

## LS2 - EXPLORING THE COMPLEXITY OF POLICY DESIGN

# PROGRESS REPORT

January 2012

Luís N. Filipe, Maria Spandou, Vasco Reis  
Profs. Rosário Macário, José Viegas

Instituto Superior Técnico  
Universidade Técnica de Lisboa



# Project Objectives

- Understand the main **decision making** processes in BRT systems
- Develop a formal structure for retrospective analysis of the various interplaying **policy components**
- Develop a systems dynamic **model** to search for well-designed and promising BRT **policy packages**

# Project Structure

- WP1 Literature review
- WP2 Exploratory survey
- WP3 Inductive Case studies
- WP4 Analytical research on policy packaging
- WP5 Design and implementation of SD tool
- WP6 Deductive Case studies
- WP7 Guidelines on policy packaging for BRT systems

# Timeplan

(RED – Removed / GREEN – Added months)

	2010				2011								2012					
Cal M	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
Proj M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WP1																		
WP2																		
WP3																		
WP4																		
WP5																		
WP6																		
WP7																		

	2012										2013							
Cal M	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Proj M	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
WP1																		
WP2																		
WP3																		
WP4																		
WP5																		
WP6																		
WP7																		

	2013			2014									
Cal M	11	12	1	2	3	4	5	6	7	8	9	10	
Proj M	37	38	39	40	41	42	43	44	45	46	47	48	
WP1													
WP2													
WP3													
WP4													
WP5													
WP6													
WP7													

# Literature Review

## Eightfold Path to Public Policy Analysis

*(Eugene Bardach, 2005)*

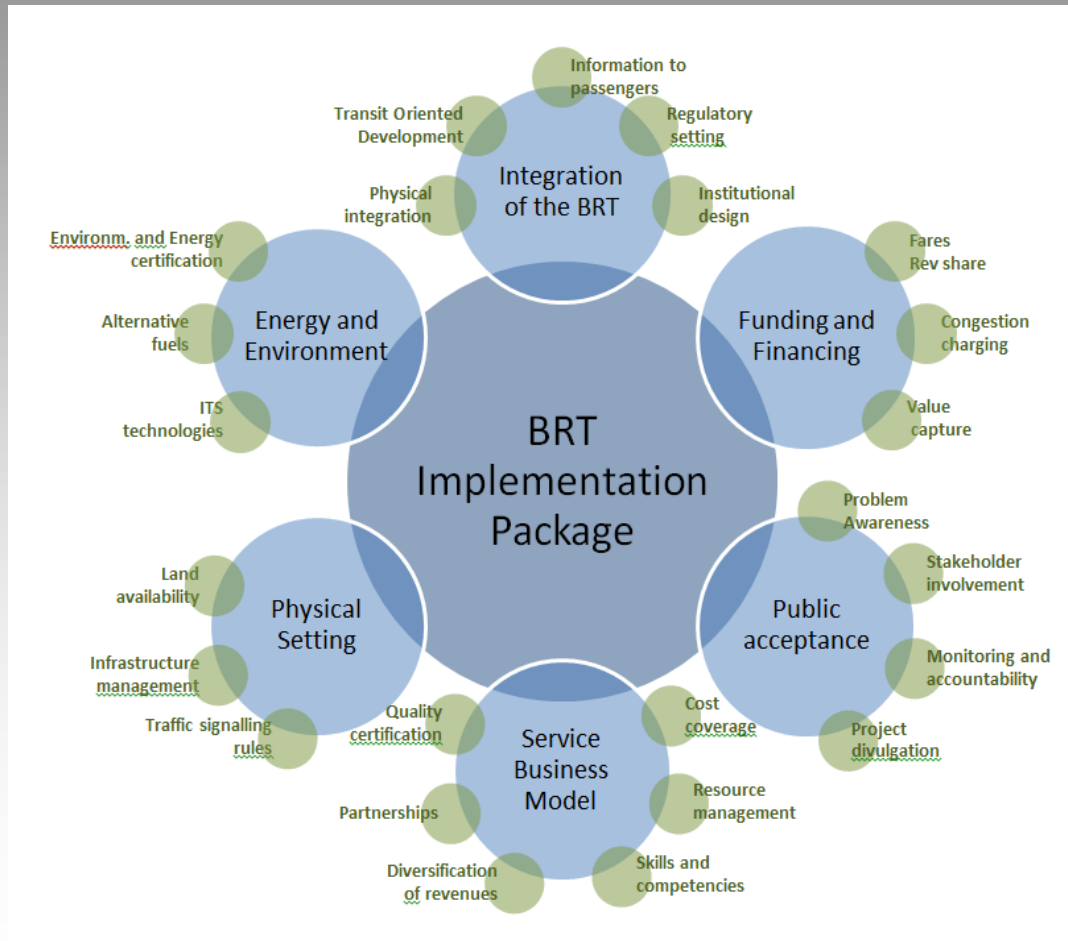
1. Define the problem
2. Assemble some evidence
3. Construct the alternatives
4. Select the criteria
5. Project the outcomes
6. Confront the trade-offs
7. Decide!
8. Tell your story

