Global Fuel Economy Initiative

GOVERNMENT OF MAURITIUS

Working Group 5
Traffic Management Measures

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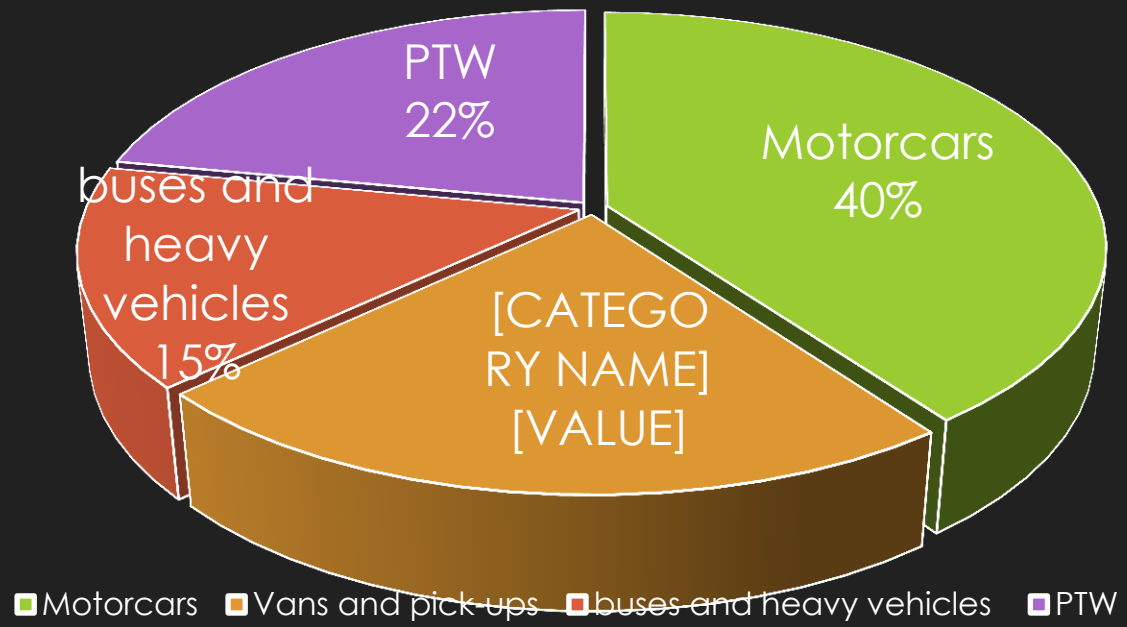
- Optimisation of traffic control system;
- Integration of land use and transport;
- Introduction of priority schemes for public transport;
- Management of parking spaces and introduction of Park and Ride;
- Introduction of road pricing;
- Introduction of non-motorised transport (NMT) in new development plans; and
- Development of a programme on eco driving and road safety.

Optimisation of traffic control system

- Increase in size of the vehicle fleet by 4.6% per year
  - As at June 2017, 519,265 vehicles were registered
- Costs due to traffic congestion – Estimated in 2013 to be @ MUR 4 Billion annually

Dorsamy & Puchooa – RDA Report 2013

PORT LOUIS Inbound traffic
> 106,000 PCU



Optimisation of traffic control system

- Mauritian motorists is estimated to spend @ 600 hours annually in road traffic congestion. ------ Source - *Dr. Gopinath Menon in 2004*
  - 30 minutes of vehicle idling entails a consumption of 1 – 3.2 litres of fuel depending on the vehicle type.
- carbon footprint of an idling vehicle in road congestion is estimated to range from 2,000 kg for a light vehicle to 8000 kg of CO2 emission for a heavy duty vehicle. *(Source MRC - National Research Group on Road Traffic 2012)*

Optimisation of traffic control system

- Measures recommended to optimise traffic flow :
  - Reviewing of Traffic signal plans at signalised junctions
  - Designing and setting up of a Coordinated Area wide traffic control system
  - Constructing Grade separated junction at important intersections
- Installation of Weigh Bridges
- Road Infrastructure development under Road Decongestion Programme and Ring Road Phase 2 as priority project

Integration of land use and transport

- The NDS (2004) for Mauritius provides a basis for physical development of Mauritius over 20 years.
- The NDS has laid the foundation for the **revision of the Outline Planning Schemes** (OPS) with a flexible and responsive pattern of land use planning
- Objectives
  - Clustering new development in the vicinity of existing settlements and identified growth zones.
  - considering the impact developments are likely to have on their surroundings and on existing transport.

