

Improvement of Urban Transport System in Colombo Metropolitan Area

The way forward

**Colombo Metropolitan Transport Master Plan
and
Areas for International Cooperation**

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Colombo Metropolitan Area (Colombo City and the suburbs) Urban Transportation - General Overview

- Being the largest city and the Capital of Sri Lanka, Colombo attracts more than 1 million daily commuters by 160,000 vehicles.
- Travel demand in the city is rapidly increasing due to increased mobility of the people after 30 years of war, ongoing massive urban development projects and increased number of privately owned vehicles with economic growth of the country.
- Modal share of public transport is decreasing rapidly. (*in 2004, 67% - in 2013, 58%*)
- Average speed of vehicles in peak time in major transport corridors falls below 10km/h.

Colombo Metropolitan Area (CMA) 995.5 sq.km (27% of Western Province)

Note) CMA area was identified in CoMTrans Study

| District | No. of DSDs in CMA | Land area Sq.km | Population Mn (2012) | Population density per sq.km |
|--------------------|--------------------|-----------------|----------------------|------------------------------|
| Colombo | 11 | 429.1 | 2.131 | 4,966 |
| Gampaha | 6 | 386.3 | 1.101 | 2,850 |
| Kalutara | 3 | 180.1 | 0.449 | 2,493 |
| Total /Avg. | 20 | 995.5 | 3.682 | 3,436 |



Issues in Urban Transportation in CMA

At present, due to variety of reasons, urban transport system of the CMA cannot satisfy the mobility needs of the people efficiently.

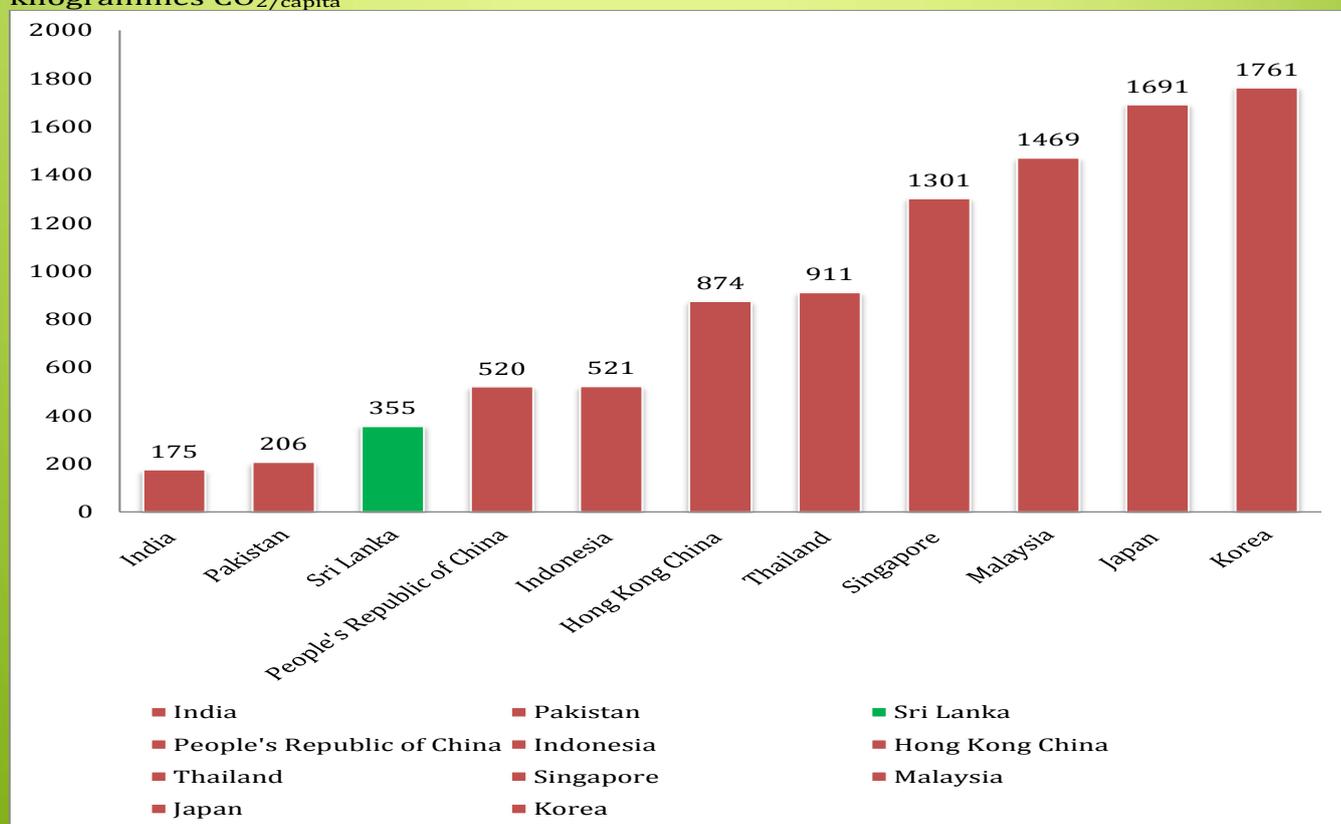
- **Traffic congestion in Greater Colombo area**

The congestion cost is estimated around 12 billion per annum with consideration of peoples' journey time while wasting their valuable time and other resources.

