सत्यमेव जयते
GOVERNMENT OF KERALA

आज़ादी का अमृत महोत्सव

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF HOUSING AND URBAN AFFAIRS

स्वच्छ भारत
एक कदम स्वच्छता की ओर

SILVERLINE SEMI HIGH SPEED RAIL

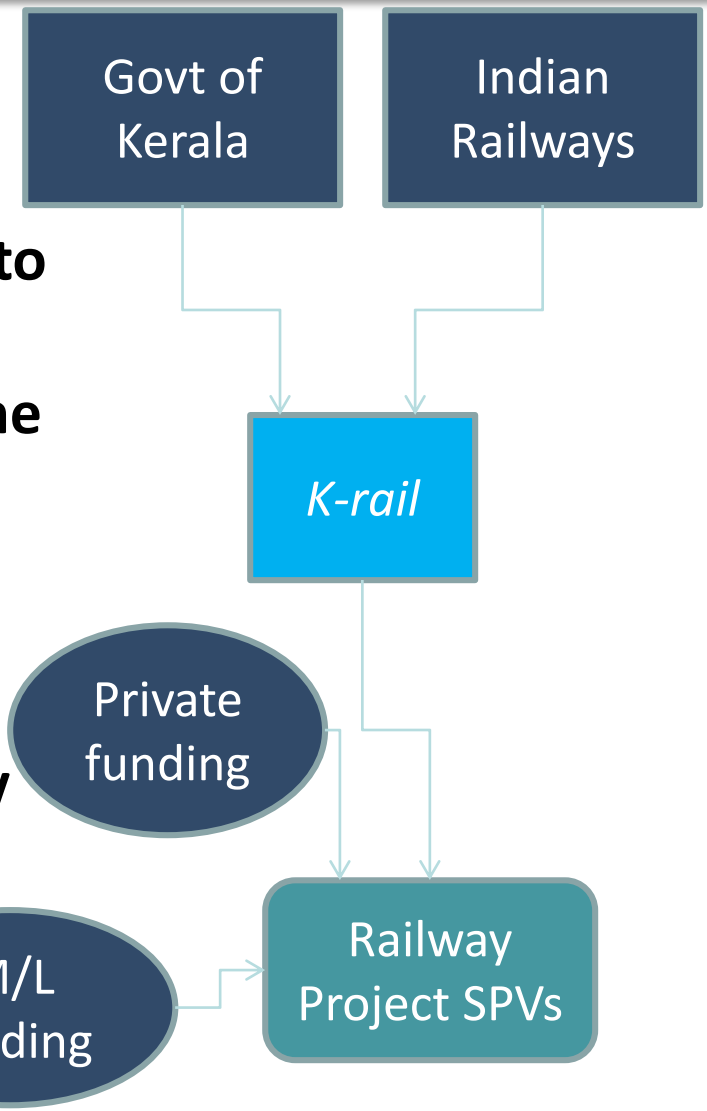
MULTIMODAL INTEGRATION TRANSPORT MODEL FOR KERALA

***"To realise the dream of modern India, to increase the ease of living index of common people and to create lasting progress, next generation infrastructure is an absolute necessity"*- Hon'ble Prime Minister**

