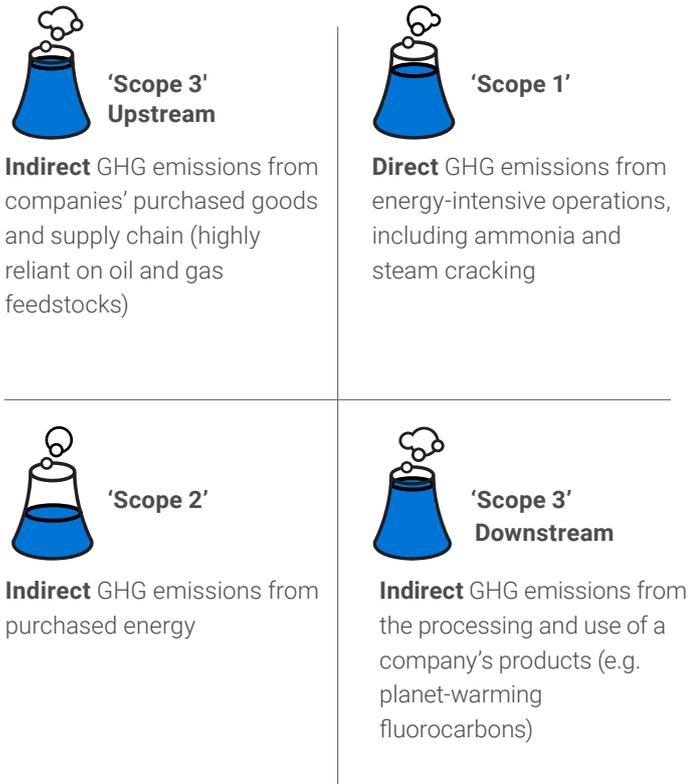


Net zero: chemicals

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

7% of human-caused GHG emissions come from the operations of the chemicals sector

Sources of emissions



 Sources: IEA, DECHEMA, ICCA (2013)



Challenges

- Competitiveness
- High costs of feedstocks (e.g. biomass) and electricity requirements for low-carbon processes
- Commercialisation of new technology



Opportunities

- Key enabler of the low-carbon transition (catalysts, cathodes, light-weight materials)
- Efficiencies and new production methods
- Circular economy and partnerships

Companies

Governments

Key levers	Key policies
<ul style="list-style-type: none"> Consumers demanding sustainable materials and reductions in embodied carbon 	<ul style="list-style-type: none"> Carbon pricing
<ul style="list-style-type: none"> Collaboration and research and development (R&D) across value chain 	<ul style="list-style-type: none"> R&D assistance for alternative process (including cost reductions in green electricity)
<ul style="list-style-type: none"> Changes to raw materials and feedstocks 	<ul style="list-style-type: none"> Increased waste collection and recycling
<ul style="list-style-type: none"> Decarbonisation of power and heat 	<ul style="list-style-type: none"> Policies to encourage decentralised energy production and circular economy
<ul style="list-style-type: none"> Recycling and waste treatment 	



Other environmental considerations

- Toxicity and pollution
- Impact on biodiversity, soil health/food production, human health

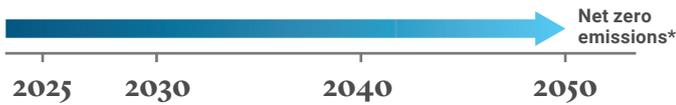
Social impacts and the 'just transition'

- Significant global employer
- Alternatives to fertilisers/plastics may raise costs of food and other key commodities

Physical risk impacts

- Disruptions to global food supply
- Weather-caused accidents (leaks, fires, explosions)
- High water reliance

Decarbonisation effort



Easier to achieve

- Switching to renewable energy
- Energy and resource efficiency
- Change in feedstocks, including use of biogenic materials
- Plastic alternatives

Possible with effort

- Green hydrogen and synthetic fuels
- New catalysts
- Lightweight materials
- Carbon capture and storage

What is needed?



Company leadership

Investment to reduce costs and energy requirements of low-carbon alternatives



Research and innovation

Electricity-based processes
Alternative materials
Downstream pathways



Consumer behaviour

Adoption of low-impact alternatives to building materials, consumer goods

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

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

How are we assessing companies' net zero pathways?

Net-zero commitment	<ul style="list-style-type: none"> Does the company have a comprehensive target for net-zero by 2050 or earlier, including emissions from value chain? Has the target been certified by the SBTi? Has the company disclosed a net-zero transition plan, including interim targets?
Strategy	<ul style="list-style-type: none"> Are capex decisions analysed according to a well-below 2°C trajectory? Evidence of R&D in / acquisitions of low-carbon technology? Is executive remuneration aligned with the net zero pathway?
Resilience	<ul style="list-style-type: none"> Exposure to physical risk? Resilience of business model in – and alignment to – climate scenarios?
Targets	<ul style="list-style-type: none"> Does the company have a target to achieve net-zero operational emissions? Does the company have targets to increase exposure to 'green' chemicals and lower toxicity of its products?
Collaboration	<ul style="list-style-type: none"> Evidence of the company working collaboratively across its value chain to reduce emissions? Evidence of the company advocating for meaningful policy action?
Red lines	<ul style="list-style-type: none"> Operational emissions target in place

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

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