Integration of land use and transport

The Ministry of Housing and Lands (MHL) has revised OPS/Local Plans for each of the five Municipalities Council Areas in Mauritius in 2015

- re-organisation of traffic centres to improve greater efficiency and use of ‘out-of- centre sites’ to accommodate bus parking areas – Short term
- review of the existing parking management system and pedestrianisation proposals for all the urban areas – Medium Term
- construction of transit oriented development, including interchange of alternative modes of transport – Long Term

Integration of land use and transport

Provision under the OPS

- Morcellement projects should encourage walking and cycling by developing networks of safe, direct and attractive routes linking residential areas, schools and other local facilities within settlement centres.

- Industrial development which generate high volumes of vehicle and containers haulage movements should be preferably located at the edge of settlement boundaries.

Integration of land use and transport

Provision under the OPS

- Clustering of industrial and commercial support service be encouraged where high level public transport accessibility networks are available at acceptable public cost, also with cycling and pedestrian facilities.
- Intra-Urban transport system to be put in place, so as to encourage use of public transport, instead of use of cars.
- Traffic and Road Safety Impact Assessment be made compulsory

Priority schemes for public transport

Main objectives of these schemes are to reduce bus travel time as compared to private cars, encourage a modal shift to public transport and to improve traffic flow.

- **complaints by bus commuters** are that the buses are mostly held up in traffic jams, uncomfortable, poorly maintained, badly driven and overcrowded during the peak hours

(Source - Jonathan Richmond - Mauritius Transport Consensus Forums 2006).

Priority schemes for public transport

Benefits

- impacts of priority lanes for public transport on air quality contributes in the reduction of air pollution in terms of running emissions, and reduction in trip end emissions

  Source – *HOV lanes -US Dept of Transport*

- bus priority schemes provides a conducive environment for a modal shift from private to public transport

Priority schemes for public transport

Number of vehicles entering daily in Port Louis 07:00 and 18:00 hours (Source: TMRSU 2016)

Vehicle type	PCU Conversion	Number of vehicles entering Port Louis	Total PCU
Cars (including taxis)	1.00	34,020	34,020
Van/Pickup	1.50	18,630	27,945
Lorries	3.00	4,150	12,450
Motorcycles	0.50	15,390	7,695
Public buses/coaches	3.00	8,010	24030
Total		80,200	106,110

Priority schemes for public transport

Vehicle occupancy survey in Port Louis 07:00 and 18:00 hours (Source: TMRSU 2016)

Station	No. of vehicles (motorcars) surveyed	Single Occupancy vehicles	Double Occupancy vehicles	Higher Occupancy vehicles
Total Vehicles surveyed	23,476	13,088	5,317	5,071
Percentage of Occupancy		55.8%	22.6%	21.6%

Priority schemes for public transport

Recommendations

- BPS be studied for the following regions :
  - from Rose Belle to Curepipe along M1; and
  - eastern, western and northern regions along certain stretches of M and A roads
- bus priority traffic signals and yellow boxes adjacent to bus Laybys be introduced
- The BPS be introduced along with an integrated ticketing system

Priority schemes for public transport

Recommendations

- bus routes be restructured and bus terminals

be relocated in line with an integrated transport system

- The BPS be operational during peak times (from 7.00 am to 10.00 a.m and 2.00 p.m to 6.00 p.m) and concurrently, a road pricing be charged at the entrance of CBD.

