



**XXIVth WORLD
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Urban Freight Transport Management, Guidance for Implementation

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1. Introduction

(1) What is Urban Freight Transport Management?

- It is a system of tools that is intended to bring social, economic and environmental success to a society.
- It focuses on procedure of designing, assessing, implementing and evaluating policy measures on urban freight transport.

(2) Why necessary?

Because there are a number of issues in urban areas and it requires systematic management to tackle them.



1. Introduction

(3) Who are involved?

Shippers, freight carriers, residents and administrators are the 4 main players.

Each player's intention is...

Shippers: to receive/send their goods in a reliable manner

Carriers: to meet shippers' needs

Residents: to enjoy a good quality of life

Administrators: to balance interests of three above players

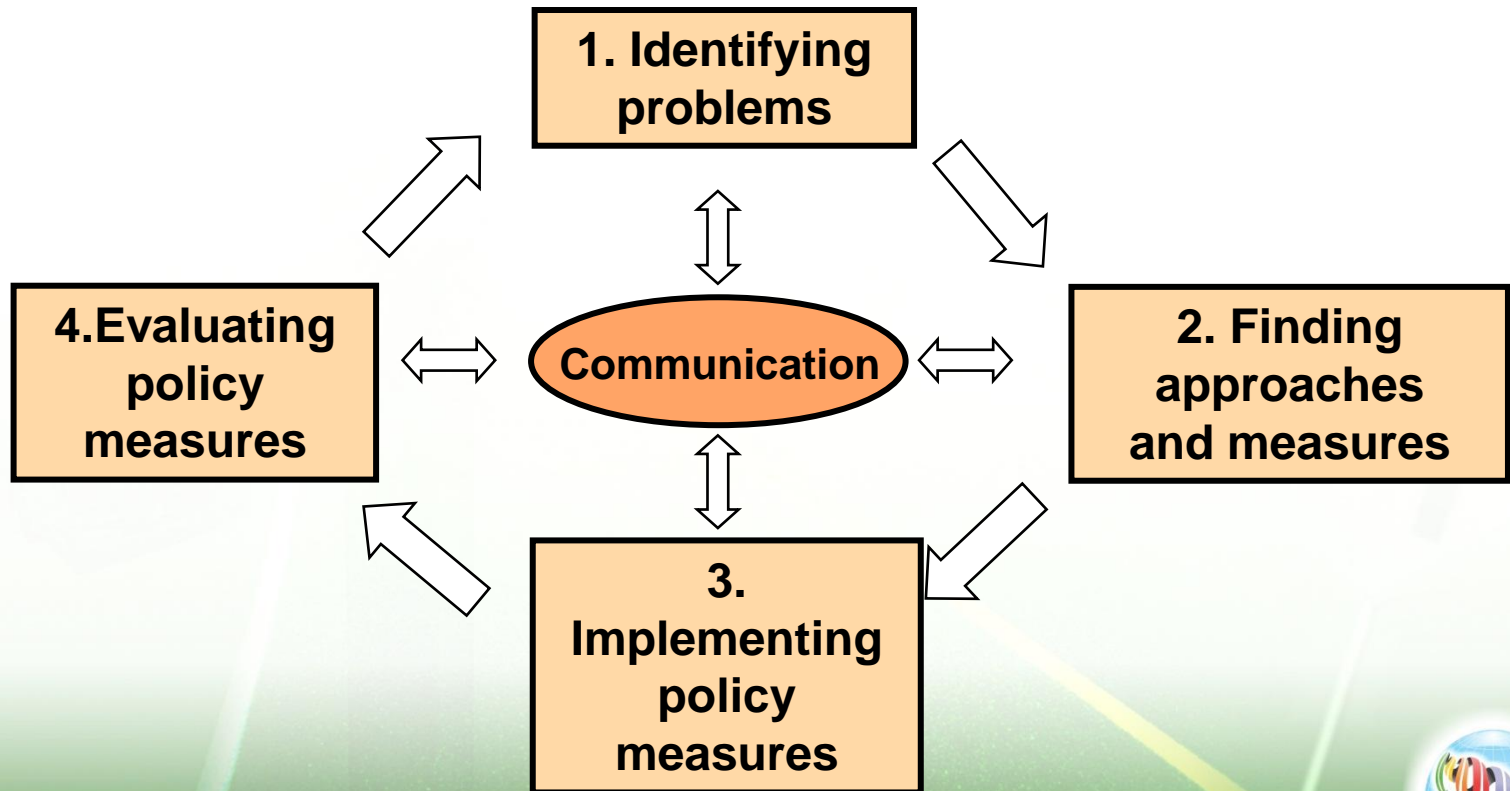
→ **each player has different interest & view.**



1. Introduction

(4) Urban Freight Transport Management Guidance

It has been prepared mainly for governmental officers in public sector and logistics managers in private sector, consisting of 4 steps (below).



