

# Insuring a Sustainable Future

Protecting nature, people,  
and planet

Sustainable Markets Initiative  
Insurance Task Force 2023



Sustainable  
Markets  
Initiative

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## Foreword

The latest findings from the Intergovernmental Panel on Climate Change (IPCC) estimate global warming could reach 1.5 degrees somewhere in the first half of the 2030s<sup>1</sup>. In 2022, natural disasters caused \$313 billion (bn) of global economic costs representing a global economic loss 4% higher than the twentieth century average<sup>2</sup>.



With extreme weather events predicted to increase in frequency and severity in the years and decades ahead, there is a clear and inarguable imperative for accelerated action across the public and private sectors to build resilience, to adapt, and to create solutions that can reduce the impact of climate change.

For decades the global insurance industry has been supporting individuals, businesses and governments in understanding, mitigating and managing the impact of increasingly severe climate-exacerbated disasters, alongside supporting the development of renewable energy and climate innovation. With 90% of the global economy committed to decarbonisation towards net zero, driving unprecedented economic and societal transformation, insurance continues to play a vital and unique role in enabling, investing in and protecting the efforts of multiple industries as they take climate-positive action to adapt and transition to a sustainable future.

In 2021 the Sustainable Markets Initiative Insurance Task Force (ITF) published a **Sustainable Products and Services Showcase**, presenting the wide-ranging innovative insurance solutions currently available to customers to develop, invest in and scale their sustainability initiatives, supporting green innovation across multiple sectors and geographies. Since then, members have driven innovation and growth in the range of risk management solutions now available globally and are working to protect the progress being made by businesses, policy makers and society.

The Sustainable Markets Initiative Insurance Task Force (SMI ITF) brings together leaders from some of the largest and most influential global insurance and broking firms with a mandate to drive tangible progress in accelerating the pace of industry transitions towards a more resilient and sustainable future, putting Nature, People and the Planet at the heart of global value creation.

This report provides a timely update on the developments across the Sustainable Markets Initiative ITF membership, to further highlight the growing suite of risk solutions and investment options that support resilience, transition and growth.

**John Neal**  
CEO of Lloyd's and Chair of the Insurance Task Force

1. AR6 Synthesis Report: Climate Change 2023 (ipcc.ch)  
2. Aon, 2023 Weather, Climate and Catastrophe Insight report



# Risk transfer for transition technology



## Supporting the transition

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Risk comes in many shapes and sizes. It evolves with global trends, it's reshaped by technological innovations, and it's accelerated or slowed down by public policy. For over 300 years, the insurance industry has stood the test of time, leading from the front to better understand risk and to collaboratively develop risk transfer solutions which can support businesses, governments, and society to manage risk in a sustainable way.

But in the last 20 years, the risk landscape has shifted dramatically, with the threat of climate change and the rapid global transition to a low carbon economy sitting front of mind for those that manage risk. For the insurance industry, this global shift in infrastructure development and investment represents a once in a generation opportunity to support businesses as they adapt and face into the future.

The opening section of this report explores the role that the insurance industry and ITF is playing today in enabling the growth of clean technologies, the scale-up of emerging technologies and in supporting the transition of hard-to-abate sectors, and how demand is likely to evolve over time.



## Clean technologies

Climate change mitigation is defined in Article 10(1) of the EU Taxonomy Regulation as “an economic activity that contributes to the stabilisation of greenhouse gas emissions by avoiding, reducing or by enhancing greenhouse gas removals”<sup>3</sup>.

In short, any activity supporting the transition to net zero. Supporting the transition has been a key focus for the ITF and the wider insurance industry, **with all members confirming that they proactively support their clients’ transition plans. In addition, 75% of the showcased offerings in the ITF’s Products and Services Catalogue focussed on supporting or enabling the energy transition.**

80% of ITF member insurance products that already actively support the transition are essentially ‘traditional’ or ‘standard’ products by nature, applied to renewable technologies, services or financial transactions, that will support industry transitions towards a more resilient and sustainable future .

### Climate change mitigation – traditional renewables

The insurance market has a wide range of products that support wind and solar projects, and that is mirrored by the ITF. **One quarter of insurance products that are showcased by ITF members cover wind and/or solar technology.** While energy generation capacity for these mature technologies is likely to continue to grow, there are headwinds including liability risks and access to rare earth materials (e.g., tellurium for solar PV) which may impact that growth.

As emerging technologies, such as offshore wind farms, become more effective and cost efficient, project investment may increase, stimulating additional insurance capacity growth as projects scale up. Standard insurance products can help to accelerate this investment, through assuming a portion of the risk related to renewable projects, for example via construction all risks products and political risk cover.

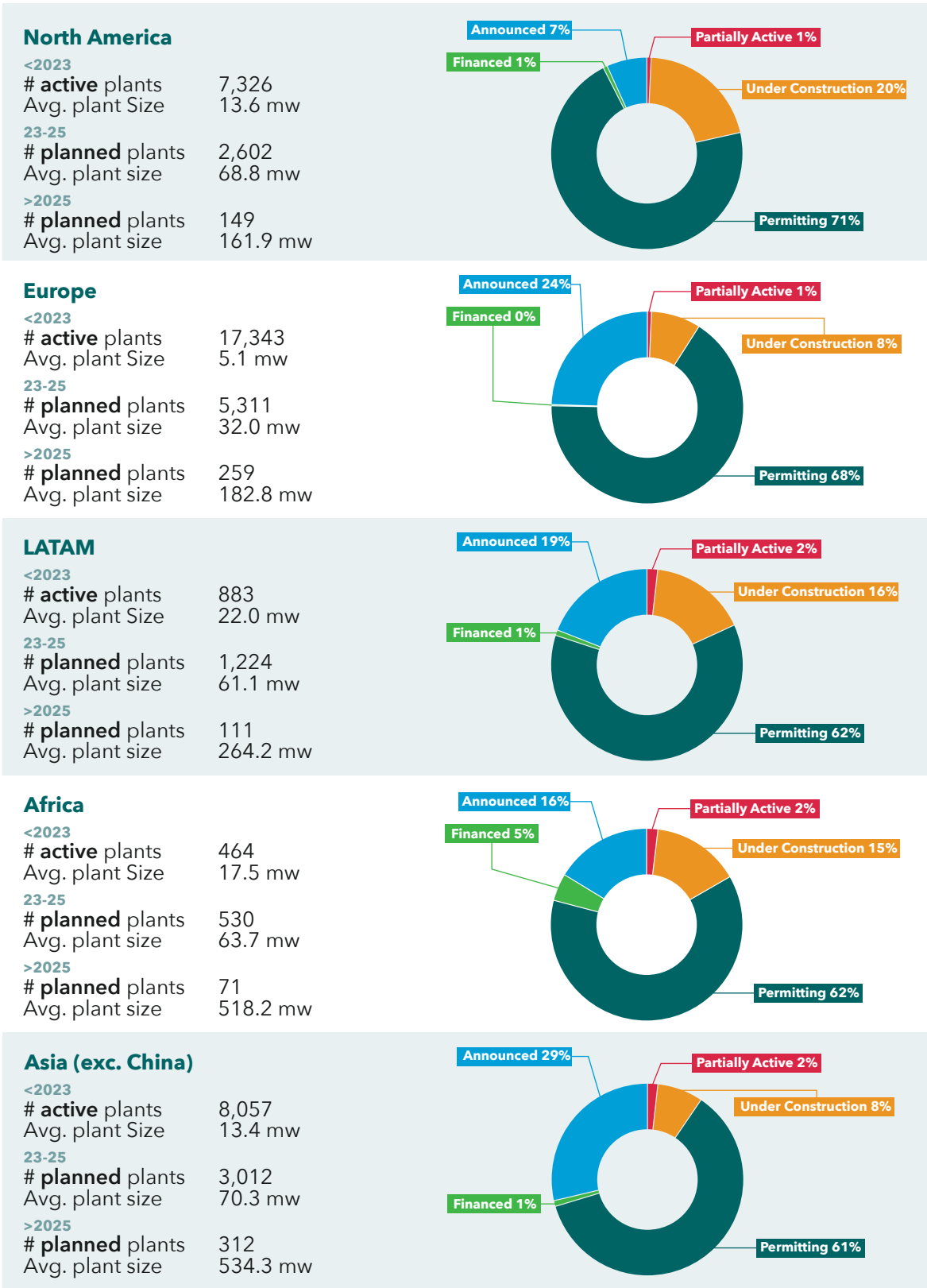
Using the Forecast Policy Scenario (UN PRI) / NZ Scenario (IEA), **the CapEx and OpEx required for wind and solar markets in 2025 has been estimated at between \$1trn and \$1.7trn. To support this level of growth, and to fulfil its ambition to protect the balance sheets of investors and project developers, it is critical that the insurance industry works collaboratively with its stakeholders to support at scale.** The Rocky Mountain Institute (RMI) has forecast that solar and wind combined will be producing three to four times more energy by 2030<sup>4</sup>, so to achieve this target, investment must increase year-on-year. ITF members are well placed to enable this growth by continuing to support traditional renewable solutions.