- Introduction of shuttle service in areas inaccessible to large buses during peak hours

Incentives to encourage public transport.

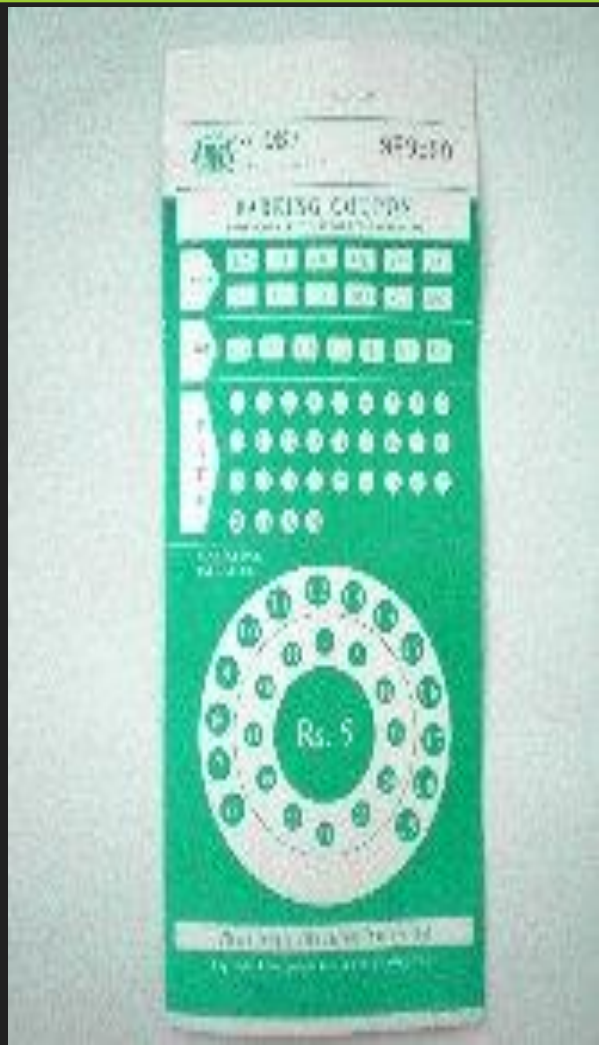
- Introduce “Smart Lines” equipped with passenger information system along major routes .
- Encourage travellers to use buses through incentives such as full day, weekly or monthly tickets at discounted price when travelling by the same bus operator.
- Make provisions in the Road Traffic Act to allow introduction of articulated and double decker buses wherever possible.
- Review the Bus Modernisation Programme to encourage purchase of semi-low floor buses with better engine type such as Euro III or higher emissions standards

Incentives to encourage public transport.

- Bypass lanes should be provided for bus use at bottlenecks, at junctions, interchanges
- Public education and/or marketing should begin before the project is implemented to gain public acceptance for the project
- Enforcement is critical for the successful operation of a BPS
- A BPS should be planned and implemented along with other accompanying measures such as Park and Ride and Road pricing