- **Shortage of parking spaces in urban areas**
- **Inadequate pedestrian walkways and facilities**
- **High rate of road traffic accidents**
- **Energy inefficiency and increased air pollution**
- **Lack of comfort, efficiency and safeness in public transport services**
- **Insufficient and unregulated para transport infrastructure facilities**

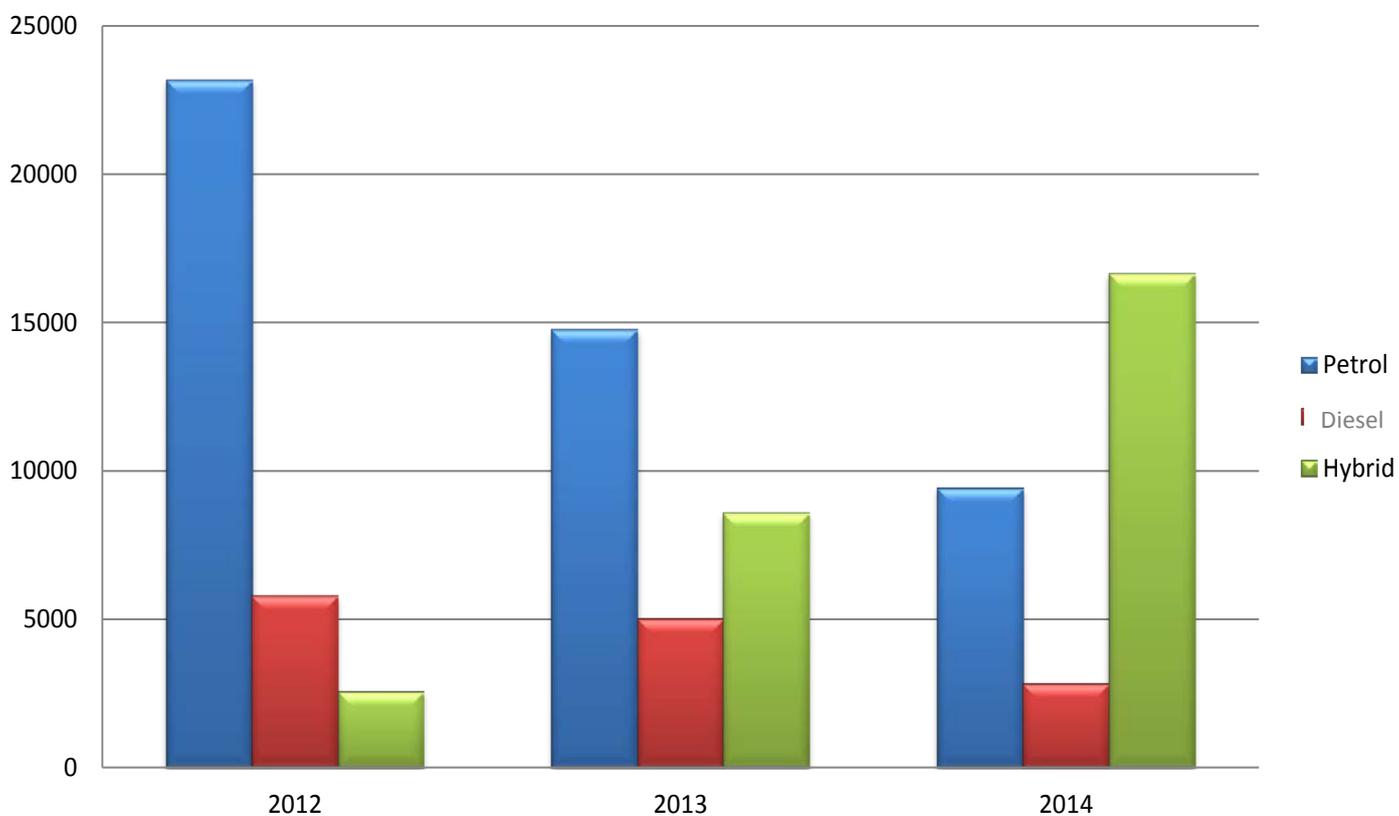
Per Capita CO₂ Emissions in Transport Sector in 2012

kilogrammes CO₂/capita



Source: International Energy Agency 2014

New Registration of Motor Cars by Fuel Type in Sri Lanka



**Urban Transport System Development Project for Colombo
Metropolitan
Region and Suburbs (CoMTrans)
2012 – 2014**



Prepared under JICA Technical Cooperation



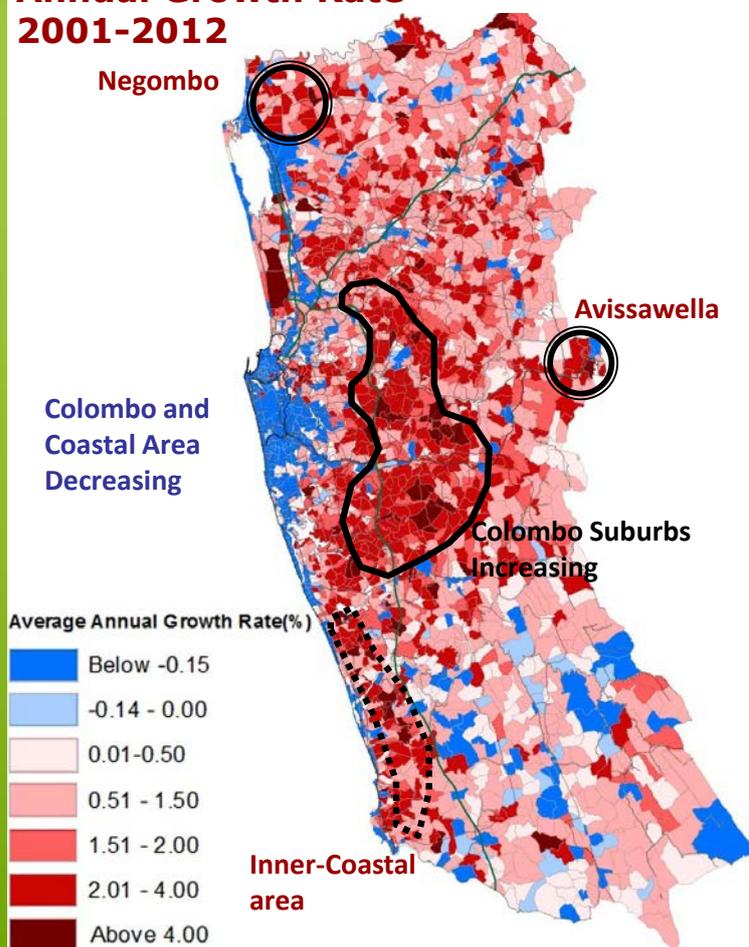
**Urban Transport Master Plan for Colombo Metropolitan
Region and Suburbs (towards 2020, 2025, and 2035)**

