

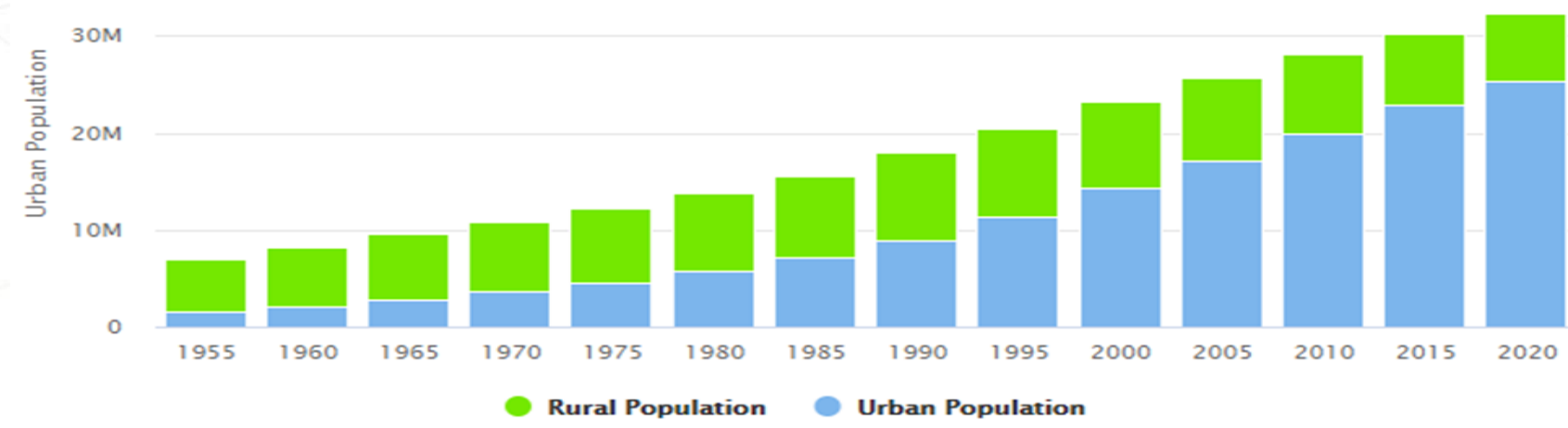
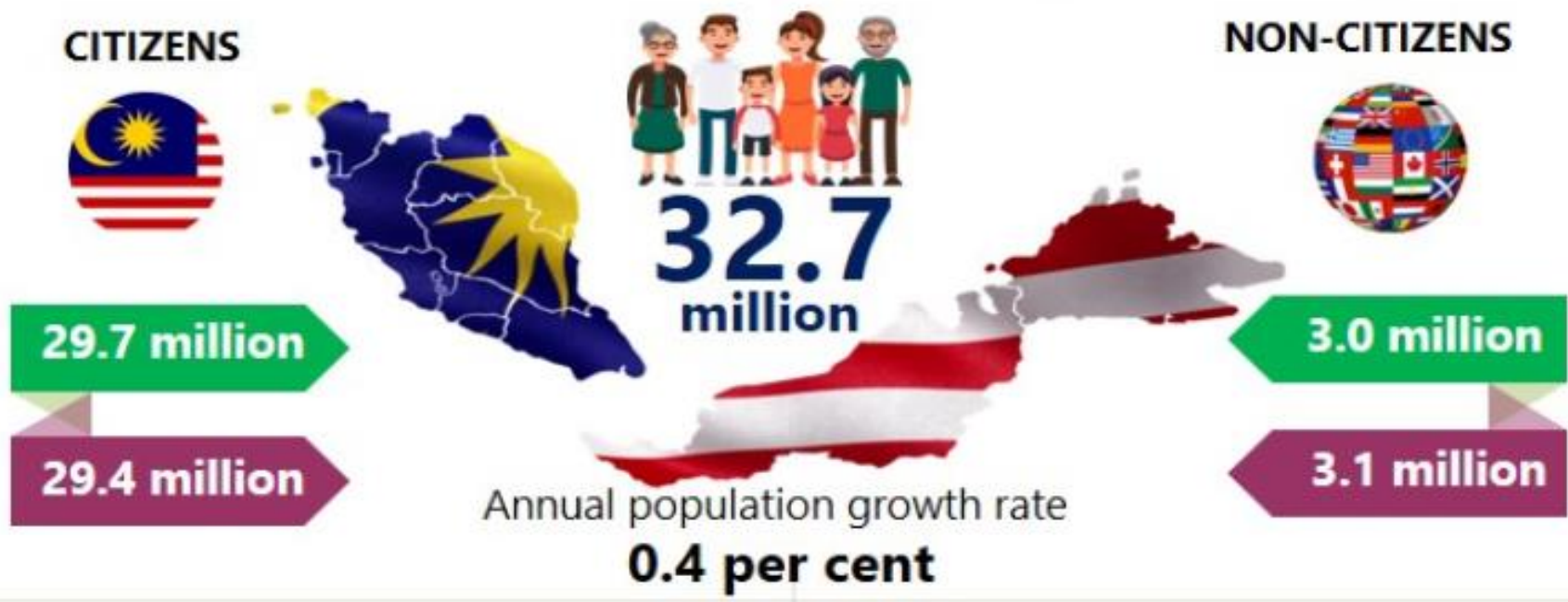
Low Carbon Mobility Blueprint

