How SUSTAINABLE is the 21st century Mass Transit Railway?

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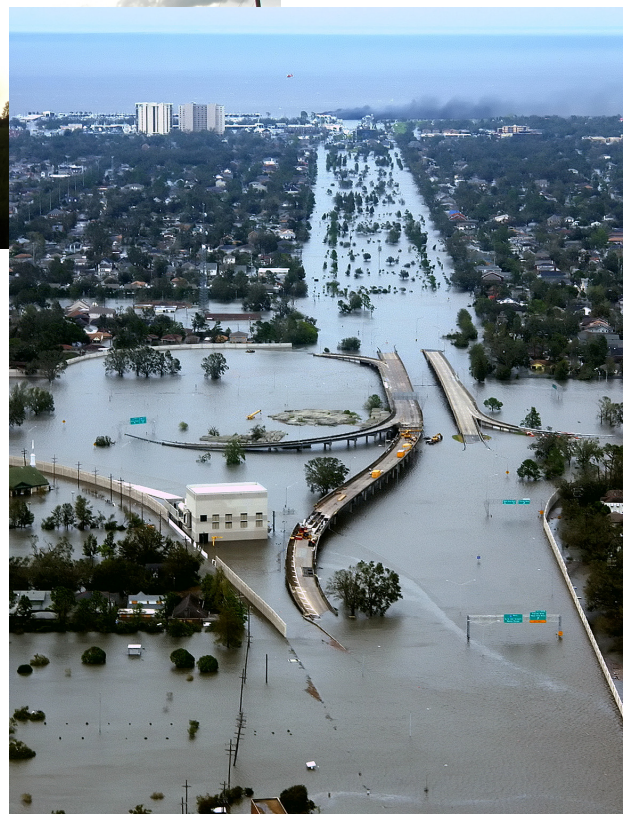
Agenda

- Carbon-Credit Transport
- Sustainability through Asset Life Cycle Management
- Carbon Footprint Control
- The Challenges