3. EU taxonomy for sustainable activities  
4. RMI (Renewable energy deployment surge)

## Global planned solar investments

### Regional plant size breakdown

Regional breakdown of solar plant volume and future pipeline, current plant, 2023-25 pipeline and post 2025.



Reference: GlobalData

Climate change mitigation – non-traditional renewables

Aside from mature wind and solar technologies, green hydrogen technology has gained significant attention as a tool for replacing fossil fuels in hard-to-abate activities such as heavy industry and transportation. Hydrogen is attractive as a source of low-carbon energy because, whether it is burned to produce heat or reacted with air in a fuel cell to produce energy, the only by-product is water. “Green” hydrogen is produced emissions-free using renewable electricity.

Green hydrogen accounts for just 5% of global hydrogen production today, largely due to its high production costs compared to other types of hydrogen. However, with the International Energy Agency (IEA) predicting that the production of green hydrogen will be profitable by 2030<sup>5</sup> its use is expected to accelerate.

The momentum behind the technology is already building, with an increasing number of countries publishing national hydrogen strategies. **The ITF is dedicated to finding solutions for clients to de-risk large scale hydrogen projects, with nine offerings in the market for related coverage across the whole hydrogen process (e.g. pipelines, transportation) and trade credit products.**

**Munich Re, for example, has developed hydrogen performance warranties. For electrolyser manufacturers, this helps to mitigate the costs from performance and warranty claims and increases the bankability of hydrogen projects.** This considerably eases the financial burden on businesses as it enables them to plough capital that was previously required for guarantee reserves into scaling up operations, while at the same time attesting to the quality of their technology.

There are, however, some gaps in the market. Today, few insurers offer standalone green hydrogen products, instead typically covering only portions of the value chain. As green hydrogen continues to grow there will be greater opportunity for the development of more sophisticated insurance products such as performance related guarantees, which could be linked to the long-term performance of innovative technology like electrolyzers.

Using the Forecast Policy Scenario (UN PRI) / NZ Scenario (IEA)<sup>6</sup>, the range of CapEx and OpEx that the hydrogen market will see by 2025 has been estimated at between \$13bn and \$45bn.

5. EIEA: ‘The future of Hydrogen’  
6. MI.(Renewable energy deployment surge)

Nascent “green” technologies

While established technologies such as solar and wind are critical to transition, emerging technologies will also be important to facilitate a balanced, adaptable energy mix. These emerging technologies include battery storage and grid solutions, carbon capture, utilisation and/or storage (CCUS), geothermal energy and low-carbon building technologies, all of which are expected to play a significant role in the transition to net zero.

Carbon capture, utilisation and storage (CCUS)

Carbon capture relates to a suite of technologies that enable mitigation of CO<sub>2</sub> emissions from large point sources such as power plants, refineries and other industrial facilities, making it a key technology for hard-to-abate sectors like heavy industry. **In the IEA Clean Technology Scenario, which sets out a pathway consistent with the Paris Agreement, CCUS contributes almost one-fifth of the emissions reductions needed across the industry sectors (cement, steel, chemicals etc)<sup>7</sup>.**

**An estimated \$160bn of cumulative investment in CCUS is needed by 2030 in order to meet IEA scenario targets. If the insurance industry is to keep pace with this level of investment, providing capacity for risk transfer, it is vital that energy firms, policy makers and insurers work collaboratively to understand and mitigate the risk.**