Vision

**Shaping the Future of Urban Transport System
in Colombo Metropolitan area and the Suburbs
by Promoting Public Transport System**

Population Growth Patterns in Western Province

Annual Growth Rate 2001-2012

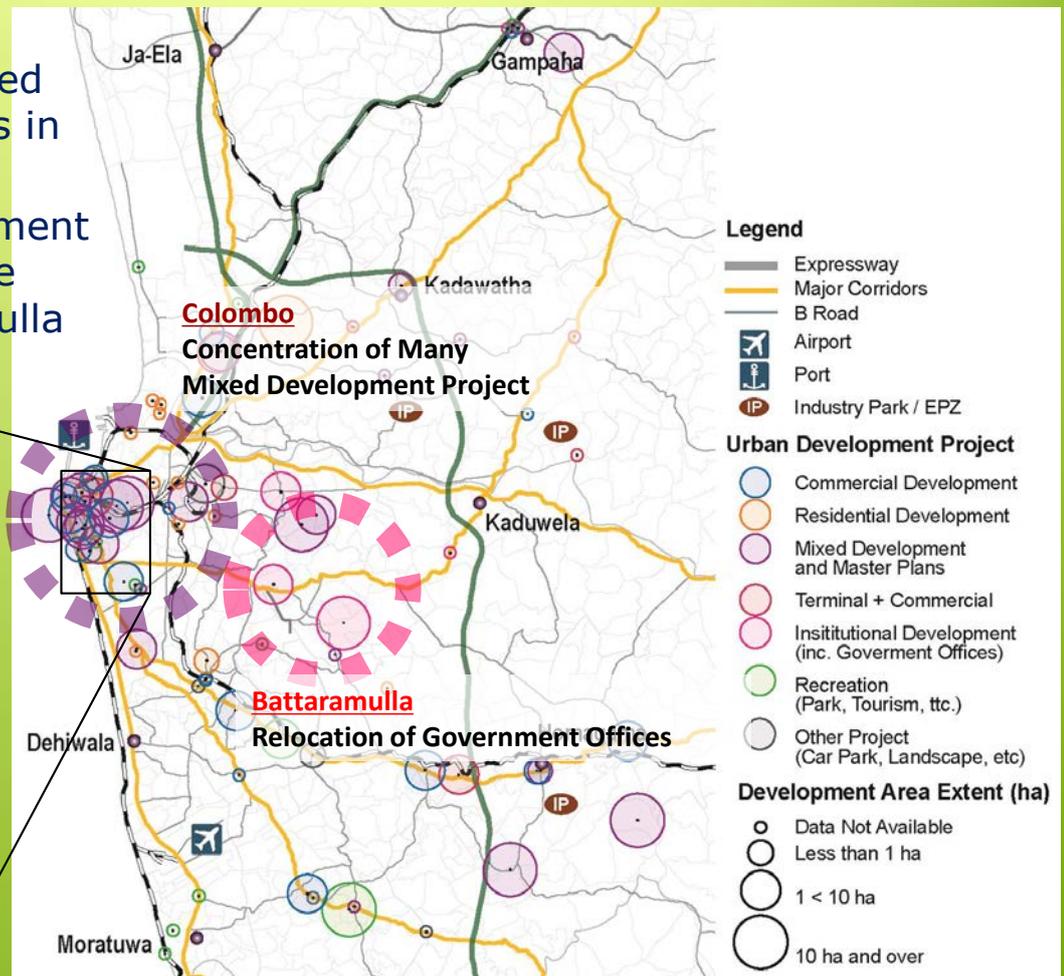
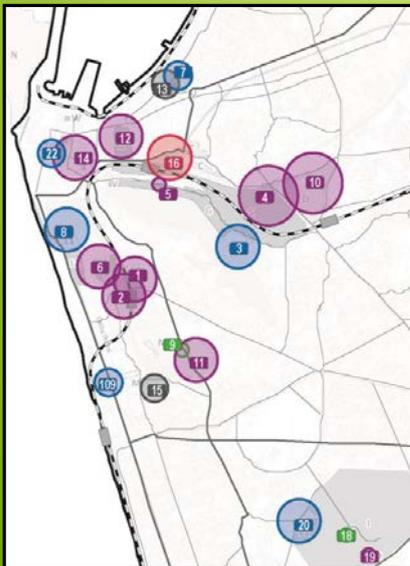


- Population is **increasing** in the areas to the **east of CMC**, while the growth rate is less in the CMC area
- This can be explained by the changes in land use – **in CMC inner city area commercial activity is increasing** and **in the suburbs to the east, residential activity is increasing**