Bandar Rendah Karbon

22nd September 2020

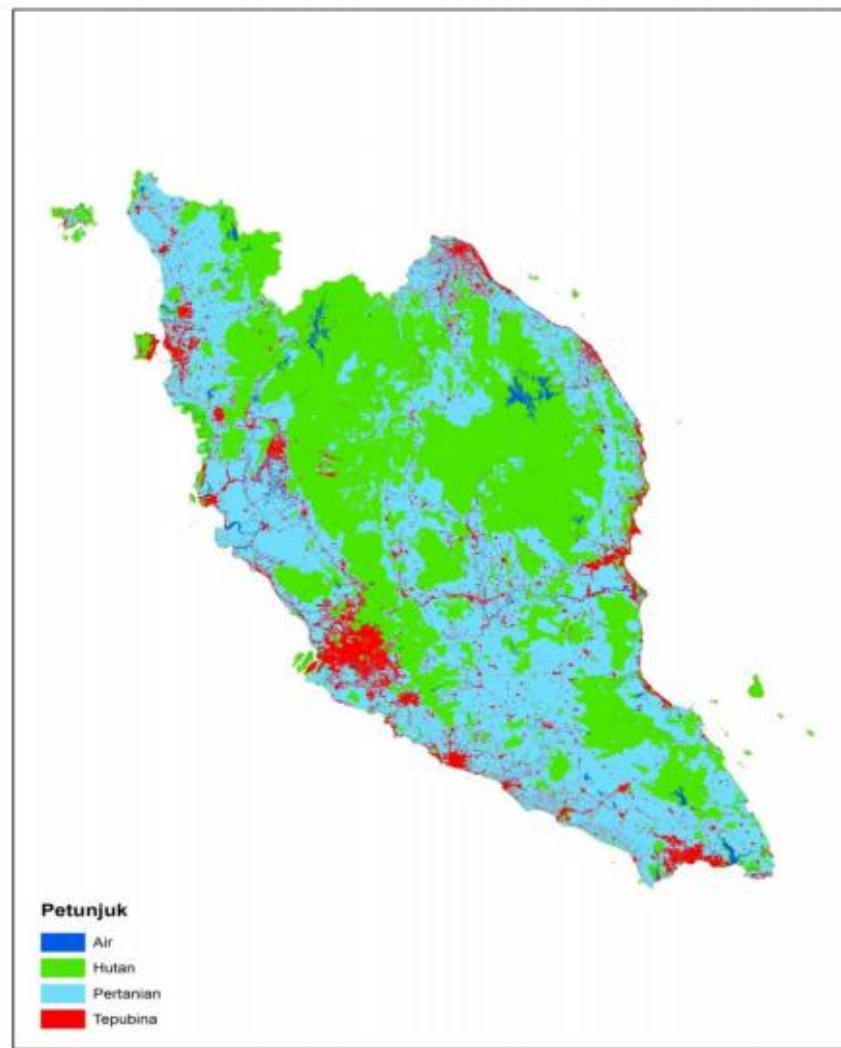


CURRENT POPULATION ESTIMATES, MALAYSIA, 2020



**41.5 mil
@2040**

**85%
@2040**

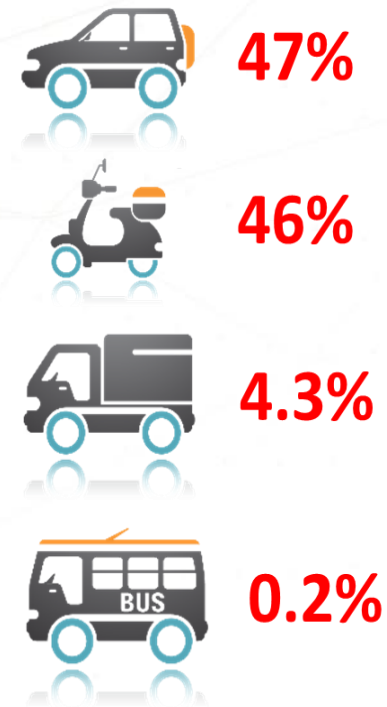


Consideration for Low Carbon Mobility Blueprint