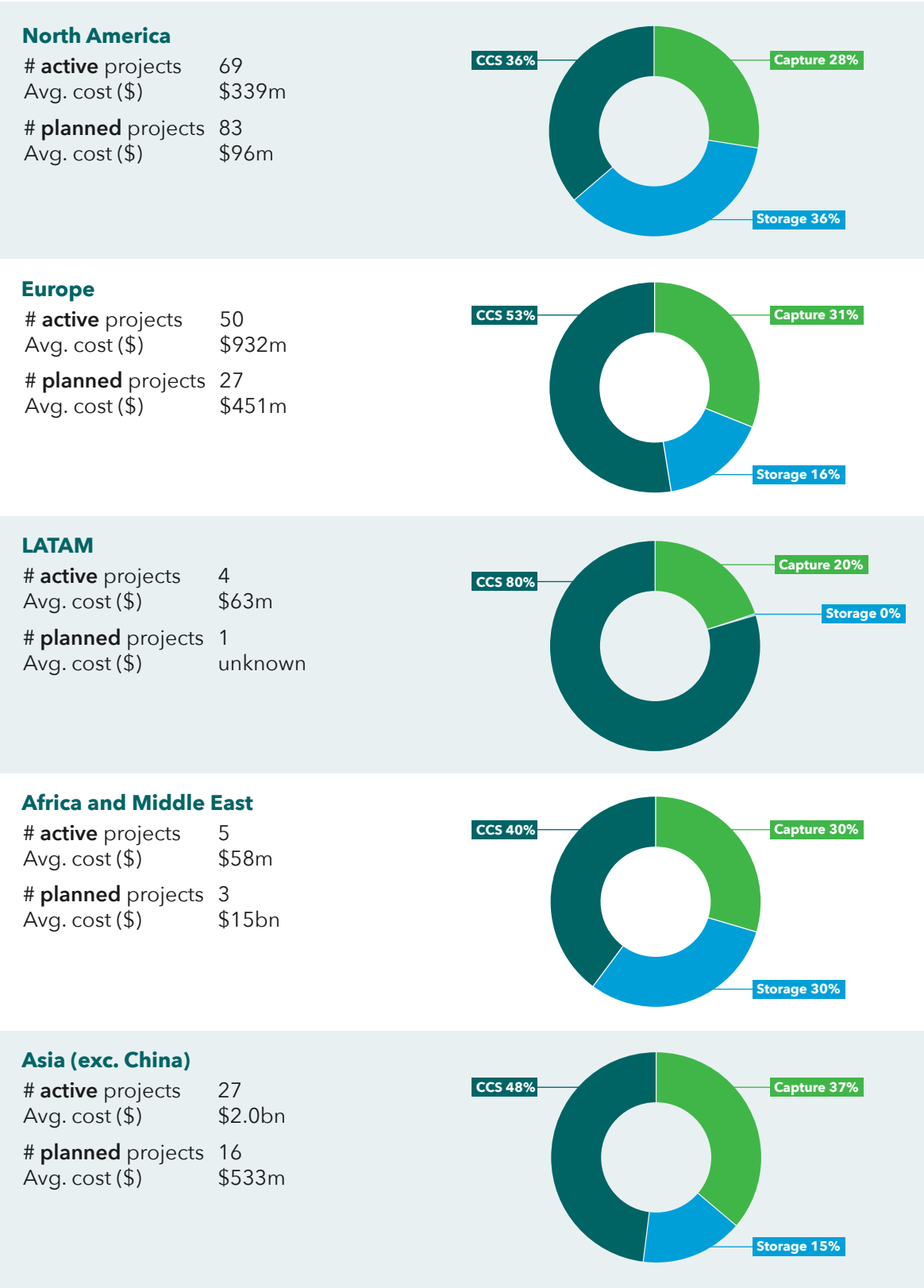


7. IEA: ‘Material efficiency in clean energy transitions

Global planned CCUS storage plants

Regional plant size and status

Regional breakdown of current and planned CCUS plants and current status of known plants.



Despite the importance of CCUS and the potential opportunities for insurers, there are currently few insurance carriers offering products and solutions to support risks involved in these nascent technologies. Standard construction risks are generally well covered in the existing construction insurance market, however there are limited solutions available for more specific risks related to carbon capture such as CO<sub>2</sub> leakage indemnity or loss of well control.

The U.S. is the global CCUS leader, accounting for 60% of current and 50% of planned future capacity, with 85% of emissions coming from plants located within 100km of a potential geological storage site.

The ITF is exploring opportunities to work with the [Carbon Capture, Use and Storage Task Force](#) which is committed to improving the understanding of CCUS technologies and is chaired by Brad Page, Chief Executive of the [Global CCS Institute](#). Sharing industry knowledge and providing a deeper understanding of the technologies through partnerships could assist ITF members with developing new products or adapting existing ones to help accelerate investment into this technology through de-risking.

Understanding the commercial insurance opportunity of CCS in the UK

Alone, the UK’s geology has the potential to store 78 gigatonnes of carbon, which equates to 78 billion tonnes of carbon removed from the atmosphere and stored straight at source.

Projects which capture carbon direct from industry source will require a variety of insurances. Recently, Lloyd’s action leadership platform, **Futureset**, has worked with the UK’s Department for Energy Security and Net Zero and the North Sea Transition Authority to run a five-part educational series, which convened CCS experts, geologists, brokers like **Aon** and **Marsh** and leading figures from both the Northern Endurance Project (NEP) and HyNet projects to discuss the commercial insurance opportunity and demand for carbon capture and storage in the UK.

This type of private and public sector collaboration is happening more frequently across the industry to help insurance carriers and brokers better understand, mitigate and provide risk transfer solutions for nascent green technologies like CCS.



Batteries

Battery energy storage is expected to play a pivotal role in supporting widespread adoption and grid-integration of renewable energy solutions. Battery storage or battery energy storage systems (BESS) are devices that enable energy from renewables, like solar and wind, to be stored and then released when the power is needed the most.

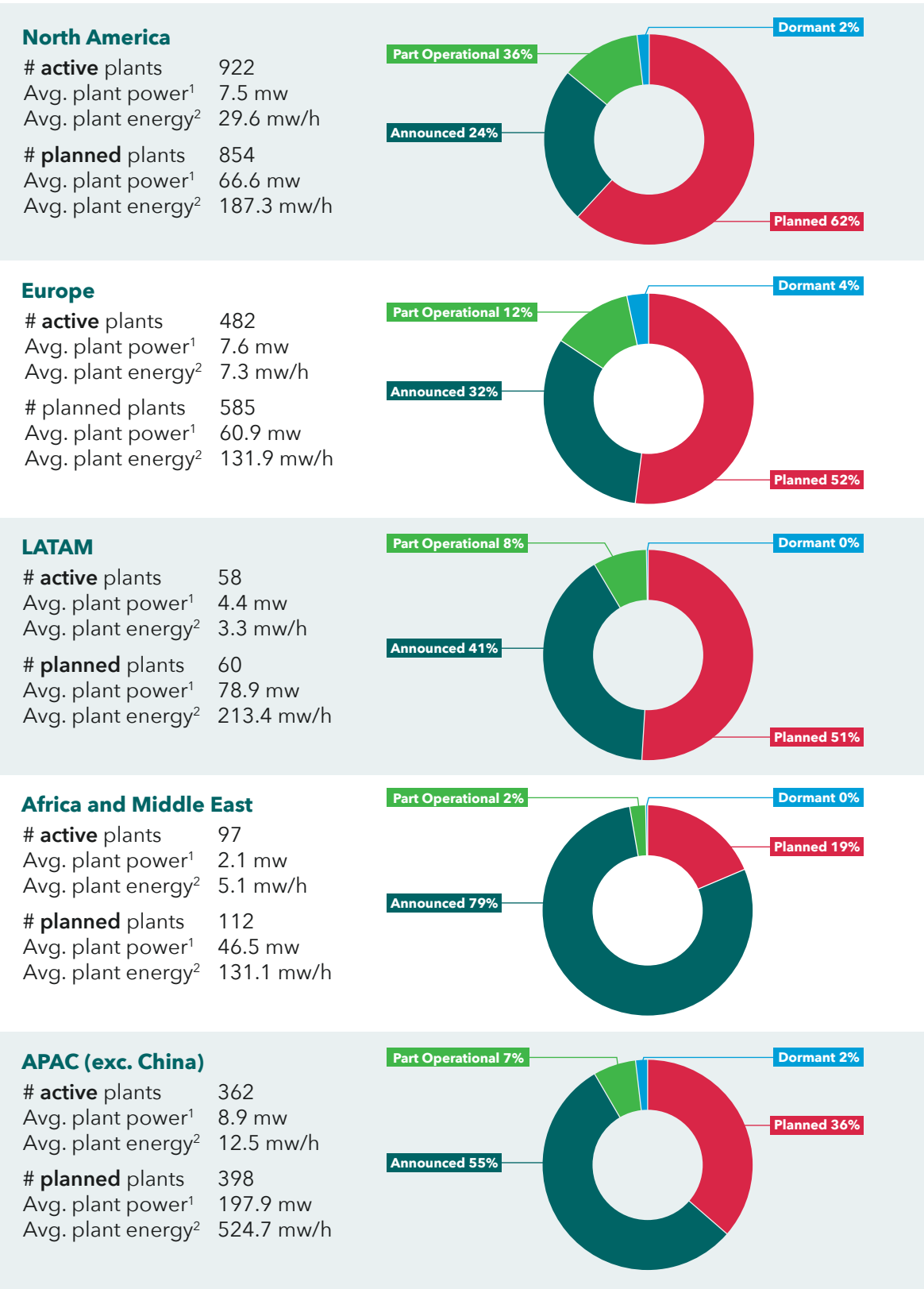
In 2025, investment of \$73bn-\$106bn is required to meet the IEA scenario. As reliance on wind and solar energy grows, demand for batteries is expected to grow by more than eight times by 2030<sup>3</sup> and insurers will play a key role in helping clients manage the associated risks.