Source: DCS
Calculated by CoMTrans

Urban Development Plans/Projects

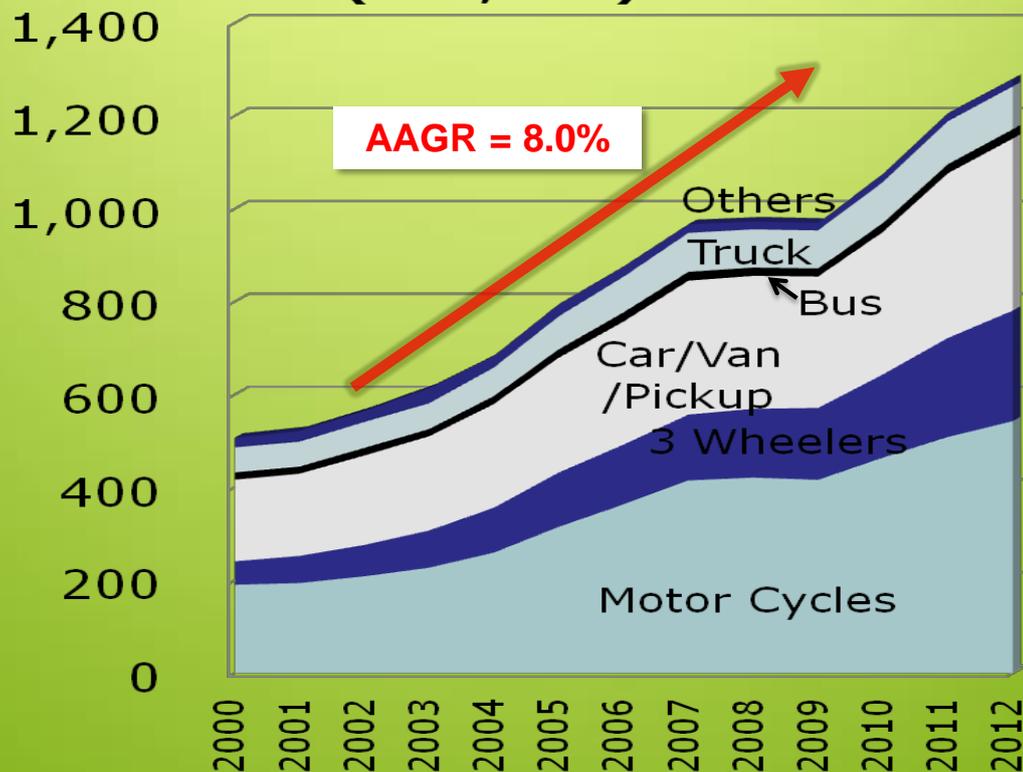
- Concentration of mixed development projects in Colombo center
- Relocation of government agencies and Defence complex in Battaramulla



Source: UDA

Rapid Increase of Private Vehicles

No. of Vehicles* in the Western Province (in 1,000)

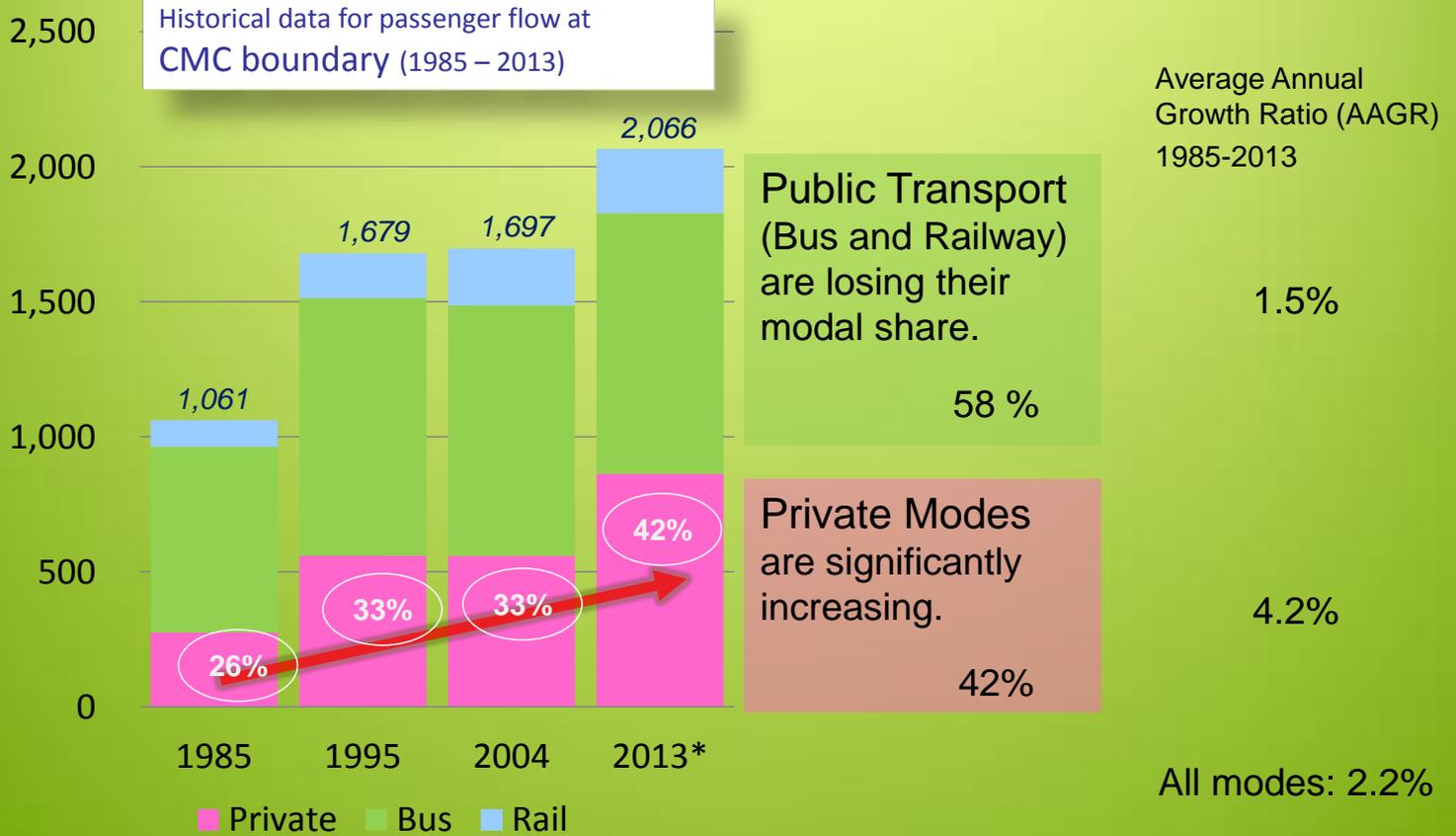


*The number of motor vehicles with valid revenue licenses. 10

Migration from Public to Private Transport

Unit: 1,000 Passengers per day, Both Direction

Historical data for passenger flow at CMC boundary (1985 – 2013)