1. Introduction

(5) Scope

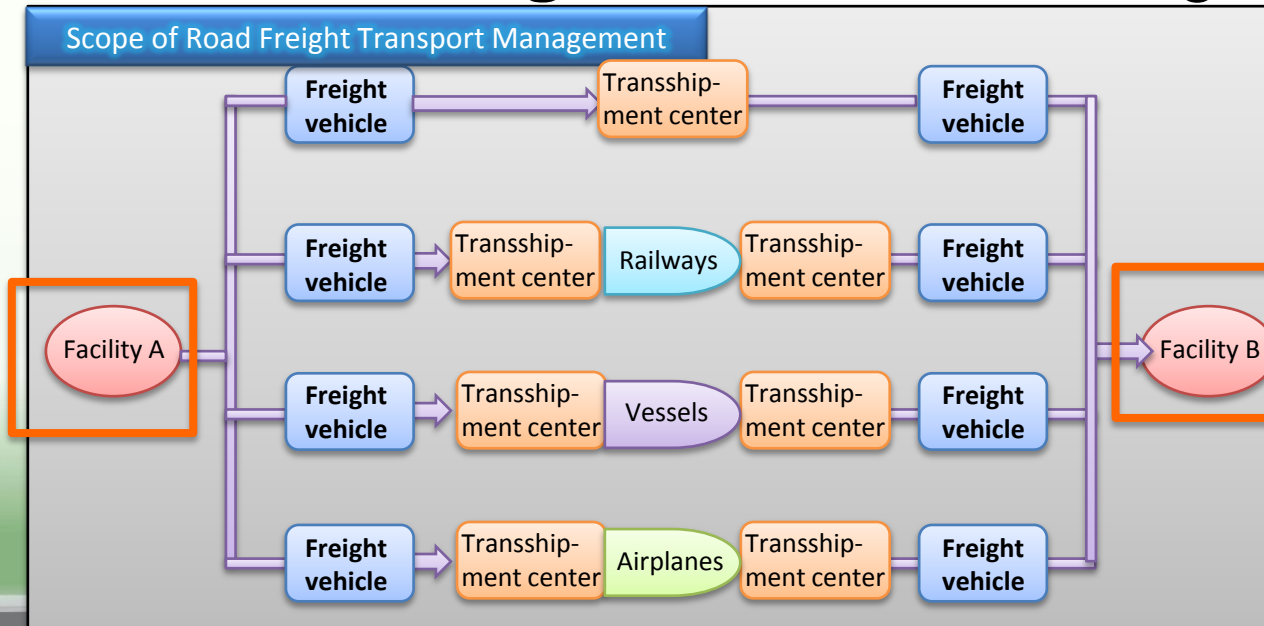
Of the Urban Freight Transport Management, our Guidance focuses particularly on **Road Freight Transport Management (RFTM)**.

Road Freight Transport Management (RFTM) covers mainly **travel of freight vehicles** starting from loading of cargos at facility A to the unloading of cargos at facility B.

Freight flow



Travel of freight vehicles in freight transport



Road Freight Transport Management (Change in traffic behavior)

Change in

- ✓ Mode
- ✓ Loading method
- ✓ Travel time
- ✓ Route
- ✓ Loading places
- ✓ Distribution of logistics centers (land-use)

1. Introduction

(6) Objectives

Objectives of Road Freight Transport Management (RFTM) is to realize economically efficient, environmentally friendly and livable society.