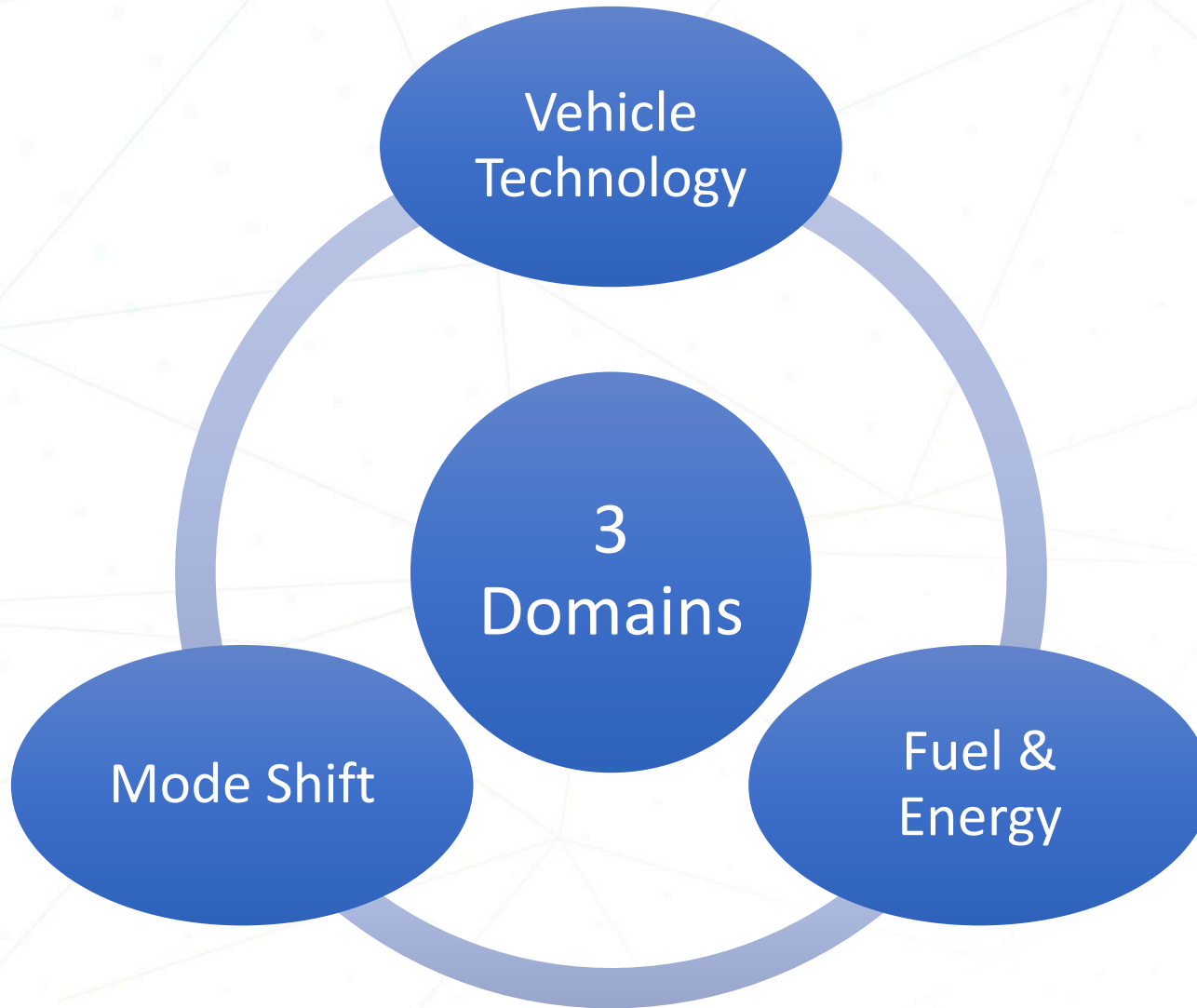
Mobility in Malaysia consumes 37% of final energy consumption, contributes to 29% of greenhouse gas emissions and costs RM 89.9 billion in annual fuel consumption expenditure

