Metro Rail - Redefining the Future of Sustainable Mobility

L&T Metro Rail Hyderabad

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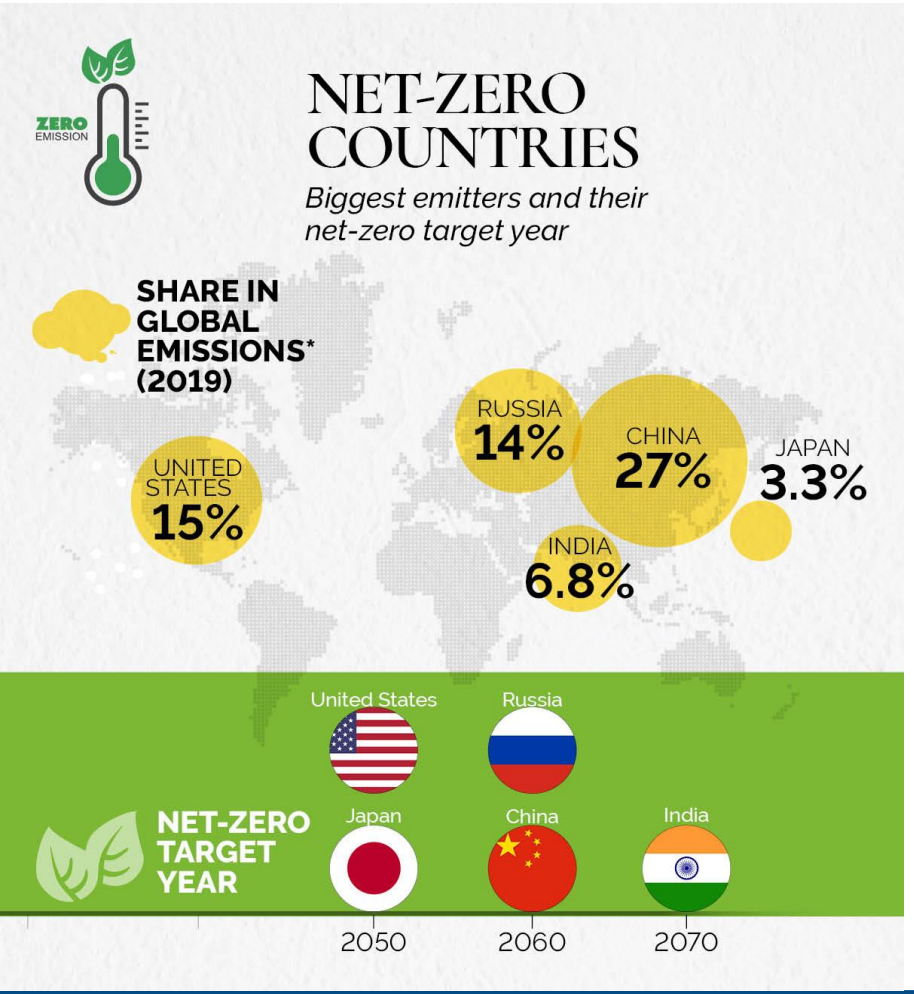
Introduction

- India’s Commitment for Climate
- Present Status
- Energy in Mobility sector
- Urban mobility
- Why Metro rail
- Metro network in India
- Green Financing
- About Hyderabad Metro
- Sustainability initiatives and Impact

India & Climate Commitment



1. August 2022 updated NDC Submitted
2. increase low-carbon power capacity to 500 gigawatts (GW) by 2030
3. meet 50 per cent of energy requirements from renewable energy by 2030

https://www.outlookindia.com/national/india-submits-updated-ndc-to-unfccc-says-it-s-a-step-towards-net-zero-by-2070-news-220117

Where Does India Stand?

- Accounts for about 18% of world population
- 6% of global energy requirement
- Per capita energy is 6.5K Kwh much lower than 20K Kwh of world average
- Still India is 4th largest emitter of greenhouse gases.
- Energy requirements are rapidly growing

*(MoEF. India: greenhouse gas emissions 2007, Indian Network for Climate Change Assessment (INCCA), Ministry of Environment and Forests (MoEF). Government of India, New Delhi. Accessed 13 Sept 2013, 2010).