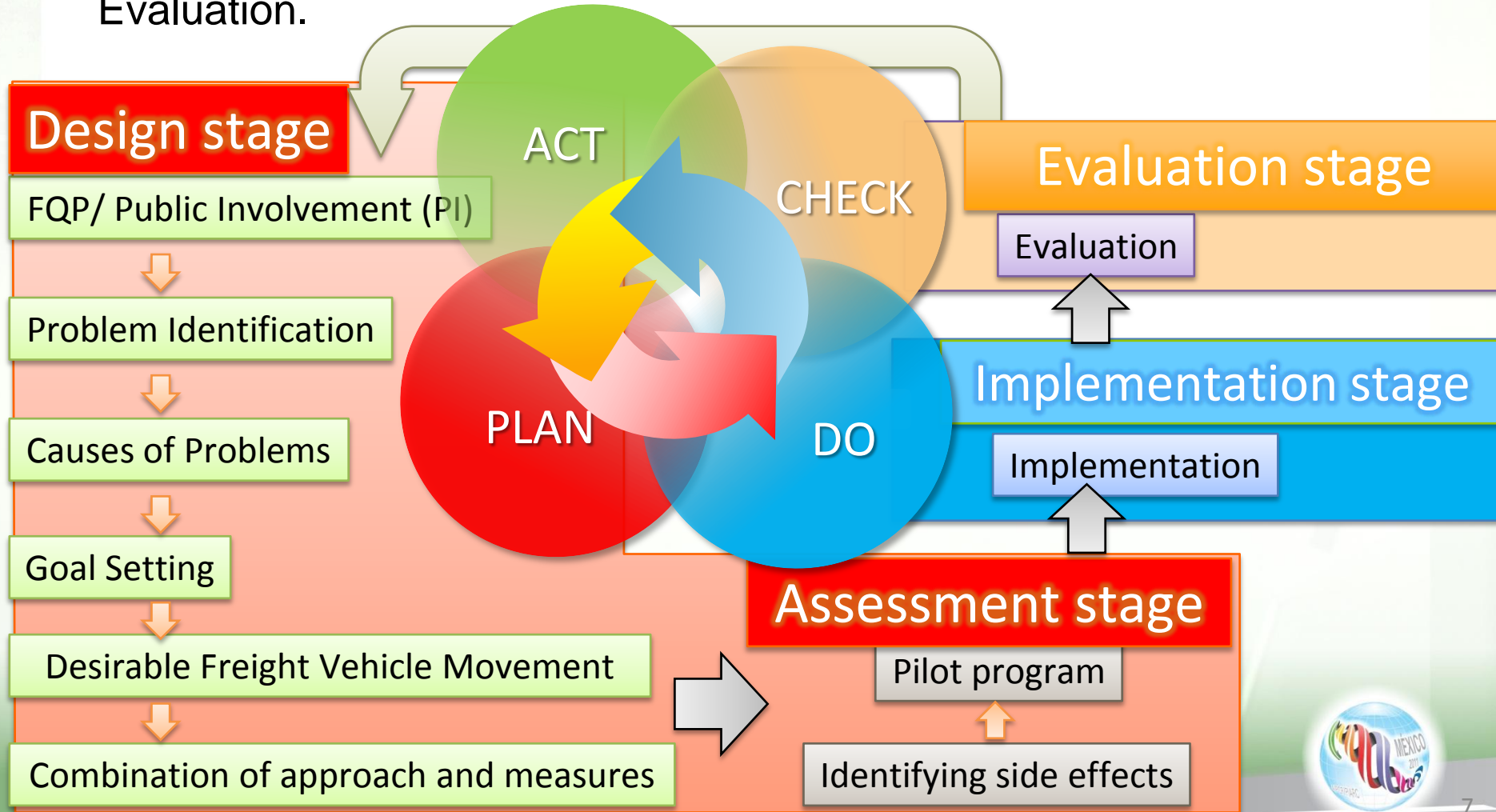
OBJECTIVES OF RFTM

Objective		Performance	
1	Economically efficient society	Less travel time	Travel further Travel more frequently
		Greater reliability	Sophisticated Production/distribution
		Larger vehicle	Mass transport
		Less CO ₂ emissions	Global climate
2	Environmentally friendly society	Less NO _x emissions, noise	Local air quality
		Safe & comfortable society	Increased traffic safety Comfortable road space
3	Livable society	Better place to live	Larger selection of products Fresh products Affordable prices for products

2. Procedure of RFTM

(1) Workflow

Road Freight Transport Management (RFTM) workflow works in a PDCA cycle, including 4 main stages; Design, Assessment, Implementation and Evaluation.



2. Procedure of RFTM

(2) Design Stage



FQP meeting

1) Partnership

We recommend officials to build **Public-Private-Partnership** through a partnership.



2. Procedure of RFTM

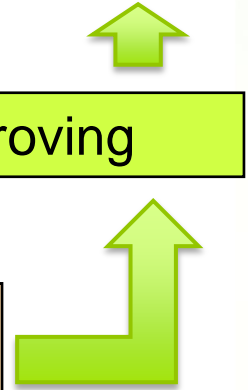
2) Public Involvement (PI)

- **PI** procedure is another way to obtain consensus among stakeholders.

Proposal of policies and measures by government



Hearing from the stakeholders



Improving



Obtain consensus among stakeholders

- It is to build a cooperative relationship between citizens and authorities.