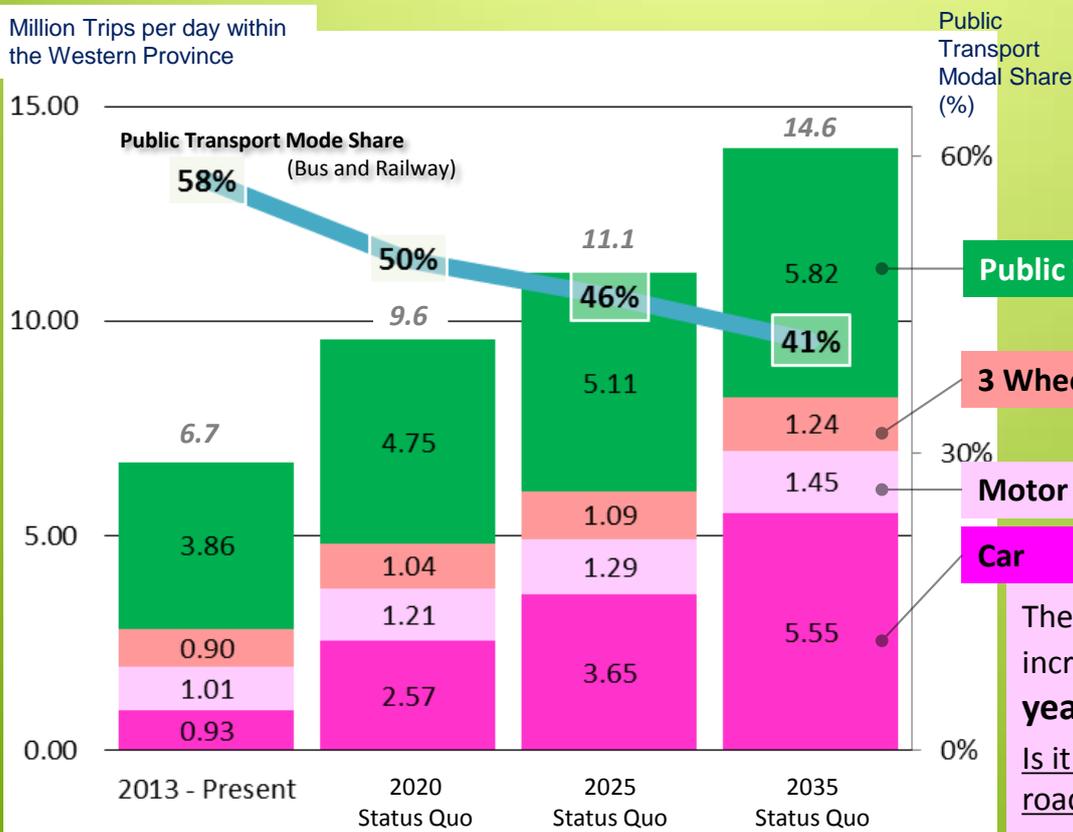
* Total passengers at CMC boundary at all survey location was 2.1 million passengers per day (both direction). For the comparison purpose, survey locations surveyed in '85, '95 and '04 were selected.

Public Transport Share in Future

If the government's budget is spent minimum on transport...

Estimated Mode Share of Inter-zonal Trips
 excluding Non-Motorized Trips
 <Car Oriented Status Quo Policy Scenario>

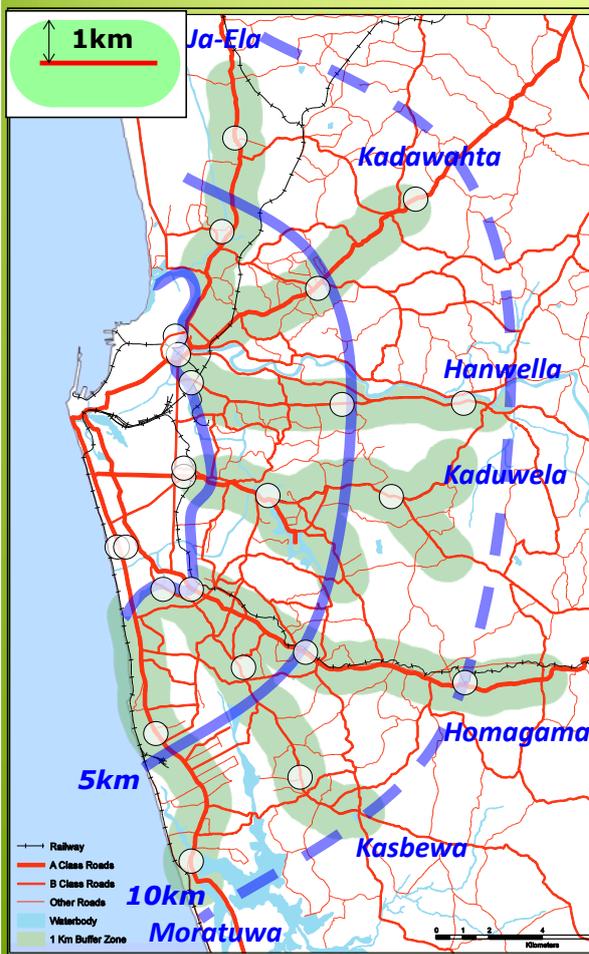
Million Trips per day within the Western Province



Note: Travel speeds are assumed to be as same as 2013 condition.