### THINGS GOV'TS DO

- Taxes
- Regulation
- Subsidies and grants
- Service Provision
- Agency budgets
- Information
- The structure of private rights
- The framework of economic activity
- Education & consultation
- Financing & contracting
- Bureaucratic & political reforms
- ...

# Literature Review Policy Packaging

## Proposed categorization of measures for BRT Policy Packaging



# Literature Review

## Policy Packaging



### Political difficulty and interaction effects

	Political intervention level	Integration of BRT	Funding and financing	Public Acceptability	Service Business Model	Physical setting	Energy and Environment
Integration of BRT	**	0	+	+	+/-	+/-	+
Funding and financing	***		0	-	+/-	+	+
Public Acceptability	***			0	+/-	+/-	+
Service Business Model	*				0	=	+/-
Physical setting	**					0	+
Energy and Environment	**						0

Level of need of political intervention: \* Low | \*\* Medium | \*\*\* High

Type of interaction effect: + Synergetic | - Counter |

+/- Can be both synergetic and counter | = No effect

# Literature Review

## Policy Packaging

### Policy packages:

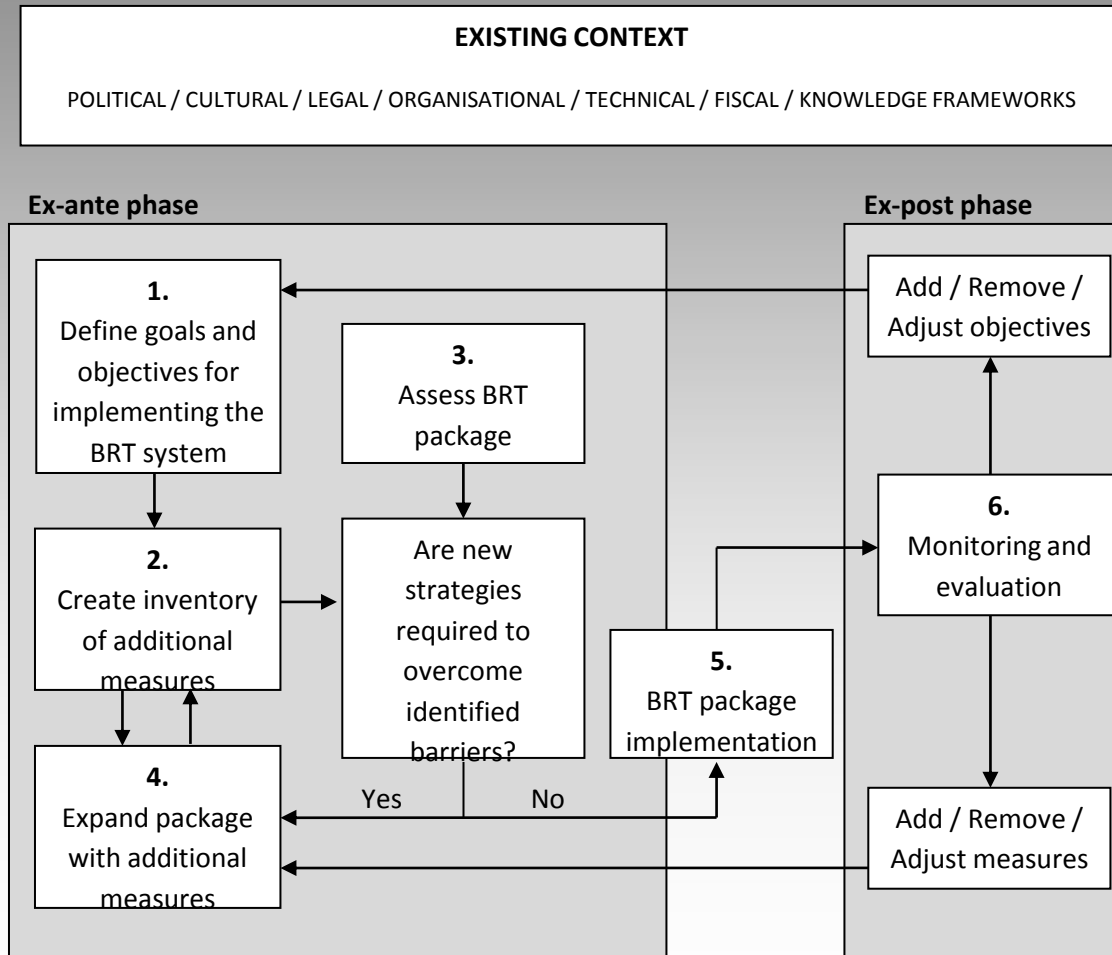
Comprise **one or several primary measures** and **several other ancillary, secondary measures**:

- **Effectiveness measures:** create synergies with the primary measures, increasing the global package's effectiveness;
- **Financing or other feasibility measures:** to raise and allocate funds, create technical capacity, or assure other type of resources necessary for implementing the primary measure(s);
- **Public acceptability measures:** that increase public acceptability of sometimes not so popular primary measures