15th Urban Mobility India Conference & Expo2022

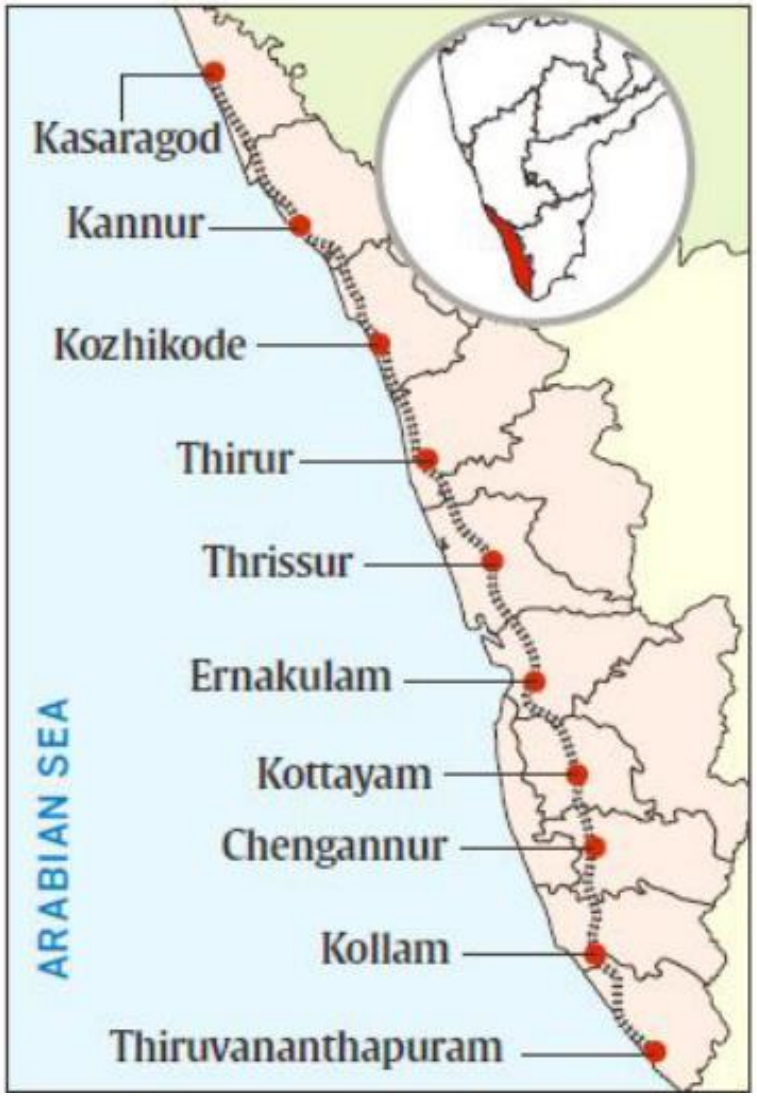
KRDCL

- JV Company – Ministry of Railways & Government of Kerala (49:51)
- Formed as per the Central Cabinet decision to involve state governments to augment and improve upon the railway infrastructure in the state
- Similar companies formed in 8 other states and projects taken up
- Another 10 states signed MoU with Ministry of Railways to form JV companies



SILVERLINE

- *530km in 4 hours*
- *Maximum speed 200kmph*
- *11 stations*
- *Ridership of 80,000 from maiden year*
- *12,872 vehicles off the road during first year*
- *Electric vehicles for first and last mile connectivity*
- *37 services each day*
- *1 service every 20 minutes during peak hours*
- *Self Service Ticket Kiosks*
- *Reduction in carbon footprint (5.95 lakh tonne by 2052)*
- *Make in India compliant*



SilverLine Stations

SILVERLINE HIGHLIGHTS

- ***ETCS Level 2 Signalling System***
- ***Automatic Train Operation***
- ***Dedicated Standard Gauge Lines***
- ***Multimodal integration***
- ***First & last mile e-connectivity***

Train Ambulance

Special Toilets for PRM

Renewable powered

External Display

Infotainment System

RORO Services (480 trucks per day)

CCTV

Reserved Seats

Green stations & buildings

Ergonomic Interiors

SILVERLINE RIDERSHIP PROJECTIONS

Candidate traffic as per K-Rail traffic survey considering travellers travelling above 150 km in the route