2. Procedure of RFTM

3) Identifying Problems

Every player in the partnership understands the present situation regarding freight movement and exchange opinions.



Time to **identify current issues.**

2. Procedure of RFTM

4) Identifying Causes of Problems

It is important to study and understand the problem and to identify what are causing the problems.

CAUSES OF PROBLEMS

Problem		Causes
(1)	Congestion	vehicle size, just-in-time delivery, loading on road
(2)	Environmental nuisance	Freight vehicles have more impacts on local air quality than passenger vehicles
(3)	Road safety	Freight vehicles' frequent start/stop and accelerate/decelerate motion can induce collisions
(4)	Energy consumption	Old freight vehicles tend to have poor fuel mileage
(5)	Visual pollution	Large freight vehicles narrow other drivers' scope and blind other side of street
(6)	Damage to infrastructure	Heavy freight vehicles tend to cause more damage on road surface
(7)	Unsuitable infrastructure	Narrow road, not suitable for large freight vehicles

2. Procedure of RFTM

5) Goal Setting

- Goals should be **simple and clear** so that everybody in the city can understand them **easily**.
- Goals should be **checked regularly** to see if they are achieved.

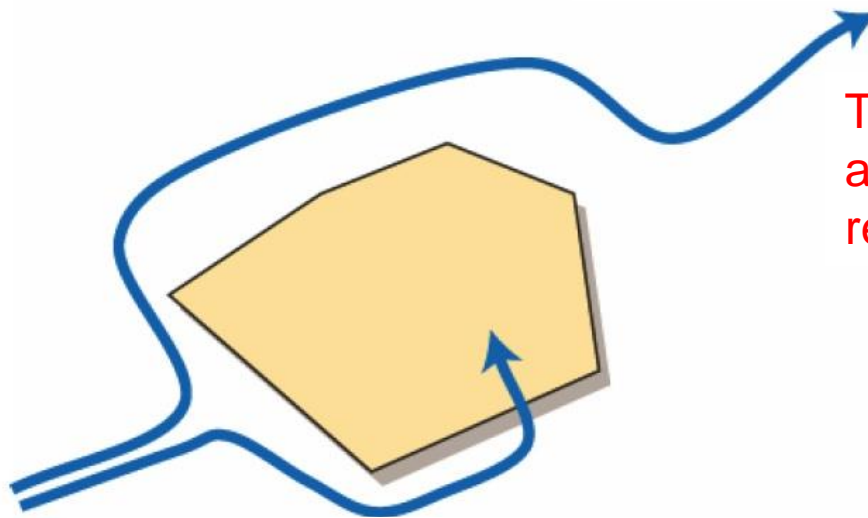
2. Procedure of RFTM

6) Designing desirable freight vehicle movement

It is necessary to design desirable freight vehicle movement for the entire city.

a) Example 1: Around the urban areas

One idea is to guide through-traffic around the city center & residential



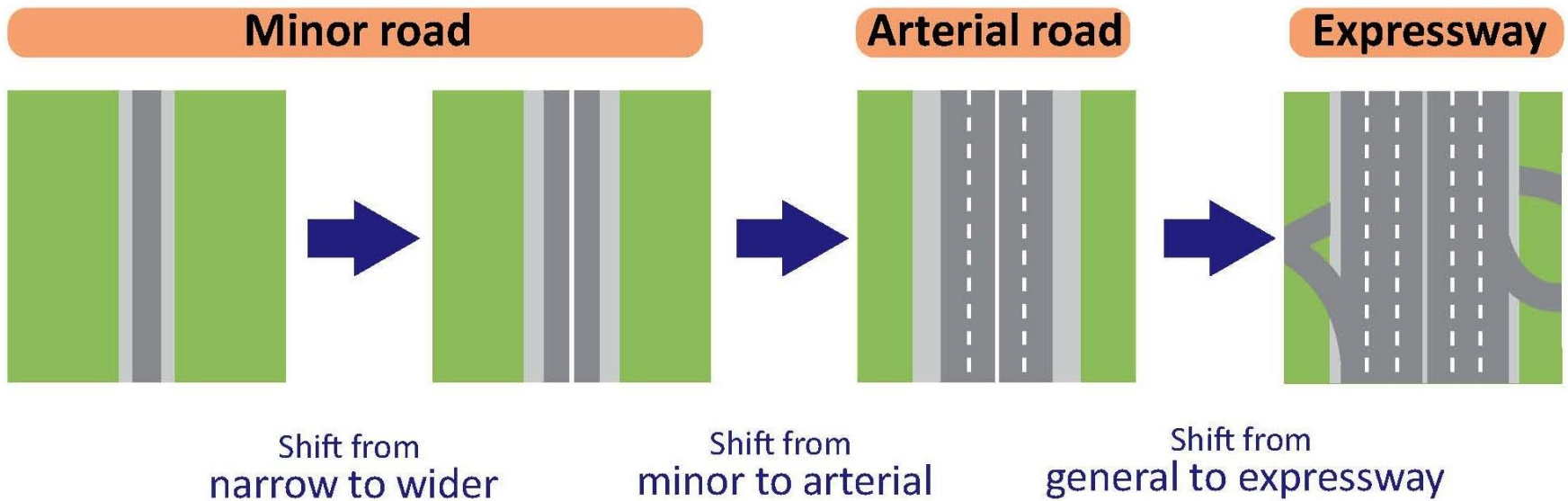
Through-traffic detours around city center and residential areas

