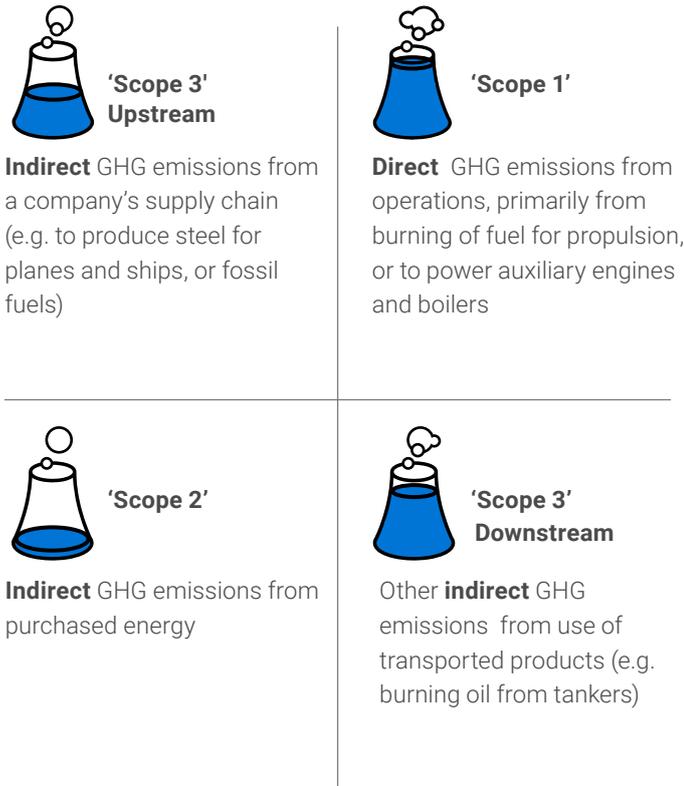


Net zero: airlines and shipping

To prevent dangerous climate change, greenhouse gas emissions must reach net zero. What do the **airline and shipping** sectors need to do?

3% of human-caused GHG emissions come from airlines and shipping

Sources of emissions



 Sources: UNEP (2019)



Challenges

- Price of current technologies
- Battery range and density
- Fragmented industry structure
- Lack of robust policies



Opportunities

- Growing consumer demand to reduce 'food miles' and other transport-related product emissions

Companies

Governments

Key levers	Key policies
<ul style="list-style-type: none"> Electrification and batteries Sustainable biofuels Ammonia Hydrogen Vessel design 	<ul style="list-style-type: none"> Carbon pricing and taxation (including at refuelling points) Support for renewables Policy coordination between international regulators, (air) ports and transport operators Regulation of biofuels Tightening/enforcing energy efficiency standards and green fuel mandates



Other environmental considerations

- Net zero shift would also help tackle pollution (reduced SOx, NOx)
- Waste and impacts on biodiversity
- Biofuel/agriculture trade-offs

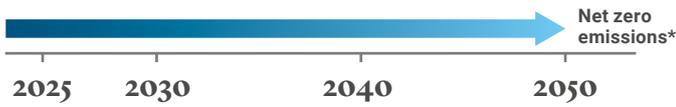
Social impacts and the just transition

- Limited impacts from changes in fuel used by ships and planes, but restrictions on (short-haul) flights may prove disruptive

Physical risk impacts

- Disruption to global transport routes and hubs from extreme weather

Decarbonisation effort



Easier to achieve

- Biofuel blending
- Vessel design
- Energy efficiency
- Batteries for short-haul journeys
- Wind-assisted propulsion for ships
- Slower ship cruising speeds
- Air traffic management for more direct routes and less taxiing

Possible with effort

- Scaling sustainable biofuels
- Ammonia- or hydrogen-based fuels
- Policy cooperation

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

What is needed?



Company leadership

- Companies investing in available decarbonisation technologies
- Logistics companies adopting stringent targets for freight



Research and innovation

- Reducing costs of electrolysis
- Synthetic fuels
- Carbon capture and storage
- Battery density



Consumer behaviour

- Demand for products with reduced transport emissions
- Modal shifts in transport due to 'flight-shaming'

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 target for net zero by 2050 or earlier?
Strategy	<ul style="list-style-type: none"> How much capital is being committed to decarbonisation efforts? What percentage of R&D is allocated to low-carbon technologies? Is there evidence of the company pursuing "low-hanging fruit" in terms of decarbonisation measures?
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 targets related to use of "green" fuels?
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 from regulators?
Red lines	<ul style="list-style-type: none"> Operational emissions target?

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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