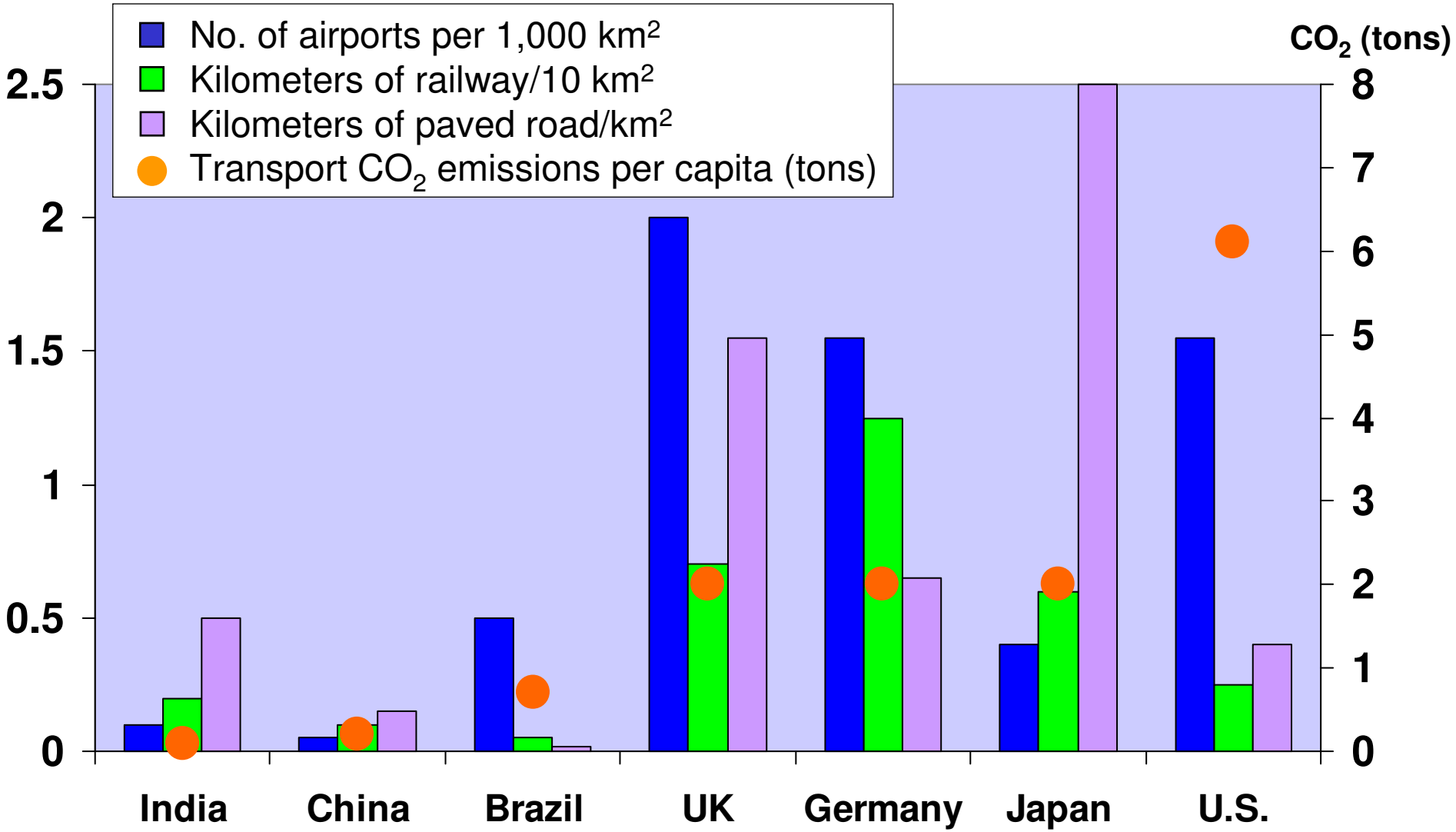
The 21st century

Carbon-crediting Transport?

Sustainability

"Meeting the needs of the present without compromising the ability of future generations to meet their needs"