Malaysia **car ownership level** is the third highest in the world at 93% per household. Malaysia registered **28.2 million vehicles** over **32.6 million population** at the end-2019.

Volume Share, 2017
Based on JPJ registration numbers



20% Public Transport & 2% Rail Freight Modal Share



Avoid



Shift

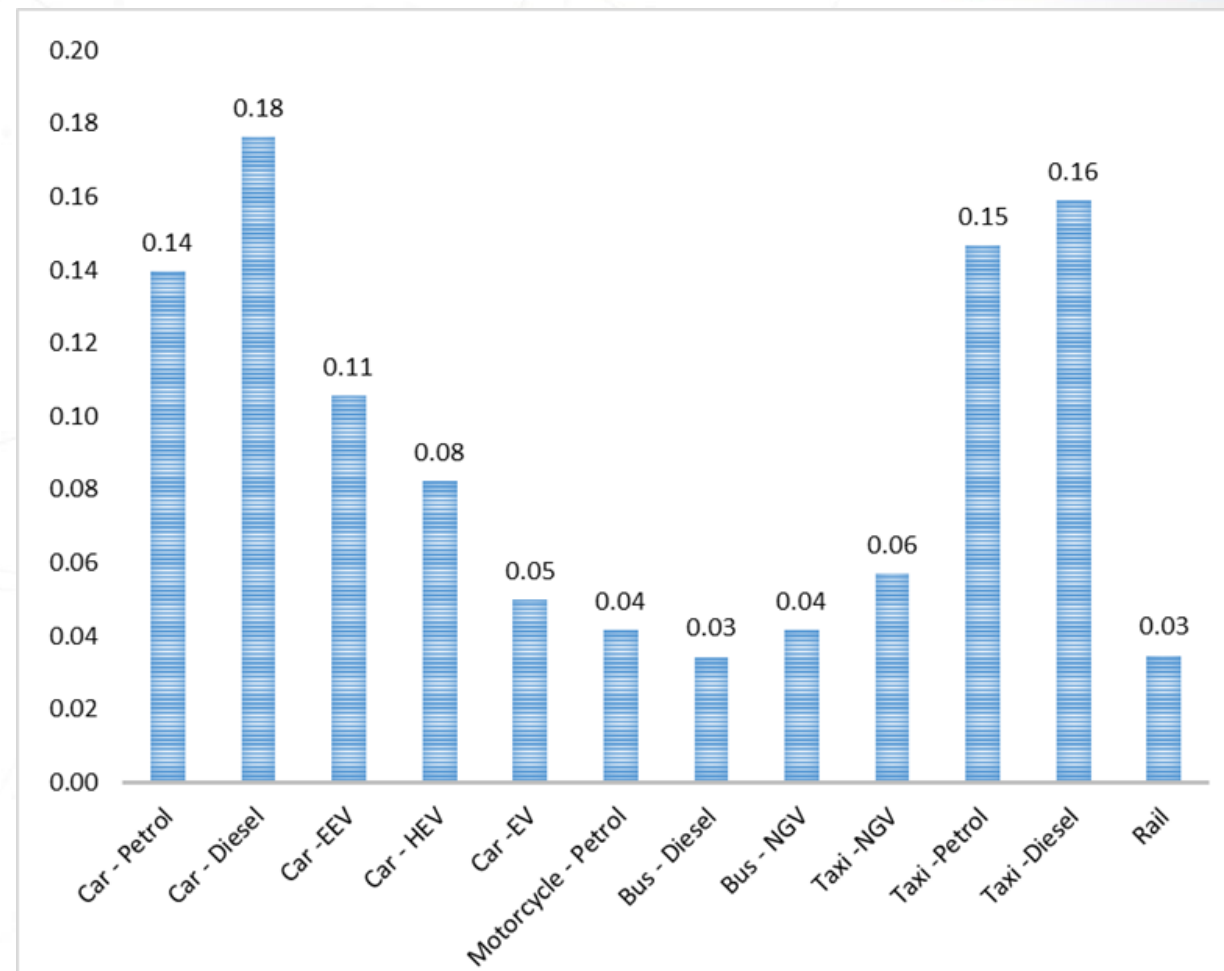


Improve

Finding on energy efficiency and cost

Transport Mode	Energy Type	Passenger Kilometer/MJ
Taxi	Petrol	0.49
Car	Petrol	0.51
Car – (EEV)	Petrol	0.68
Car – HEVs	Petrol	0.87
Taxi	30% Petrol, 70% CNG	1.04
Motorcycle	Petrol	1.73
Bus	Diesel (B7)	1.76
Car - EVs	Electricity	2.20
Bus	CNG	2.72
Rail	Electricity	3.19
Bus (full load)1	Diesel (B7)	3.82
Bus (full load)1	CNG	5.91
Bus	Electricity	4.26
Motorcycle	Electricity	4.26
Rail (full load)2	Electricity	8.93
Bus (full load)1	Electricity	11.10