Current and planned battery storage plants

Regional electrochemical bess plant size and status

Regional breakdown of current and planned electrochemical battery storage plants and current status of known plants



Reference: GlobalData



Energy storage is one of the emerging technologies in which both insurers and distribution partners have dedicated capabilities, with the insurance market quickly developing standalone products for energy storage or integrating battery technology into existing power policies.

One of the most prominent use of batteries is in Electric vehicles (EV), which typically account for 30-40% of the value of an Electric Vehicle<sup>8</sup> however batteries are often excluded from EV liability insurances currently available in the United Kingdom, which is, in part, due to underwriter discomfort around the lack of data on the manufacturing of batteries in China which make up around 80% of batteries entering the global market<sup>9</sup>. This is perceived as a significant barrier to the growth of the second-hand EV market as people are often reluctant to take the risk of battery failure, given the high costs associated with it. The provision of this liability insurance will assist in growing the public appeal of EVs and help to promote extending the first life use of EV batteries.

The **ITF Product and Services Showcase** currently showcases three products related to battery technology including **Tokio Marine Kiln's (TMK)** dedicated solution through its partner **Altium**. In 2022, with support from TMK, Altium delivered the world's first **data-driven BESS warranty programme to help accelerate growth in the battery energy storage market through giving warranty cover for second life batteries**. In 2023, this partnership introduced a new product providing contractual liability insurance to dealers offering non-insurance guarantees for the batteries and power trains of electric vehicles, which are a key element of the energy transition efforts for transport.

As more projects and innovations develop in this space, there is an opportunity for insurers to address potential future protection gaps in forced outage and recycling/decommissioning.

## Insurance product descriptions

**Contractual liability insurance** can protect against claims related to contract issues. It can cover the liability that a business owner assumes from a contract and is important for businesses that regularly operate through, and issue contracts with their suppliers and customers.

Brad Irick, TMK CEO said: "Insurance has a critical role to play in supporting the global transition to a sustainable future, and a key part of that is the creation of insurance products and services that are underpinned by financial and risk management support. One of the ways we are supporting the transition is through partnerships with start-ups like Altium, which can support accelerated growth in the battery energy storage market and help to improve energy security as we progress to a low carbon economy."

8. IEA: [Global Supply Chains of EV Batteries \(windows.net\)](#)  
9. Statista, published Oct 24, 2023: [Global EV Li-ion battery capacity by country shares | Statista](#)

## Low carbon buildings

**Buildings account for 40% of global energy consumption and 25% of water usage and are also responsible for 33% of greenhouse gas emissions<sup>10</sup>.** The transition within the buildings and construction industry is concentrated into two activities.

- 1 Retrofitting** - aiming to reduce the associated environmental impacts through upgrading the building using modern technologies to achieve better energy management and efficiency
- 2 Green property** - a plan, project or technique that might lessen or eliminate negative environmental impacts while simultaneously trying to build infrastructure that will minimise future impacts.

Retrofits are expected to see early investment in North America and Europe, followed by delayed growth in Eurasia, Africa and Asia Pacific. However, lack of long-term clarity and certainty about the policy and regulatory strategy for decarbonising buildings and lack of trust due to previous policy failures is likely to hamper acceleration of retrofits for commercial properties.

**Investment into transition technologies (methodologies or processes that contribute to electrification or drive reduction in emissions, energy consumption, water use) is expected to reach \$218bn by 2050**, with most new technologies generally incorporated into existing insurance offerings.

In addition to supporting retrofitting of new clean tech, the ITF is developing solutions and leveraging partnerships to create Green Claims and Build Back Better schemes to improve climate resilience and reduce environmental impact including AIG's Green Endorsements.

Beazley offers insurance specifically related to retrofits via its partnership with We2Sure, which compensates for the underperformance of heat pumps (a low carbon technology which uses electricity to provide heating and cooling to a building) when certain weather conditions arise.



10. Sizerici et al: 'A Review of Carbon Footprint Reduction in Construction Industry, from Design to Operation'



Geothermal

Geothermal energy originates from the heat within the Earth’s core, using man-made wells which drill into underground reservoirs to extract geothermal resources, and could provide a reliable source of energy compared to other renewable sources. However, despite the advantages - including negligible emissions, resiliency to extreme climate events and reliability of power source and a slight acceleration in growth of around 5% between 2015 – 2021, this accounted for a mere 0.5% of global installed renewable electricity capacity during this period<sup>11</sup>. Policies are needed to decrease the costs of geothermal projects and tackle any risk management challenges.

Property damage and business interruption exposures due to machine breakdown and site related risks, are well covered by existing policy types. **For example, Allianz provides coverage for geothermal technologies as part of its renewable energy insurance solutions.**

The most significant risk gap is coverage for “finders’ risk” or the failure of exploratory drilling. There is limited coverage currently available to mitigate the financial loss that could ensue, which could be a limiting factor given the high cost of investment this technology entails. In **Munich Re provided geothermal exploration risk insurance in Kenya which supported the financing of the exploration.** More recently, Specialist ESG focussed managing general agent (MGA), **Parhelion, backed by ITF member, Howden, launched a first-of-its-kind underwriting facility in 2021 set up to help de-risk early-stage development of geothermal energy projects with the capacity to significantly expand electricity access and energy sector resilience in Kenya and Ethiopia**<sup>13</sup>.

Innovations in this sector include Enhanced Geothermal Systems (EGS), an emerging technology where underground reservoirs are accessed by pumping water through impermeable rock. If the method is reproducible, it could significantly increase the accessibility of geothermal power. U.S. investment syndicates are exploring methods of retrofitting oil and gas wells to become productive geothermal sources. And similar research is being pursued into unproductive geothermal plants.

Working closely with their clients, ITF members are well placed to enable the transition of assets through retrofitting as the technology becomes proven.

11. IRENA: Boosting the Global Geothermal Market Requires Increased Awareness and Greater Collaboration  
12. IDB: IDB | Geothermal Financing and Risk Transfer Program (iadb.org)  
13. Company release by email: <https://www.thinkgeoenergy.com/underwriting-facility-set-to-energise-geothermal-development-in-kenya-and-ethiopia/>

Hard-to-abate sectors

In part due to appetite, transition risks and a lack of viable abatement options, hard-to-abate sectors such as agri-business (agriculture and forestry) and marine and aviation are transitioning at a slower pace. This can also affect the supply of insurance due to a lack of insight and data on any potential new risks.

Agriculture/agri-business

Agribusiness contributed 18% of global greenhouse emissions in 2021, and at current rates of productivity and deforestation, the business-as-usual outlook is a growth of 17.5% in emissions by 2030.

How the Insurance Task Force can provide support

ITF members are already focused on supplying products that provide climate resilience in the agribusiness sector, as the agricultural ecosystem is highly exposed to the effects of climate change. There is also an opportunity to accelerate up to 25% of identified carbon abatement opportunities through tailored products and stewardship to support the evolution of crop and animal protein production, along with electrification of farm and forestry vehicles.

Agriculture abatement options

Abatement measure	Net-Zero emissions <sup>2</sup>	Development Outlook
Diet Shifts	-39%	Consumption of carbon intensive ruminant animal proteins (namely lamb and beef) would have to fall by 45% in the Net-Zero pathway.
Animal protein production	-13%	Animals’ GHG emissions could be reduced through selective breeding, feed-mix optimisation and methane/nitrification inhibiting additives in feed.
Crop production	-9%	Less pollutive crop production practices would include low/no-tillage production, improved fertilisation practices and better water & irrigation management.
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 as they are predicted to not only abate carbon but also save costs.