Growing Energy Requirement

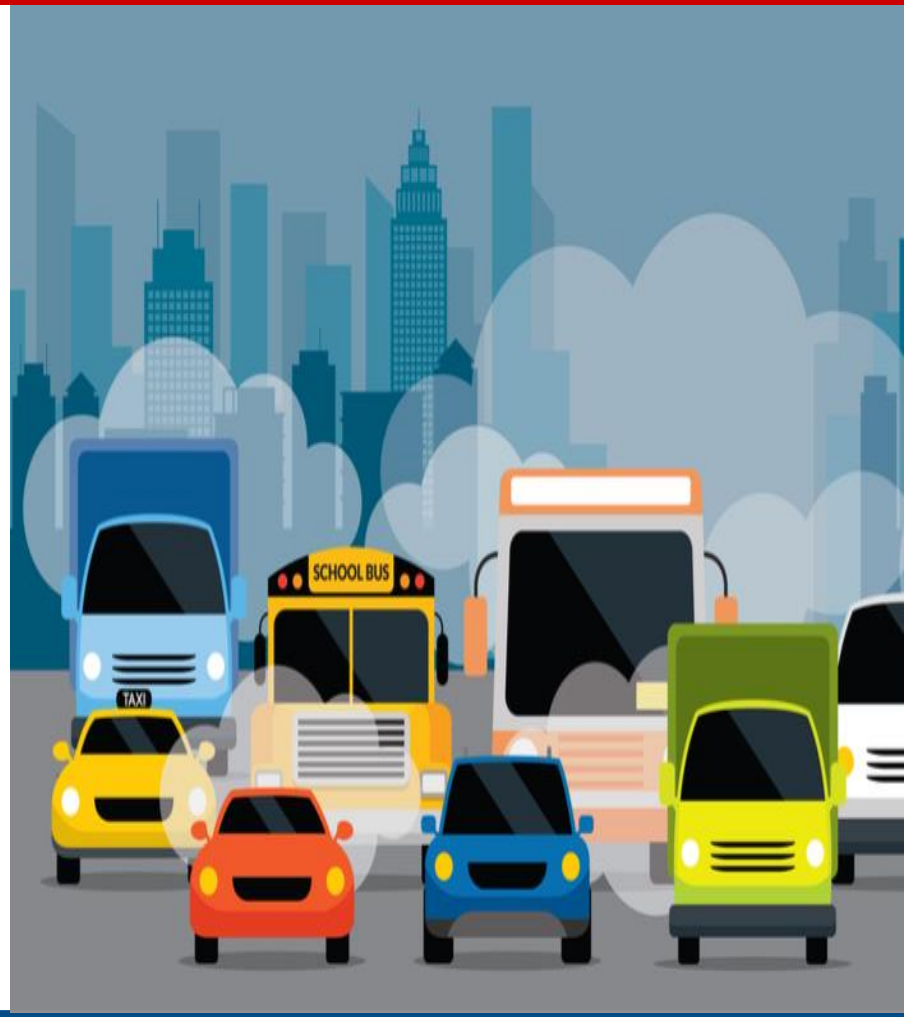
- Energy requirement growing up
  - population growth
  - economic growth
  - and urbanisation.
- A third of India's population lives in urban areas & this will change to half by 2050.
- India's GDP is also expected to grow at a healthy rate
- Population, income, and urbanisation are expected to drive travel demand, and freight transport demand.

