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SMI Insurance Task Force Report
Opportunities for the insurance industry to support the transition
Lloyd's Futureset
MarshMcLennan
TERRA CARTA
Sustainable Markets Initiative

Foreword

The insurance industry is uniquely placed to support the transition to a sustainable future. For decades, our global insurance industry has been supporting individuals, businesses and governments in understanding, mitigating and managing the impact of increasingly severe climate-exacerbated disasters. Additionally, we play an important role in supporting investment in and development of renewable energy and climate innovation, initiatives key to realising the transition pathway and net zero goals.

This report, developed by Marsh McLennan in partnership with the Sustainable Markets Initiative Insurance Task Force (SMI ITF), seeks to provide greater clarity as to the key risks and challenges businesses across multiple sectors face in the transition and crucially, how insurers can support them. We hope that by identifying areas for partnership and collaboration, the ITF can drive and deliver innovative insurance solutions to address these challenges.

Our research, carried out by interviewing C-Suite and Heads of Risk Management from various real economy firms, identifies seven specific cross-sector opportunities where the insurance industry could be a key enabler to catalyse the transition in hard-to-abate sectors.

Alongside the research, we have presented a set of practical recommendations for the insurance industry to take forward, highlighting the opportunities to further support customers. We need to ensure the collective management of the risks of transition, alongside the growth opportunities spurred on by new economic activities, as we seek to help businesses accelerate towards a more resilient and sustainable future.

John Neal
CEO of Lloyd's and Chair of the Sustainable Markets Initiative Insurance Task Force

Nick Studer
President and CEO of Oliver Wyman Group, Climate and Sustainability sponsor on the Marsh McLennan Executive Committee

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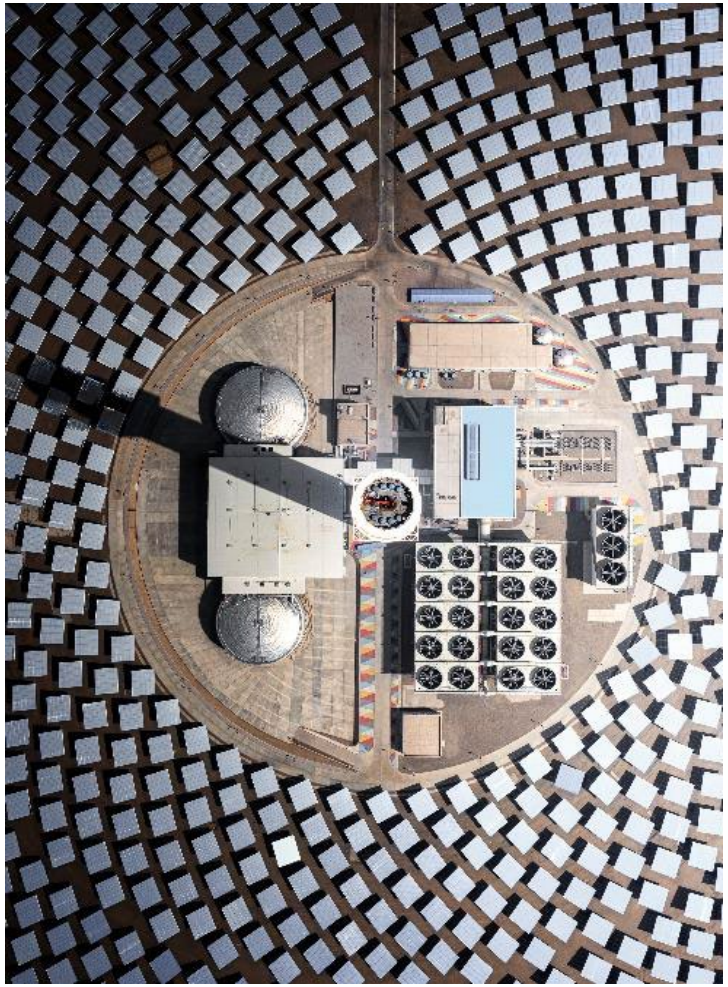
The role of the insurance industry in catalysing the transition in hard-to-abate sectors

This report explores seven key sectors and technologies to understand their transition trajectory and identify the key challenges and risks they will face. This provides an overall picture of where the insurance industry can provide the necessary risk solutions to catalyse the transition.



Seven key sectors and technologies

- **Energy**
- **Fusion**
- **Mining**
- **Aviation**
- **Shipping**
- **Space**
- **Agribusiness**

Summary of key risks and recommendations

1. The top three challenging areas identified by real economy firms in their journey towards net zero are **reputation, financial planning, and profitability**. The research shows that, across all aspects of products and services, the insurance industry can do more to make our customers feel a **greater level of support**. We suggest this begins with **enhanced engagement**.

2. There are **opportunities** for the insurance industry to **innovate, evolve existing products to insure new risks, and expand capacity for existing risks**. Innovative insurance solutions, like new pooling solutions for pioneering technologies and capital relief solutions designed to boost financial investment, could drive global progress and accelerate industry transitions towards a more resilient and sustainable future.

3. The Insurance Task Force can draw upon the **cross-sector convening power** of the Sustainable Markets Initiative. **Cross-taskforce collaboration** could allow the insurance industry to engage with policymakers and gain access to key data that will enable our industry to better support the transition.

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Marsh McLennan risk landscape for the transition and where the insurance industry currently provides support

Supporting the climate transition has been a central focus for both the Lloyd's market and wider insurance industry in recent years. There is an opportunity for the industry to support beyond existing insurance solutions by developing innovative risk solutions and partnering across industries to address wider transition challenges

	Planning and development	Construction	Operations	Later life
Strategic risks	Immature/slow progress across value chain (e.g., roll out of supporting infrastructure, cooperation, upstream engagement in transition)			Technological obsolescence leading to stranded assets/early retirement
	Availability of adequate talent pool			
	Uncertainty in market size and demand		Industry innovation degrading competitive advantage	
	Delays to siting and permit processes		IP theft degrading competitive advantage	
Financial risks	Lack of appropriate offtake agreements (volume, length, price, FX)	Cost volatility (e.g., input costs, overheads, FX)		
	Insufficient confidence in investment returns hindering financial decisions (e.g., company revenues, time scales, FX, interest rates)		Revenue volatility (e.g., price and volume fluctuations)	
	Insufficient confidence in viability of novel technologies			
	Creditworthiness of counterparties (e.g., offtakers)			
Operating risks		Weather impacts		
		Damage from novel technology malfunction		
		Performance and integration of technologies		
		Cyber and terrorist attacks		
		Input/feedstock supply volatility (e.g., intermittency)		
		Supply chain disruptions		
		Contractors defaulting or failing to deliver		
Liability and reputational risks				Mandated restoration or remediation
		Legal fees or regulatory fines (incl. environmental and pollution, workers' compensation, physical damage, greenwashing)		
	Reputational damages (e.g., environmental concerns, malpractice, third party misconduct)			
Geopolitical risks		Nationalisation or expropriation of assets		
	Business disruptions or delays driven by political instability and uncertainty in regulation and policy			
	Competitive disadvantages due to divergent environmental regulation/policies			

Conventional insurance Non-conventional insurance

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Leveraging the insurance industry's risk management expertise and improving product visibility would support real economy firms' response to climate transition challenges

Report approach

We conducted research with CEOs of real economy companies in hard-to-abate sectors. We aimed to understand the challenges they are facing, and the level of support they have received so far from the insurance industry, as they navigate their role in transition.