Source: Change Vs. reference case in 2050

In the spirit of the Sustainable Markets Initiative objective of cross task force collaboration, the Insurance Task Force is forming partnerships to encourage behavioural change across the agri-business sector, including carbon abatement activities, regenerative farming, sustainable water use, and protection of biodiversity and ecosystems. In 2023, the ITF has partnered with the [Agribusiness Task Force](#) and is proactively working to develop a new, adapted insurance product that supports risks across the value chain of firms in agricultural transition. In this respect, the insurance industry and ITF can act as a crucial enabler of regenerative farming practices, offering insurance cover for farmers, offtakes, financial services and technology companies.

Shipping and aviation

In shipping and aviation, investment in zero-emission technologies has been limited, despite the estimated **\$750bn in investment needed by 2050 to reach net-zero targets**.

To date, marine insurance innovation has been led by members of Protection and Indemnity clubs (P&I clubs), and the ITF has a unique opportunity to work with marine market groups to learn and evolve wider market insurance offerings.

The IEA’s policy framework scenario predicts current policies in marine transportation will result in low and zero carbon fuels making up less than 3% of shipping’s total energy consumption by 2030.<sup>14</sup> Long fleet lifetimes, a lack of available abatement options and low willingness to transition by the industry mean technological progress is slow. In addition, the lack of a strong international governance framework makes transition policy implementation challenging.

Shipping abatement options

Abatement measure	Net-Zero emissions <sup>2</sup>	Development Outlook
Hydrogen	-19%	Low-carbon fuels account for ~45% of fuel intake by 2050, with hydrogen constituting a large portion of this but long vessel lifetimes may delay adaptation.
Bioenergy	-19%	<ul style="list-style-type: none"><li>Design and implementation of engines powered by ammonia and other biofuels.</li><li>First hydrogen and ammonia powered vessels due to come into operation in 2023.</li></ul>
Energy efficiency	-14%	<ul style="list-style-type: none"><li>Energy efficiency must improve from 30 to 35% by 2050 to reach Net-Zero</li><li>Shipping has had limited investment in zero-emission technologies to date, however retrofitting to meet regulations and improve fuel efficiency/costs is a mainstream activity</li></ul>
Electrification	-4%	<ul style="list-style-type: none"><li>From 2030, ferries and other vessels for short-sea shipping would be electrified</li><li>Technologies to decarbonise shipping are at early stages of maturity with R&amp;D ongoing in alternative fuels, electrification and hydrogen</li></ul>
Shipping demand reduction	-4%	Slowing demand growth driven by a 40% reduction of oil tankers as oil usage decreases

Source: Change Vs. reference case in 2050

14. International Chamber of Shipping: ‘A zero emission blueprint for shipping’

As with shipping, sustainable aviation fuels have high abatement potential, but are far from becoming commercially viable, despite a high willingness from the sector. Aviation has also not been a focus for international policy on decarbonisation given the challenging societal pressures. The most significant abatement options include reduction in aviation demand and use of Sustainable Aviation Fuels (SAFs), such as hydrogen and biofuels. Support from the insurance industry will be crucial to help the sector evolve.

Aviation abatement options

Abatement measure	Net-Zero emissions <sup>2</sup>	Development Outlook
Sustainable aviation fuels	-52%	<ul style="list-style-type: none"><li>Hydrogen and biofuels could reduce Aviation emissions significantly, but technologies are not expected to become economically viable before 2030</li><li>In 2028, the world's first largest passenger liquid green hydrogen-powered airplane (entirely green from fuel to propulsion, with scalable systems) will fly between the Netherlands and London.</li></ul>
Energy efficiency	-13%	The industry has a strong record on fuel efficiency, but further improvements are possible through replacing old aircraft, optimising airport operations and introducing energy-efficiency features and light weight components in airplanes.
Aviation demand reduction	-10%	Demand reduction accelerated after Covid-19 with a 37% decline in business travel, shifting preferences towards remote communication technologies.
Electrification	-6%	<ul style="list-style-type: none"><li>Electricity could substitute up to 6% of jet fuel consumption through battery-powered, hybrid- and turboelectric propulsion technologies. Impact remains small since electric aircraft are limited to short-haul flights.</li><li>Technologies to decarbonise aviation are at early stages of maturity with R&amp;D ongoing in alternative fuels, electrification and hydrogen.</li></ul>

Source: Change Vs. reference case in 2050

Efficiency measures across vessels, aircraft and sector operations are already a mainstream activity, providing an opportunity for ITF members to support both sectors. Longer-term, hydrogen and biofuels are key to decarbonisation of both the shipping and aviation industries, for which the ITF is well placed to create targeted insurance solutions. The ITF is already planning to work closely with the SMI Aviation Alliance to “open up discussion with customers embarking on research and development in this area to identify requisite insurance coverage for emerging risks and new technologies”.



# De-risking investment to enable growth

## Financial services

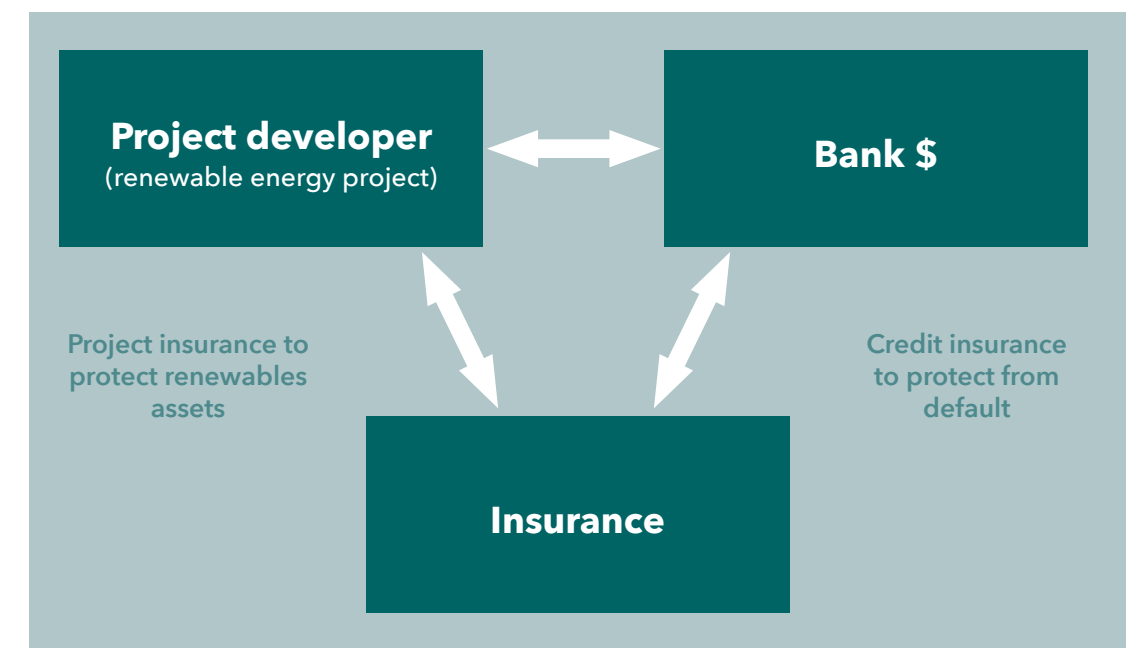
### De-risking investments

Risk factors such as credit scores can be barriers to innovation and clean energy. Specifically, small and medium enterprises (SMEs) often struggle to secure capital from traditional financial lenders to update or install infrastructure.

