

LBR LBO Infrastructure Summit 2016 – "Realizing The Transformative Power of The Western Region Development: Opportunities and Challenges"

### NATIONAL ROAD MASTER PLAN

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#### NATIONAL ROAD MASTER PLAN 2017- 2027

Formulating the National Road Master Plan for 2017 to 2027 to cater to the demand giving due consideration to sustainable economic development of the country while facilitating public transport systems, enhancing the safety of road users, with environment & social safeguards and introducing stringent monitoring mechanism to ensure return on investment

# OUTLINE

- •Rationale for a Road Master Plan
- •**Objectives:** Align with National Polices, Catering to the demand
- Methodology: Demand forecast & Economic analysis
- •Strategies for implementation: Technical & Financial
- System for Monitoring: Development of KPIs

# Road Network in Sri Lanka

Category	Length
National Highways (Class A & B Roads and Expressways)	12,380
Provincial Roads (Class C&D)	18,418
Local Government Roads	81,321
Other (Mahaweli & Irrigation etc)	4,000

# Length of National Road Network

	A class in km	B class in km	Total in km(Main & Trunk)	Expressways in km
Total length in Sri Lanka	4,215	7,995	12,210	170
Western Province				
COLOMBO	166	261	426	34
GAMPAHA	128	622	751	35
KALUTARA	80	341	421	29
TOTAL in WP	374	1,224	1,598	98

# RATIONALE FOR THE NRMP

#### **Current Status**

Increasing traffic volumes and traffic mix

Low travel speeds, severe traffic congestions, and increased accident rates

• Capacity of trunk roads

Need of a High Mobility Network to augment the network

• Uncontrolled roadside development

Poor law enforcement, Lack of monitoring

# Population Density - 2016

#### Average Population Density of Sri Lanka - 331

Province	Population Density (Persons per Sq.km)
Western	1,652
Central	472
Southern	470
Northern	131
Eastern	170
North Western	323
North Central	133
Uva	156
Sabaragamuwa	100

#### Vehicle Population 2016 - Sri Lanka



Source: - Central Bank of Sri Lanka





#### Completed & Ongoing Road Projects

# **RATIONALE FOR THE NRMP**

CONT'D

#### For the Future

#### Safety of Road Users

It has become a major concern. Victims of majority of road accident fatalities and casualties are bicyclists, motorcyclists, and pedestrians

• Public Transport (PT) Requirements Provision of infrastructure facilities to enhance PT

#### Return on Investment

A large sum of public fund has been invested in the development of major part of network and systematic maintenance is required to ensure **return on investment** 

# RATIONALE FOR THE NRMP

#### CONT'D

#### **Urbanization**

#### Evolved

Unfettered urbanization has led to undesirable outcomes, reflected in ribbon-type urban expansions, population concentration etc.

#### Planned

Government strategy to accord priority to the development of urban growth centers with adequate capacity and economic opportunities to absorb growing urban population (Example: Megapolis Development Plan)

**Policy instruments:** Transport Policy, Land use Policy, Fiscal Policy and Tax Regime, Legal Framework

#### **Vehicle Population in Western Province - 2013**



Source: - Central Bank of Sri Lanka



#### Vehicle Population 2013 - CMC Boundary



Metropolitan Region and Suburbs (CoMTrans)

# **OBJECTIVES OF THE NRMP**

• Promote economic development of the country Considering the immediate and future socio-economic development plans and policies of the Government

- Facilitate mobility, reduce travel times and costs, and improve accessibility
- Meet current and expected future transport needs and ensure efficient utilization of assets and investments
- Build cost effective infrastructure elements with improved safety for the people

# OBJECTIVES OF THE NRMP CONT'D

- •Balance between the maintenance and rehabilitation of existing assets and adding capacity through widening, improving, and construction of missing links
- Promote institutional development, capacity enhancement of human resource engaged in road network administration
- Ensure protection of the environment , safeguard of social and cultural values
- Develop the local road construction industry

# Expressway Network in Sri Lanka



# **Expressways within Western Province**



# Outer Circular Highway (OCH)



The project is being implemented on 3 sections

The third section from Kadawatha to Kerawalapitiya has a length of 9.2 km (elevated length 5.3 km).

Second section Kaduwela to Kadawatha

Has a length of **8.9** km (4.2km Elevated).

Construction completed for the first section from Kottawa to Kaduwela of **11** km. (3.2 km elevated) with funding assistance from JICA.

# **OCH Project**



**Elevated Section** 

# OCH



<u>Kottawa IC</u>

Road Development Recognised Under Megapolis Transport Plan

### Future Road Development Plans within Western Region Megapolis

- 1. OCH Phase III
- 2. Marine Drive Extension
- 3. Baseline Extension
- 4. Road Development for Port City
- 5. New Bridge Construction Project Over Kelani River
- 6. Elevated Highway Project



#### Expressway Connectivity Improvement Plan

Road Name	From	From (km)	То	To (km)	Length (km)
Ambatale Jn - CINEC (Ambatale to Salaml Uyana Jn)	Ambatale Jn	0.00	Salaml Uyana Jn	1.89	1.89
Japan Friendship Road	Pelawatta access road jn	0.00	Kumbulawala jn	2.08	2.08
Nayapamulla - Unanwitiya - Nagoda	Nayapamulla	0.00	Nagoda	12.07	12.07
Mampe - Kottawa	Miriswatta Jn	0.00	Pinhena Jn	6.23	6.23
Colombo - Hanwella Low Level Road	Kaduwela	13.11	Wanahagoda Jn	26.82	13.71
Veyangoda - Ruwanwella	Nittambuwa	4.00	Urapola	12.35	8.35
Colombo - Hanwella Low Level Road	Madampitiya jn	0.00	Ambatale	8.64	8.64
Aggona Jn - Koswatta Jn	Aggona Jn	0.00	Koswatta Jn	1.33	1.33
Mattegoda - Polgasovita	Mattegoda	0.00	Polgasovita	5.21	5.21
Colombo - Hanwella Low Level Road	Ambatale	8.64	Kaduwela	13.11	4.47
Hokandara - Kottawa	Vidyala jn	0.00	Makumbura	3.92	3.92
Hokandara - Thalawathugoda	Hokandara	0.00	Thalawathugoda	2.86	2.86
Galle - Baddegama	Galle	0.00	Baddegama	19.30	19.30
Madinnagoda Road	Rajagiriya Rd	0.00	Buthgamuwa Rd	2.64	2.64