Key conclusions

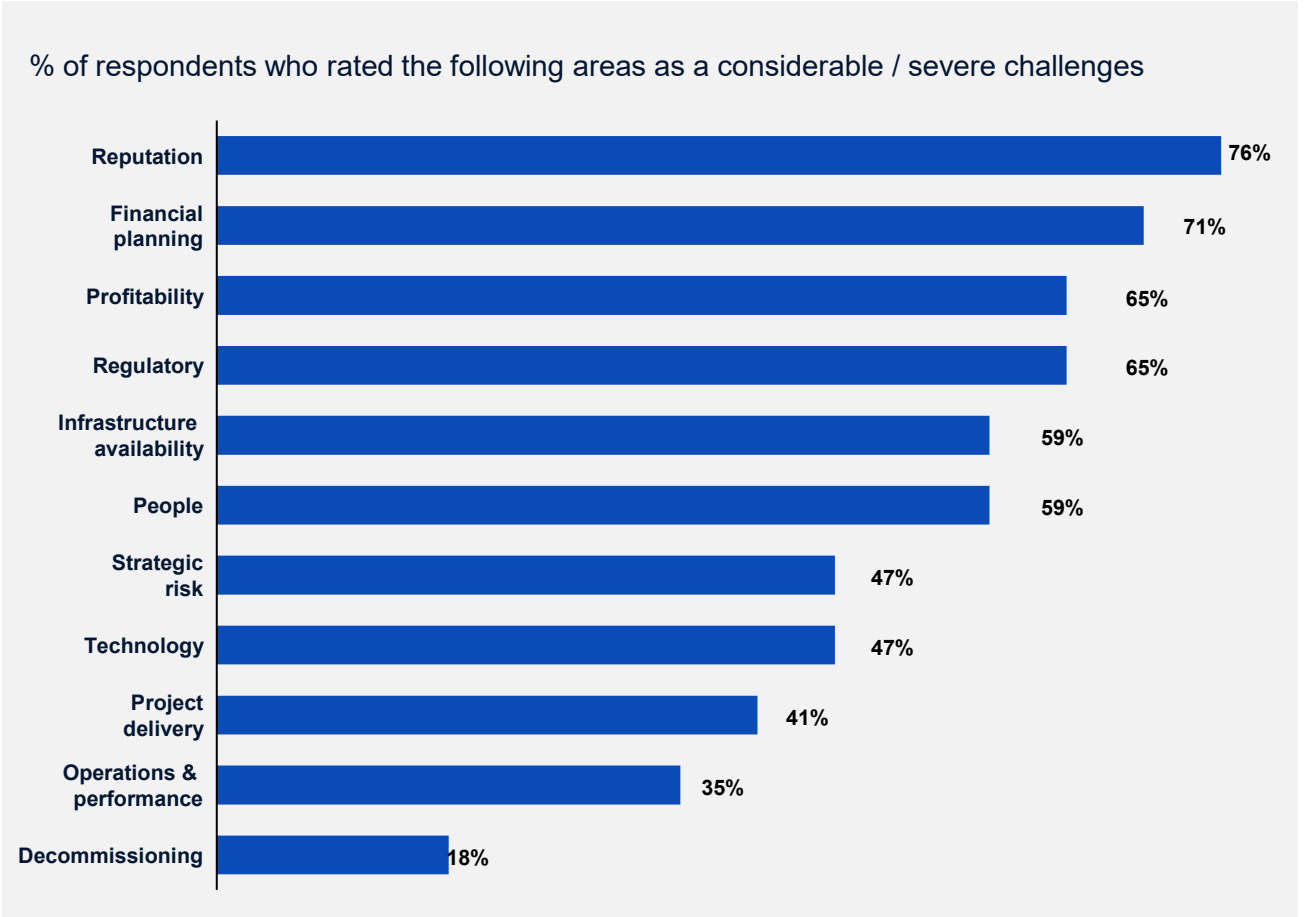
The insurance industry **has an important role to play** in shaping the path to net zero, through evolving and deploying its risk transfer offerings and better articulating its **value proposition** to potential customers.

Established insurance products like construction, property and business interruption already have a well-understood role in mitigating some important challenges. However, there are fewer mature insurance offerings available for the **first-order strategic and financial risks** which firms see as their top challenges in the transition.

Although insurance risk transfer cannot address all risks, the industry's broader **risk management expertise** can play a crucial role in driving the transition.

Insurance runs the risk of being a (costly) afterthought, if it is seen as 'downstream' from a more urgent set of considerations that drive investment in the transition. To help catalyse the transition, insurance firms should increase the level of **engagement and collaborative problem solving** with real economy firms as well as finance and public sector partners.

Survey results: Challenges faced by companies in climate transition



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Opportunities for insurers to draw on the cross-sector convening power of the Sustainable Markets Initiative to support the transition

Suggested focus areas

Sector		Solutions for the insurance industry to explore and build
Energy	1	Develop **insurance-led pooling solutions** for renewable projects, providing coverage at the portfolio level to banks supporting these projects
	2	Engage with policymakers on expanding **Offtaker of Last Resort schemes,** e.g., expanding their application to more producers, geographies, and/or other categories of offtake
Aviation	3	Engage with policymakers on offering **government-backed warrantees against changes in policy regarding SAF**, e.g., blending mandates, subsidies, supply commitments for municipal waste
Shipping	4	Develop **liability and physical damage coverage for ammonia bunkering,** considering additional crew safety and physical damage risks posed
Agribusiness	5	Build out offering for **soil health and fertilizer yield insurance,** engaging agribusiness and regulators to encourage recognising soil as an asset class
Construction	6	Establish **cross-industry and cross-geography data sharing structures** for cross laminated timber (CLT), for which there is limited carrier underwriting appetite despite mature construction practices globally
CCUS	7	**Extend tenure of policies for carbon capture / storage,** accommodating long-duration of liability for carbon (writing policies up to ~10 years)

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Sector transition pathways: Energy sector

Current state

Share of global emissions	**High**	Accounts for 40% of global emissions
Transition progress	**Medium**	There has been an extensive development and wide deployment of renewable energy technologies globally. However, coal, oil and gas remain prevalent energy sources
Existing commitments	**Medium**	The Stated Policies & Announced Pledges scenarios highlight that there is still a need for an acceleration in commitments, in order to achieve 1.5°C outcome
Insurer involvement in transition	**High**	Close multi-year collaboration; wide range of products incl. technology performance insurance, equity contribution guarantee facility

Key Risks associated with the transition

- **Dependence on infrastructure,** including grid updates and expansion, interconnectors
- **Unsuitable offtake agreements** (e.g., length, price), uncertain markets and lack of demand signals
- **Technological obsolescence** from rapid innovation/advancements
- **Volatility of renewable inputs** (e.g., wind power) and challenges in forecasting
- **Failures in energy storage and in grid stability** leading to power outages
- **Expensive maintenance and repairs** due to limited supply of engineers, and/or damage-prone assets (e.g., offshore wind sub-sea cable damage)
- **Volatility in energy prices** and rising competition
- **Optimising decisions around decommissioning and repurposing**
- **Divestment/difficult demands from FIs** while transitioning
- **Legal or regulatory fines** (incl. flaring fines, greenwashing fines, fines for missing targets)
- **Inconsistent and evolving regulation** hindering investments (e.g., onshore wind restrictions)
- **Uncertainty around the role of carbon markets**, incl. the structure and mechanisms

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Sector transition pathways: Energy sector

Emerging and enabling technologies to the transition

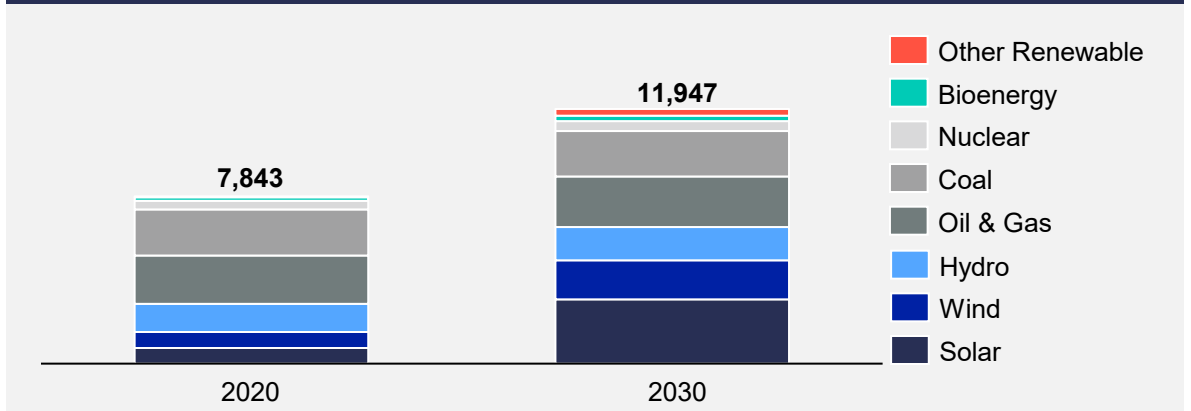
The move towards sustainable energy sources will be pivotal in achieving global net zero targets.

The insurance industry already offers a wide range of products that support the development of wind and solar projects. As these mature technologies continue to grow and expand, they will face unprecedented risks and challenges. Insurers will need to evolve and adapt the products offered to support the progression of these critical clean technologies.

Similarly, investment in emerging technology projects will likely increase, generating additional insurance capacity growth. Insurers can help to accelerate this investment through assuming a portion of the risk related to these new energy sources.