The insurance market is actively supporting and enabling the increased financing of 'green projects' by de-risking transactions.

ITF member **Ascot**, for example, supports **Tierra**, a new managing general agent (MGA) established to provide credit insurance to banks which are providing green project financing loans to their clients. Covering \$6.5m in sums insured, the insurance protects against default under the project loan and allows banks to reduce their risk and capital charges related to green projects and therefore increase their lending volumes.

### Lifecycle for providing credit insurance to banks





The product is offered globally, to those banks actively providing funding to projects in the key sectors required for the energy transition (e.g., renewables generation, energy storage, energy efficiency, transmission, etc).

Additionally, removing uncertainty around efficiency and performance can make financing of projects more attractive to investors, which in turn enables growth and development of innovative solutions, progressing the transition. Across the market, sustainable construction and energy efficiency products tailor traditional products such as builders’ risk, property damage, and business interruption and performance coverage for innovative materials and emerging technology and practices.

**Munich Re’s technology performance insurance for bioenergy and circular economy projects, for example, allows to transfer technology performance risk of these projects to the insurer.**

The product provides a revenue guarantee in case of technology performance issues during plant start-up and long-term operations.



## Insurance product descriptions

**Builders risk** is property insurance that helps protect buildings under construction from risks like fire, theft, explosions and vandalism.

**Property damage** covers similar risks to builders insurance but is for established businesses premises and ‘bricks and mortar’.

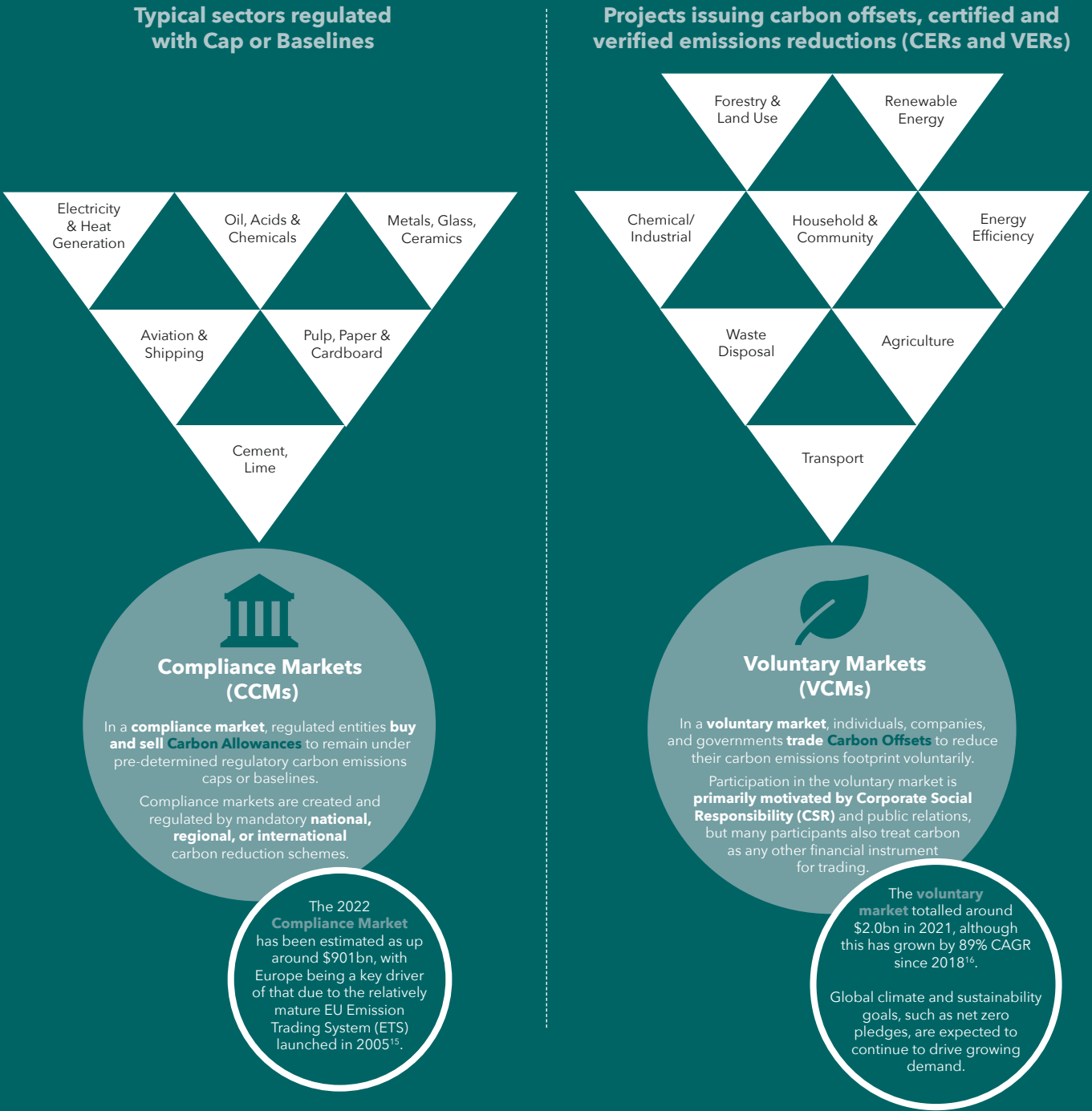
**Business interruption** insurance can cover loss of income during periods when you cannot carry out business as usual due to an unexpected event impacting your business.

## Supporting carbon markets

In addition to direct investment by industries into clean technologies to support decarbonisation, companies are supporting efforts beyond their own carbon footprint via carbon credits, which help finance projects for removal of carbon dioxide from the atmosphere.

## Carbon markets overview

There are two key markets enabling the trading of carbon-related financial instruments, underpinned by a range of projects focused on emission avoidance and carbon removal:

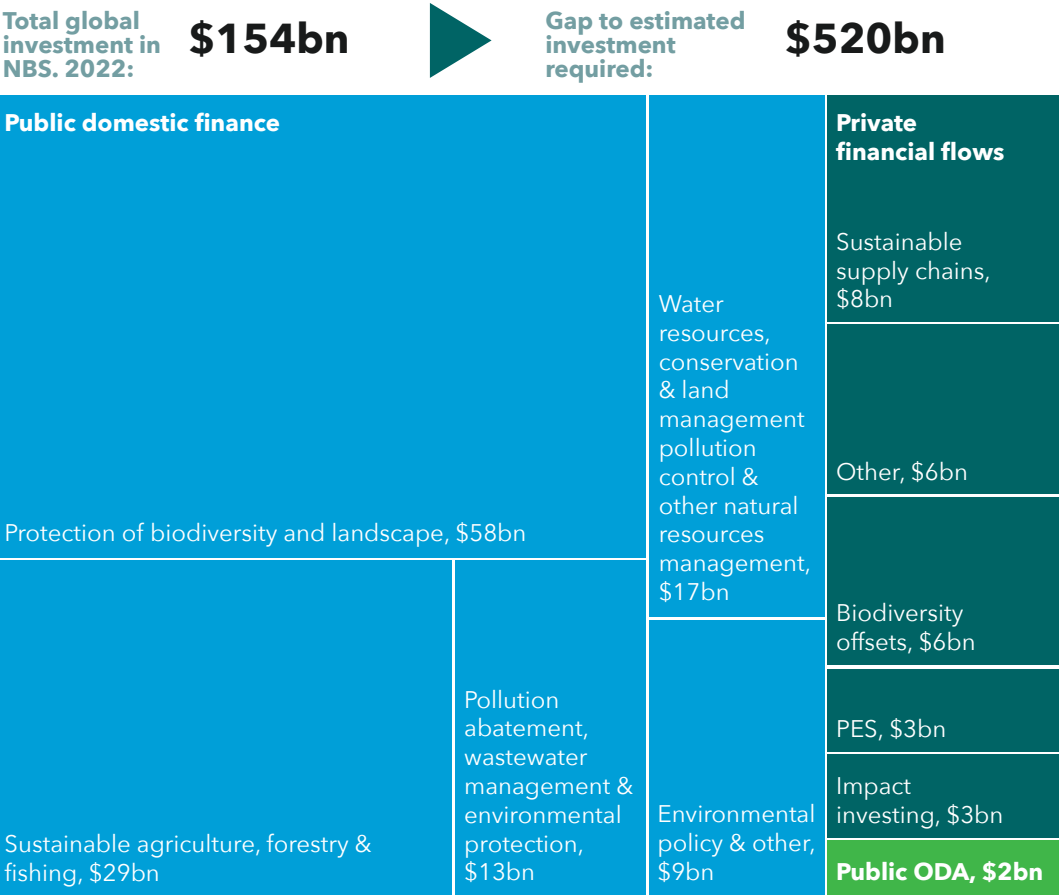


15. Refinitiv: 'Carbon Market Year in Review 2022' Note that the Refinitiv report quotes market size in Euros which have been converted to US dollars using annual average exchange rates. Per the report, the global compliance market amounted to c. €762bn in 2021 and €865bn in 2022.  
16. Ecosystem Marketplace: 'State of the Voluntary Carbon Markets 2022'



Carbon credits associated with avoidance projects represent the avoidance or reduction of CO<sub>2</sub> that would have otherwise been emitted into the atmosphere, e.g., through nature based solutions (NBS), such as avoided deforestation, or tech-based solutions such as renewable energy generation. In contrast, carbon credits associated with removal projects represent the drawdown of CO<sub>2</sub> from the atmosphere through NBS such as ecosystem restoration or tech-based solutions such as direct air capture.

Carbon related nature based solution investments in 2022



Investments in Nature Based Solutions (NBS) are not as well understood in comparison to established climate-related finance, have high perceived risks and often lack sufficient predictable, long-term revenue streams. Globally, public and private financial flows to NBS are estimated to be c.\$154bn in 2022, of which, 83% is public investment, reflecting the relative novelty of investing in natural capital. **Based on analysis conducted by UNEP, NBS finance flows amount to just 23% of the investment required to limit climate change to 1.5°C, suggesting that significant and immediate investment is required.** Growth in investments over the next two decades will drive significant opportunities for the NBS insurance market.

Insurance products can provide protection at all stages of the NBS project life cycle and are adaptations of traditional products. Natural catastrophe, general liability, and professional liability covers are currently the most mature options in the NBS category, and are well covered by the existing market.

Despite its potential, there are few mature insurance products available in the market which present an opportunity for carriers to tailor existing offerings to support the growth of high-integrity carbon markets. Insurance support is required both to protect the carbon credits as a financial instrument through financial lines products such as cap and trade guarantee bonds and carbon offset validation insurance, and to protect the carbon reduction activities invested in, such as forest planting or renewable energy plants.

In addition, **ITF member RenaissanceRe offer underwriting capacity for Chaucer’s partnership with carbon credit insurance specialist Kita, which has developed a pioneering Carbon Purchase Protection Cover** which insures the buyer of forward purchased carbon credits against delivery risk, removing a significant protection gap.

**Marsh** has a solution for the voluntary market to protect against credit under-performance, reversal and fraud cover and **Aon** offers a solution for the compliance market offering cap and trade bid guarantee bonds.

Kita’s CEO and Co-Founder Natalia Dorfman said: “We are honoured to be working alongside a (re)insurer of Chaucer’s stature, as well as Munich Re Syndicate and RenaissanceRe, to bring Carbon Purchase Protection Cover to the market. **To prevent the worst impacts of climate change, we must remove gigatons of CO<sub>2</sub> from the atmosphere annually. Insurance can act as a fundamental enabler - by removing risk and increasing trust in the market, insurance will help drive capital to help quality carbon projects scale**”

There is an opportunity for carriers to continue to tailor existing products for application to the carbon markets, with tailored liability coverages, underperformance guarantees and political risk protection being the largest gaps for this nascent market.

Investment and investment products

Beyond risk transfer via insurance products, **ITF members can also advance sustainability through their investment choices with some already investing directly into climate solutions. ITF life and pensions members have made multi-asset ESG funds a default investment fund for their clients, with Phoenix having transitioned £15bn of client investments into its sustainable multi-asset solution in 2022, as part of a move to align default investments to sustainability.** The fund tracks sustainable indices that target a 50% reduction in carbon emissions to equity and listed real estate components (£12 billion assets under management).

In 2021, **AXA XL played a key role in helping Belize reduce its debt burden and generate funding for expanded marine conservation through “Blue Bonds for Ocean Conservation,”** a joint effort with the US International Development Finance Corporation (DFC), The Nature Conservancy and Credit Suisse. This award-winning transaction helped Belize gain immediate relief from a high debt-service burden by buying back its existing debt at a discount, and thereby tripling the country’s budget for marine conservation programmes during the next two decades.

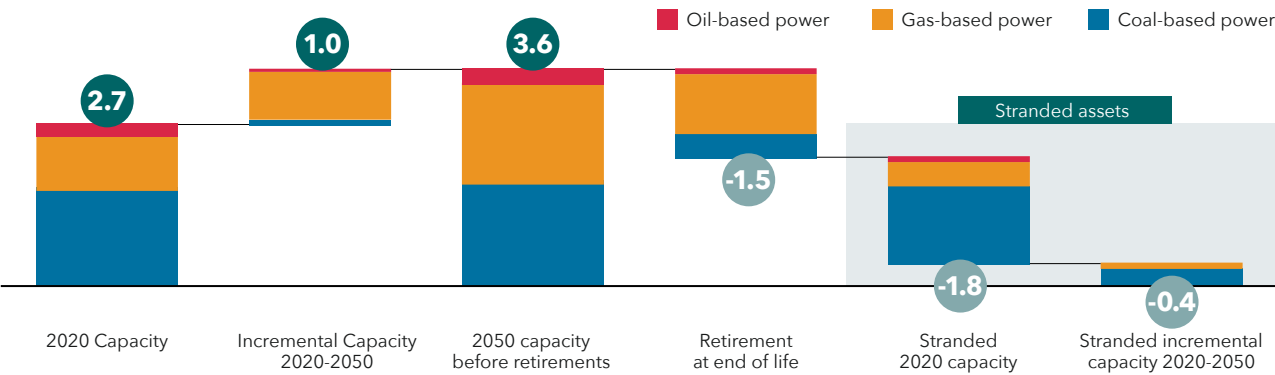
Facilitating change

Supporting decommissioning

**Market and societal expectations on re-establishing ecosystems and biodiversity increasingly mean there is more attention on the safe decommissioning by older energy infrastructure and management of their toxic legacies. The IEA predicts that by 2050, in a net zero scenario, over \$2trn of assets would be left stranded due to falling demand in oil and gas.**

This asset stranding represents not only a huge financial risk to investors, but also the risk of environmental damage. Oil and gas companies, however, have limited monetary incentives for properly managed decommissioning of assets that are no longer in use. There are regulatory conditions in place to reduce costs associated with decommissioning, but these vary across regions. As the decommissioning market becomes more mature, and regulations more onerous, there is likely to be an increasing need for risk transfer.