Road Name	From	From (km)	То	To (km)	Length (km)
Kottawa - Malabe	Pannipitiya	0.00	Arangala jn	5.38	5.38
Maharagama - Pamunuwa - Thalapathpitiya	Maharagama	0.00	Thalapathpitiya	2.40	2.40
Kelanisiri Bridge - Angoda Jn	Kelanisiri Bridge	0.00	Angoda Jn	1.80	1.80
Negombo - Giriulla	Koppara Jn	0.00	Y Jn	2	2.00
Makola - Udupila	Makola	0.00	Udupila	8.85	8.85
Athurugiriya - Kottawa	Athurugiriya	0.00	Kottawa	5.80	5.80
Pannipitiya - Digana Jn	Pannipitiya	0.00	Digana Jn	2.10	2.10
Angoda Jn - Aggona Jn	Angoda Jn	0.00	Aggona Jn	1.49	1.49
Minuwangoda - Gampaha - Miriswatte	Minuwangoda	0.00	Miriswatte	12.20	12.20
Kottawa - Talagala	Kottawa	0.00	Pinhena Jn	0.96	0.96
Halpatota - Kurundugahahetekma	Halpatota	0.00	Kurundugahahete kma	16.49	16.49
Kahathuduwa - Jambugasmulla	Kahathuduwa	0.00	Jambugasmulla	2.81	2.81
Kadawata - Ragama - Welisara	Kadawata Bo Tree Jn	0.00	Mahabage Jn	8.05	8.05

Road Name	From	From (km)	То	To (km)	Length (km)
Negombo - Mirigama	Nugawala Jn, Negombo	0.00	Mirigama	30.57	30.57
Labuduwa - Wandurambe - Sandarawela	2.20 <sup>th</sup> km	2.20	Sandarawela	22.12	19.92
Kottawa - Batemulla	Kottawa	0.00	Batemulla	13.68	13.68
Kosgoda - Uragaha	Kosgoda	0.00	Uragaha	6.00	6.00
Ambatale Jn - CINEC	CINEC jn	0.00	Salaml Uyana Jn	2.39	2.39
Kirimetiya - Yala	Kirimetiya	0.00	Yala	17.17	17.17
Total					252.76

# **Elevated Road Network**



### APPROACH AND METHODOLOGY

This is a combination of traffic engineering (analysis, modelling etc), financial analysis, economic evaluation, and investment planning

#### Data Collection

Collection of primary data on traffic loads, volumes and flow patterns, road conditions, and vehicle fleet characteristics road construction and maintenance

Analysis & Modeling

Tools included

- (i) The Highway Design and Management software (HDM)
- (ii) System for Traffic Demand Analysis (STRADA)

### APPROACH AND METHODOLOGY Contd..

- Both tools used as predictive models. HDM employs physical and economic determinants and generates physical and monetary results, while STRADA is a technical model with physical nonmonetary outputs
- Individual investments are calculated and ranked according to their net present value calculated at a discount rate of 12%

# PLANNING STAGES

- Traffic Forecasting- Running of STRADA model to identify traffic and capacity constrained road section with the future demand.
- HDM-4 Programme Analysis; to generate a Optimized Work Programme for capacity increase requirement, rehabilitation and resurfacing
- Manual processing in MS Excel; to Finalise the Candidate List with time targets

### Strategies for Implementation

Comprehensive set of actions to establish strategies for,

- High mobility network (Expressways, Highway links)
- Existing roads
  - Maintenance
  - Rehabilitation
  - Improvement
  - Development
- New roads / Capacity additions

Task of planners to Find,

where? (those are required at what locations)

what? (Types of interventions, standards, configurations, selection of appropriate technology etc)

When? (Time targets for implementation)

# CHALLENGES TO ROAD PLANNING & IMPLEMENTATION

- No classification of roads based on a functional hierarchy
- The development of roads has been mostly reactive to emerging land use patterns and the increasing trend in motorization.
- Allocation of adequate financial resources to carryout maintenance has been lagging behind increasing needs.
- Substantial capacity expansion to cope with the growth in traffic did not occur due to many other limitations – Land acquisition cost, road geometry

### CHALLENGES .....

CONT'D

- Increasing backlog of deferred maintenance causing costly rehabilitation and reconstruction.
- Past emphasis on rehabilitation and maintenance has led to a piecemeal approach to the improvement of the network, preventing the development of a cohesive network
- There is a need for a strategic shift from the traditional project centric approach to an approach that is focused on programs and strategies inline with the development happened in other sectors
- Absence of committed economic/development plan for the country; Lack of coordination and integration among the relevant sectors
- Lack of policy instruments to govern infrastructure development and its share in National Economy. Deficiencies in procurement and approval process

# Systems for Monitoring

#### **Project Monitoring Systems**

Timely completion of projects Expenditure within budgetary allocations (minimizing variations etc)

#### **Development of Key Performance Indicators KPIs** Roughness Index (IRI)

Accident Reduction

Thank You