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Insurance Coverage for CO_2 Storage Projects

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IEA Greenhouse Gas R&D Programme

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Insurance Coverage for CO_2 Storage Projects

This report is a focused review of recent developments regarding insurance coverage for carbon dioxide (CO_2) geological storage projects. It seeks to address the following: what companies are offering or planning to offer insurance to CO_2 storage projects, what is the scope and duration of the coverage offered, and does coverage extend to the transportation of CO_2 to the project site? This work and report was prepared by Franz Hiebert.

Introduction

With increasing private investment, project maturity, and sophistication in government regulation of carbon capture and storage (CCS), a spectrum of insurance products is emerging in the private insurance market to cover particular activities and risks related to CO_2 storage projects. Much of this activity has occurred within the last few years if not months. While some insurance companies prepared bespoke policies for specific clients for early carbon storage projects, a significant increase in attention from the insurance sector is evident in 2023 and 2024. For example, the global insurance groups Howden and SCOR announced a new insurance facility specifically for carbon storage (and related transport issues) in January of 2024[1].

Market assessments published by the insurance industry project a significant increase in CO_2 storage activity and related capital expenditures. WTW (Willis) reports that between 2022 and 2023, the number of CCS projects in construction and development increased by 57%[2]. Insurance broker Marsh projects that the global market for CCS will reach $4.9 billion by 2026[3]. In 2021, Global reinsurance giant Swiss Re published an expectation that in a world that is compatible with the Paris climate goals "… the carbon removal industry will have to scale from some 10,000 tonnes of negative emissions today to around 10 billion tonnes by 2050. That's a factor increase of 1 million over a period of three decades, or a compound annual growth rate (CAGR) of close to 60%"[4] .

Government regulation and the permitting process often define financial security requirements for carbon storage projects. Insurance is one mechanism that CO_2 storage project owners can use in order to meet those requirements and protect themselves against the financial consequences from adverse events Since requirements for permitting and financial securities are defined on a national or sub-national basis, insurance coverage will vary by location and even from project to project. In the US, for example, State-level regulations may apply, or in the EU, the members states would transpose EU regulation into national law.

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[1] SCOR (2024, January), *SCOR Syndicate Leads Carbon Capture and Storage Insurance Facility* https://www.scor.com/en/news/scor-syndicate-leads-carbon-capture-and-storage-insurance-facility)

[2] Clark, P., et. al., (2024, April) *Energy Market Review 2024 - Carbon capture and storage: Has the insurance market adequately responded to operator needs?* https://www.wtwco.com/en-us/insights/2024/04/carbon-capture-and-storage-has-the-insurance-market-adequately-responded-to-operator-needs

[3] Marsh, undated webpage - *Carbon Capture and Storage Insurance* https://www.marsh.com/en/industries/energy-and-power/expertise/carbon-capture-storage-insurance.html

[4] Repmann, M., Schelske, O., Colijn, D., Prasad, S., (2021, July) *The Insurance Rational for Carbon Removal Solutions,* https://www.swissre.com/dam/jcr:31e39033-0ca6-418e-a540-d61b8e7d7b31/swiss-re-institute-expertise-publication-insurance-%20rationale-for-carbon-removal-solutions.pdf

Entities currently seeking insurance are largely independent multi-party carbon storage project developers. For example, of the 48 carbon storage projects currently under review for a Class VI permit in the US, about 90% are relatively new companies or startups. Many are multi-party entities (not all of which have a major player as partner, in particular one from the oil and gas industry). These entities are the most likely to depend on insurance to meet permit and regulatory requirements for financial securities since they often do not have, or choose to use, the balance sheet to meet requirements. Project developers with major oil and gas companies to date apparently have relied on corporate balance sheet strength in order to demonstrate financial security. However, in interviews conducted for this article, information collected suggests that this pattern may change and even large multinational firms may now be considering insurance as an element to organize carbon project financing.

