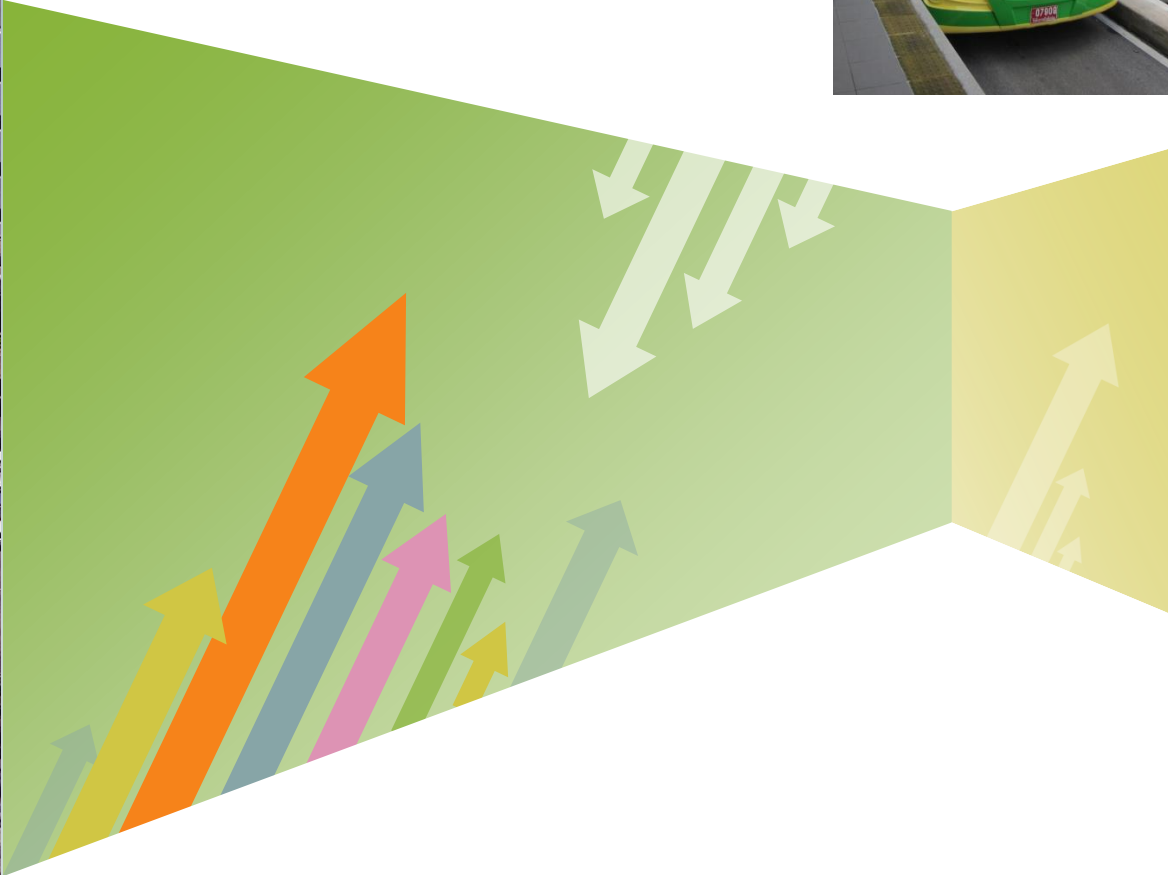
CO2 cost-effectiveness summary

Option	Capital cost USD	CO2 saving p.a. (first year)	USD\$ per 1 st year tonne CO2 reduced
BRT and let jeepney licences expire	\$210 million (no traffic management)	60,000 tonnes	\$3,500/tonne
Buy-back	\$6,000 per old jeepney (guess) + scrap admin.	20.0 tonnes per vehicle	\$300 per tonne
Financing incentives (implied)	> \$14,000 vehicle	5.0 tonnes per vehicle	\$2,800/tonne

Discussion

- *Why not buy-back?*

Session 5A: Institutional analysis



Integrating transit - key components

Desired outcomes

1. Affordable & convenient
2. Quick & predictable
3. High quality – clean, comfortable
4. Accessible, integrated, connected