Fossil fuel capacity - asset value, 2020 - 2050 (\$trn)



Source: McKinsey & Co Net Zero Transition Report Jan 22

Products showcased by the ITF in this space focus on mitigating the uncertainty of environmental liabilities along with sustainably focused decommissioning activities in hard-to-abate sectors.

**Marsh has developed a range of products to reduce the uncertainty associated with managing and decommissioning late life assets.** The insurance programmes provide for a range of outcomes, from allowing an alternative replacement scheme if a late life asset is damaged, through to providing for liabilities that may arise from the process of decommissioning itself.



## Claims-led resilient reinstatement

Across the market, insurers are evaluating the business case for claims-led transition. **Half of the insurer ITF members have adopted “build back better” clauses in the event of a claim, enabling their clients to rebuild to more sustainable standards.**

By enabling the use of “green” solutions as part of the claims process, the ITF is supporting acceleration of the transition, compared with the like-for-like replacements that would traditionally have been sourced following a claim.

**AIG** offers Upgrade to Green® endorsements that support the energy transition by adding coverage for the increased cost of repairing or replacing covered property damaged by a covered cause of loss, using materials, equipment, and/or methods that are recognised as being “green”.

## Stewardship

Stewardship is a key service that can be offered by the financial services sector to support the real economy with transition. Designing incentives for clients who can demonstrate realistic plans for sustainability targets encourages positive behaviours.

These syndicates are designed to provide additional capacity (a total of over \$90m of additional capacity) for companies that perform well against ESG criteria.

**Beazley’s ESG syndicate 4321** partners with **Marsh** on its ESG Risk Rating (ERR) assessment tool, which provides exclusive capacity for clients with a strong ESG rating. **Hiscox’s ESG syndicate 3033** can offer clients with a high ESG rating up to 25% of its syndicate 33 line-size, which means it could write a maximum of £42.5m in capacity in 2023.

ITF members all have clear sustainability strategies. Three quarters of the membership offer incentivised sustainable underwriting and investments to reward green business practices and encourage positive climate action.

In addition, Lloyd’s has two syndicates exclusively focused on environmental social and governance (ESG) underwriting. Both are run by members of the ITF.



The Insurance Task Force and broader insurance industry also plays a central role as a convener of the private sector and government.

In 2023, Task Force member **Howden** concluded its inaugural year of the **Global Risk and Resilience Fellowship** which is a global partnership between Howden and Resilient Cities Network at was launched at COP27 through the Sustainable Markets Initiative’s ITF.

The fellowship seeks to bring together city leaders, with a deep understanding of urban resilience challenges, and those who have the expertise and resources to overcome those challenges, to collaboratively develop the solutions that empower cities to build a safe, equitable, and sustainable future for all.

The 2023 cohort of insurance professionals were seconded into city leadership teams in Melaka, Surat, Miami, Glasgow and The Hague. It was a resounding success. Together, over three-to-six months, the fellows worked with city leaders to deliver tangible movement towards increased city resilience and to support city leaders to harness the power of insurance to de-risk and accelerate resilience-building activities.



# Enabling recovery post disaster



## Building Resilience: The adverse effects of climate change

### Weather events

In addition to supporting transition activities to mitigate the rise in greenhouse gas emissions, the insurance industry already has the capability to help protect against the adverse impact of climate change.

Climate and natural catastrophe models have driven insurance underwriting for physical risk since the 1990s but the risk we face is rising with climate change driving secondary perils such as wildfire, convective storm and flooding in some of the world's most vulnerable areas, making weather related disasters more likely and more severe and the existing models not fit for purpose. This means that current insurance premiums increasingly do not reflect the real cost or signal the real risk to the economy and wider society and there is a growing concern that some regions and types of business could become uninsurable leading to alternative solutions.

One example is parametric cover, an alternative risk solution which uses a measurable index and which is based on predefined triggers or pay out mechanisms that don't require a notification of physical damage as with traditional property damage cover. The benefit of parametric insurance is a faster pay out for those that need it the most, with coverage often sold alongside traditional policies.

**Beazley's** cover for cyclones in Northern Australia provides a parametric solution for individuals and businesses who either cannot afford traditional insurance premiums or need quick and certain settlement.

**AXA XL's** parametric microinsurance scheme was designed specifically to protect coffee and grain farmers against drought and excessive rainfall events in Nicaragua. It is aimed at microenterprises with a significant agricultural portfolio exposed to adverse weather conditions.



Disasters - funding clean up

The ITF’s Disaster Resilience Framework for Climate-Vulnerable Countries, published in 2021, seeks to demonstrate the opportunity for public and private capital sources to work alongside insurance and reinsurance companies to “reengineer and drastically improve disaster resilience in low- to middle-income countries who are most at risk from climate-exacerbated extreme weather events”. A pilot project in Kenya looked at the potential for drought catastrophe bonds to be developed with the help of insurance and reinsurance market participants.

Work to advance the framework continued in 2023, with the launch of a ground-breaking partnership between the **ITF and the United Nations Capital Development Fund (UNCDF)**. Established to scale insurance access for climate-vulnerable countries, the partnerships sets out a long-term commitment for the design of insurance products and services that will support financial resilience in the event of climate shocks. The partnership will initially focus on building and scaling solutions across Fiji and the Pacific Islands, and will later seek to replicate the model in other Small Island Developing States (SIDS) and Least Developed Countries (LDCs).

Commenting on the launch of the framework, Dominic Christian, Global Chairman, Aon Reinsurance Solutions, former Deputy Chairman of Lloyd’s and former Chairman of ClimateWise, said, **“It is our great honour to be part of an industry collaboration that provides a practical and immediate solution to the needs of so many in low- to middle-income countries. This framework brings focus to an urgent opportunity for public-private partnerships to support developing countries in their ability to finance, manage and build greater resilience in the face of increasing extreme weather events that bring long-term, devastating impacts to their communities and economy.”**

**[Read about the ITF’s Disaster Resilience Framework](#)**

Conclusions

The insurance industry has a critical role to play in supporting efforts to address and tackle climate change; de-risking investments to accelerate development of transition technologies, and influencing behaviour via policy incentives, “build back better” policies, and via the industry’s own investments as asset managers.

Collaboration is the key to success. By working closely together, and collaborating with stakeholders outside of the insurance industry, the members of the Insurance Task Force can drive positive change, and unlock new opportunities for growth.

**John Neal, Chief Executive Officer, Lloyd’s, and Chair of the Sustainable Markets Initiative’s Insurance Task Force, said:**

Building resilience is central to the insurance industry’s role of helping businesses, government and society manage risk. But resilience isn’t only achieved by sharing risk, it also comes from knowledge transfer, collaboration and working together towards a common goal.”

## Authors and contributors

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### About the Insurance Task Force

#### The Sustainable Markets Initiative's Insurance Task Force

is comprised of global CEOs from the insurance and finance sector, and is chaired by Lloyd's CEO, John Neal. Members of the Task Force have committed to support the global transition to net zero and to address sustainability challenges from within the sector itself.



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