The shortest route in residential areas to the final destination

2. Procedure of RFTM

b) Example2: Using arterial roads

Another idea is to guide freight drivers to wider, arterial roads or expressways, which contributes to reduction in congestion and environmental burdens.



USE OF ARTERIAL ROADS WITH LESS ENVIRONMENTAL BURDEN AND GREATER SAFETY

2. Procedure of RFTM

7) Selecting approach

“Approach” is a type of incentives or idea for problem-solving. 6 approaches are suggested.

Approach	Description
Infrastructure	Developing road infrastructure (e.g. roads and parking)
Regulatory	Policy, land use planning, licensing, regulations and associated instruments.
Logistical	Involvement of private entities in the form of the actors (e.g. freight businesses.)
Co-operative	Harmonising measures between private and public sector actors
Technology	State-of-the-art technologies (e.g. ITS)
Behavioral Change	An active manner to raise awareness of measures and encourage the use of alternatives

2. Procedure of RFTM

These are examples of approaches. One can discuss with stakeholders at the table which approach is the most suitable for you city's situation.

EXAMPLES OF APPROACH

Approach	Example
(1) Infrastructure	Development of bypasses/ring roads, urban distribution centers, loading facilities
(2) Regulatory	Introduction of fuel taxes, road user charge, dedicated freight Impose vehicle restrictions Introduce congestion charging
(3) Logistical	Use of small delivery vehicles Improved terminal operations Improve driver competencies
(4) Co-operative	Form freight partnerships load sharing systems (increase load factors) Joint delivering
(5) Technology	Use of electric delivery vehicles Use of GPS and FTMS Implement a vehicle parking reservation system
(6) Behavioral	Implement anti idling messages Improve social acceptance of urban freight activities Use of recommended truck routes

2. Procedure of RFTM

8) Selecting measures

Typical measures are listed by category in the table below.

		Measure	Example	
Traffic Management	Traffic Flow Management	Through-traffic optimization	Infrastructure	Ring roads, bypasses
			Traffic management	Restriction of through-traffic in city
		In/out-flow optimization	Infrastructure	Transshipment terminals outside city
			Traffic management	Truck route designation
	Parking management		Infrastructure	Loading/unloading facility
			Traffic management	Truck-only parking space
	Time management			Limited time window for trucks
	Vehicle management			Low-emission vehicles

2. Procedure of RFTM

MEASURES TO REALIZE THE DESIRABLE FREIGHT VEHICLES MOVEMENT (cont.)

Measure		Example
Better transport method	Joint delivery	Infrastructure Joint delivery center
		Traffic management Joint delivery agreement
	Intermodal transport	Infrastructure Intermodal terminals Transshipment equipments
Harmony with urban structure	Land-use plan	Infrastructure Environmental buffer along arterial roads
		Land-use management Restriction of residential building along arterial roads
Other	Improve vehicle movement	ITS, ICT
	Organizational activities	Freight Quality Partnership

2. Procedure of RFTM

Our suggestion is to examine your city's situation carefully and then to seek the best combination of approaches and measures.