	Lever	Maturity
Key technologies	Solar	Medium
	Hydropower	High
	Wind	Medium
	Hydrogen	Low
	Nuclear	Medium
Enabling technologies	**Lever**	**Maturity**
	Electricity grid	Medium
	Carbon capture (CCUS)	Low
	Battery storage	Medium

Vision for 2030 and beyond: when private sector expects commercial viability



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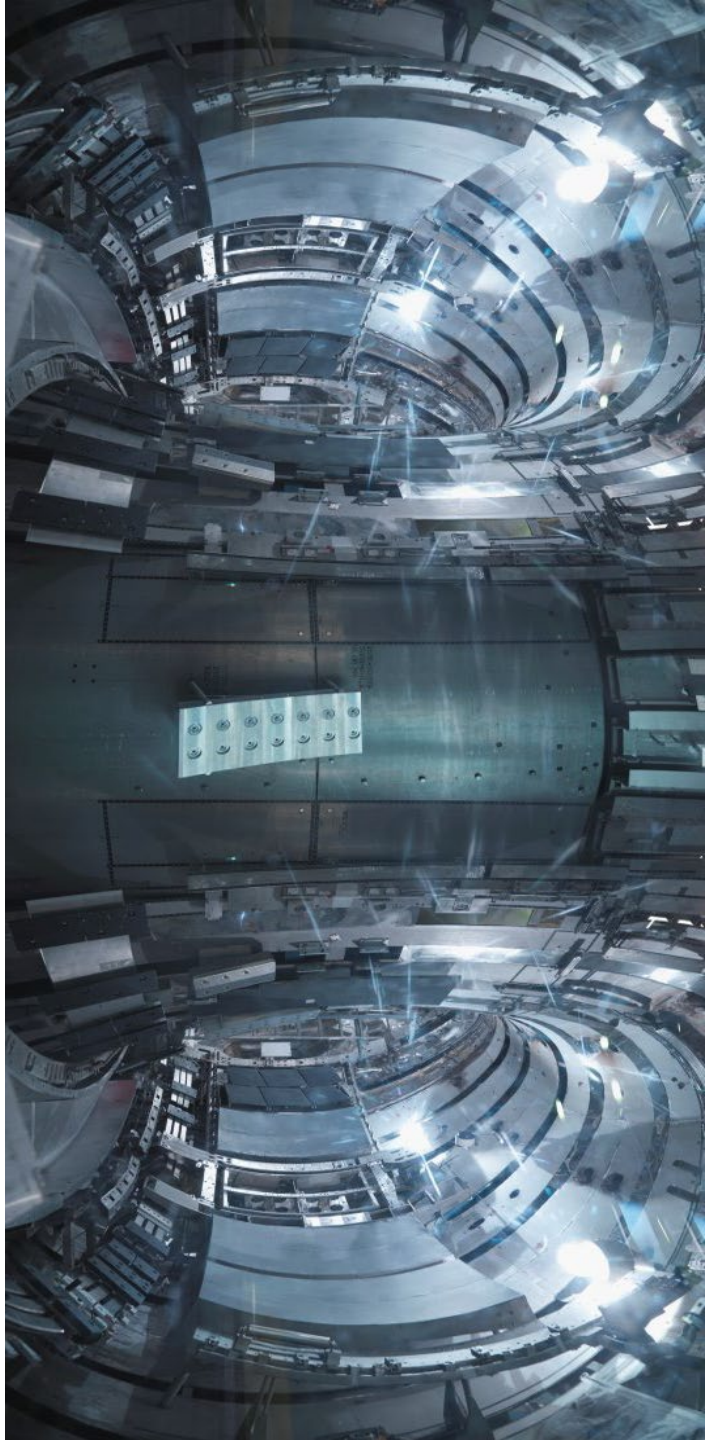
Sector transition pathways: Fusion sector

Current state

Share of global emissions	**N/A**	Negligible as not yet operational; moreover, the technology will be a clean energy "solution" and therefore not significantly contribute to emissions
Transition progress	**Low**	Focus is on commercial viability; little consideration of sustainable processes (e.g., inputs, materials)
Existing commitments	**Low**	Company commitments are related to commercial provision, not to sustainability of operations
Insurer involvement in transition	**Low**	Insurers not involved in early development

Key Risks associated with the transition

- **Uncertainty in timeframe for commercially viable fusion**
- **Uncertainty over broader power sector role for fusion** at point of availability and in each location
- **Lack of expertise in fusion hindering acceleration of supply chains and financial institution support**
- **Insufficient availability of long-term storage facilities** for the energy created by fusion
- **Uncertain costs of durable materials** needed to withstand high neutron flux and high temperatures
- **Long-term funding uncertainties** for fusion with expected 10+ year return periods
- **Higher cost of sustainably-sourced materials** (e.g., metals used)
- **Disrupted supply of deuterium and tritium inputs** (or other isotopes used, such as helium-3)
- **Risk of civil liability were an accident to occur**, such as breach of confinement / inventory resulting in leaked tritium or mobilized activated products
- **Lack of clear regulation for fusion differentiated from fission**, incl. parts import and export
- Harm caused from improper treatment of **radioactive materials**, particularly when decommissioning



Sector transition pathways: Fusion sector

Emerging and enabling technologies to the transition

Fusion is the universe's most powerful form of energy. Its ability to provide clean, reliable, baseload power could make it a vital tool in the world's transition to net zero. Recent breakthroughs and advances in technology have proven the science, but the full fusion energy value chain still needs to be industrialised and commercialised.

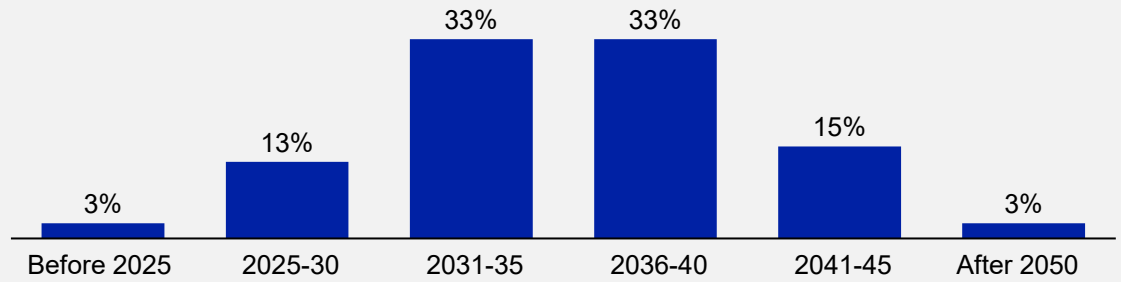
The sector has attracted significant investment to date which is driving faster progress than ever before. Advances have been made in the necessary technology, enabled by both private and public sector funding.

There is an expectation that fusion energy could be commercially viable in the next ten years and that the insurance industry would have a central role to play in de-risking this. The construction of the first fusion plants is likely to be riskier than it is for more established fission plants as they will be first-of-a-kind. But fusion's operational risks will be significantly lower than fission; fusion carries no risk of a catastrophic nuclear reactor meltdown or high activity, long-lived nuclear waste, and has a lower risk supply chain.

	Lever	Maturity
Key technologies	Magnetic confinement (e.g., tokamaks, stellarators)	Low
	Inertial confinement (e.g., laser compression)	Low
Enabling technologies	**Lever**	**Maturity**
	Renewable energy availability on grid	Medium
	Durable materials for prolonged reactions	Low
	Scaled-up isotope production	Medium

Vision for 2030 and beyond: when private sector expects commercial viability

% response out of 40 respondents in Fusion Industry Association survey (2023)



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Sector transition pathways: Mining sector

Current state

Share of global emissions	**Medium**	Accounts for 2-3%1 of global emissions
Transition progress	**Low**	Some use of renewable energy for power. Limited use of emissions reduction levers - largely dependent on upstream and downstream emission reductions
Existing commitments	**Medium**	All ICMM members (24 of largest global miners) have committed to Net Zero (Scope 1 & 2) by 2050, setting Scope 3 targets, and reporting on progress.2
Insurer involvement in transition	**Medium**	Close collaboration with insurers, but limited transition focus

Key Risks associated with the transition

- **Uncertainty in viability of lower-emission operations** (e.g., safety concerns with operating electric fleet in high temperature climates and undergrounds, and challenges due to limited lifespan of mines)
- Immature transition of **upstream and downstream activities preventing achievement of targets, e.g.,** downstream green steel production, low-carbon shipping methods
- **Unclear downstream willingness to pay 'green premium'** for environmentally-mined/refined products
- **Lack of expansion resulting in supply shortages** of critical minerals for clean technologies
- **Rapid technological and policy change** creating **uncertainty** and barriers to investment
- Lower-emission **fuels damaging fleet/machinery**
- **Reputational damages** due to local pollution or biodiversity impact
- Uncertainty in **regulatory expectations** and trends
- **Geographic and land access limitations to establishing on-site renewable energy supply** (e.g. land with the right tenure and environmental approvals) or **accessing renewables through the grid**

Note: Higher proportion of emissions may be allocated to mining due to inclusion of coal | Source: IGF 2022 (1); ICMM (2); Oliver Wyman analysis

Sector transition pathways: Mining sector

Key technologies for the mining emission reduction

The mining sector will play an integral role in the move towards renewable energy sources and achieving net zero. Renewable energy technologies like solar panels, wind turbines, and electric vehicles (EVs) require a significant amount of minerals like lithium, copper, nickel, and rare earth elements. As these clean technology projects mobilise and expand, the global demand for key minerals is expected to nearly double.