# Literature Review Policy Packaging

## Policy packaging framework for BRT projects



# Literature Review

## Policy Packaging



### Criteria for Assessing BRT Policy Packages

Analytical Dimensions	Associated evaluation criteria
Dimension 1 Objectives and goals	Clarity of objectives and goals; Measurability of goals; Effectiveness against goals; Compatibility with parallel objectives/goals.
Dimension 2 Primary measures and causal assumptions	Breadth and diversity of potential measures; Accuracy of causal assumptions; Accuracy of distributional effects.
Dimension 3 Inter-measure interaction	Exploitation of potential synergistic relationships; Mitigation of potential contradictory/redundant relationships; Skilful incorporation of quantitative and qualitative assessment.
Dimension 4 Policy design process, technical and financial considerations	Financial viability; Stakeholder engagement.
Dimension 5 Barriers and unintended effects	Ex-ante mitigation of barriers and unintended effects; Ex-past package flexibility.

# Literature Review

## Agents in BRT Systems

<i>Domain</i>	<i>Agents</i>	<i>Nature</i>
<b>BRT System</b>	BRT Authority/Administrator	Public Agency/Government
	Bus Operators	Private/Public Company
	Fare Collection Manager	Private/Public Company
	Infrastructure Manager	Public Agency/Government
	Trust Fund Manager	Private/Public Company
	Employees	Individuals
<b>Public Authorities</b>	Political Authority/Head of Government	Individual/Government
	Other modes' authorities	Public Agency/Government
	Traffic Engineering authority	Public Agency/Police/Government
	Other related public authorities (environment, urban development, public works, etc)	Government
	Competing public transport operators/routes	Public Companies