Current Transport Scenario in India

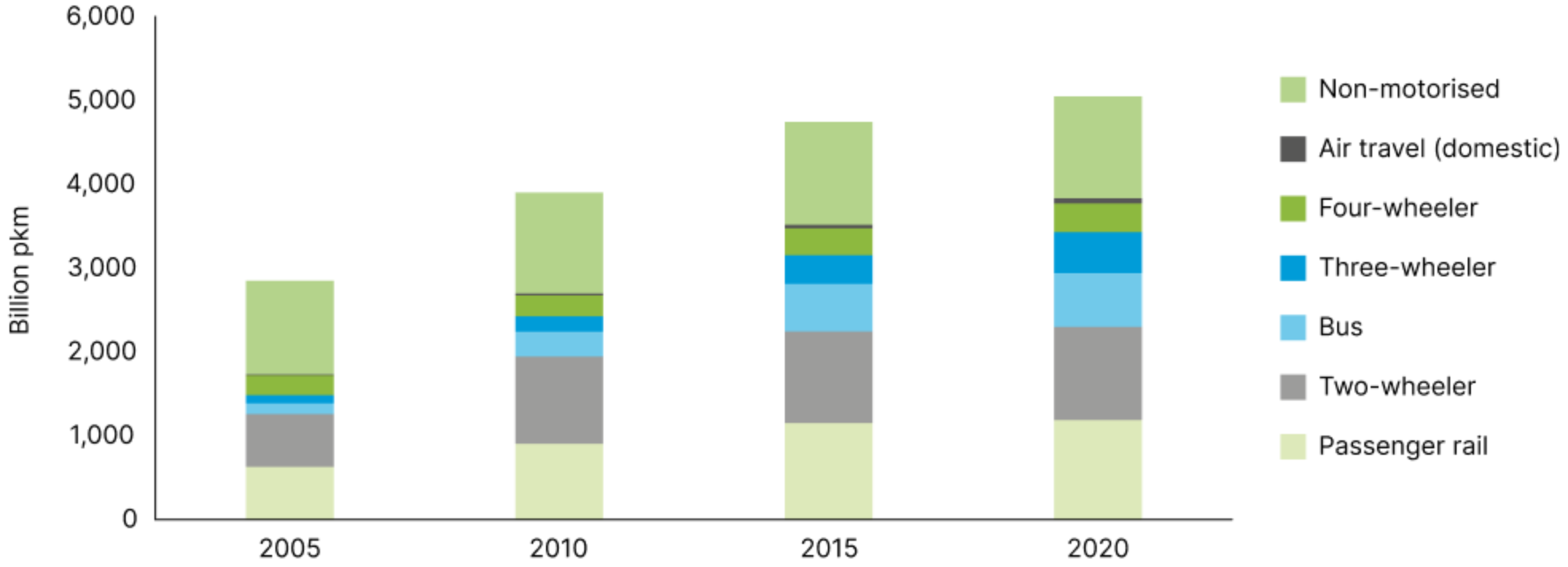
- Transport contributes about 6.4 % to the GDP of the country and 13 % of India's GHG emissions*
- Energy demand from transport is growing at much faster pace and projected to increase six times in 2050
- Largely oil-dependent
- India is the third-largest oil importer globally nearly 80 % of India's current crude oil consumption comes from imports.
- Intercity transport : By road (82 %), rail (17 %), and a limited share of air transport.
- IR aims to increase freight share to 50% by 2030

Urban Transport in India

- In urban areas, road transport dominates.
- Present status of urban transport
  - increasing trip distances,
  - increasing share of private motorised transport,
  - declining share of public and NMT.
- These trends leading to -
  - increasing air & noise pollution,
  - road safety and congestion.
- Need of the hour is to have transportation system that runs of clean energy