To protect the long-term success of new clean technologies the mining industry will need to scale up production to meet the projected demand. Insurers will have a key role in supporting this effort, by derisking the investment needed in new technologies.

Alongside this, insurance can continue to support the carbon abatement of the wider mining industry, providing the risk solutions needed to enable the development and production of renewable energy and fuel sources, which are critical to the operation of the mining sector.

Key technologies

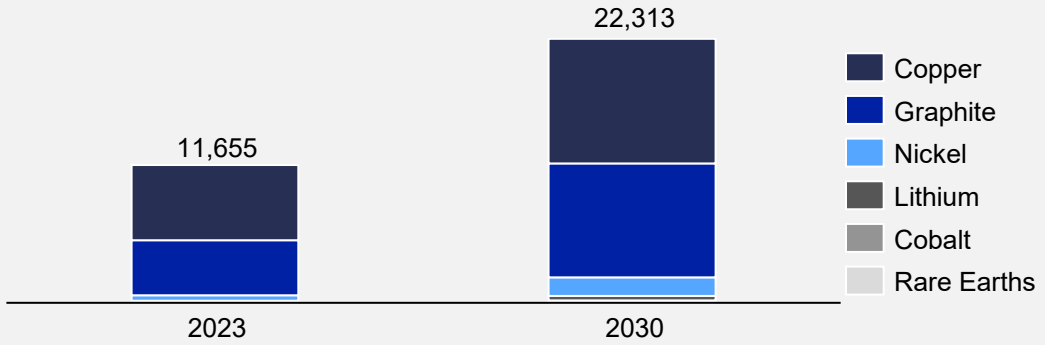
Lever	Maturity
Renewable energy supply (on-site)	Medium
Bio/synthetic fuels for vehicles/machinery	Low
Electrification of vehicles/machinery	Medium
Downstream metals production (e.g. green steel)	Low
Energy efficiency	High

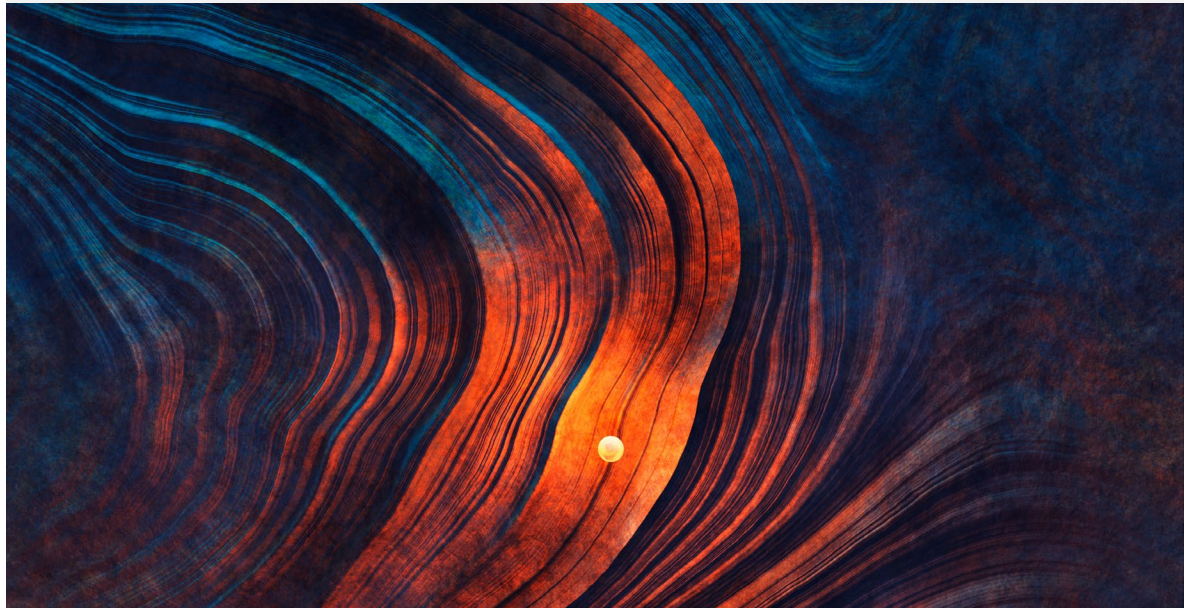
Mining plays a broader role

Mineral	Reliant clean tech
Copper	
Graphite	
Nickel	
Lithium	
Rare earths	

Source: IEA Critical Minerals 2022 (1)

Vision for 2030: Global mineral demand for clean tech, Steps scenario, kt (kilotonne)[1]





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Sector transition pathways: Aviation sector

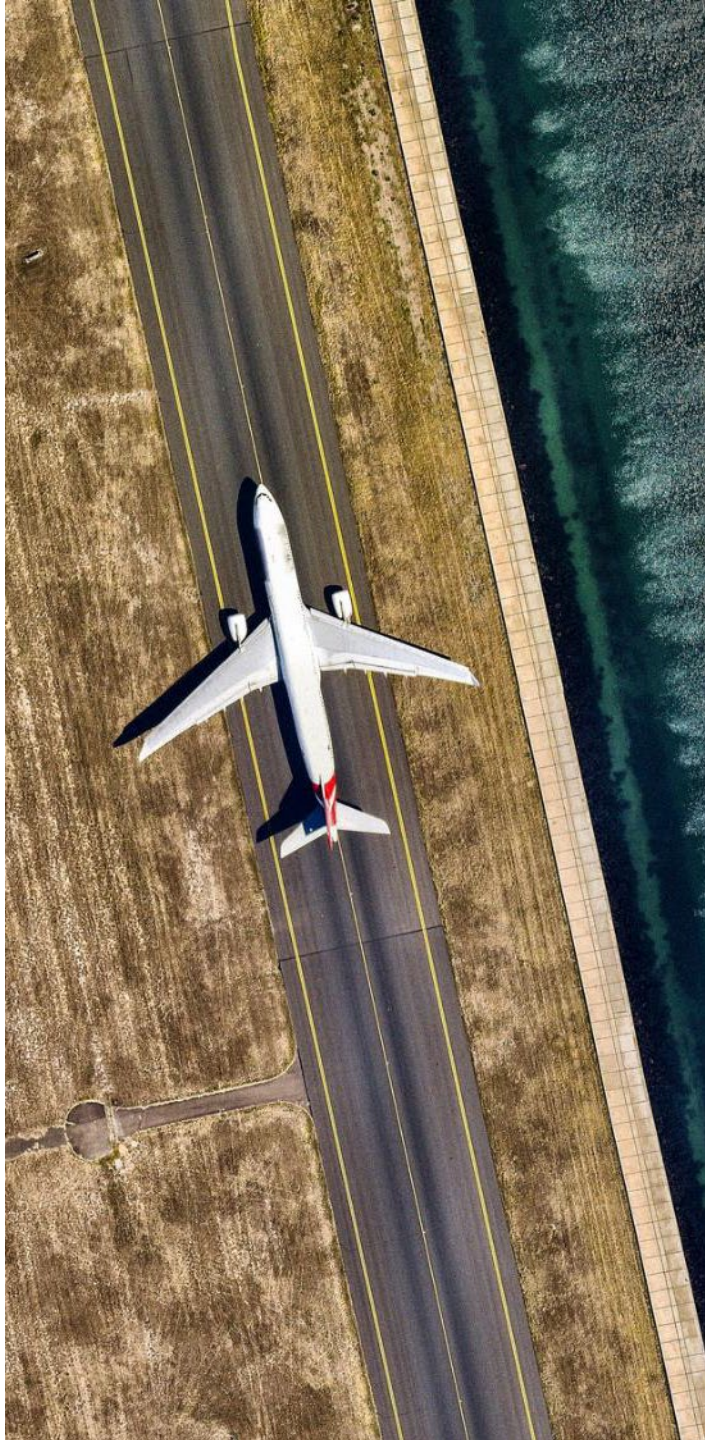
Current state

Share of global emissions	**Medium**	Accounts for 3%1 of today's emissions
Transition progress	**Low**	Low penetration of SAF and immature alternative propulsion technologies, but a well-understood pathway
Existing commitments	**Medium**	Airline alliances have made commitments to operational efficiency improvements, SAF and CCUS
Insurer involvement in transition	**Medium**	Engaging with insurers on BAU and trials; some green insurance policies offered