RELATIONSHIP BETWEEN APPROACHES AND MEASURES

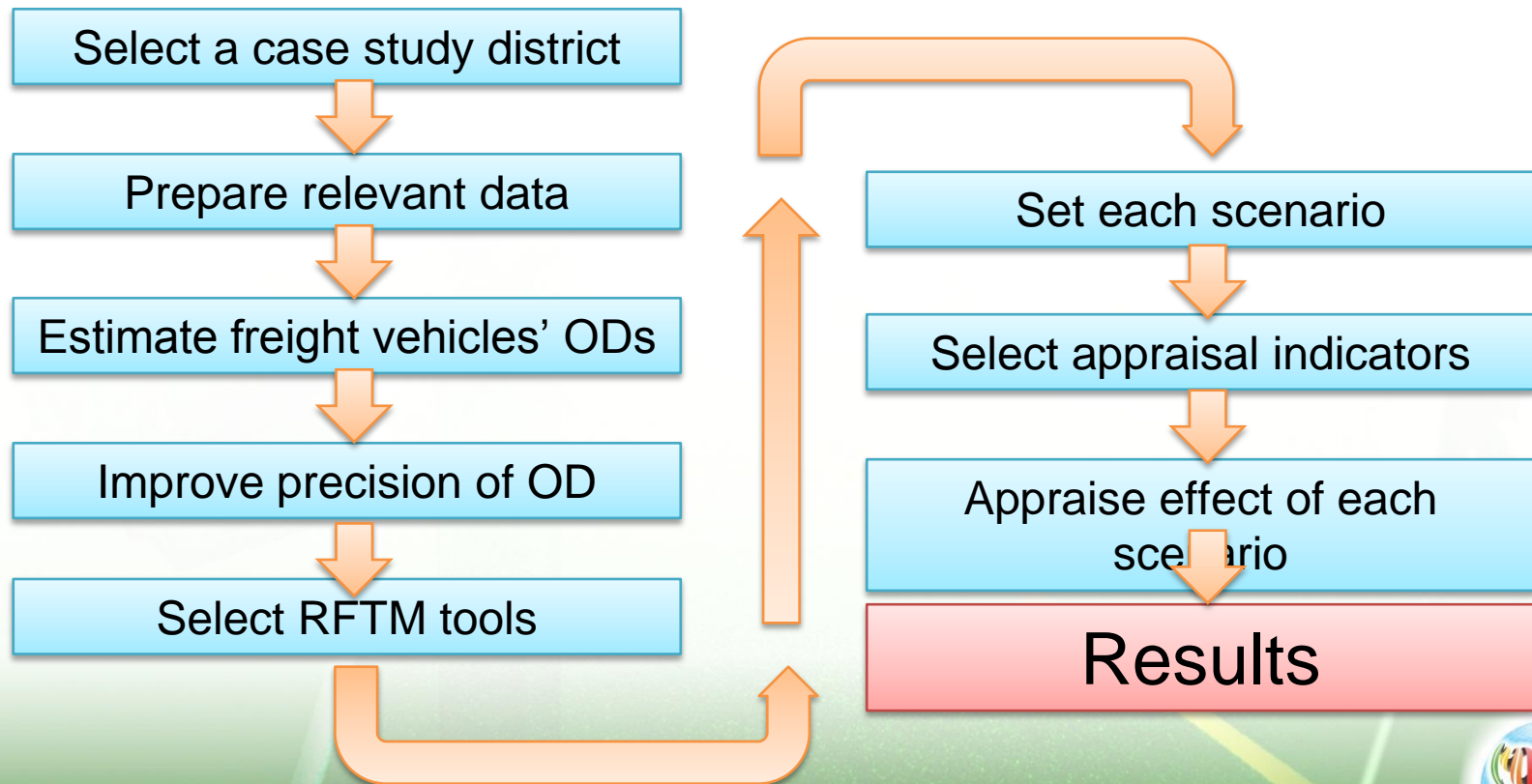
Measures		Approaches						
		Infrastructure	Regulatory	Logistical	Co-operative	Technology	Behavioral changes	
Traffic management	Traffic flow Optimization	Through-traffic optimization	✓	✓		✓		✓
		In/out-flow optimization	✓	✓		✓		✓
	Parking management		✓	✓	✓	✓		✓
	Time management			✓	✓	✓		✓
	Vehicle management		✓	✓	✓	✓	✓	✓
Better transport method	Joint delivery		✓	✓		✓		✓
	Intermodal transport		✓	✓	✓		✓	
Harmony with urban structure	Land-use plan			✓		✓		✓
Other	Improve vehicle movement		✓		✓		✓	
	Organizational activities				✓	✓		✓

2. Procedure of RFTM

(3) Assessment Stage (Computer simulation)

1) Identifying effects and side effects

We carried out a computer simulation for Tokyo at district level.
Below is the simulation workflow.


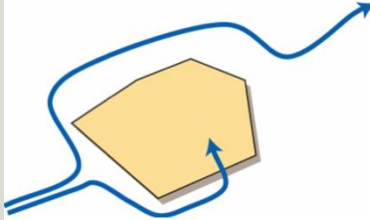
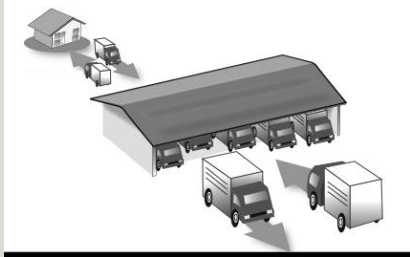


2. Procedure of RFTM

Imaginary measures in the simulation

3 imaginary measures are included in the computer simulation.