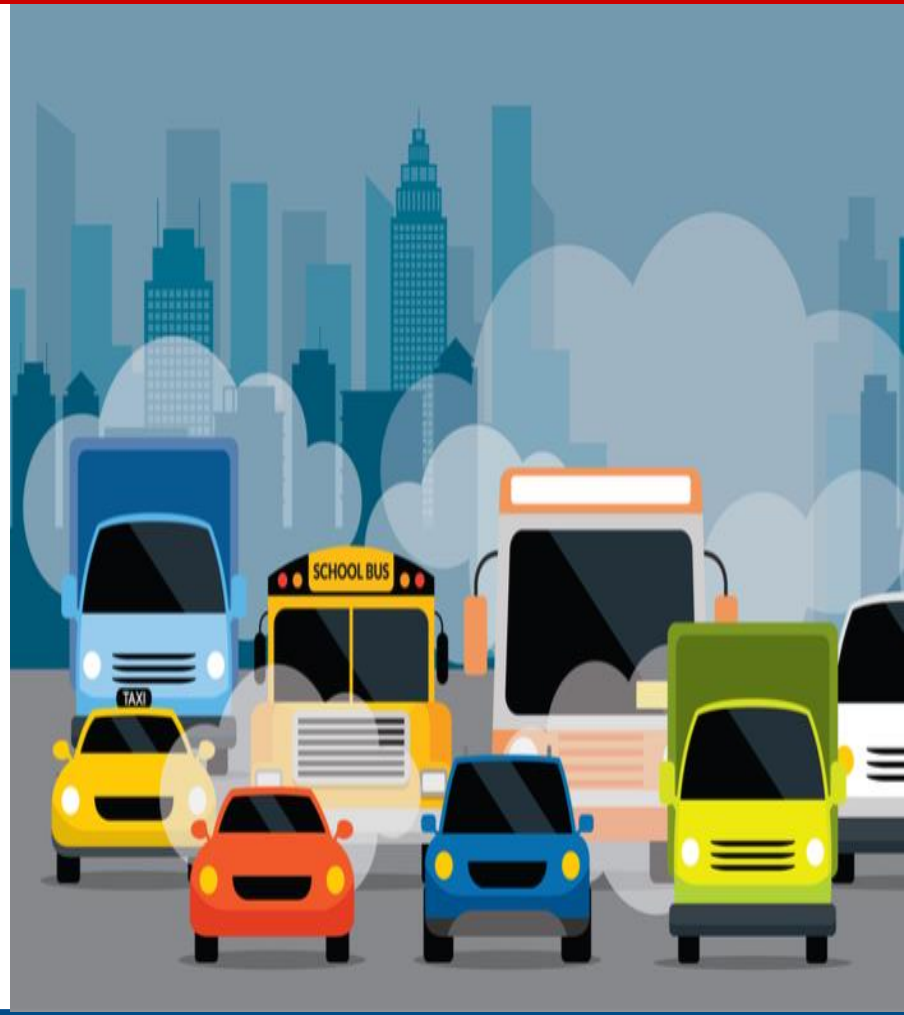


Transport growth and share across various modes



Metro rail – Must for sustainable urban mobility

- Rail based transport is most energy efficient
- Rolling resistance of steel wheel on steel rail is less than one tenth of rubber tyre on concrete road
- Predominantly use electric energy as against oil used by private transport
- Have the ability to harness braking energy by regenerating electrical energy



Carbon Footprint Comparison

Parameters/Modes of Transportation	Metro	Bus	Car	Motorbike
Capacity per vehicle	975	50	4	2
No. of Vehicles req. to carry 975 pax.	1	20	244	488
SEC	7 Kwh/km	4 Km/ltr.	14 Km/ltr.	45 Km/ltr.
Travel Distance (in Km)	30	30	30	30
Travelling Time	**50 min.**	1 hr. 40 min.	1 hr. 20 min.	1 hr. 5 min.
Energy/Fuels required. Per vehicle	210 Kwh	7.5 ltr.	2.14 ltr.	0.65 ltr.
CO2 emission, in terms of Kg	0.91 Kg per Kwh	2.7 Kg per ltr.	2.3 Kg per ltr.	2.3 Kg per ltr.
CO2 emission for 30 Km travel distance	**190 Kg**	405 Kg	1,200 Kg	730 Kg

Metro Rail in India

"Metro will be more than just a cheap and safer means of transport. It will reduce congestion on roads making movement easier. It will also reduce atmospheric pollution to a great level making the environment healthy. The metro will totally transform our social culture giving us a sense of discipline, cleanliness & enhance multi-fold development of a cosmopolitan city."