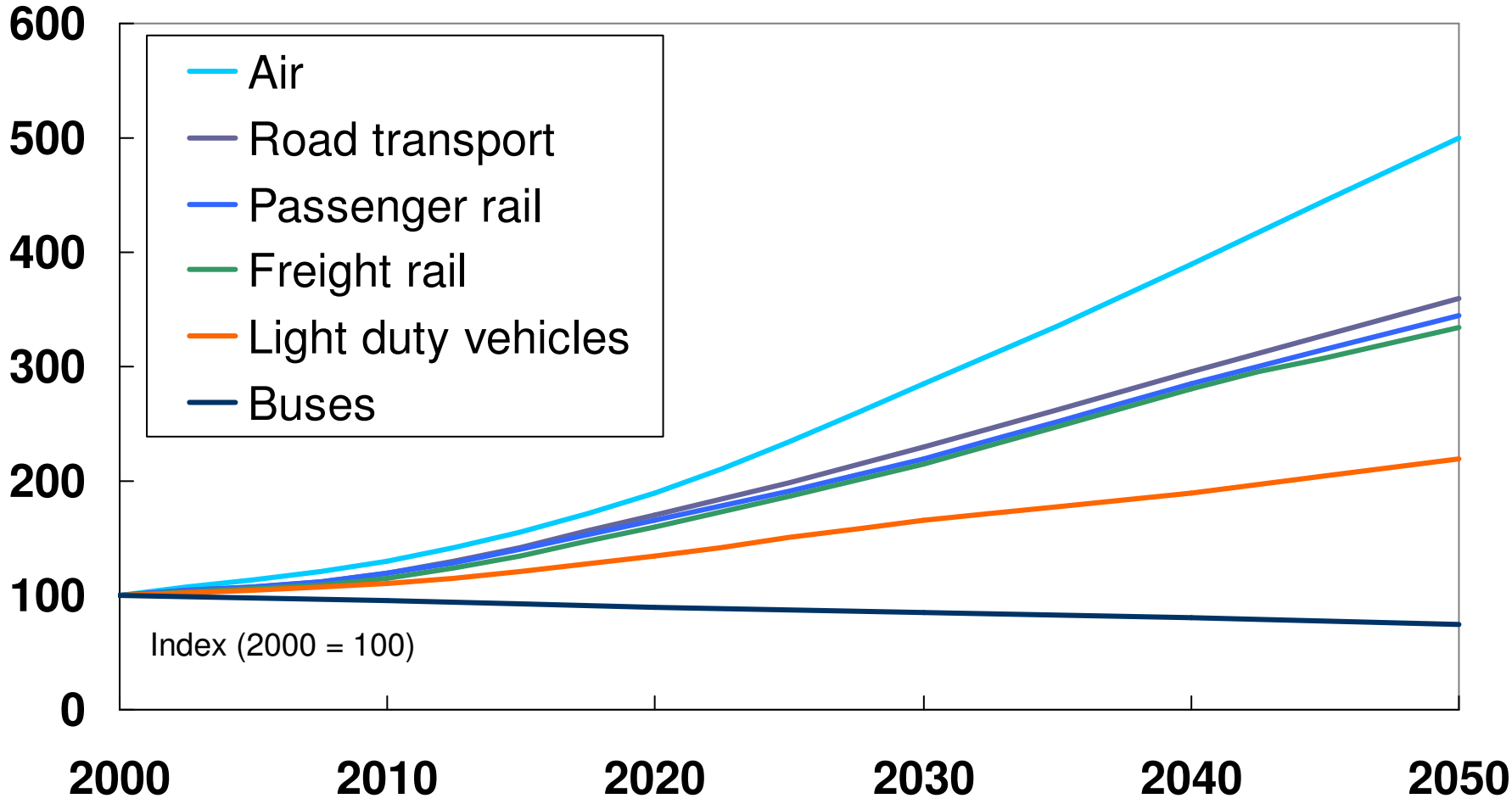
Transport Infrastructures by Country



Source: CIA – World Factbook 2007

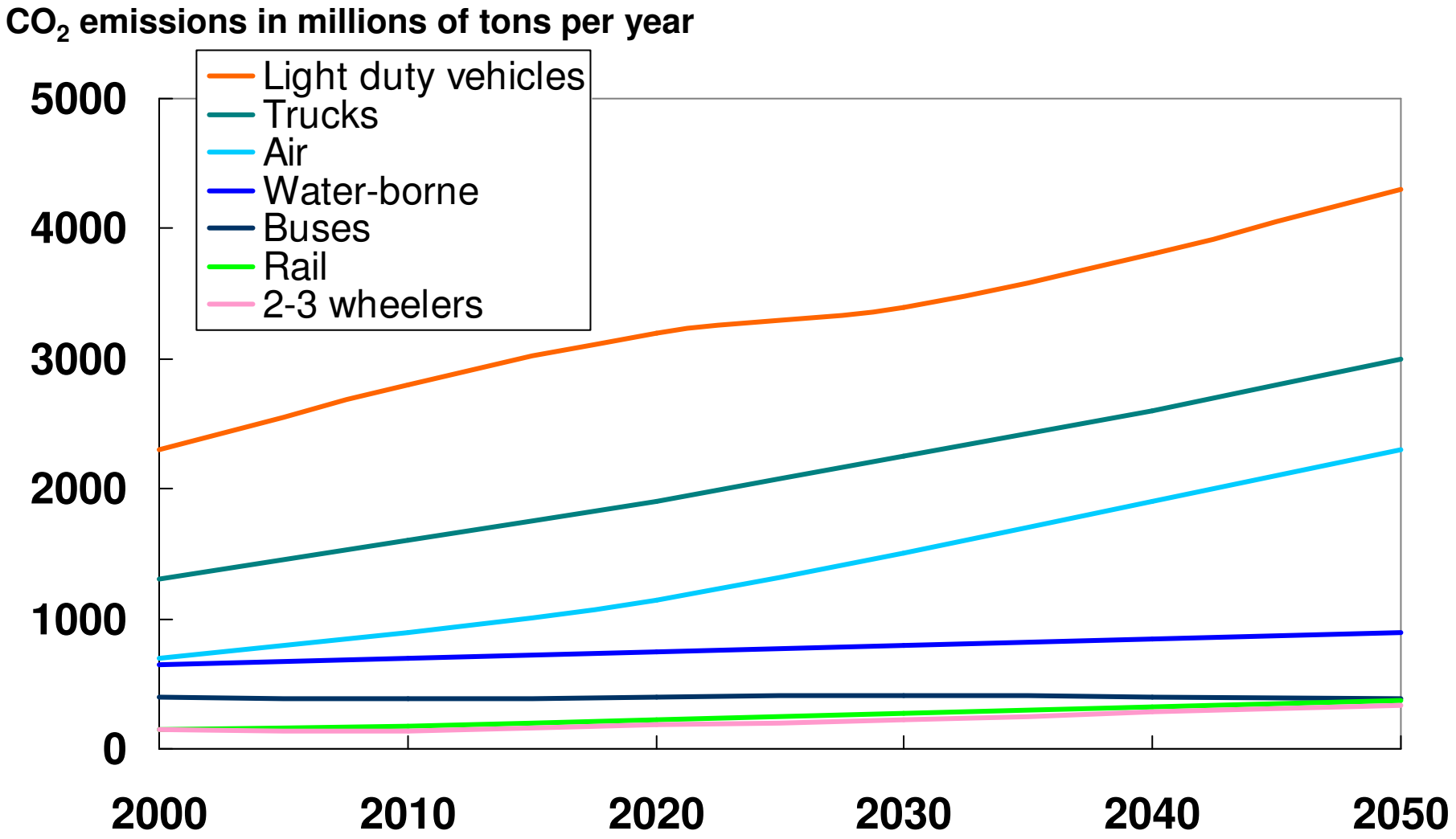
Comparative Mileage by Modality

Worldwide passenger/ton-kilometers



Source: 2008 version of the IEA/ETP's MoMo model