Car & Taxi 1,58,271 people

Buses - 88,442 people

Train - 91,975 people

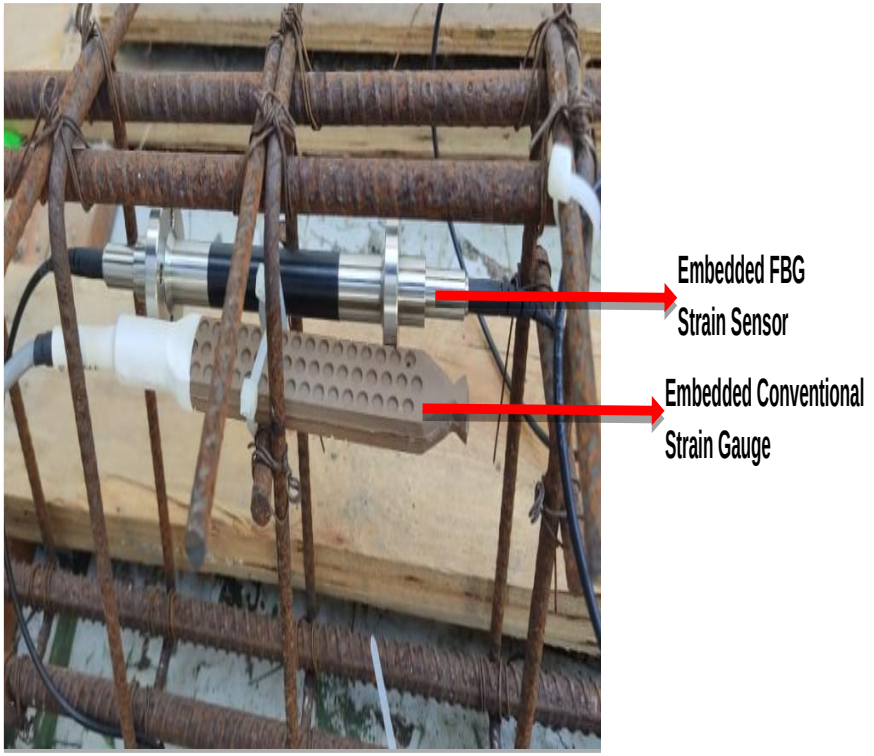
•The daily ridership was observed to be varying between approx. 79,934 daily trips in realistic scenario to 1,14,000 trips in optimistic scenario in 2025-26.

•Study by ICRA for DMRC done in 2016 also gave a ridership of 80,942 per day (By the year 2020 and 1,21,462 by 2028) with a fare of Rs. 5/Km.

YEAR	REALISTIC SCENARIO	OPTIMISTIC SCENARIO
2025-26	79934	114764
2029-30	94672	139164
2040-41	132944	216498
2051-52	158946	271080