Shift to more efficient & lower emission mode



VEHICLE ENERGY EFFICIENCY



ELECTRIC MOBILITY



4 FOCUS AREA OF LCMB

ALTERNATIVE FUEL ADOPTION

Biodiesel

250

200

100

ml



PUBLIC TRANSPORT MODAL SHARE





**Electric Car
Adoption**



**GHG Reduction
via
Electric Mobility**



**Electric Bus
Adoption**



**Electric Motorcycle
Adoption**



GHG Reduction via

Alternative Fuel

Biogas



**Agricultural waste,
municipal waste,
sewage and
organic waste**

Biofuel



**Biomass
(e.g. Crude
Palm Oil)**

Bio-CNG



**Residue and
waste material**

Hydrogen



**Renewable Energy
(Hydropower, Solar
and Biogas)**



**Shifting Freight
(Road-to-Rail)**



**GHG Reduction
via
Public Transport
Modal Share**



Public Transport

Land-use Development

Transit-Oriented Development & Low Carbon City Framework



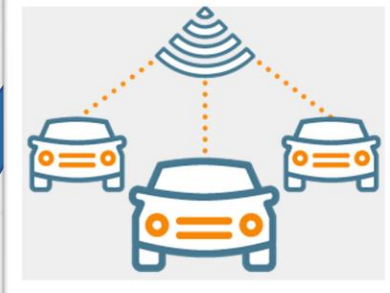
The TOD concept can help to reshape the quality and form of urban growth through improving accessibility, mobility, pedestrian friendliness, and increasing sustainability



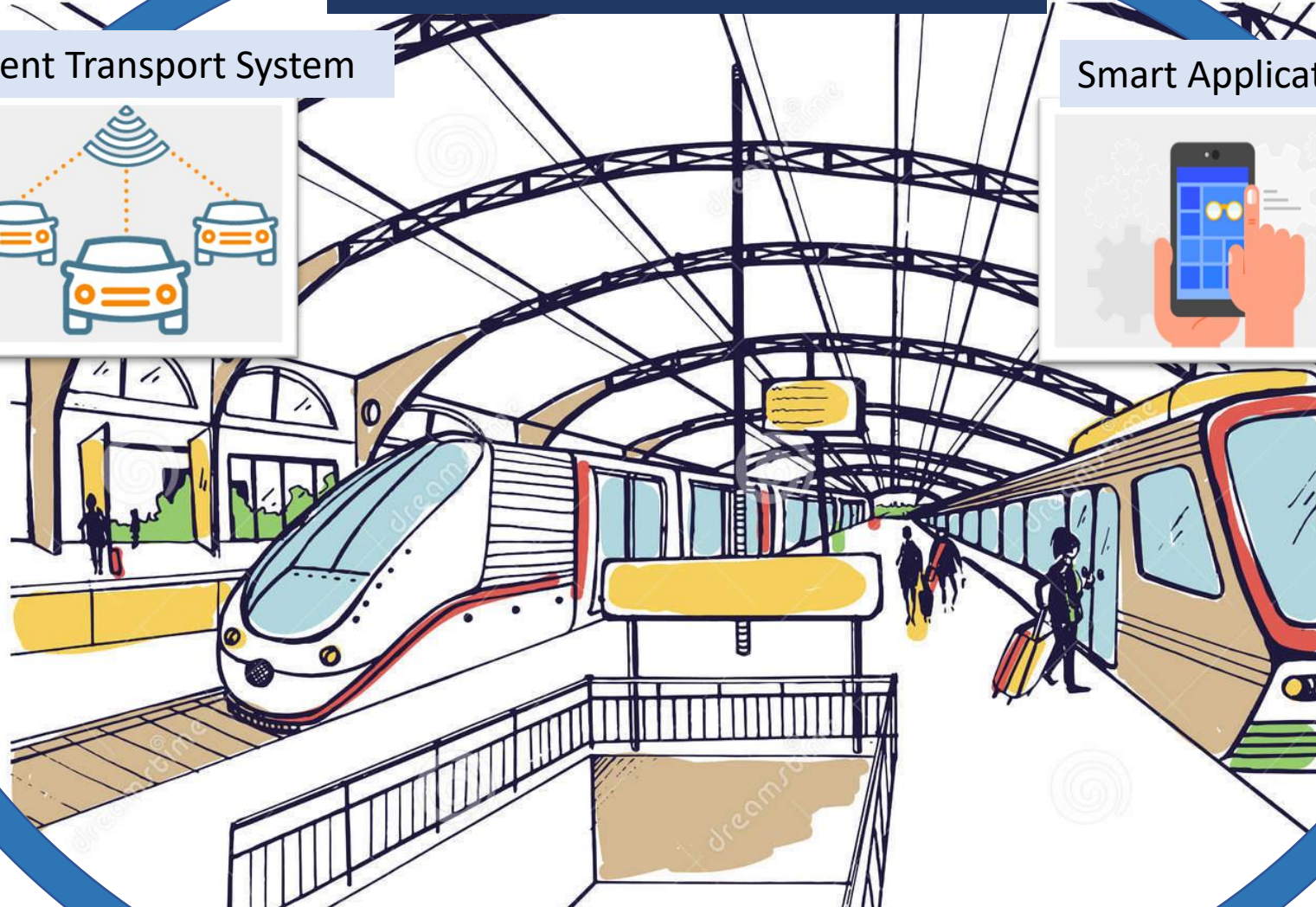
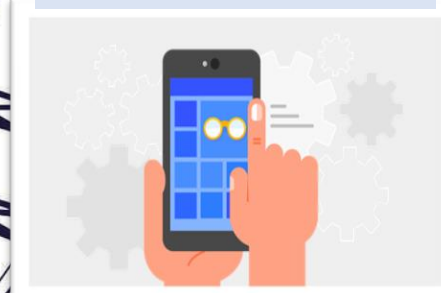
A dense network of walking and cycling routes improve access to goods, services and public transport.