E Sreedharan, Metro Man and Ex-Delhi Metro Managing Director

https://tiss.edu/uploads/files/End_User_Impact_of_HMR.pdf

Metro Network in India

- Metro networks currently operates in 15 Indian cities
- Combined network length under operations 785 KM
- Fourth longest network in world
- Metro works are in progress in 7 cities
- Under Construction Routes: 454.27 Km
- Approved Routes: 448.11 Km
- Proposed Routes: 1045 Km
- The target is to have a metro rail network in 100 cities by 2047*
- Least polluting mode of mass rapid transport system
- Characterised by High PHPDT

*themetrorailguy.com

https://www.hindustantimes.com/india-news/at-least-100-cities-in-india-to-have-their-own-metro-networks-by-2047-says-top-official-101633578454285.html

Role of Govt., Civic Bodies and Industries Chambers

- Integration of MRTS with other modes of transportation.
- Connectivity to major railway stations, bus stations and airports.
- First and last mile connectivity availability with vehicles running on clean energy.
- Role of all stakeholders from govt, industry chambers and private bodies is the need of the hour

Green Financing

- With Net Zero target by 2070, India demands $1tn (£722bn) in climate finance *
- The Indian Government is actively working towards the decarbonisation of transport,
- Major focus on the adoption of sustainable mobility
- Metro projects are capital intensive
- Financing institutions and transport organisations need to come together,
- Collectively work towards furthering innovative financing policies for the decarbonisation of transport

https://www.theindustryoutlook.com/services-and-consulting/news/pm-modi-pledges-india-targets-net-zero-emissions-by-2070-nwid-2037.html

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L&T Group – ‘Sustainable Progress for a Better World’

L&T Hyderabad Metro Rail is committed to contribute to the L&T’s overall Goal to achieve Carbon Neutrality by 2040 and Water Neutrality by 2035.

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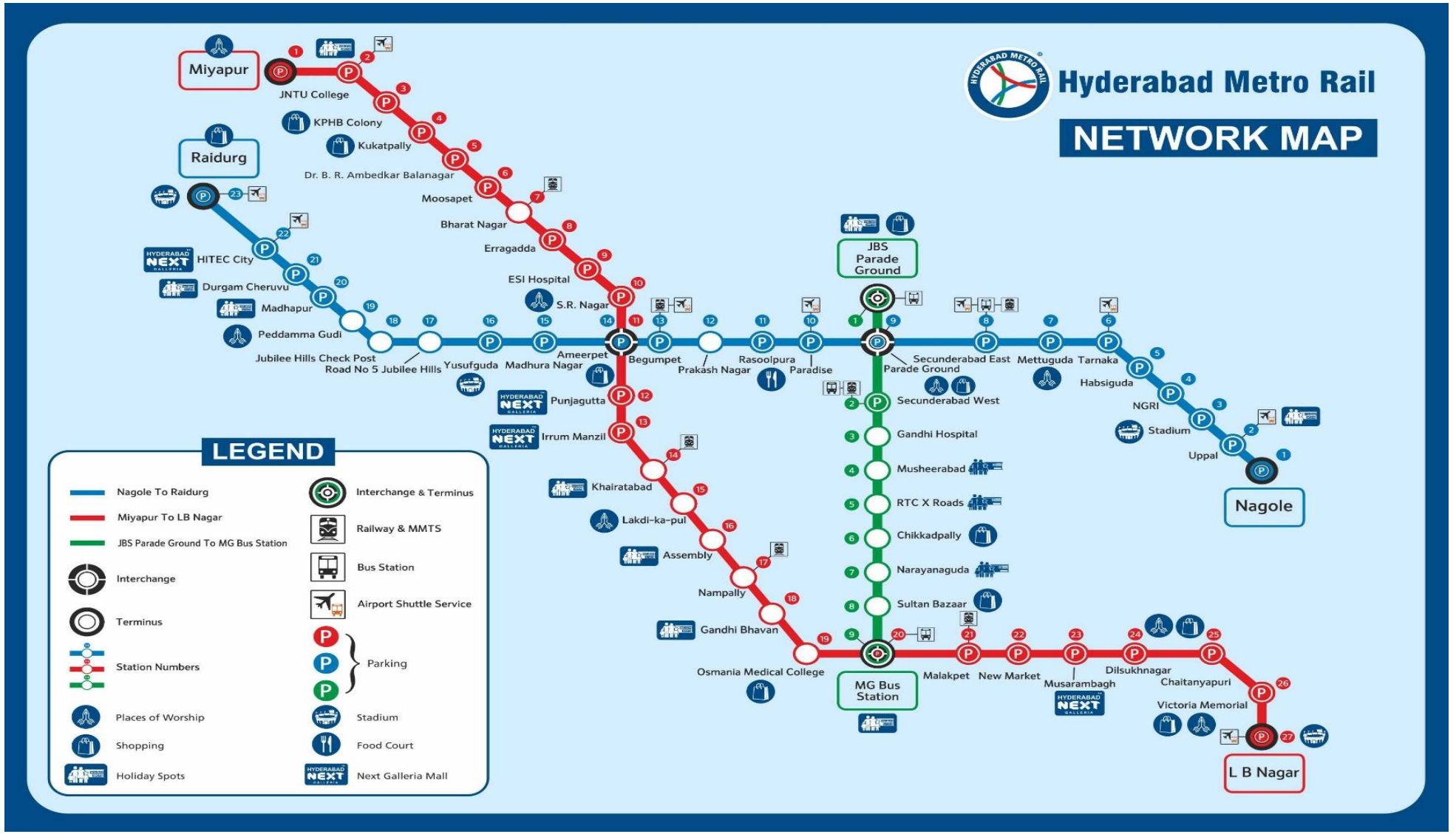
Hyderabad Metro Rail