STRUCTURAL HEALTH MONITORING USING FBG SENSORS

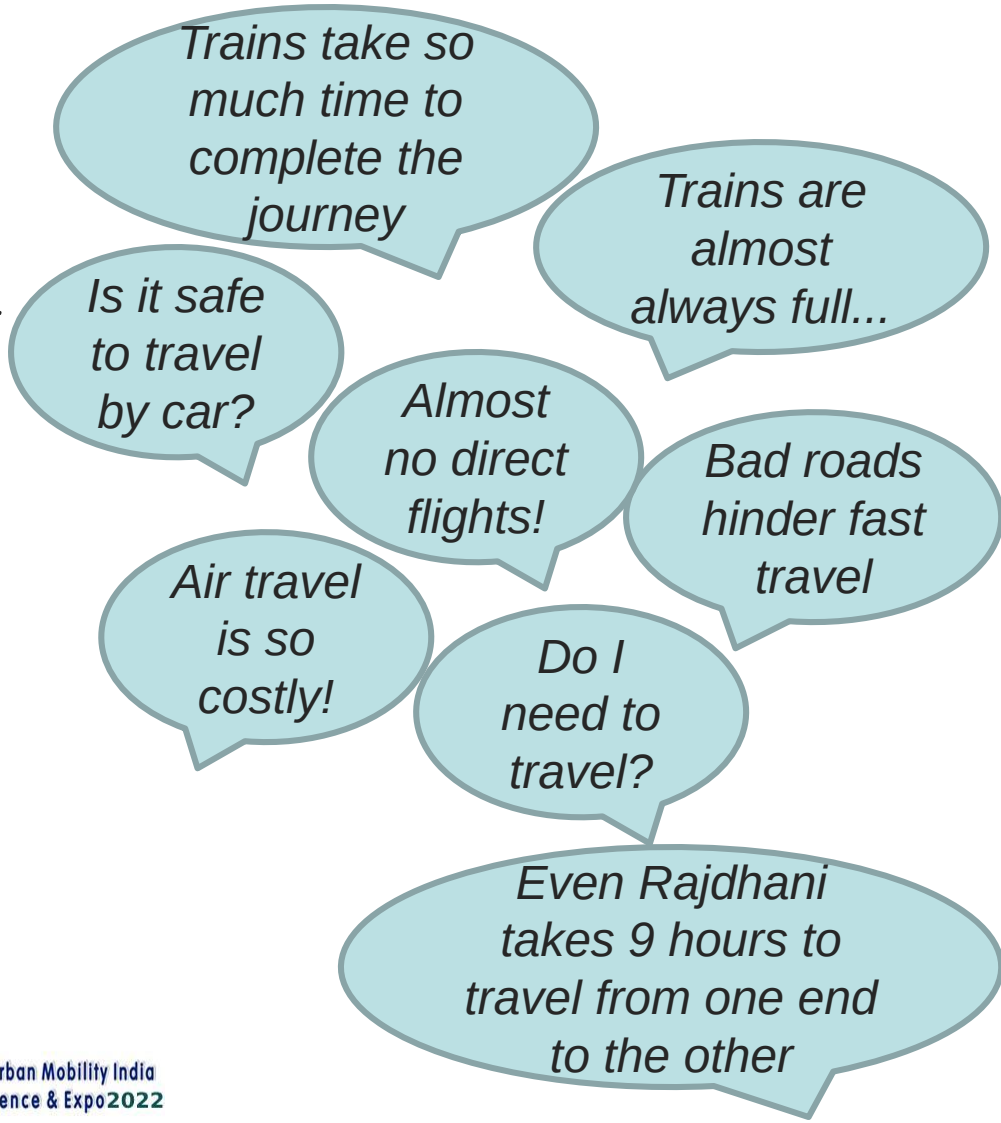
- *Fiber Brag Grading technology*
- *Continuous real time monitoring of railway structures*
- *Eliminates manual inspection system*
- *Easy integration of fiber optic sensors into the structural system*
- *Fiber optic sensors work both as sensing elements and as the signal transmission system*
- *Effective warning system through SMS alerts*
- *Developed by K-rail in collaboration with IISc and L2M Rail*