PUBLIC TRANSPORT

Intelligent Transport System



Smart Application



Frequent, fast, and reliable high capacity rapid transit reduces dependence on private vehicles.

TRAFFIC FLOW



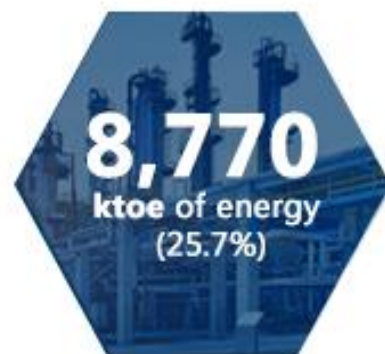
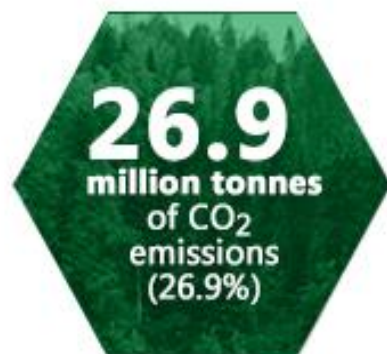
Specific bus route, congestion charges, & reduction in the overall supply of parking create incentives for the use of public transport

Shifting Freight Mode from Road to Rail



Cargo freight is transported 98% by road and only 2% by rail.
By LCMB, road-to-rail freight mode is targeted to increase to 5%(2030).