Road Freight Transport Management SCENARIOS

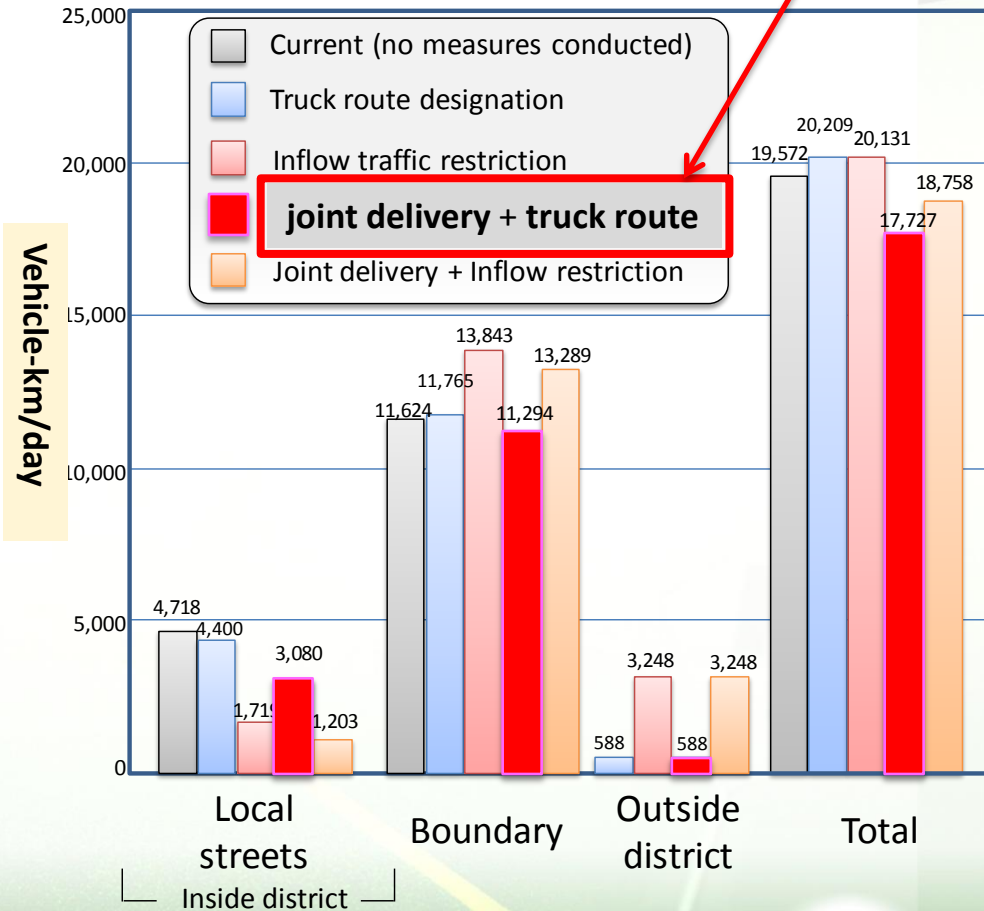
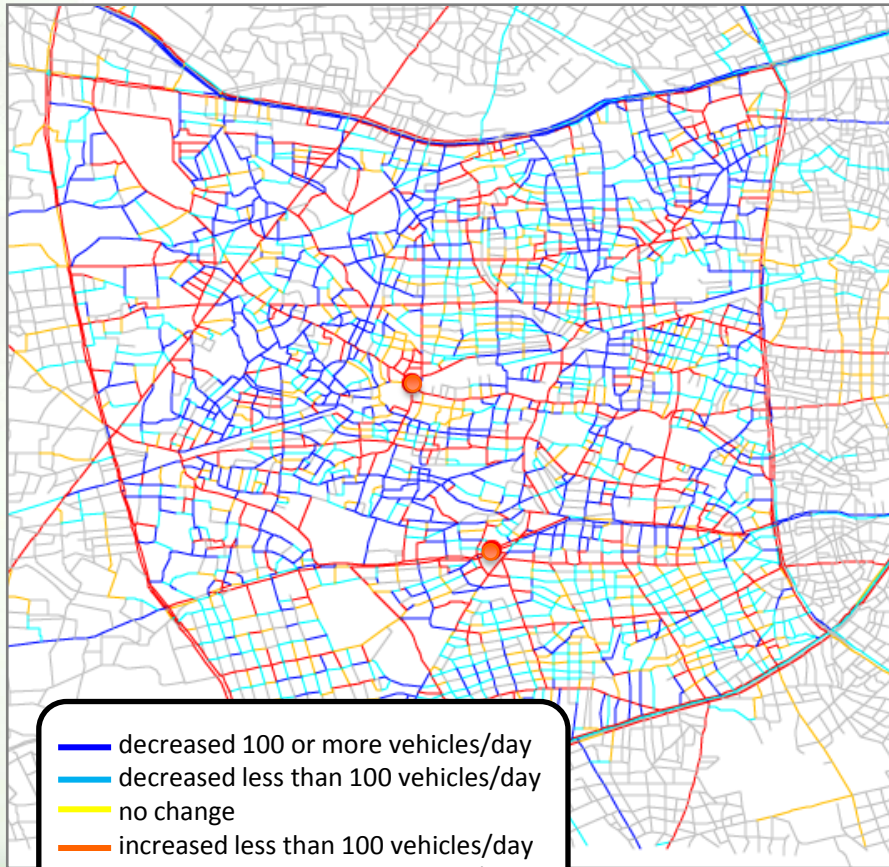
	a) Truck route designation	b) In-flow traffic restriction	c) Joint delivery
Description	 <p>Trucks are allowed only on designated routes</p>	 <p>No through-traffic</p>	 <p>Joint delivery</p>
Expected effects	<ul style="list-style-type: none">-Reduction in freight transport on local streets-Reduction in environmental burdens and accidents	<ul style="list-style-type: none">-Reduction in freight transport in the restricted area-Reduction in environmental burdens and accidents	<ul style="list-style-type: none">-Reduction in number of freight vehicles in delivery-Reduction in environmental burdens and accidents