Comparative Emissions by Modality

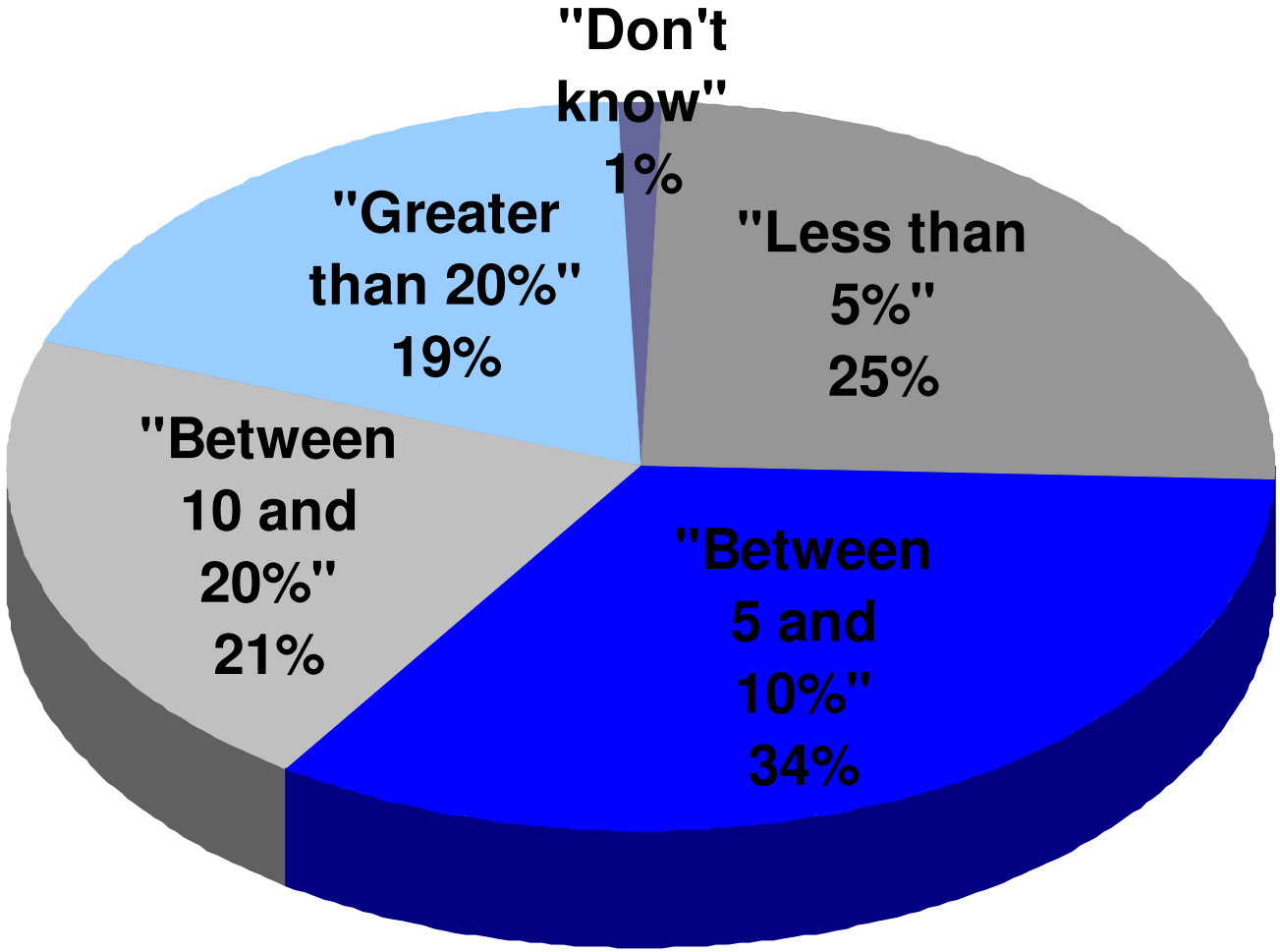


Source: ITF based on 2008 version of the IEA/ETP's MoMo model

Percentage of Electric Cars Expected

Survey of participants at the 2010 International Transport Forum:

In 2010, the share of electric vehicles in new car sales in OECD countries will be:

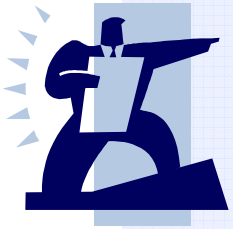


Source: www.internationaltransportforum.org

Climate Change Policy

Climate Change Policy of MTR (issued in 2006)

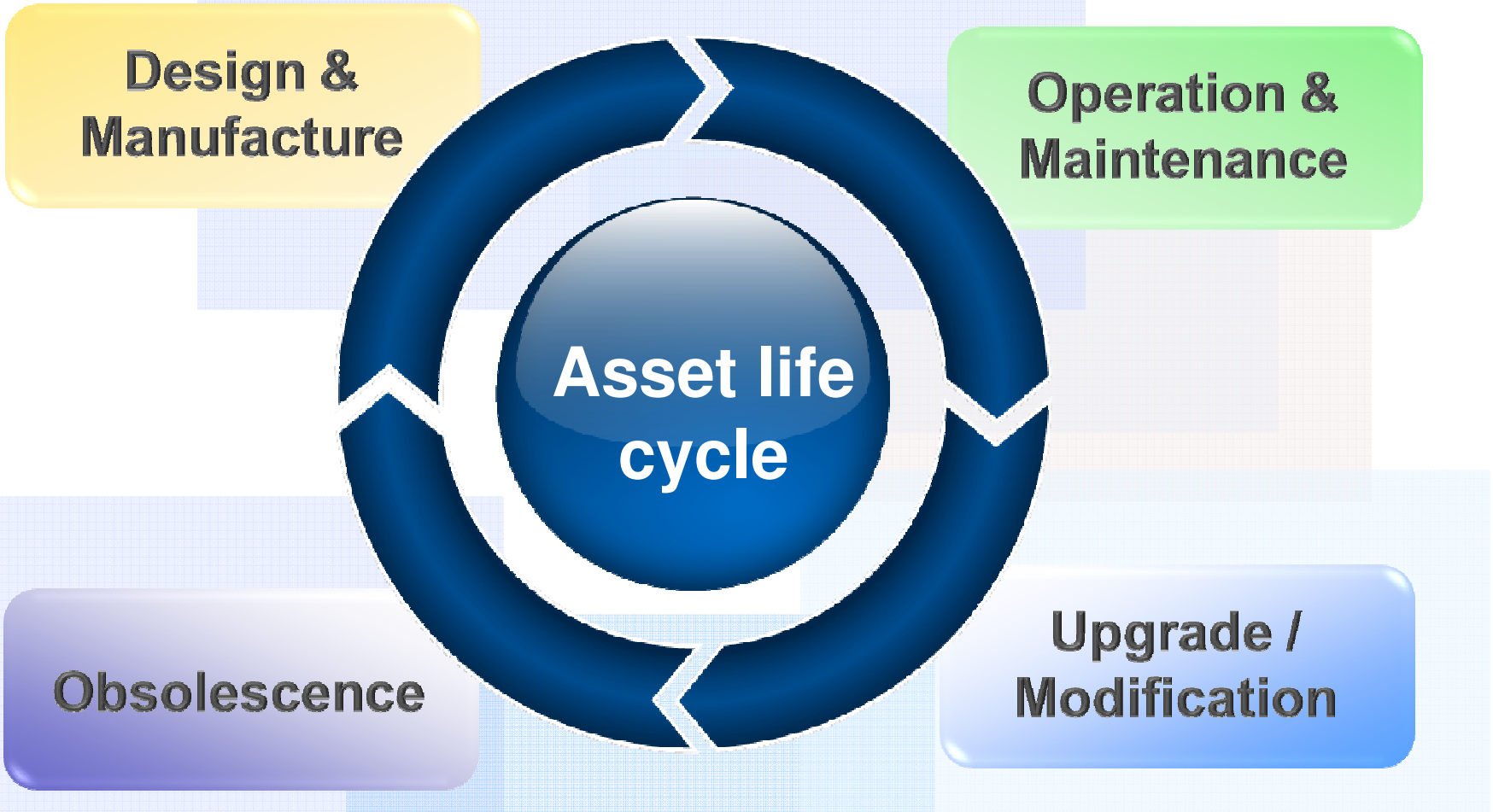
Commits to adapting and mitigating risks presented by climate change and to becoming one of the most resource efficient and ecologically sustainable railways and property-service providers in the world