Key Risks associated with the transition

- **Dependence on supply chain transition**, incl. on SAF / SAF lubricant production, refuelling, OEMs etc.
- Complexity in rolling out **supporting infrastructure to electrify ground service equipment**
- **Lack of confidence / robustness in SAF offtake demand** and broader flight demand
- **Uncertainty in customer willingness to pay a 'green premium'** for lower emissions flights
- Higher aircraft complexity / **new designs increasing maintenance and repair costs**
- **Unknown viability of alternative propulsion technologies**
- **High / fluctuating SAF costs**
- **Extreme weather** impacting flight operations, disrupting supply chains and/or causing damage
- **Damage caused by novel technology** (e.g., explosions during hydrogen refuelling)
- **Legal or regulatory fines** (incl. greenwashing, low-pollution rule non-compliance etc.)
- **Mandated offsets, CCUS or carbon market participation**
- **Divergence in national regulations** complicating operations and increasing competition (e.g., safety restrictions on new technologies, carbon taxes)

Source: International Air Transport Association (1); Oliver Wyman analysis



Sector transition pathways: Aviation sector

Key technologies for the aviation emission reduction

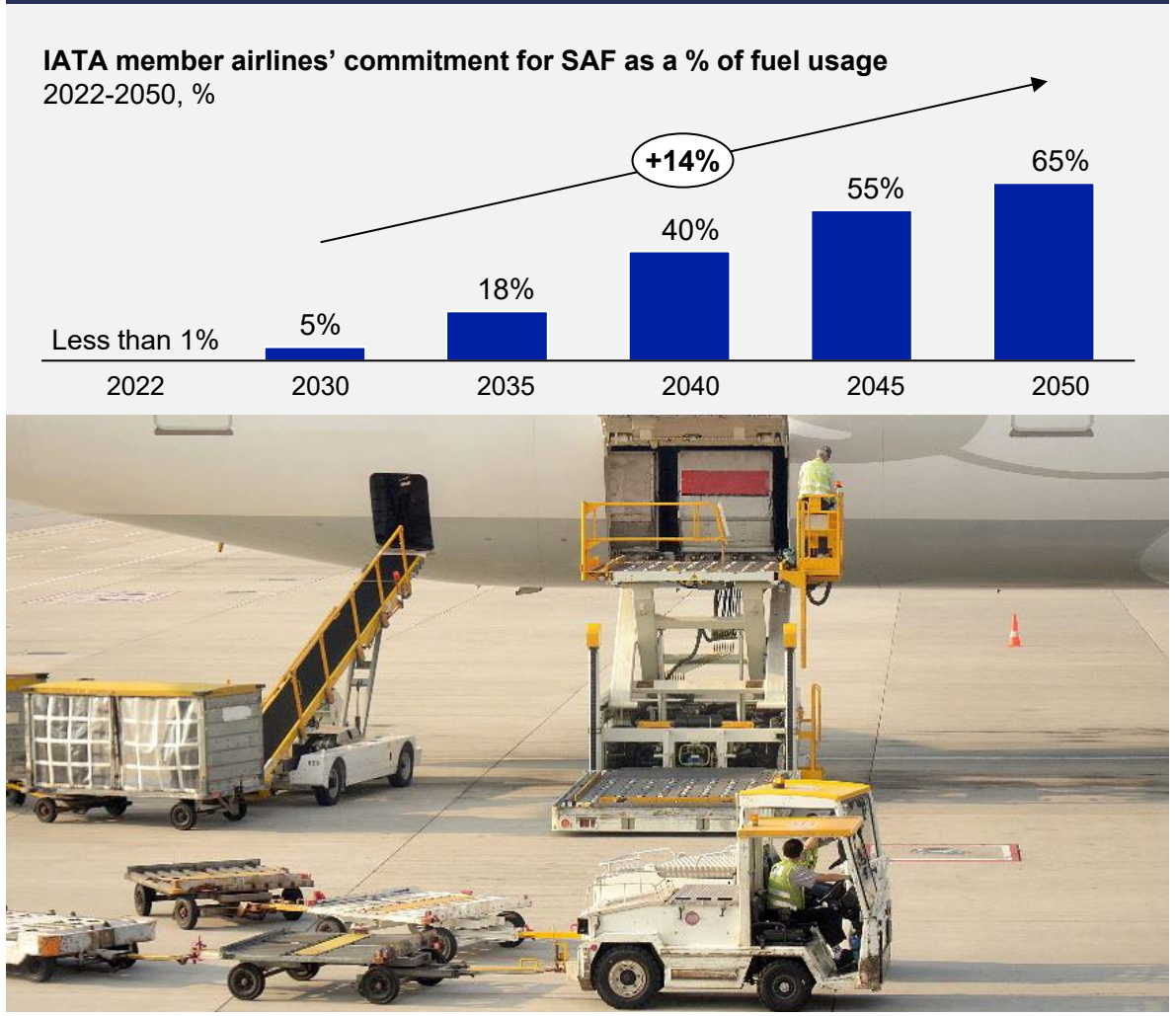
There are two critical areas of carbon abatement for the aviation industry: reducing the economy's reliance on aviation as a method of transportation and increasing the use of Sustainable Aviation Fuels (SAF) in favour of traditional fuel sources.

Insurance has a pivotal role in decarbonising aviation by de-risking emerging energy technologies and sustainable fuel alternatives. Airlines have already made the commitment to increase their use of SAF. However, to realise that ambition, further investment and development will be needed to bring the production of these fuels to a level of maturity and scale that can sustain future demand. Insurance will be critical in supporting these projects.

	Lever	Share of CO_2 reductions	Maturity	Description
Key technologies	SAF		Low	Low/zero carbon fuels (e.g., Hydroprocessed Esters and Fatty Acids (HEFA), Gasification)
	CCUS		Medium	Offsets/abatements
	Alternative propulsion		Low	Hybrid/electric/hydrogen propulsion technologies
	Fleet/operational optimization		High	Newer generation fleets; optimised flight routes

Source: International Air Transport Association (1); Oliver Wyman analysis

Vision for 2030 and beyond: IATA SAF commitments[1]



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Sector transition pathways: Shipping sector

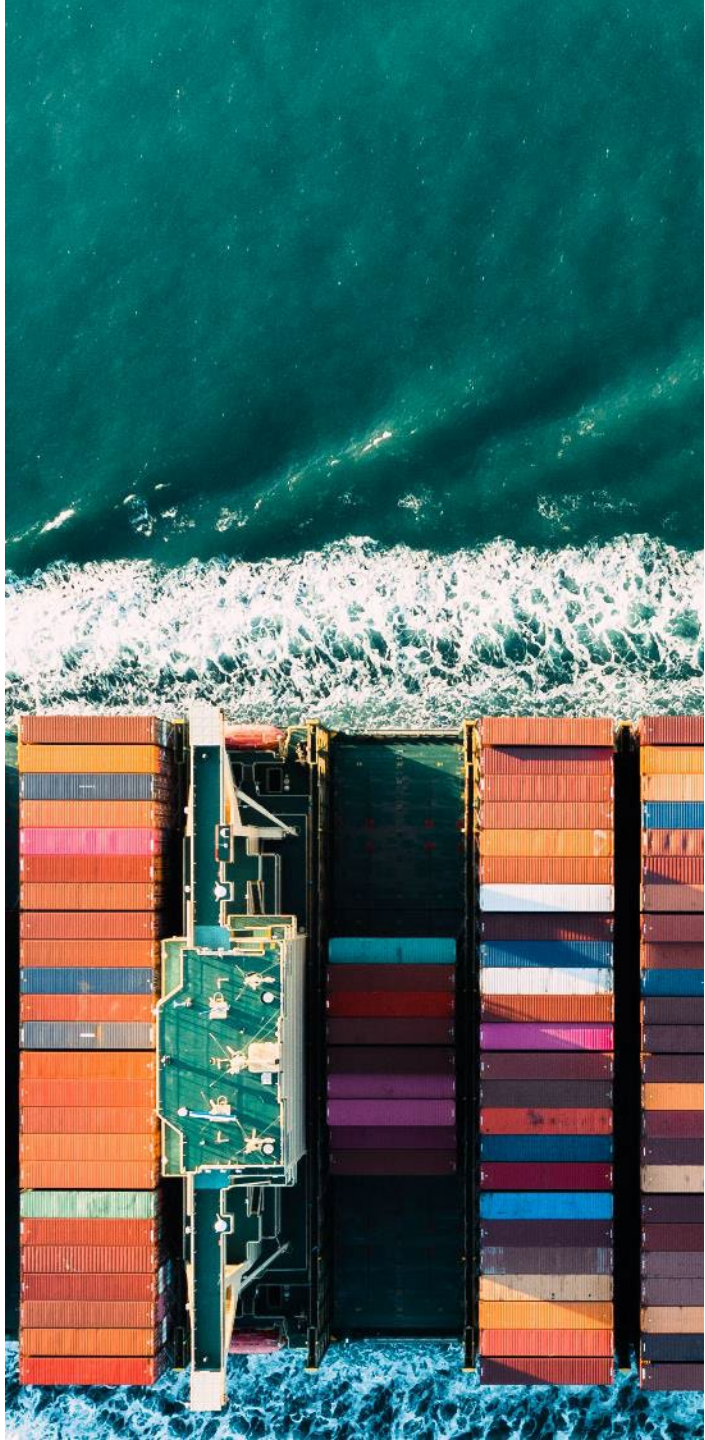
Current state

Share of global emissions	**Medium**	Accounts for 2%1 of global emissions
Transition progress	**Low**	Immature technologies, with reluctance to finance/support enablers and less pressure due to importance for global trade
Existing commitments	**Medium**	Whilst there are commitments to building low/no-emission fuel plants, progress limited by lack of financial support to reach FIDs
Insurer involvement in transition	**Low**	Poseidon Principles for Marine Insurance set guidelines for insurers to promote sustainability in shipping, despite additional insurability challenges