# Literature Review

## Agents in BRT Systems

<i>Domain</i>	<i>Agents</i>	<i>Nature</i>
<b>Private Sector</b>	Competing private transport operators/routes	Private Companies
	Shopkeepers and businesses around corridors	Individuals/Private Companies/Associations
<b>Civil Society</b>	Users	Individuals
	Car Users	Individuals
	Citizens (public opinion/voters)	Individuals/Associations
	Public Transport Associations	Associations
	Unions (drivers, etc.)	Organizations
	Residents neighbouring corridors	Individuals/Associations
	Transport Experts & Mobility related NGOs and associations	Individuals/Associations/Private Companies/Universities
	News Media	Private/Public Company

# Literature Review

## Agents' Main Roles in BRT Systems



<b>Agent</b>	<b>Interests</b>	<b>Reactions/Decisions</b>
<b>BRT Authority/Administrator</b>	Ensuring the provision of transport service	Define fare Define supply level, frequencies or timetable Supervise and enforce service provision by bus operator Supervise and enforce fare collection system Supervise and enforce infrastructure management
<b>Bus Operators</b>	Receiving payment in exchange for providing transport service	Operate vehicles (perform bus trips) Perform maintenance of vehicles
<b>Fare Collection Manager</b>	Receiving payment in exchange for managing fare collection system	Operate fare collection system (collect revenue) Perform maintenance of fare collection system

# Literature Review

## Agents' Main Roles in BRT Systems



<b>Agent</b>	<b>Interests</b>	<b>Reactions/Decisions</b>
<b>Political Authority/Head of Government</b>	Achieving public acceptance of the transport service provided	Define policy objectives of BRT system Decide about the budget of BRT system
<b>Shopkeepers</b>	Avoiding negative impact of BRT on commercial activity	Promote public protests Spread word about negative impacts of BRT system
<b>Users</b>	Availability of transport service: Fast, Affordable and Reliable	Decide on using or not using the service of the BRT system Spread word about perceived quality of service of BRT system
<b>Car Users</b>	Preserving at least previous level of service in road network	Promote public protests Interfere with bus operation (non-compliance of traffic rules along corridors and intersections)
<b>Citizens</b>	Availability of alternatives of transport services	Spread word about perceived quality of service

# Literature Review

## Basic Functions and Structure of BRT Systems

- **Institutional Structure**
  - Policy-making and setting standards
  - Regulation
  - Planning and Design
  - Project implementation
  - Operational management
  - Financial management
  - Contracting and concessions
  - Administration
  - Marketing

# Literature Review

## Basic Functions and Structure of BRT Systems

- **Infrastructure**
  - Busway infrastructure
  - Feeder infrastructure
  - Stations
  - Intermediate transfer stations
  - Terminals
  - Depots
  - Control center
  - Traffic control signals
  - Integration infrastructure
  - Commercial space
  - Public utilities
  - Landscape



# Literature Review

## Basic Functions and Structure of BRT Systems

- **Financing Source**
  - System Planning
  - Operations
  - Infrastructure
  - Equipment
  - Maintenance
- **Business Structure**
  - BRT Manager
    - Plan the system
    - Program the operation
    - Oversee Quality Control

# Literature Review

## Basic Functions and Structure of BRT Systems

- **Business Structure**
  - Trunk Operator (private concession)
    - Procure trunk vehicles
    - Operate trunk vehicles
    - Maintain fleet
  - Feeder Operator (private concession)
    - Procure feeder vehicles
    - Operate feeder vehicles
    - Maintain fleet

# Literature Review

## Basic Functions and Structure of BRT Systems

- **Business Structure**
  - Fare system company (private concession)
    - Procure fare equipment
    - Collect fare
    - Maintain fare equipment
  - Trust Fund Manager
    - Account for revenues
    - Distribute revenues

# Literature Review

## Basic Functions and Structure of BRT Systems

- Systematization of basic roles and responsibilities
  - System Planning and Regulation
    - Define service quantity (schedules and/or departure frequencies)
    - Define route scheme
    - Define fare level and structure
    - **Define of standards. In particular, those directly perceived by users: Vehicle standards, Platform and station dimensions, Fare collection standards, physical access to the system**