The number of car trips will increase a factor of **6 in 30+ years**.
Is it possible to increase the road capacity to 6 times of current level?

Identification of 7 Transport Corridors



Seven Transport Corridors have been identified as most important corridors taking transport volume, urbanization level, population density and network function into consideration.

Corridor Population



Population within suburban area within 10km from CMC boundary, buffered area is set with 1km width on both sides of each roads. Census population data by GN division in 2012 is used.

Public Transport Development Options

BRT
(Nagoya, Japan)



AGT
(Tokyo, Japan)



Monorail
(Okinawa, Japan)



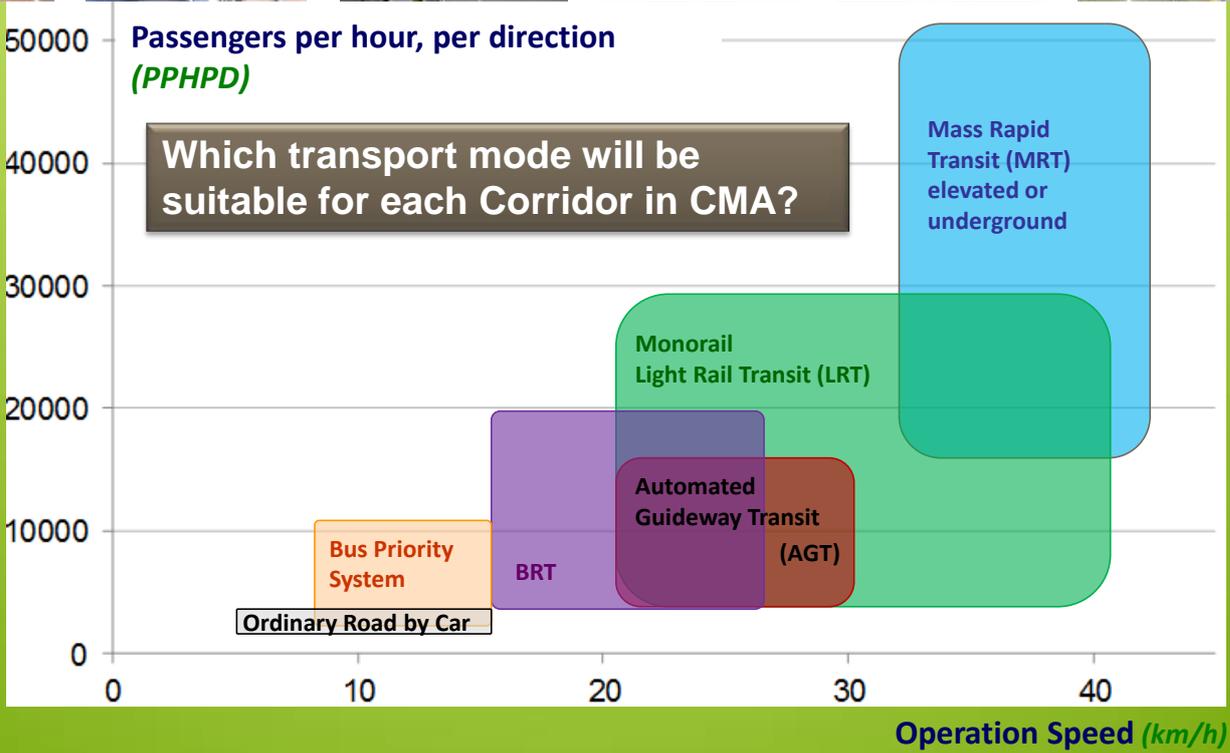
LRT
(Manila, Philippines)



MRT-Elevated
(Bangkok, Thailand)



MRT-Underground
(Delhi, India)



Development Options [Seven Corridors]

| Corridor/Area | | Development Options in 2035 | | |
|-----------------|-----------------|-----------------------------|------------|--|
| | | Monorail | Railway | BRT/Bus/Roads |
| Seven Corridors | Malabe | Monorail | - | - |
| | Galle | - | Modernized | BRT [w/ Marine drive Extension] |
| | Kandy | - | Modernized | BRT |
| | Negombo | - | Modernized | Bus priority |
| | High Level Road | Monorail | - | - |
| | Horana | - | - | Bus priority U. Expressway [via Nugegoda] |
| | Low Level Road | - | - | Bus priority |

Example: Development Option on Malabe Corridor

MmTH

Fort/Pettha: Multimodal Transport Hub located in the Centre of Colombo.