Key Risks associated with the transition

- Bunkering of **highly flammable and corrosive fuel** making it difficult to get insurance
- Low availability/**supply of zero emission fuels**
- **Lack of/immaturity of fuel infrastructure** (transport, storage, refuelling services)
- Immature tech and infrastructure making it **difficult to create cost estimates**
- **Uncertainty in government support** to develop market
- **Uncertain markets, lack of demand signals**, and **reluctancy to take offtake agreements**
- **Balancing increasing costs to drive the transition and the impact of that on social issues** such as food security, disaster response, socio-economic progress
- **Competition for funding/financing** – World Bank and MDBs ramping up but hydrogen fuel funding, for example, can go to lots of things, not just shipping
- **No clear winner of alternative fuels** so need to remain flexible (e.g., with hybrid engines or multiple types of ship on order)
- **Crew safety**, especially when using ammonia fuel

Source: IEA (1); Oliver Wyman analysis



Sector transition pathways: Shipping sector

Emerging and enabling technologies to the transition

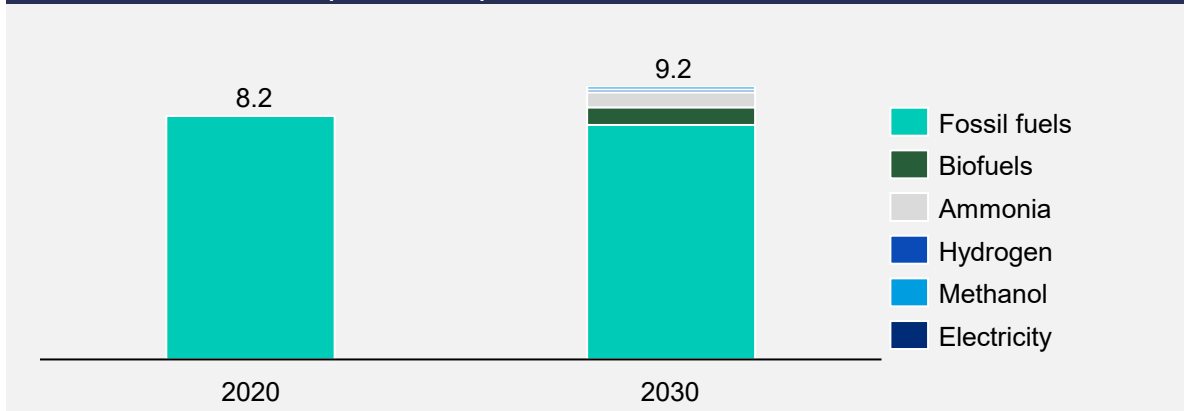
The shipping industry accounts for approximately 2% of total global CO2 emissions, and the International Energy Agency (IEA) estimates international shipping activity will more than double by 2050. The use of alternative marine fuels is integral to reducing GHG emissions from shipping.

Insurance can support in the decarbonisation of shipping by de-risking the ability to deploy and use emerging energy technologies and sustainable fuel alternatives, with each alternative having different characteristics and associated risk profiles.

Progress has been slower than other sectors, but investment is rising. There is a need not only for the de-carbonisation of the industry, but for shipping to be ready to transport the new green fuels and technologies needed to reach a net-zero future.

	Lever	Maturity
Key technologies	Liquefied natural gas (LNG)	Medium
	Methanol-based fuels	High
	Ammonia	Medium
	Liquid hydrogen	Medium
	Higher efficiency ships	High
	Lever	**Maturity**
Enabling technologies	Dual-fuel engines	Low
	Fuel distribution infrastructure	Medium
	Fuel feedstock supply chains	Medium
	Electricity grid	Medium
	Optimising routes	High

Vision for 2030: IEA Projected energy consumption in international shipping in the NZE scenario, EJ (ExaJoules)[1]



Source: IEA (1); Oliver Wyman analysis

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Sector transition pathways: Space sector

Current state

Share of global emissions	**Low**	Makes up a negligible proportion of global emissions, despite emissions intensity of fuels
Transition progress	**Medium**	Low priority for space companies, though efficient engines, ground operation improvement and cleaner fuels being explored and implemented
Existing commitments	**Low**	Industry in early phases of making commitment to sustainable operations, currently without a climate focus
Insurer involvement in transition	**Low**	Space insurance is focused on launch / satellite risk with limited appetite for brand-new technologies - several focus on ESG and limit support of certain activity, e.g., space tourism

Key Risks associated with the transition

- **Uncertainty in viability of new designs** (increased efficiency engines, reusable rocket launchers, satellites designed for demise) **and new technologies** (space-based solar power)
- **Lack of low-carbon fuel production and infrastructure** making low carbon launch unviable
- **Energy supply disruptions** to ground operations, incl. storage failures where renewables used
- **Long-term funding uncertainties for novel technologies (incl. space-based solar power, asteroid mining)** with 15+ year waits for returns
- **High cost of repairs of reusable launch vehicles** compared to single-use vehicle production
- **Newer designs failing at launch / in-orbit**, destroying high value asset and losing expected revenue
- **Limited data availability around performance and potential risks and hazards in orbit,** with an increasingly cluttered space environment posing greater threat
- **Missed launch slots** (due to weather events, construction delays etc.) delaying project ~12 months
- **Insurer unwillingness to cover new technologies** due to significant losses in the past
- **Uncertainty created by lack of binding space regulation** and varying policies

Sector transition pathways: Space sector

Emerging and enabling technologies to the transition

We rely on a safe and sustainable space domain to understand our planet and to support fast and reliable communications critical to the global economy.

The number of active satellites in orbit as doubled since 2021 to 10,000, the majority of these being in Low Earth Orbit, which is becoming increasingly cluttered with space debris. Space sustainability is more than keeping satellites in orbit, it is about maintaining the safety and health of the space environment to keep space a valuable resource for many generations to come and to reduce the carbon intensity of launches. There is an opportunity for insurance to support and derisk investment in space.

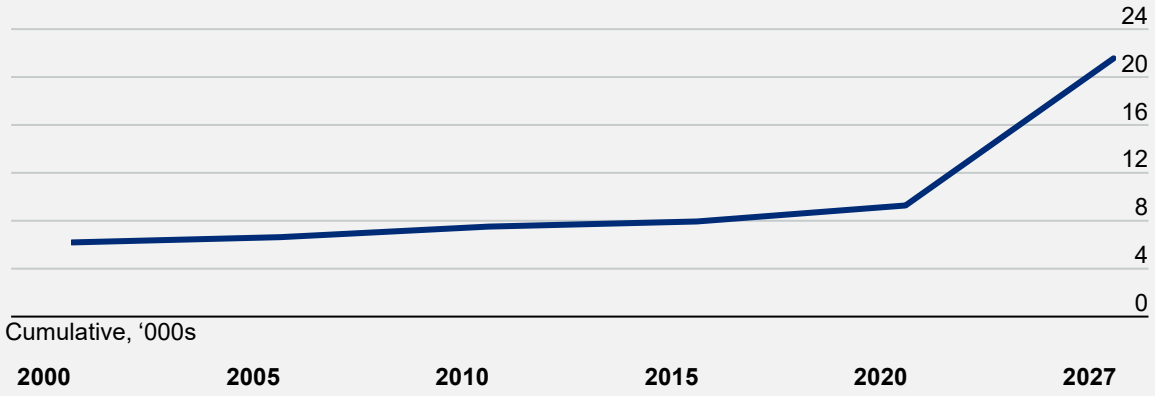
The space sector may be the answer for the supply of vital minerals needed for developing clean technologies, such as renewable energy systems, electric vehicles, and advanced batteries. Asteroids can contain high concentrations of valuable minerals, which could be harvested and brought back to Earth or used directly in space.