□ **Bullets in red denote roles related to planning and implementation phase**

# Literature Review

## Basic Functions and Structure of BRT Systems

- Systematization of basic roles and responsibilities
  - Supervision of Operation
    - Supervise service level compliance
    - Supervise vehicles maintenance
    - Supervise stations and terminals maintenance
    - Supervise fare collection system provision and maintenance
  - Users Information and Marketing
    - Provide on-time information of service schedule (predictability of arrival)
    - Provide information of routes and network at stations (usability of routes)
    - Provide citywide information about transport system (potential travelers' awareness of BRT alternative for trip making decisions).

□ Bullets in green denote roles perceived by the users

# Literature Review

## Basic Functions and Structure of BRT Systems

- Systematization of basic roles and responsibilities
  - Operations
    - Control vehicle departure
    - Operate Vehicles
    - Operate Control Center (delivering instructions to the parts of the system and keep monitoring system functional)
  - Infrastructure
    - Operate stations and terminals (cleaning, security, functional access)
    - Operate traffic control signals and busway availability

□ Bullets in green denote roles perceived by the users

# Literature Review

## Basic Functions and Structure of BRT Systems

- Systematization of basic roles and responsibilities
  - Fare Collection
    - Operate fare collection equipment
    - Collect fare
  - Trust Fund Manager
    - Account for revenues
    - Distribute revenues

# Literature Review

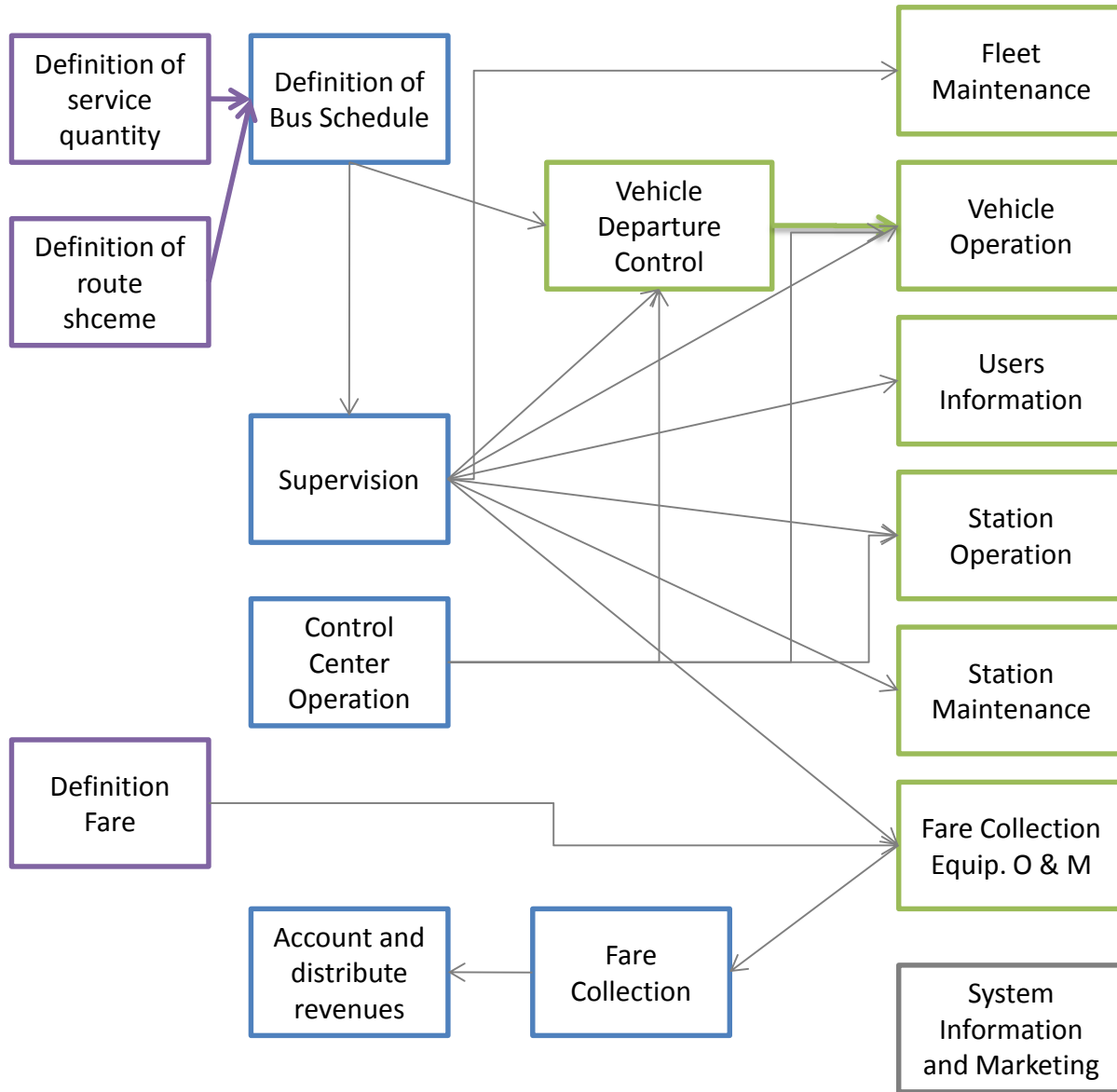
## Basic Functions and Structure of BRT Systems