Products

**Integrated
Ticketing/Fares**

Integrated services

Integrated Network

Priority Actions

**Common Ticket
(all modes)**

**Operating
Concessions –
Gross Cost**

Network Plan

**Infrastructure
Improvements**

**Integrated
Fares**

**Regional
Authority**

**MRT Masterplan
including
Services**

**Bus Network
& Services**

**Bus Infrastructure
Improvements**



3 things to consider....1

Functions and how they are distributed – e.g. Bangkok

- *3 agencies for rail*
- *1 state monopoly for buses + others*
- *2 traffic authorities etc*

Table A.5: Current Transport Agency Functions

Function	Transport sector agencies			
	Rail and MRT	Other Public Transport	Roads & Road Vehicles	Traffic & Street Management
Policy and Planning				
Policy and Planning	MOT/OTP & SRT	MOT/OTP & DLT	MOT/OTP, DOH & ETA	BMA & OTP
Program development and management for infrastructure provision				
Design	MOT/OTP, SRT, MRTA and BMA	MOT/OTP, DLT	DOH, ETA, DRR, BMA	BMA
Construction preparation & management	MRTA, SRT, BMA	BMTA, Harbors Department under MOT	DOH, ETA, DRR, BMA	BMA
Delivery of works	MRTA, SRT, BMA & private contractors	BMTA and Harbors Dept. (MOT) & private bus and water transport operators	DOH, ETA, DRR, BMA & private contractors or concessionaires in case of DMT and SES II toll roads.	BMA
Maintenance	SRT, BTS, BMCL	BMTA and Harbors Dept. (MOT) & private bus and water transport operators	DOH, ETA, DRR, BMA	BMA
Financing	Government budget for SRT, Blue Line and Green Line extension civil works	Government budget and revenue from passenger fares	Government budget, private financing in case of DMT and SES II toll roads.	Government budget
Service delivery, including operations & maintenance				
Provision	BMCL, BTS, SRT	BMTA & private bus and water transport operators	DOH, ETA, & private concessionaires for DMT and SES II toll roads	BMA, Traffic Police
Ticketing and marketing	BMCL, BTS, SRT	BMTA & private bus and water transport operators	As above for toll collection	na
Service specification	MRTA, BMA, SRT	LTCB, DLT	na	na
Contracting	MRTA, BMA, SRT	BMTA	DOH, ETA, DRR, BMA	na
Contract compliance	MRTA, BMA, SRT	DLT, BMTA	DOH	na
Financing	BMCL, BTS, SRT	Government budget and revenue from passenger fares	na	na
Regulation & enforcement	Part of contract	DLT, Police and Harbors Department	Police DLT for vehicle registration/ fitness & driver authorization	Police