	Lever	Maturity
Key technologies for lower space emissions	Low-emitting fuels	Medium
	Re-usable launch vehicles	Medium
	Satellite longevity operations	Low
	Energy efficiency and renewables at manufacturing / launch sites	Medium

Space plays a broader role	
Lever	**Maturity**
Earth observation / monitoring	High
Automating precision agriculture	Low
Air traffic/maritime route optimization	High
Forestry fire prevention	Medium
Space based solar power	Low
Asteroid mining	Low

Source: CelesTrak (1); Oliver Wyman analysis

Vision for 2030: Projected global satellite launches[1]



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Sector transition pathways: Agribusiness sector

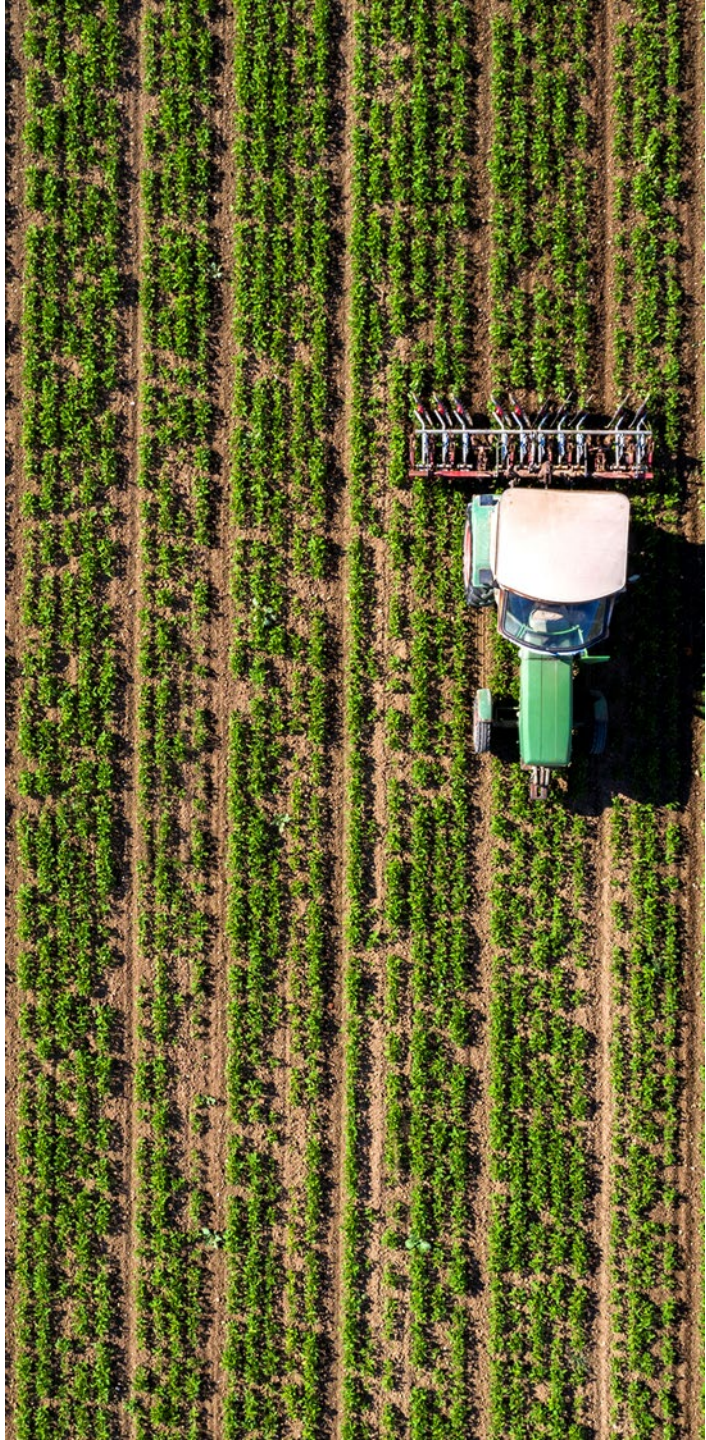
Current state

Share of global emissions	**High**	Accounts for 22%1 of global emissions
Transition progress	**Medium**	Varying maturity of technologies and practices; work to be done on scaling transition activities globally
Existing commitments	**Medium**	Buyers are committed, but limited by ambition of small-scale farmers and producers
Insurer involvement in transition	**Low**	Focus has been on access to funding (support for crop yields and protection due to climate change), less on transition

Key Risks associated with the transition

- **Lack of small-scale farmer awareness** of key technologies for the transition and their importance
- **High capital costs** required to roll out relevant technologies
- **Lack of golden standard causing diverging adoption** of different technologies across farms
- **Complex value chains / ecosystems making it difficult to co-ordinate**, such as by identifying shared cost opportunities or understanding impacts across supply chain
- **Downstream unwillingness to pay 'green premium' for more sustainable practises**
- **Physical impacts of climate change causing disruption** (e.g., droughts, heat stress, severe weather events), **reduced yields or yield loss**
- **Reduced supply chain robustness** due to climate change (e.g., due to growing location unsuitability)
- Pressure to reduce impact across **emissions, biodiversity, nature, deforestation etc. in parallel**
- **Lack of sector-specific knowledge within financial services** providers
- **Varied access to government grants, fundings and incentives** for farmers
- Poor soil health and nutrient content

Source: IPCC (used as there was no comparable IEA % for agribusiness) (1); Oliver Wyman analysis



Sector transition pathways: Agribusiness sector

Emerging and enabling technologies to the transition

Traditional fertilisers, rich in harmful chemicals, have contributed to soil degradation, water pollution, and greenhouse gas emissions. As farmers transition to and implement regenerative agricultural practices, this often requires financial investment to buy new machinery and/or employ more staff. In the first few years of this transition process, there can also often be a dip crop yield.

Offloaders or food companies may offer farmers increased prices or incentives for regenerative agriculture grown produce, and depending on how this is structured, there could be financial losses should the crops fail.

Insurance can de-risk the financial investment of the farmer and/or offloader. This revenue protection may enable banks to lend on better terms to farmers in transition and de-risk the investment for asset managers, thereby unlocking significant flows of capital to finance regenerative practices.

	Lever	Maturity
Key technologies	Regenerative agriculture and sustainable production practices	Medium
	Anaerobic digestion	Medium
	Alternative proteins/shift in consumption	Medium
	Renewable energy use on farms	Medium
	"Green" machinery and transportation methods	Medium
Enabling technologies	**Lever**	**Maturity**
	Animal feed additives/ optimisation	Low
	Reduction in food loss or waste	Medium
	Land conservation & natural carbon sinks	Low
	Optimised use of land	Medium

Source: Insuring a Sustainable Future, SMI Insurance Task Force 2023 (1); Oliver Wyman analysis

Vision for 2050: Agricultural abatement options for NZE scenario[1]

Abatement Measure	2050 vs. 2019	Development Outlook
Diet Shifts	-39%	Consumption of lamb and beef needs to fall by 45% in the net zero pathway
Animal protein production	-13%	Selective breeding, feed-mix optimisation and methane/ nitrification inhibiting additives to reduce animals' GHG
Crop production	-9%	Low/no-tillage production, improved fertilisation practices and better water & irrigation management all pollute less
Reduction in food waste	-8%	Food waste and loss would need to fall 13% to a 20% global average by 2050
Electrification	-3%	Electric farm vehicles fully replace internal combustion vehicles by 2050 under the Net-Zero pathway

1 Executive summary

2 Sector deep-dives

3 **Recommendations**

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Key recommendations for insurers to support real economy businesses: across innovation, evolution of existing products and expanded capacity

Market innovation/ transformation ***Reconsidering the market approach***	**Evolution of existing products** ***Evolved product offerings and/or applications to new insured risks***	**Expanded appetite/ capacity** ***Increased capacity for existing insured risks***
New, insurance-led pooling solutions to cover low appetite risks	Improvement and widescale adoption of build-back better wordings	Increase catastrophe risk availability, considering: • Insurability, incl. adequacy of limit for insured • Breadth of capacity suppliers (e.g., ILS)
Design of insurance solutions to enable capital relief for financial services, to allow greater investment	Evolution of BI product wordings to accommodate technological advancement	Underpin asset performance for novel technologies (e.g., performance guarantees)
Use of long-term risk capacity of life insurance balance sheets to invest in long duration risk exposures	Longer tenure of policies to improve coverage and provide price stability	Credit risk for green infrastructure projects as a lever for crowding-in investment
Coordinated cross-industry data sharing for novel technologies and transition assets	Legal liabilities and damages caused by first-of-a-kind technologies (e.g., battery storage, ammonia bunkering)	Accelerate the deployment of solutions to support creation and running of mutuals and captives
Exploring partnerships with banks to harmonize risk assessment approach	Credit insurance for exposure to portfolios of off takers (e.g., buying groups) or of start-up companies	

A range of levers can be considered in exploring how to expand appetite/capacity for existing offerings (e.g., better risk mitigation, lower cost distribution/underwriting/claims handling, new capacity providers and pooling approaches, etc.)