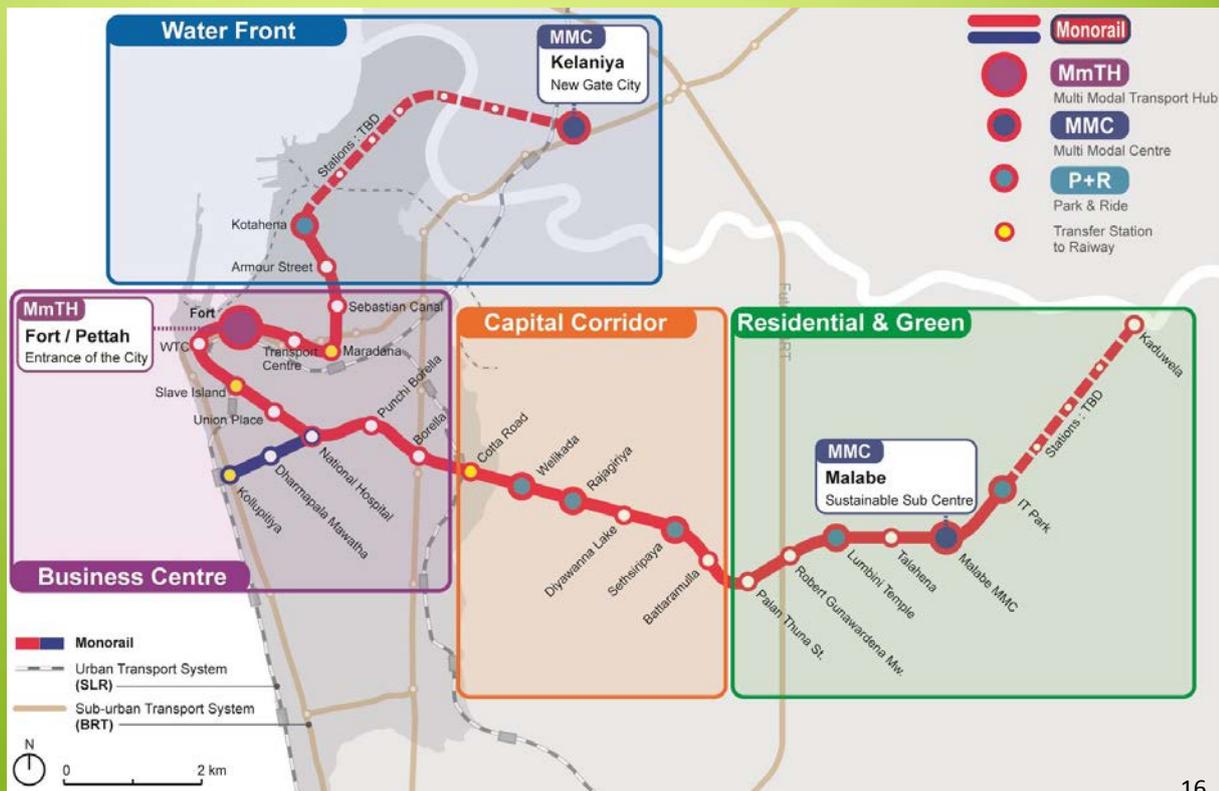
MMC

Malabe & Kelaniya: Multimodal Centre located in the Suburbs of Colombo, the terminal stations of Monorail.

P+R

Kotahena, Welikada, Rajagiriya, Sethsiripaya, Lumbini Temple, Malabe MMC, Kelaniya MMC, and IT Park:

Transfer stations from passengers' cars to Monorail



Multi-modal Centres (MMCs) as Traffic Nodes



4 MMCs

Kelaniya

Multimodal Centre (MMC) is proposed with Monorail, Railway, BRT, Bus

Malabe

Multimodal Centre (MMC) is proposed with Monorail, Bus

Makumbra

Multimodal Centre (MMC) is proposed with Railway, Bus, Future monorail

Moratuwa

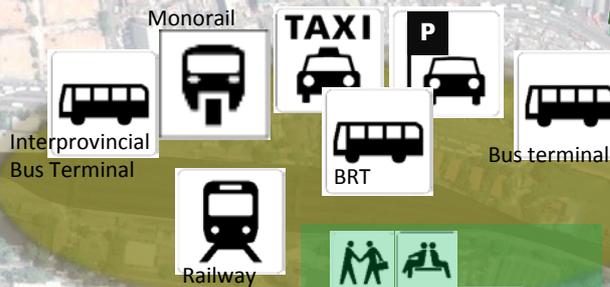
Multimodal Centre (MMC) is proposed with BRT, Railway, Feeder Bus

Detailed locations of proposed transport facilities and network alignments will be examined and identified in the pre-feasibility or feasibility study stage.

Multi-modal Transport Hub (MmTH)

Fort/Pettah MmTH

- Monorail Station
- Railway Station
- Bus terminal
- Interprovincial Bus terminal
with access ramp from port access expressway
- BRT Station
- Parking
- Taxi
- Drop-off area



Western Province Bus Terminal
(Gunasinghapura Bus Stand)
10 Bays, 16 Routes, 600 Buses
WPRPTA: Western Province Road Passenger Transport Authority