LCMB Potential Reduction



2015 2020 2025 2030

LCMB Focus Area



Vehicle Energy
Efficiency



Electric Mobility



Alternative Fuel
Adoption

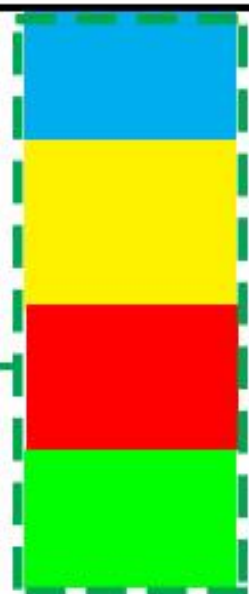


Public Transport
Modal Share

LCMB ROADMAP



LCMB



Thank You

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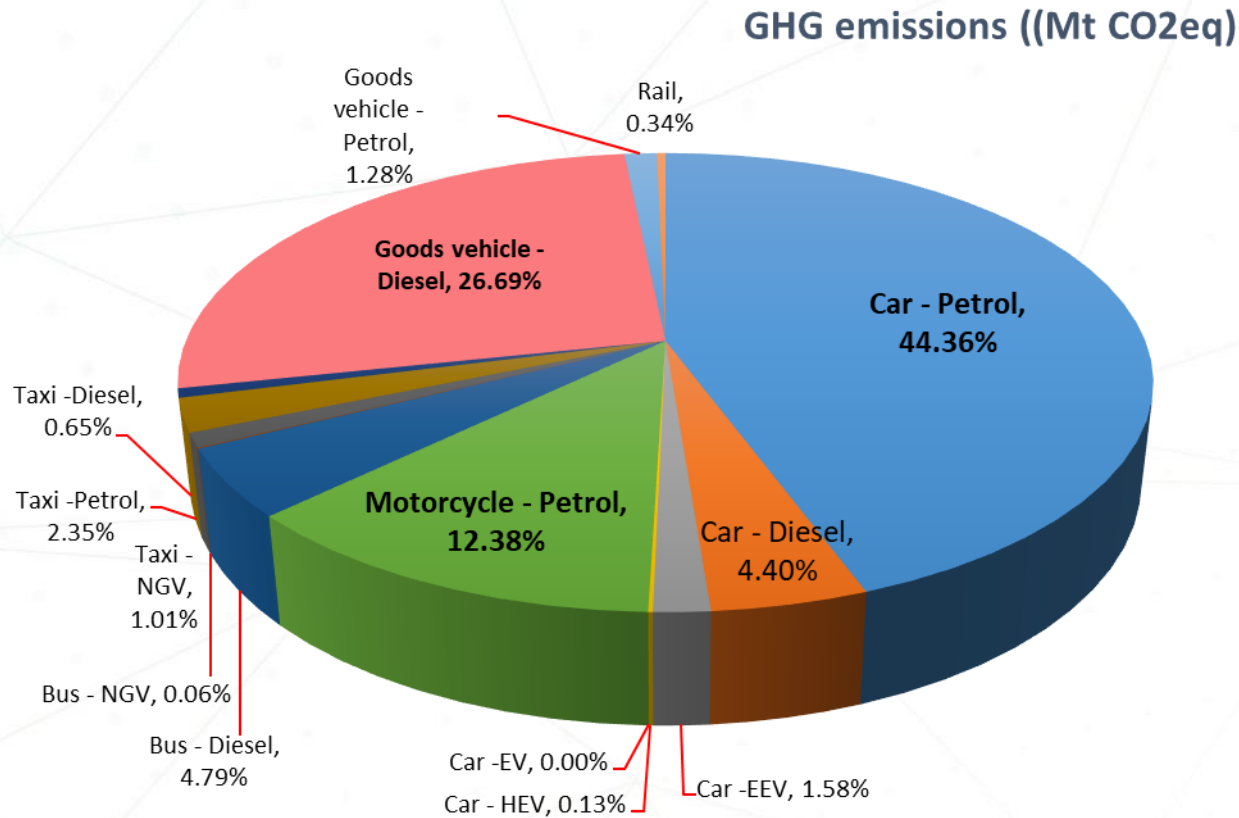
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- ❑ The most carbon intensive mode is private car, ranging from 82 to 148 gCO₂eq/passenger-km.
- ❑ Public transport such as rail and buses produce substantially lower values from the range of 10 to 67 gCO₂eq/passenger-km depending on load.
- ❑ Our number of buses per 100,000 population in GKL is only 19, whereas the World Bank Urban baseline is 50. Thus, for a population of 8 million there should be at least 4,000 buses (instead of now 1,567 buses).
- ❑ Rail freight on average use only 15% as much energy as a freight truck per tonne-km.
- ❑ if the driving speed improves from 10 km/h to 60 km/h, fuel efficiency will be from 0.22 liters/km to 0.06 liters/km, and CO₂ emissions will be reduced from 600 gCO₂/km to 100 gCO₂/km. Situation will be worse on stand still/idling and stop-go condition.