Management of parking spaces and introduction of Park and Ride

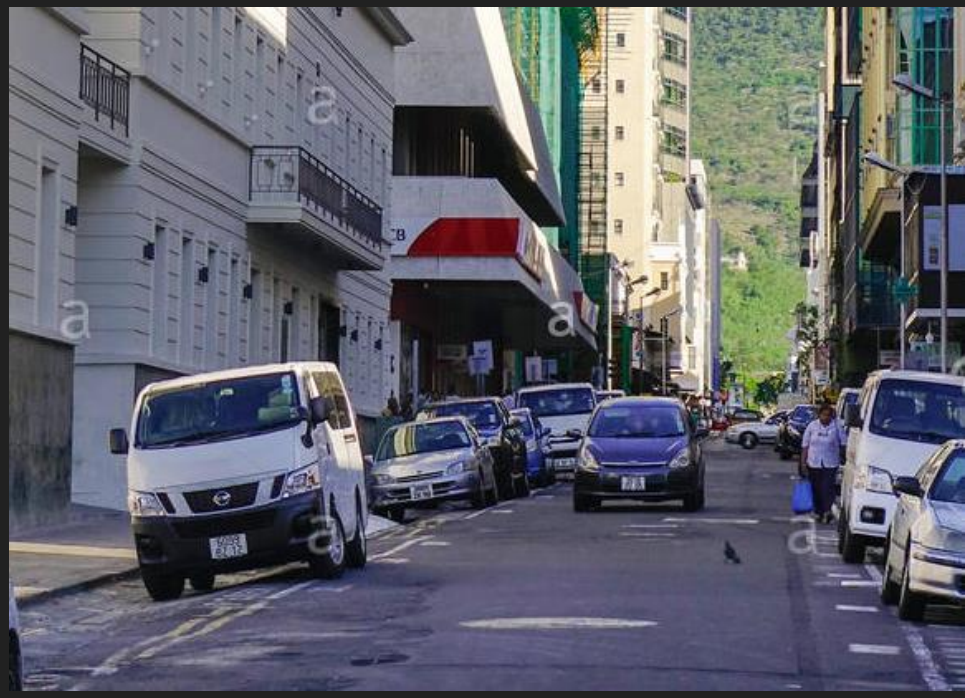
- Paid parking has been introduced in only three towns and the City of Port Louis
  - congestion also occurs beyond those regions, particularly in Vacoas and other CBD of major villages such as Goodlands, Rivière du Rempart, Flacq and Rose Belle.
  - Dedicated parking bays are provided free of charge for two wheelers



Management of parking spaces and introduction of Park and Ride

- Delivery bays are being provided in commercial zones and are operational throughout the day attracting heavy goods vehicles during peak hours

- On-street parking spaces are mostly occupied by 9.00 a.m.



Management of parking spaces and introduction of Park and Ride

Location	Paid Parking	Delivery	Disabled	Motorcycles	Reserved
Port Louis	1,051	222	34	267	402
Beau Bassin/Rose Hill	213	33	9	26	20
Curepipe	160	19	10	20	11
Q. Bornes	382	52	19	46	31
Total	1,806	326	72	359	464

Management of parking spaces and introduction of Park and Ride

- Park and Ride systems may be of different forms:
  - Peripheral Park and Ride system
  - Suburban Park and Ride system
  - Park and Ride bus/metro services system

- Exclusive-Use Park and Ride facilities
- Shared-Use Park and Ride facilities

Management of parking spaces and introduction of Park and Ride

Recommendations

- Review parking policies and actions
  - Incorporating parking spaces in traffic centres to encourage the Park and Ride system.
  - Provide parking bays and infrastructure for non-motorised vehicles free of charge.
  - Removal of on street parking from main arteries of CBDs
- Improve parking efficiency
  - A smart parking system could be contemplated to inform road users of real time potential parking spaces

Management of parking spaces and introduction of Park and Ride

Recommendations

- **Manage parking demand**
  - Parking Scheme (zoning, pricing and time limits) could be reviewed to reduce demand in the CBD so that users could opt for alternative modes
  - Local authorities should enforce the provisions and conditions of the Building and Land Use Permit.
  - Parking management to be reviewed in the Planning Policy Guidelines for urban areas and big villages

Management of parking spaces and introduction of Park and Ride

Recommendations

- **Managing parking supply**
  - Suburban park and ride facilities to be considered in the context of an integrated transport system and land use planning.
  - Peripheral Park and Ride hub be created on the outskirt of Port Louis with reduced parking fees, security for vehicles and shuttle facilities.
  - Relocating existing long-stay/commuter parkings from the main CBD towards their periphery in order to free capacity for short-stay parking.

Congestion Pricing

In 2004, the Govt Of Mauritius commissioned a study on congestion pricing *(Congestion Pricing in Port Louis by G. Menon)*.

- Congestion charging addresses Traffic issues by charging drivers for operating vehicles at highly congested times to reduce travel times, improve air quality and decrease greenhouse gas emissions.