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Identified opportunities to develop insurance propositions for the transition (1 of 4)

Market innovation | Evolution of product offering | Expanded appetite

Innovation focus area	Current situation & limitations	Proposed innovation	Sector-specific examples	Degree of innovation
New, insurance-led pooling solutions to cover low appetite risks	Market struggles to **provide capacity** for first-of-a-kind technologies or for large cat risk concentrations	An MGA, a group of carriers involved in insuring transition risks, or the Lloyd's market could set up pooling arrangements to **enable the provision of cover across hard-to-insure risks** in a diversified way	*Large-scale energy transmission projects*	
Design of insurance solutions to enable capital relief for financial services, to allow greater investment	• **Insurance can allow a degree of credit relief for banks,** thereby facilitating cheaper borrowing, e.g., surety, or credit relief insurance • **Uncertainty over expected pay-out reduces capital relief impact**	**Strengthen and innovate capital relief mechanisms,** including increasing transparency of products and confidence in pay-out (e.g., parametric solutions)	*Credit insurance for renewable-focussed lenders*	
Use of long-term risk capacity of life insurance balance sheets to invest in long duration risk exposures	Transition investments often have **longer return periods than appeal to most investors, inhibiting financing** of transition-technologies even where insurers are willing to provide credit products	**Utilise long-term risk capacity of life insurance balance sheets** to invest in long duration risk exposures	*Investments in fusion developers*	
Co-ordinated cross-industry data sharing for novel technologies and transition assets	**Limited history and availability of risk and claims data** on transition technologies restricts insurer confidence	Encouraging **increased sharing of standardised data** by the real economy sectors and third parties, as well as across the insurance industry (whilst maintaining confidentiality and competitive IP)	*Sharing data on performance history of CCUS methods*	

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Identified opportunities to develop insurance propositions for the transition (2 of 4)

Market innovation | Evolution of product offering | Expanded appetite

Innovation focus area	Current situation & limitations	Proposed innovation	Sector-specific examples	Degree of innovation
Exploring partnerships with banks to harmonize risk assessment approach	**Lenders/investors do not generally have access to insurer risk assessment insight** during their due diligence (instead relying on other third parties), **nor is there proactive coordination of risk assessment approaches**	Explore **partnerships with finance providers to better coordinate risk assessment and use insurance industry insight** to support higher confidence in transition-related loans, investments and acquisitions; also ensuring insurance **conditions set by banks are feasible**	Sharing assessment of expected losses for renewable projects under consideration for investment	
Improvement and widescale adoption of build-back better wordings	• Repairing with like and kind **misses an opportunity to improve the sustainability and/or climate resilience of existing assets** after a loss event • Build back better wordings have been developed in the market but are **not widely adopted**	Efforts to **evolve 'build-back better' offerings, increase their affordability** for **insureds**, and **drive greater uptake** across the industry	Repairing aircraft with more efficient engines	
Evolution of business interruption wordings to accommodate technological advancement	Business Interruption cover does not generally accommodate the impact of **technological advancements** which can cause disruption by, e.g., increasing repair costs and extending wait times for parts	**Evolve wordings for Business Interruption to accommodate and maintain access to rapid technological advancements**, potentially covering additional cost to get insureds to the front of an OEM's queue	Improvements to turbines produced at wind-farms outpacing roll-out at wind farms	

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Identified opportunities to develop insurance propositions for the transition (3 of 4)

Market innovation | Evolution of product offering | Expanded appetite

Innovation focus area	Current situation & limitations	Proposed innovation	Sector-specific examples	Degree of innovation
Longer tenure of policies to improve coverage and provide price stability	Financial investors often **desire certainty around their coverage availability over a 10y+ period**, whereas insurer appetites tend to be for shorter tenures	**Extending tenure of policies/**offering longer-term capacity where appropriate, thereby: • Enabling contract price stability for the insured, including with renewal clauses • Accommodating unique longer-term liabilities, such as with carbon storage • Providing greater certainty of cover over the entire project lifecycle	*Extended liability for carbon kept on balance sheets (~10 years)*	
Legal liabilities and damages caused by first-of-a-kind technologies	• **Insurance structure relies on data on past performance,** hindering first-of-a-kind technology deployment • **Sector appetite varies,** with insurers more able to cover novel technology in certain sectors (e.g. more openness for aviation than energy)	Develop **legal liability and property damage cover for novel technologies supporting the transition,** facilitated by early engagement	*Battery storage* *Ammonia bunkering, with risks posed to workers unlike those of traditional shipping fuels*	
Credit insurance for exposure to portfolios of offtakers or of start-up companies	• Credit insurance available for single offtakers, however single offtakers can be insufficient for large investments, resulting in **buying groups**, **which credit insurance needs to serve** • **Offtakers may also include start-ups,** for which credit insurance is **harder to secure**	**Provide portfolio credit insurance for offtake agreements involving multiple offtakers**, including in the case of **buying groups, and to start-up companies**	*SAF offtake agreements with multiple airlines*	

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Identified opportunities to develop insurance propositions for the transition (4 of 4)

Market innovation | Evolution of product offering | Expanded appetite

Innovation focus area	Current situation & limitations	Proposed innovation	Sector-specific examples	Degree of innovation
Increasing catastrophe risk availability • **Insurability** • **Adequacy of limit** • **Breadth of capacity suppliers (e.g., ILS)**	• **Increasing natural catastrophe risks** driven by climate change, with **high severity and probability of loss events limiting insurability** or **resulting in insufficient limits** • The appetite is also restricted if there is **insufficient diversification amongst capacity suppliers** (e.g., lack of risk transfer to investors through insurance-linked securities)	**Increasing capacity/coverage through relevant market innovations** (e.g., pooling, data sharing), **improved risk mitigation** (through real-economy education and risk engineering services), **and cheaper distribution/underwriting/claims operating models** (e.g. parametric)	*Large offshore wind projects* *Weather-related disruptions to feedstock for biofuels*	
Underpinning asset performance especially for novel technologies	• Existing performance guarantees in the market, **offered by a very limited number of insurers** • **Legal restrictions prevent policies covering financial under-performance of asset,** such that focus must be on physical performance		*OEMs providing low-emitting generators seeking to guarantee asset achieves a specified level of electricity generation*	
Credit risk for green infrastructure projects as a lever for crowding-in investment	**Credit risk insurance well-established,** though **large-scale infrastructure projects less often the target,** especially in emerging economies, which reduces pool of investors		*Port redevelopments accommodating greener shipping fuels*	
Accelerate the deployment of solutions to support creation and running of mutuals and captives	Hard-to-insure risks may be best served by captives, though **businesses may lack the necessary capital or knowledge**	**Accelerate existing solutions supporting mutuals and captives**, including with their establishment and then providing adjacent insurance covers and services	*Renewable energy producers*	

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Opportunities for insurers to draw on the cross-sector convening power of the Sustainable Markets Initiative to support the transition

Suggested focus areas

Suggested activity *Innovation area or critical engagement*	Type of solution	Sector	Key stakeholders
Develop **insurance-led pooling solutions** for renewable projects, providing coverage at the portfolio level to banks supporting these projects	**Market innovation/ transformation**	**Energy**	Financial Services Task Force Energy Transition Task Force
Establish **cross-industry and cross-geography data sharing structures** for cross laminated timber (CLT), for which there is limited carrier underwriting appetite despite mature construction practices globally	**Market innovation/ transformation**	**Construction**	Sustainable Buildings Task Force Regional insurers
Develop **liability and physical damage coverage** for **ammonia bunkering,** considering additional crew safety and physical damage risks posed	**Evolution of existing products**	**Shipping**	Lloyd's Lab
Extend tenure of policies for carbon capture/storage, accommodating long-duration of liability for carbon (writing policies up to ~10 years)	**Evolution of existing products**	**CCUS**	CCUS Task Force Lloyd's Lab
Build out offering for **soil health and fertilizer yield insurance,** engaging agribusiness and regulators to encourage recognising soil as an asset class	**Evolution of existing products**	**Agribusiness**	Agribusiness Task Force incl. Yara International; Lloyd's Lab
Engage with policymakers on expanding **Offtaker of Last Resort schemes,** e.g., expanding their application to more producers, geographies, and/or other categories of offtake	**Support expanded appetite/capacity**	**Energy**	Governments/regulators Energy Transition Task Force
Engage with policymakers on offering **government-backed warrantees against changes in policy regarding SAF,** e.g., blending mandates, subsidies, supply commitments for municipal waste	**Support expanded appetite/capacity**	**Aviation**	Aviation Task Force Governments

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