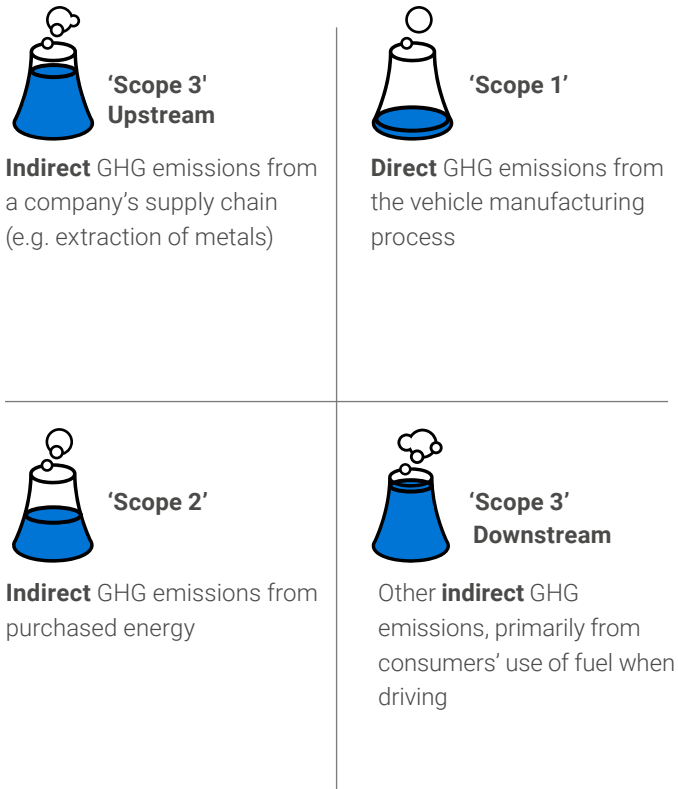



Net zero: road transport

To prevent dangerous climate change, greenhouse gas emissions must reach net zero. What does the **transport sector** need to do?

12% of human-caused GHG emissions come from road transport

Sources of emissions



 Source: HSBC (2019), based off IEA, EDGAR, Global Carbon Project

Challenges

- Charging infrastructure and 'range anxiety'
- Limited alternatives for heavy-goods vehicles (HGVs)
- Potential raw material bottlenecks
- Costs of hydrogen production
- Consumer choice and time lag for vehicle switch

Opportunities

- Growing demand for passenger vehicles
- 'Mobility as a service' as new business model; synergies with IT and power sector
- Increased efficiency and safety from digitalisation and automation

Companies

Governments

Key levers	Key policies
Electrification and battery storage	Carbon pricing
Digitalisation	Emissions and efficiency standards
Hydrogen	Congestion charges and public transport
Decentralisation of energy	Subsidy reform
Automation/self-driving	Scrappage schemes
	Government procurement
	R&D assistance



Other environmental considerations

- Pollution from NOx and SOx can be reduced through electrification
- Particulate pollution from tyres, braking and roads may increase with higher traffic volumes

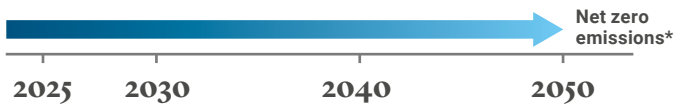
Social impacts and the just transition

- Affordability of transport is key social issue
- Fuel taxes are large source of government revenues
- Concern around labour rights in battery value chain

Physical risk impacts

- Disruption to production facilities and supply chains from extreme weather

Decarbonisation effort



Easier to achieve	Possible with effort
Light vehicle electrification	Power grid upgrades to incorporate flexible usage patterns
Fuel economy and biofuel blending	Fuel cells
Ride-sharing	Range improvements and automation
Charging infrastructure	Urban planning
Geofencing for hybrid vehicles	

*To be followed by reducing emissions of other GHGs such as methane to net zero

What is needed?



Company leadership

Investment and R&D for net zero across vehicle life-cycle



Research and innovation

Fuel cells and hydrogen infrastructure
 Advancement in battery cells
 Demand management



Consumer behaviour

Optimising vehicle usage
 Modal shift in transport

LGIM will vote and implement investment sanctions against companies falling short of our climate expectations.

How are we assessing companies' net zero pathways?

Net-zero Commitment	<ul style="list-style-type: none"> Does the company support the Paris Agreement target? Does the company have a net-zero target, including emissions from sold products?
Strategy	<ul style="list-style-type: none"> How much capital is being committed to zero-emissions vehicles? What percentage of R&D is allocated to low-carbon technologies?
Resilience	<ul style="list-style-type: none"> Is the company analysing the physical climate risks to its portfolio and evidencing measures to manage these? Resilience of business model in – and alignment to – climate scenarios?
Targets	<ul style="list-style-type: none"> Does the company have a target to grow revenue from low-carbon technologies? Targets to reduce operational emissions? Does the company have targets in place to improve life-cycle emissions/improve circularity of products?
Collaboration	<ul style="list-style-type: none"> Evidence of the company working collaboratively across its value chain to reduce emissions? Is there evidence of the company advocating for meaningful policy action?
Red lines	<ul style="list-style-type: none"> Disclosure of Scope 3 emissions

For more information...

Please see: <https://www.lgimblog.com/categories/esg-and-long-term-themes/climate-impact-pledge>

Important information

Source: LGIM as at September 2020. The value of an investment and any income taken from it is not guaranteed and can go down as well as up, you may not get back the amount you originally invested. The above information does not constitute a recommendation to buy or sell any security

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