One of the key actions:
Reduce direct carbon emissions in a targeted and continuous fashion

Sustainability through Asset Life Cycle Management

Asset Life Cycle Management



Asset Life Cycle Management

Design & Manufacture

Partnering with Suppliers for best technology solutions

E.g. - Improvement in traction system
- Light weight design

Upgrade / Modification

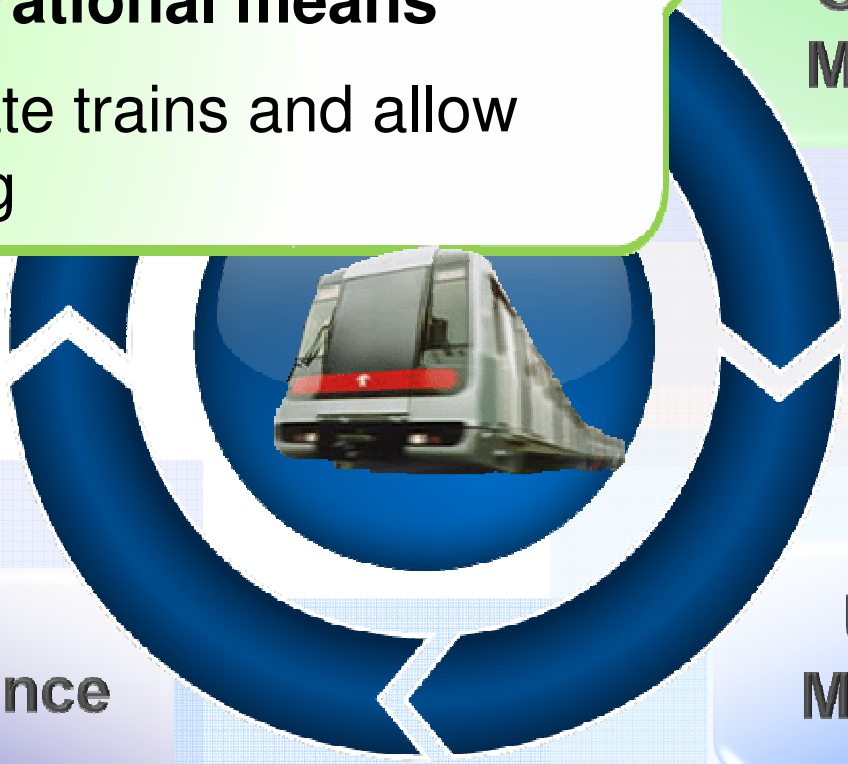
Obsolescence

Materials –
Reusable? Recyclable?

