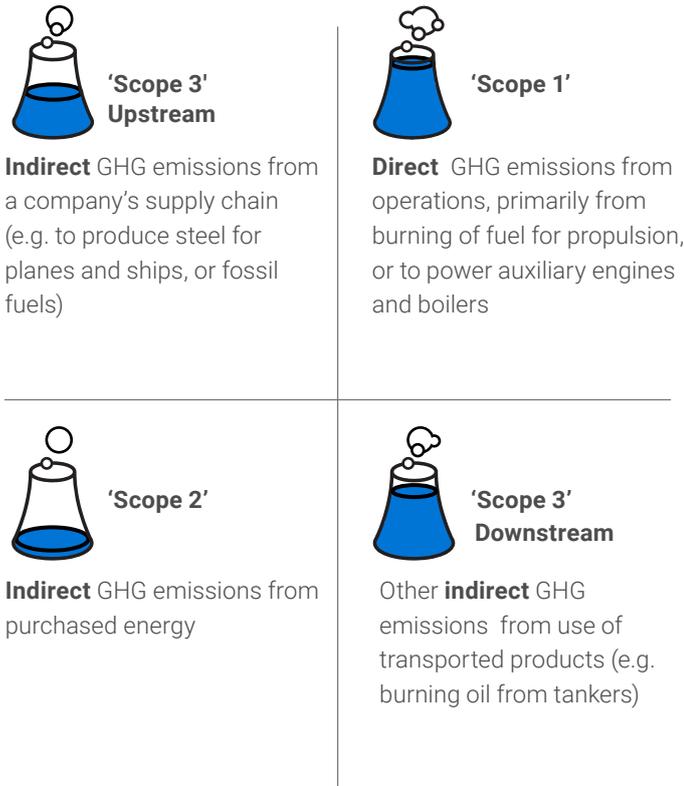


Net zero: airlines and shipping

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 (reduce SOx and NOx)
- Waste and impacts on biodiversity
- Biofuel/agriculture trade-offs

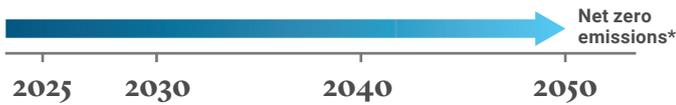
Social impacts and the 'just transition'

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	Possible with effort
Biofuel blending	Scaling sustainable biofuels
Vessel design	Ammonia- or hydrogen-based fuels
Energy efficiency	Policy cooperation
Batteries for short-haul journeys	
Wind-assisted propulsion for ships	
Slower ship cruising speeds	
Air traffic management for more direct routes and less taxiing	

*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 have a target for net zero by 2050 or earlier? Does the company provide a net zero transition plan that sets out clear milestones over the short and medium term?
Strategy	<ul style="list-style-type: none"> Is there evidence of the company pursuing "low-hanging fruit" in terms of decarbonisation measures? Evidence of a capital allocation strategy that contributes to the development and roll-out of low-carbon technologies and wider decarbonisation efforts
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, and the climate alignment of fleets?
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"> Short and medium-term operational emissions targets and evidence of progress towards these targets

For more information...

Please see: https://www.lgim.com/landg-assets/lgim/_document-library/responsible-investing/climate-impact-pledge-brochure-uk-eu-2021.pdf

Important information

Source: LGIM as at September 2021. 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

© 2021 Legal & General Investment Management Limited. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, including photocopying and recording, without the written permission of the publishers. This material is issued by LGIM Asia Ltd, a Licensed Corporation (CE Number: BBB488) regulated by the Hong Kong Securities and Futures Commission to conduct Type 1 (Dealing in Securities), Type 2 (Dealing in Futures Contracts) and Type 9 (Asset Management) regulated activities in Hong Kong. The registered address of LGIM Asia Ltd is Unit 5111-12, Level 51, The Center, 99 Queen's Road Central, Hong Kong. D002078_ASIA