Transport Demand on the Rise

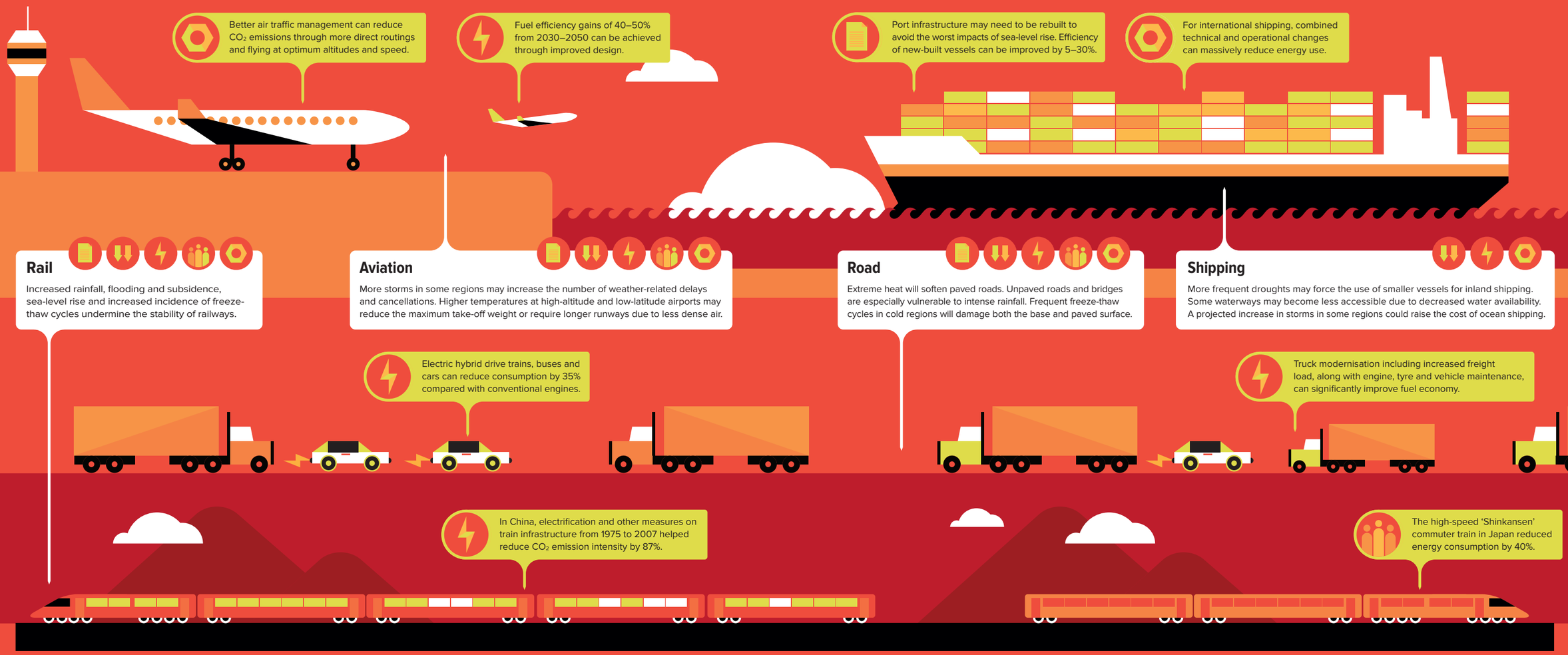
Transport accounts for about a quarter of global energy-related carbon emissions. This contribution is rising faster than for any other energy end-use sector. Without aggressive and sustained policy intervention, direct transport carbon emissions could double by 2050.

Key Findings from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) | For more information **cisl.cam.ac.uk/ipcc** and **bsr.org**

Opportunities & Solutions

The transition required to dramatically reduce greenhouse gas (GHG) emissions needs system-wide strategies that combine new vehicle/fuel technologies, modal change, and stringent sustainable transport policies and profound behaviour change.

- System Infrastructure Efficiency
- Carbon Intensity of Fuels
- Energy Efficient Vehicle Performance
- Demand Reduction
- System Optimisation



Rail

Increased rainfall, flooding and subsidence, sea-level rise and increased incidence of freeze-thaw cycles undermine the stability of railways.

Aviation

More storms in some regions may increase the number of weather-related delays and cancellations. Higher temperatures at high-altitude and low-latitude airports may reduce the maximum take-off weight or require longer runways due to less dense air.

Road

Extreme heat will soften paved roads. Unpaved roads and bridges are especially vulnerable to intense rainfall. Frequent freeze-thaw cycles in cold regions will damage both the base and paved surface.

Shipping

More frequent droughts may force the use of smaller vessels for inland shipping. Some waterways may become less accessible due to decreased water availability. A projected increase in storms in some regions could raise the cost of ocean shipping.

Co-Benefits

Efficient, low-carbon transport systems have significant co-benefits, such as better access to mobility services for the poor, time saving, energy security, and reduced urban pollution leading to better health. Some studies suggest that the direct and indirect benefits of sustainable transport measures often exceed the cost of their implementation.

Reduced Road Traffic

Reduced road traffic and congestion often lead to fewer traffic crashes, less noise and less road damage.

Health

Walking and cycling and rapid transit/public transport combined with improved land use can bring great health benefits. Lowering CO_2 emissions could increase emissions of health-damaging small particulates.

Energy Security

Cutting carbon emissions is likely to be more challenging than for other sectors given the continuing growth in global demand and scale of change needed. However, doing so will assist with long-term energy security.

Cost Savings

Many energy efficiency measures have a positive return on investment. Improving aerodynamics and cutting the weight of vehicles and optimising design may have a negative lifetime cost.

Low-Carbon Cities

Owing to their high concentration of population, economic activity, and motorisation, mega-cities are primary contributors to local and global environmental problems. Low-carbon transport is a long-term sustainability strategy.