- Largest Metro Project in the World on PPP Format
- Design, Build, Finance, Operate & Transfer Model
- 100% shareholding by L&T Limited
- 69.2 Km, 57 Stations, 3 Lines Elevated Network
- Precast Civil Construction for Viaduct & Stations
- Daily Avg. Ridership: 410,000
- Over 75,000 jobs were created from May 2014 till June 2022 with over 2.5 crore man-days of job

L&T Metro Rail
Hyderabad



L&T Metro Rail

Hyderabad Metro Rail – A Green Mobility Partner

- Compliant to ISO-45001:2018 & ISO-14001:2015
- Regenerating trains & elevators
  - 40% of Traction energy is regenerated
- 8.35 MWp Captive Solar Power Plant in Depots & on Station Rooftops
  - >10% of energy requirement met from Solar capability
- Water Harvesting at Stations & Depots
  - Total 150 Rain Harvesting Pits @ stations & depots to recharge water table
- Waste Management – Zero Discharge policy
- Hyderabad Metro Rail offers 100% Daylight and Cross Ventilation at Platform & Concourse level
- Out of 57 stations, Hyderabad Metro Rail has its 23 stations IGBC LEED Platinum certified
- Over 1000 saplings were planted in 2021 contributing the green cover

Hyderabad Metro Rail – A Green Mobility Partner

- In FY2021-22,
  - Approx. 16 million liters of fuel saved;
  - Approx. 38 million Kgs of CO_2 emission saved;
  - Total 11 million units are generated through solar plant viz. 10% of total power consumption;
  - Total 27 million units of energy regenerated by regenerative braking system of Rolling Stock viz. approx. 40% of total traction power consumption.
  - Our application for carbon crediting has been successfully submitted

Awards and Recognition

- For sustainable initiatives LTMRHL has been awarded with:
  - Prestigious Gold Award in the “Best Sustainability Practices” by GoTS Dept. of Industries & Commerce 2021
  - “The Excellence In Green & Sustainable Metro System” by The Rail Analysis of India organization.
  - Economic times Infra focus award 2022 in transportation sector (Metro) category