Source: Study Team. DMT is Don Muang Tollway & SES II is Second Stage Expressway



3 things to consider....2

Level of government

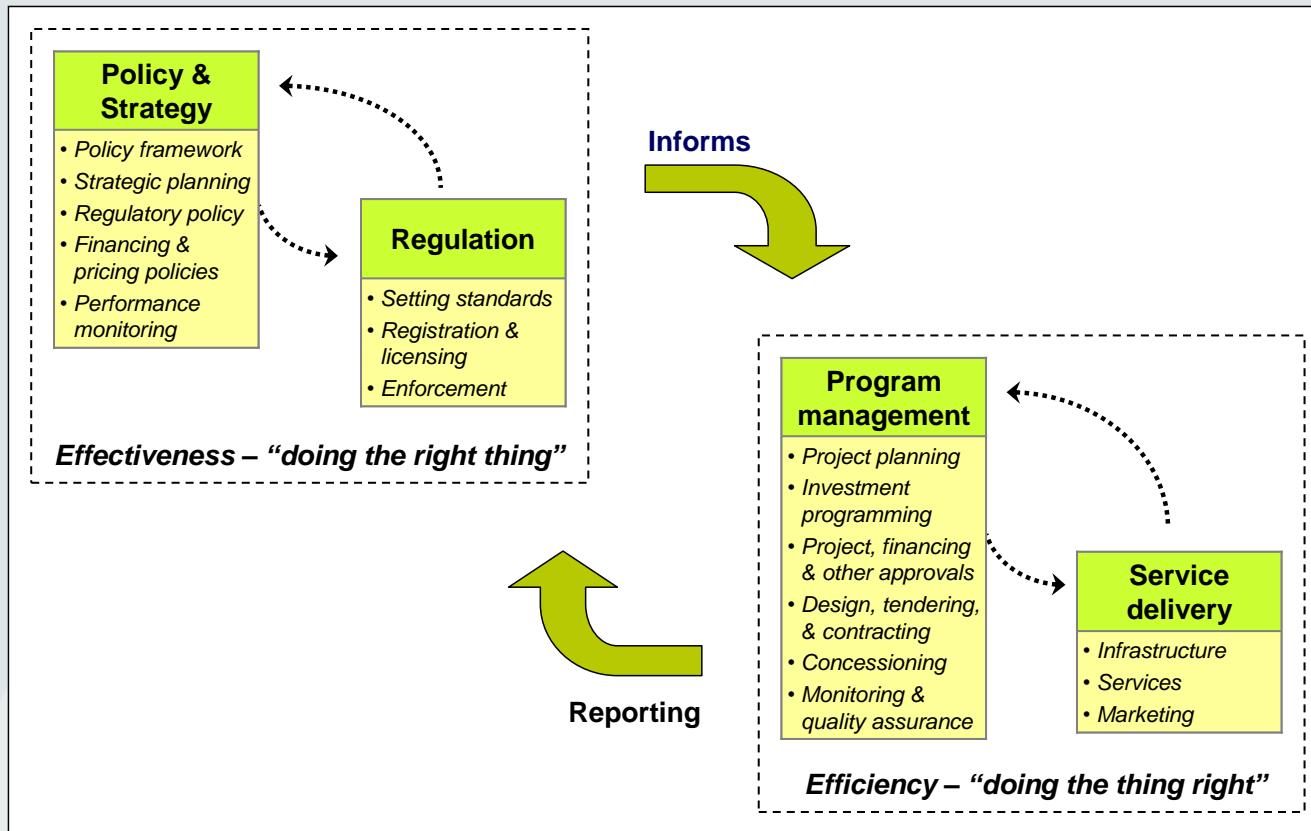
TABLE 11.1 ALLOCATION OF STRATEGIC FUNCTIONS

Strategy level	Function	Agency	Comments
"For the city"	National roads Public enterprises Tax levels Intergovernmental transfers Regulation and competition policy Vehicle registration and safety	Ministry of construction Ministry of economy Treasury Treasury Ministry of economy Ministry of transport	Private sector construction Sometimes municipal May be function of a quasi-independent commission
"Of the city"	Urban structure planning Strategic transport planning Local road management Public transport planning and procurement Traffic management Law enforcement Road safety	Planning department Transport department Roads department Public transport agency Traffic department Police department Interdepartmental unit	Direct responsibility to mayor Sometimes national
"In the city"	Public transport operations Road construction and maintenance Local facility consultation	Private companies Private companies NGOs and individuals	Franchised or contracted Some force account maintenance typical Sometimes under formal public inquiry laws

World Bank, 2002. *Cities on the Move*.

3 things to consider....3

Allocation of functions

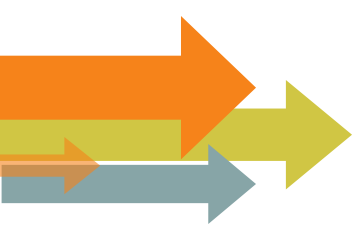




Mapping Cebu's transport functions

Function	Transport Sector Agencies			
	Rail	Other Public Transport	Roads & Road Vehicles	Traffic & Street Management
Policy and Planning				
Policy and Planning				
Programme Development and Management for Infrastructure Provision				
Design				
Construction Preparation & Management				
Delivery of Works				
Maintenance				
Financing				
Service Delivery, including Operations & Maintenance				
Provision of services				
Ticketing and marketing				
Service planning and specification				
Procurement/ tendering of services				
Contract Compliance				
Financing				
Regulation				
Regulation & Enforcement				
Certification and safety				

Discussion



Timetable

Day/ time	Topic
Wednesday 11 October	
12.30-12.45	Introduction
12.45-13.00	Transport and the global agendas
13.00-13.45	How are projects prepared? - Overview
13.45-14.15	Why is concept important?
14.15-15.00	Innovative approaches
15.00-15.30	Break
15.30-16.30	Closer look at project preparation
16.30-17.00	Exercise: putting your team together
Thursday 12 October	
09.00-10.30	Demand and economic appraisal
10.30-11.00	Break
11.00-12.00	Identifying risks and potential role of private sector
12.00-12.30	Wrap-up