Conventional Strain Gauge and FBG strain sensor

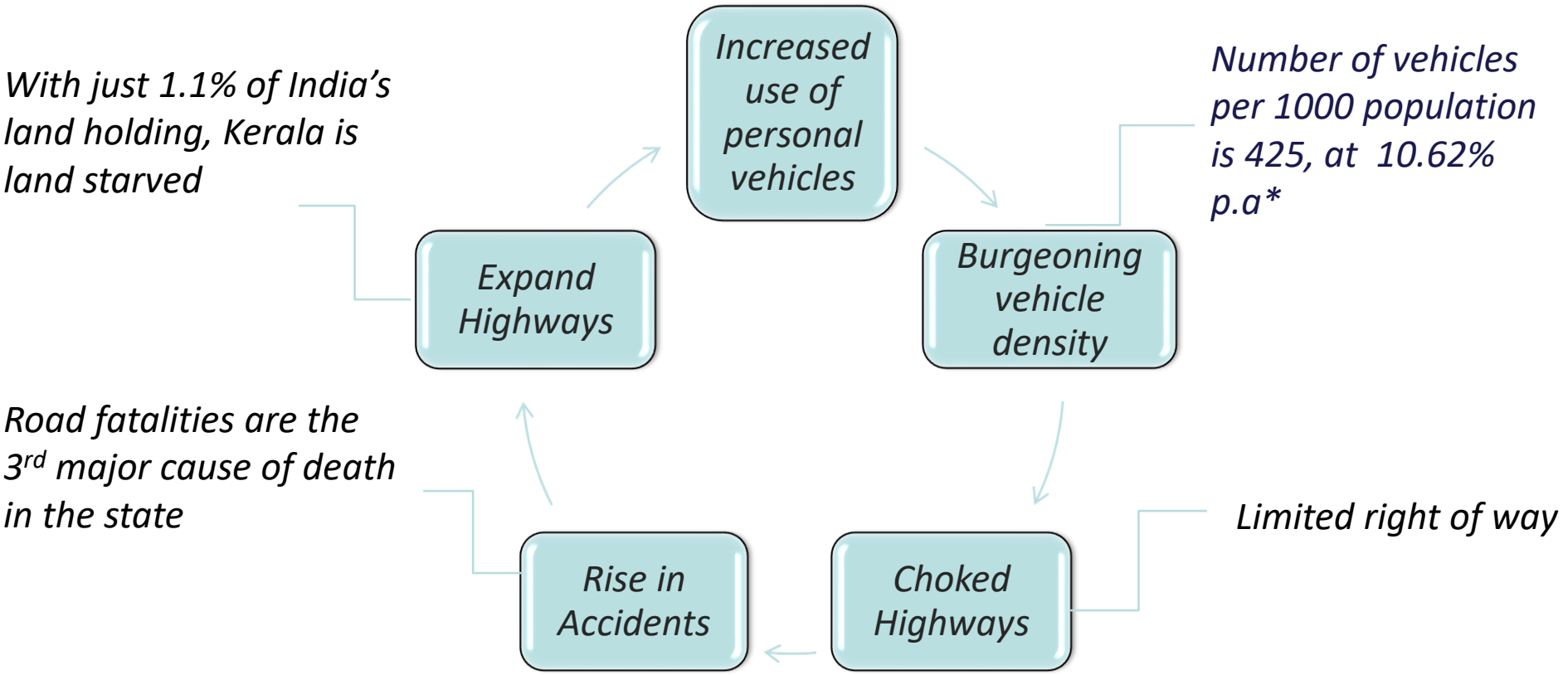
THE TRAVEL TRILEMMA

- *Rail / road is 30-40% slower in Kerala than its counterparts*
- *A road journey takes 10-12 hours*
- *Trains have speed restrictions of 15-20kmph on an average due to 626 curves*
- *An increase in speed is only possible if these curves are straightened*
- *Not viable at all to straighten all the curves as most of it passes through high population areas*
- *10 to 20 years time to complete*
- *Very high capital cost to carry out the process*
- *Existing train services need to be suspended*