2. Procedure of RFTM

Results of Computer Simulation

Most effective measure package

Figures show the results of traffic changes induced by imaginary measures.



TRAFFIC SHIFTS FROM LOCAL STREETS INSIDE TO SURROUNDING ROADS



2. Procedure of RFTM

2) Pilot Program

- Another tool to assess effects of planned measures.
- Gives **specific traffic data and opinions** from participants.



Pilot Program installing loading spaces on roads in Shibuya, Tokyo Japan.

2. Procedure of RFTM

(4) Implementation Stage

- Check if the program is feasible and practicable.
- Then set the carefully-planned **measures into action.**

2. Procedure of RFTM

(5) Evaluation Stage

-Evaluation and feedback are equally important to guarantee the success of the measures.

-Main objectives of evaluation:

- **Check** that actions are implemented as planned;
- **Analyze** the effects of the actions undertaken;
- **Determine** whether objectives are met; and
- **React and develop** solutions where objectives have not been met or problems have been raised.

2. Procedure of RFTM

Key Performance Indicators for evaluation

KPIs FOR EACH CATEGORY

Criteria	Objective	Indicator	Source	Measurement
Life quality	Emissions reduction	-noise -air quality -CO2 -traffic volume -accidents	-field study -local authority -police	-modeling, measurements -traffic counts -literature research
Economic development	Economic development	-Commercial floor space -number of visitors	-local authorities -offices, real state	-statistics -questionnaire study
Accessibility	Improving accessibility	-vehicle-km -travel time -number of obstacles	-carriers -drivers -field study -police	-questionnaire study -traffic counts
Transport efficiency	Improving vehicle load factors	-average load factor of vehicles -fuel consumption per unit	-operators	-study

3. Conclusion

1 Importance of PPP

Using **Public-Private-Partnership (PPP)** offers a constructive way of consulting and involving stakeholders through each stage of planning

Either **Freight Quality Partnership (FQP)** or **Public Involvement (PI)** procedure can be conducted.

3. Conclusion

2 Responsibility of Public Authorities

Public Authorities take ultimate responsibility for planning, implementing and managing policy measures.

3. Conclusion

3 Combination of Approach & Measures

- Design the **desirable freight vehicle movement** on roads in the **entire** city
- Seek the best **combination of approach & measures.**

3. Conclusion

4 Workflow as a PDCA cycle

- **Evaluating the results** of the measures is another factor of success
- **Improvement** with empirical and scientific evaluation in the PDCA cycle.

Thank you very much for listening!

For complete version of “Guidance”, please see our TCB4.3 WG3 technical report on the official website of PIARC (<http://www.piarc.org/es/>) in the near future.