- Systematization of basic roles and responsibilities
  - Maintenance
    - Maintain fleet
    - Maintain fare collection equipment
    - Maintain infrastructure
      - ◆ Busway infrastructure
      - ◆ Stations & Terminals
      - ◆ Depots
      - ◆ Control center
      - ◆ Other infrastructure (inter-modal integration, commercial space, public utilities, landscape, etc.)

□ Bullets in green denote roles perceived by the users



# BRT System



Users-Transport System Interface

Users

Citizens

# Results

- Preparation of questionnaire to evaluate BRT policy packaging on selected case study BRT systems; questionnaire encompasses 5 dimensions:
  - Objectives and goals
  - Primary measures and causal assumptions
  - Inter-measure interaction
  - Policy design process, technical and financial considerations
  - Barriers and unintended effects
- Selection of BRT systems to consider as Case Studies:
  - Belo Horizonte, Brazil
  - Santiago, Chile
  - Bogotá, Colombia
  - Guangzhou, China
  - Ahmedabad, India

# Conferences and Seminars

- Macário R.  
**Thinking on public accountability: How to address quality of policy design and decision-making?**  
12th Thredbo Conference, 11-15 September 2011, Durban, South Africa
- Filipe, L N., Macário R.  
**A first glimpse on policy packaging for implementation of BRT projects**  
12th Thredbo Conference, 11-15 September 2011, Durban, South Africa
- Spandou M., Macário R.  
**Decentralization as an institutional determinant for the performance of urban mobility systems**  
12th Thredbo Conference, 11-15 September 2011, Durban, South Africa &  
VREF CoE Workshop 26-29 October 2011, Beijing, China
- Macário R., Galelo A.  
**Accessibility: User satisfaction, Authority satisfaction, or Society satisfaction ?**  
12th Thredbo Conference, 11-15 September 2011, Durban, South Africa
- Veras T., Macário R.,  
**Assessing Gaps on Training and Education for BRT Systems**  
12th Thredbo Conference, 11-15 September 2011, Durban, South Africa

# In-progress or Future Research

- Completion of report D1 / D2
  - D1 – Literature review and theoretical framework -
  - D2 – Exploratory survey  
(both due by the end of Feb/2012)
- Collection of data for the case studies (questionnaires)
  - Start in March 2012 – End Aug 2012

Thank you for your attention !

Rosário Macário

[rosariomacario@civil.ist.utl.pt](mailto:rosariomacario@civil.ist.utl.pt)

**Bus Rapid Transit**  
**Across Latitudes and Cultures**  
**VREF Center of Excellence**