- **Congestion reductions of 13 to 30%, greenhouse gas reductions of 15 to 20%** and air pollution have been achieved from implementing Road pricing in London, Singapore and Stockholm, and similar benefits would be expected

Congestion Pricing

- **Multiple technologies have been proven in congestion charging**

- These include
  - camera-based recognition,
  - radio-frequency identification,
  - dedicated short-range communications, and
  - global positioning satellite systems combined with cellular radio communications.

Congestion Pricing

- **Initial public acceptance can be difficult to secure, and implementation of** congestion charging can require time to build consensus.
- **Upfront investments in public transit may be necessary to absorb increased** ridership and to provide affordable mobility for low-income populations
- **Net revenue generated by congestion charging can be used for transit** enhancements and other benefits.

Congestion Pricing

- Choices for drivers:
  - to pay the fee and enjoy good traffic conditions;
  - to change the time of their trip to avoid paying;
  - to group trips to the city to get maximum benefit;
  - to change their destination;
  - to abandon trip for that day;
  - to use an alternative route; and
  - to change the mode of travel– use bus, car pools or park and ride.

Congestion Pricing

Recommendations

- To support the operation of the Metro Express, the WG recommends the setting up of an Electronic Pricing System (ERP) at main entrances of the CBD of major towns and in Port Louis through a cordon control system.

- It is proposed that consultancy services be outsourced from experienced experts to further advise on the ERP project

Introduction of non-motorised transport (NMT) in new development plans

- Non-motorised transport (NMT), known as active human powered transportation includes walking, cycling and variants such as small-wheeled mobility equipment.

- Cycling is presently considered to be risky as the density of vehicles circulating within the road network is high and there is no margin of safety for cyclists.

Introduction of non-motorised transport (NMT) in new development plans

- Direct cycle routes between housing areas and major destinations .
- Convenient cycle infrastructure means avoiding stop-start travel caused by obstructions, lack of priority. Good cycle parking completes the journey.
- Speed of travel on a bicycle can be quicker than by car through an urban area if cycling infrastructure is integrated in newly-designed streets.

Introduction of non-motorised transport (NMT) in new development plans

Cycling, walking and driving need three different networks with specific design requirements and connectivity for road safety

Introduction of non-motorised transport (NMT) in new development plans

- **Security:** It must offer the facility to lock the frame of the bike securely to an fixed structure, namely a cycle parking stand.

- **Sufficient space:** There must be sufficient space for cyclists to access the cycle parking easily.

Introduction of non-motorised transport (NMT) in new development plans

Recommendations

- Promotion of pedestrianised roads, cycle lanes in towns and residential areas.
- Promotion of the use non-motorised transportation system with
  - Street furniture and design features for safe mobility of pedestrians and cyclists
  - better connectivity with special non-motorised shortcuts
- Planning NMT in upcoming developments and designing for a 'Three Network' (cycling-walking-driving) framework.

Eco driving and Road Safety

- Eco driving techniques includes the following:
  - Choice of energy efficient vehicle.
  - Driving at low RPM and correct use of the gear box.
  - Avoiding unnecessary accelerations and harsh braking.
  - Removal of unnecessary extra loads from the vehicle.
  - Regular checking of tyre pressure.
  - Regular checks of vehicle consumption and maintenance of the vehicle.
  - Moderate use of the air conditioner.

Eco driving and Road Safety

Recommendations

- There is a need to conduct a "Train-the-Trainer Programme" for driving instructors so that they can impart the best practices of eco driving to the learners.

- **Awareness raising and setting up an effective communication strategy on eco driving.**

- Encouraging private and public sector organizations to improve fuel efficiency of heavy duty vehicles
  - Implementation of an efficient maintenance programme
  - Provide training to drivers and implementing a proper monitoring and reporting system
  - consider a rewarding scheme for best performing drivers
  - Identify the worst drivers for further coaching

Thank you
for your attention