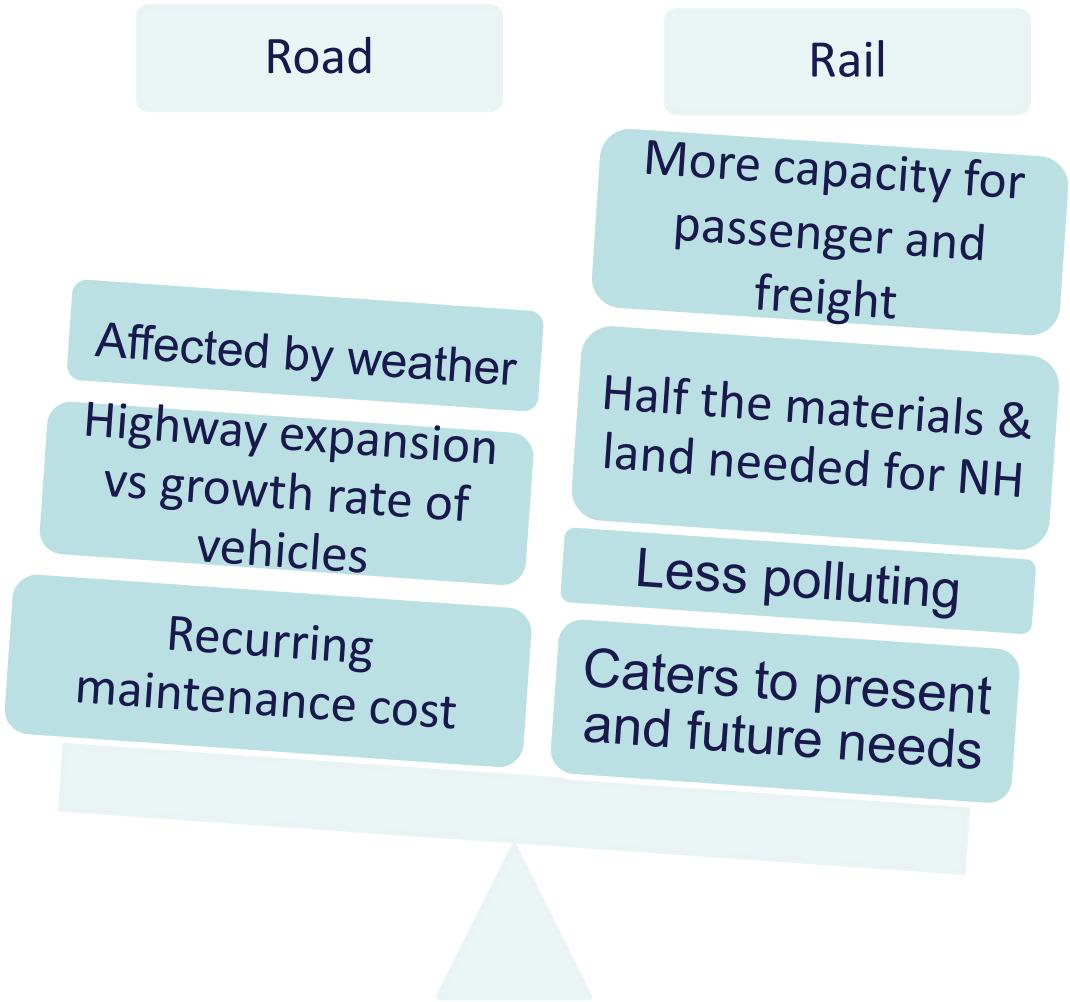
VICIOUS CYCLE OF VEHICLES ON ROAD

The state incurs an additional financial burden of Rs 1000 crore each year due to accidents



BALANCING BENEFITS

Shift to rail to help India reduce CO2 emissions by 70% by 2050 (RM FOR NTI Aayog)



- *Rails help achieve climate neutrality as they consume 6 times less energy, emits 9 times less CO2 and PM than road.*
- *Rail sector emits just 1% of the total CO2 emission from the transport sector (WEF).*

* Data by World Development Indicators

SCENARIO WORLDWIDE

London

- ***Rail, bus, ferry***
- ***Multimodal stations for seamless interchange of passengers***

Singapore

- ***International leader in integrated multimodal transport***
- ***World's first area licensing***
- ***Vehicle quota system***
- ***Electronic Road Pricing***