Hyderabad Metro Rail – A Green Mobility Partner

EV Charging Facility

E Riksha

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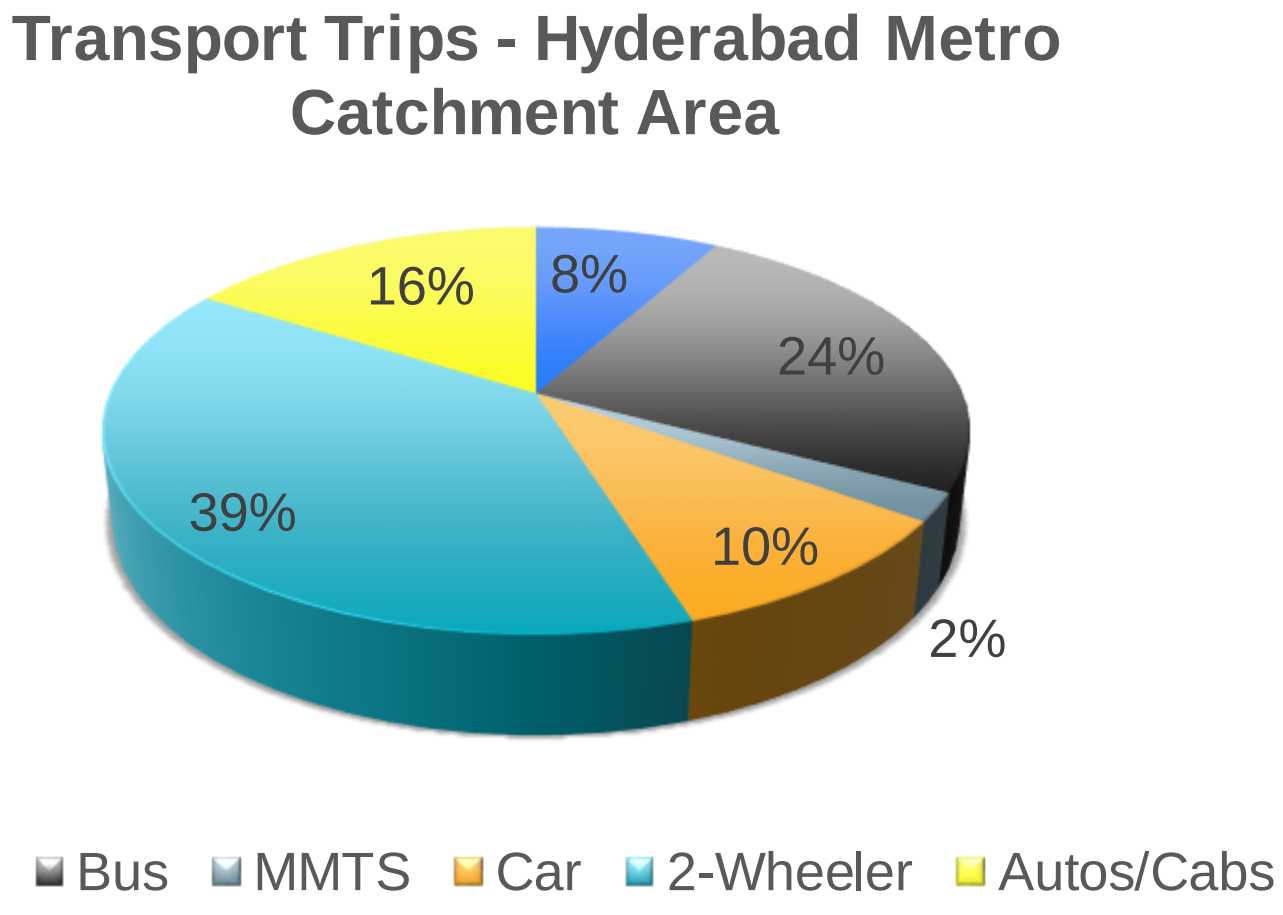
Parking facility
for FMLM

Green channel
for harvested
Heart transport

Tree plantation

Current Transport Scenario in Hyderabad



Transport Trips in Metro Catchment Area (4.9 million trips)

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We thank CII IGBC for an opportunity to showcase HMR's sustainability footprint in a tangible and quantifiable basis by their robust certification process. This has always pushed us to stretch our sustainability endeavours towards India's Mission of Net Zero.


Thank
you!