Asset Life Cycle Management

Reduce resource consumption through operational means

E.g. – Regulate trains and allow more coasting



Operation & Maintenance

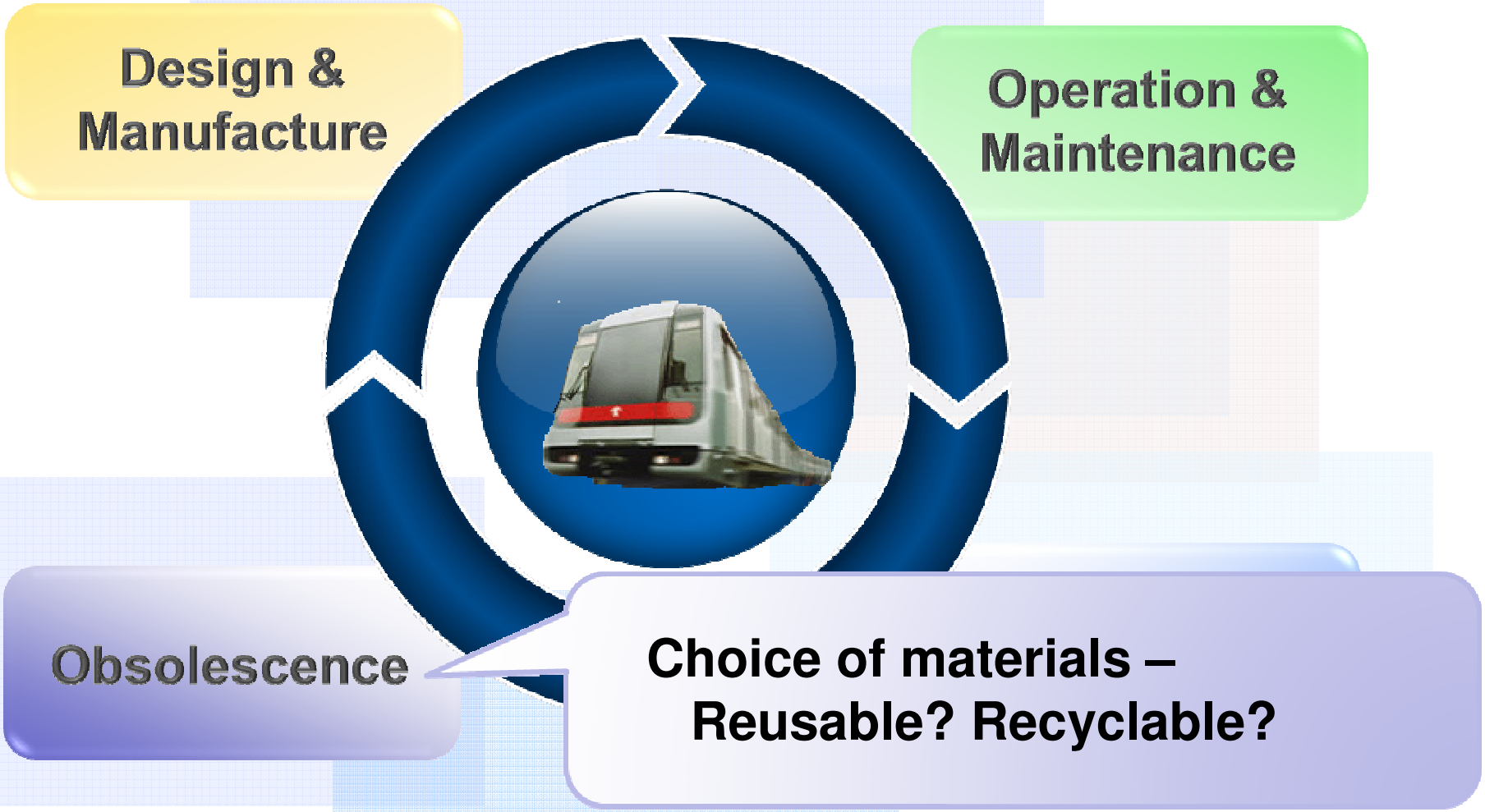
Upgrade / Modification

Obsolescence

Asset Life Cycle Management

Flexibility in design that allows easy upgrade and replacement

Asset Life Cycle Management



Initiatives to reduce Resources Consumption

Environmental Control System

- Water-cooled air conditioning system
- Direct cooling system
- Energy saving free cooling mode

Lighting System

- LED lighting
- Lighting control
- Solar photovoltaic panels

Main Control System

- Time scheduling

Initiatives to reduce Resources Consumption

Lifts & Escalators

- Elimination of home landing of lifts
- Automatic control of car lights and ventilation fans
- Standby mode for group control of lift bank
- Lift power generation feature
- Variable frequency drive
- Traction lifts

Power Supply System

- Single high voltage transmission and distribution system
- Wayside traction energy storage

Initiatives to reduce Resources Consumption

Overhead Line System

- Overhead rigid conductor rail
- Silver copper contact wire

Signalling System

- Automatic door open/close
- Automatic train regulation

Initiatives to reduce Resources Consumption

Rolling Stock

- Regenerative brake
- Weight management
- Power electronics equipment
- Permanent magnet motor

Carbon Footprint Control

Carbon footprint tracking system

Cover entire life cycle of railway projects

- Embodied carbon
- Carbon emitted during provision of service

Model of carbon footprint to be developed based on actual data from railway projects when completed

Identify de-carbonisation opportunities

The Challenges

Challenges

- Various constraints, especially financial implication
- Strong determination needed for implementation and follow through

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THANK YOU