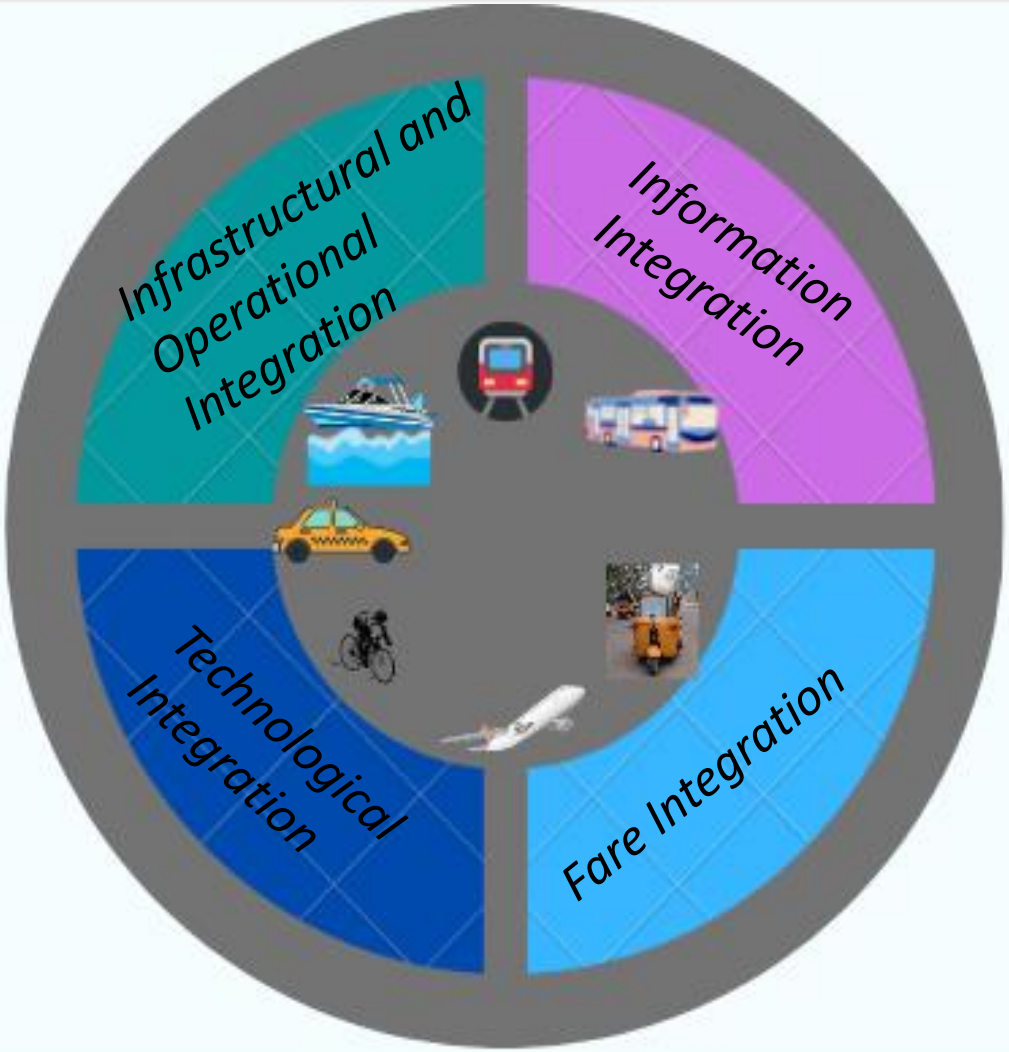
Hong Kong

- ***High public transit mode share (90%)***
- ***Low personal vehicle ownership (50 vehicles per 1000 population)***

SILVERLINE FOR MULTIMODAL INTEGRATION

- *Integrated Metro, Water Metro, and SilverLine station at Ernakulam and Kochi Airport station*
- *Silverline stations in proximity to Railway stations of Thiruvananthapuram, Thrissur, Kozhikode, Kannur*
- *Light metros of Thiruvananthapuram and Kasaragod to be linked with SilverLine stations*
- *Electric vehicles for first and last mile connectivity*
- *Parking space for 3000 cars at all important stations*
- *EV charging points at SilverLine stations to encourage adoption of e-vehicles*
- *Exploring scope of connecting cities in Kerala through waterway connectivity (Parvathy Puthanar)*

MULTIMODAL TRANSPORT NETWORK FOR KERALA



- *Seamless movement of passengers, goods, services*
- *Different modes of public transport complementing each other*
- *People centric model of transport to encourage shift from personal to public modes of conveyance*
- *Mobile apps to provide real time information*
- *Smart cards to assist in intermodal travel*
- *Special facilities for PRM*

Thank You!

SOON, KERALA WILL CHANGE THE WAY IT TRAVELS.
FUTURE IS FASTER