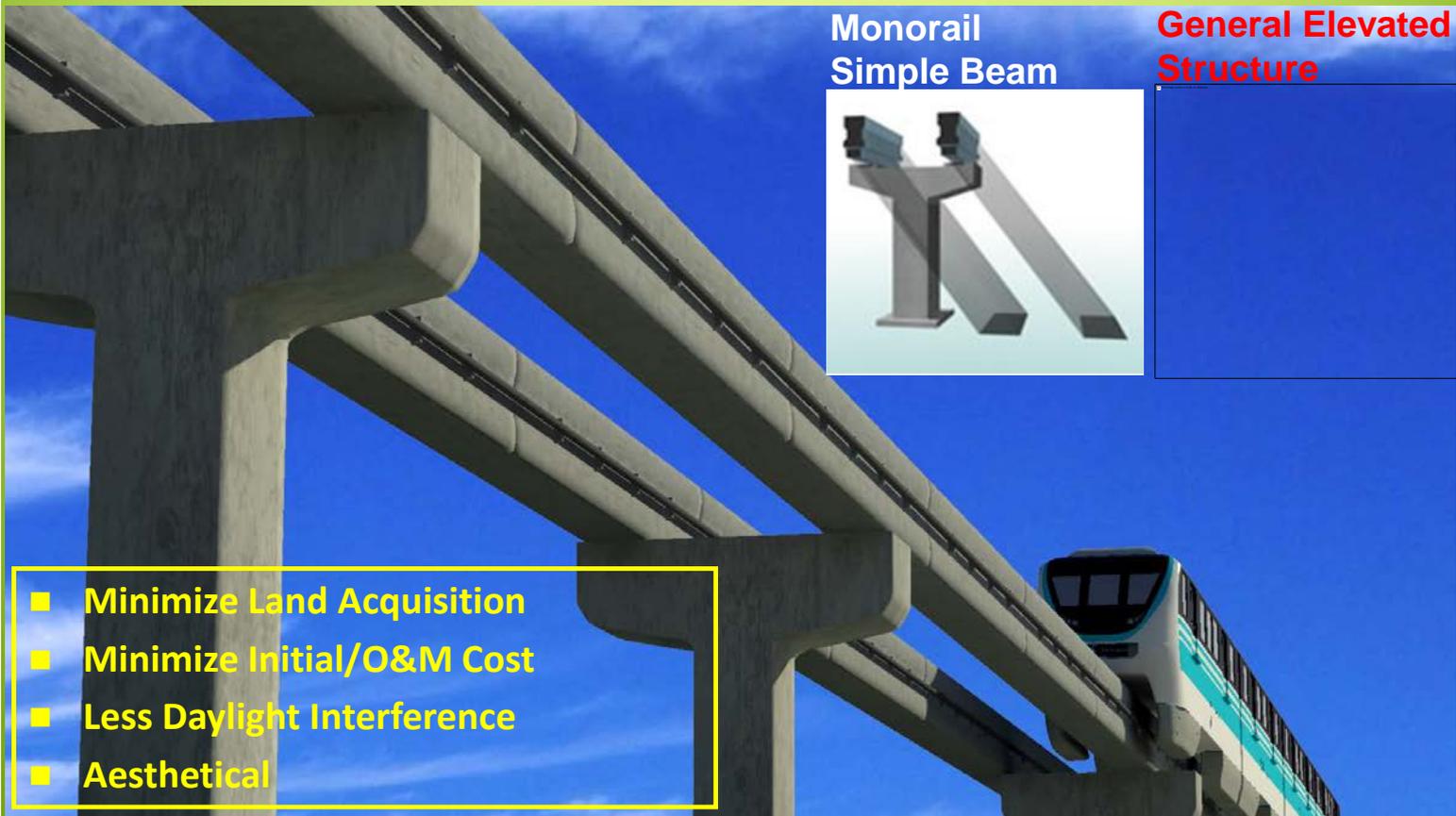
SLTB Bus Terminal
(Public, Intra/Interprovincial)
(Central Bus Stand)
30 Bays, 102 Routes, 900 Buses
SLTB: Sri Lanka Transport Board

NTC Bus Terminal
(Private, Interprovincial)
(Bastian MV Bus Stand)
42 Bays, 171 Routes, 1,600 Buses
NTC: National Transport Commission

- Station plaza with smooth connection to transport modes

Monorail System (Simple Beam Structure)

Simple Beam Structure installed at center median of roads



Monorail
Simple Beam



General Elevated
Structure



- Minimize Land Acquisition
- Minimize Initial/O&M Cost
- Less Daylight Interference
- Aesthetical

Video on Colombo Monorail

Cooperation with Development Partners in realizing the Master Plan

- World Bank
- ADB
- JICA
- KOICA
- Indian Exim Bank
- Chinese Exim Bank
- Private Sector

Local Benefits of the Low Carbon Scenario

Economic Benefits

Estimated by CoMTrans, 2013 Economic Price

VOC: Vehicle Operating Cost

2035

BaU (SQ)

964

LCS

823 bn. LKR/y

VOC saving for 30 years: 388.8 bn. LKR

Travel Time Cost

2035

BaU (SQ)

1,727

LCS

1,269 bn. LKR/y

Time saving for 30 years: 1,102.4 bn. LKR

Loss due to Traffic Accidents*1

2035

BaU (SQ)

11.8

LCS

11.5 bn. LKR/y

Loss saving for 30 years: 1,066 mil. LKR

Cost Saving: Net Present Value, 2013 Economic Price,

Evaluation period: 2015-2044, Discount rate: 12%
 based on the guideline of "Assessing Public Investment in the Transport Sector 2001" by Ministry of Finance and Planning

Assuming projects are implemented in accordance with the short, intermediate and long terms, evaluation period: 2015-2044.

Other Benefits

Modal Share (Public Transport %)

2035

BaU (SQ)

41%

(car 39%)

LCS

55%

(car 30%)

Ref. year of 2013
58% (car 14%)

Estimated by CoMTrans

Travel Speed (average speed in Western Province)

2035

BaU (SQ)

13.7 km/h

LCS

18.0 km/h

Estimated by JICA-STRADA model, CoMTrans

Population in the Public Service Area

2035

BaU (SQ)

0.73 mil. pop

LCS

1.40 mil. pop

defined as the area within 800m radius from railway stations and BRT stations in CMA. Ref. 2013: 0.63 mil. People (17% of CMA's population (3.68mil.))

Estimated by CoMTrans

Reduction of Emissions: NO_x, SO_x, SPM, Dusts from motor vehicles

Promoting regional economy and creating new employments by domestic Bio-fuel production industries

The way forward

In revolutionizing the City's transport system with creating modern infrastructure facilities, traffic management measures and new transport modes to make the city with having user friendly transport system, minimized traffic congestion contributing to the government effort on upgrading the city infrastructure and amenities based on the garden city concept.

Measures:

- Realization of the viable transport projects and strategies identified through the recently prepared Urban Transport Master Plan.
- Receive assistance from the international development partners for financing and implementing viable development projects.
- Enhance private sector participation for development of transport infra facilities and services.

Expected Outputs

- 1. Transport oriented urban development strategies**
- 2. Finalized feasibility studies for all transport corridors**
- 3. Colombo Central - Multi Modal Transport Hub (MmTH) and MMCs with user friendly modern transit facilities and amenities**
- 4. Established Transport Demand Management strategies to establish an efficient, safe and comfortable urban transport system**
- 5. Integrated organizational set up for the management and operation of the system**



Thank you
for your attention