Companies Offering Insurance for CO_2 Storage Projects

The insurance value chain includes specific actors and interrelated roles:

- *Insurance brokers* meet with customers, assess needs, research policy options, make policy recommendations, and advise clients on strategy. Brokers contact insurance companies to find the best policies for their client's specific project needs.
- *Insurance companies* offer the insurance policies for projects. Underwriters evaluate project risks and set terms and conditions and premiums. Policies address the specific needs of a project and can include property, casualty, environmental liability, non-delivery, and reversal, among others. *Carbon Credit Insurance* is a recent entry in the climate transition market that covers the risk of losing carbon credits for a variety of reasons. One example of this type of insurance is the policy developed by AON for Eni and the HyNet North West and Northern Endurance Partnership in the UK. The policy includes indemnity for loss of carbon credits due to a leak of CO_2 from storage[5].
- *Reinsurance* is insurance for insurance companies. Reinsurers deal with primary insurers, not insurance customers. They cover bundles of insurance policies rather than individual projects.
- *Institutional Investors* – Insurance companies may also act as institutional investors in carbon projects, a much-needed source of funding for climate solutions/project finance.

Listed in Table 1 below are companies that have announced insurance products linked to CO_2 storage or have been vocal on the topic in public. These entities were identified through industry contacts and desk-top research. A link to company-relevant statements/offerings is presented in the table. The documents published on-line range from detailed reviews, projections of carbon storage market activity, listing of insurance offerings, and relevant industry news articles. The links represent a starting point for further investigation of the current engagement of each company with the carbon storage market.

[5] Insurance Journal Magazine, (2024, May*), Markets/Coverages: Aon Offers Carbon Capture, Storage Insurance for Energy Transition,* https://www.insurancejournal.com/news/international/2024/05/17/774654.htm

Table 1. Partial list of insurance firms that offer or have published interest CO_2 storage projects. The list is incomplete as additional firms are entering the market or in due diligence/planning process to enter the market. Note that inclusion in this listing does not represent an endorsement of the company or product by IEAGHG but is for information purposes only

Company	Reference
AJ Gallagher	*Gallagher Specialty extends climate risk services with carbon insurance solutions* (2024 , June)[6]
Allianz	Koh, W., *CCUS Technologies - Can they mitigate climate change?* (2022, January)[7]
Amwins	Carbon Sequestration 101 : Understanding the Risks and Finding Insurance Solutions (2022, November)[8]
Aon	Wells, K., *Aon Launches Comprehensive Carbon Capture and Storage Insurance* (2024, May)[9]
Ascot, Tierra	*Green Credit Insurance* (2022, May)[10]
CarbonPool	Jessop, S., *Ex-Allianz execs raise funds for carbon credit-backed insurance* (2024, January)[11]
Howden	*Howden Launches First-of-its- Kind Carbon Capture and Storage Insurance Facility* (2024, January)[12]
Ironshore, Liberty Mutual	*Carbon Sequestration and the Carbon Footprint of Business* (2023, April)[13]
Kita	*Why Carbon Insurance*[14]
Lloyds of London	*Climate Action Plan* (2021, July)[15]

[6] https://www.ajg.com/uk/news-and-insights/2024/june/gallagher-specialty-carbon-insurance-solutions/
[7] https://commercial.allianz.com/news-and-insights/expert-risk-articles/ccus-technologies.html
[8] https://www.amwins.com/resources-insights/article/carbon-sequestration-101-understanding-the-risks-and-finding-insurance-solutions
[9] https://www.reinsurancene.ws/aon-launches-comprehensive-carbon-capture-and-storage-insurance-solution/
[10] https://ascotgroup.com/blog/ascot-partners-with-tierra-underwriting-to-provide-green-credit-insurance/
[11] https://www.reuters.com/markets/carbon/ex-allianz-execs-raise-funds-carbon-credit-backed-insurance-2024-01-29/
[12] https://www.howdengroupholdings.com/news/howden-launches-first-of-its-kind-carbon-capture-and-storage-insurance-facility
[13] https://business.libertymutual.com/insights/carbon-sequestration-and-the-carbon-footprint-of-business/
[14] https://www.kita.earth/whycarboninsurance
[15] https://www.lloyds.com/about-lloyds/media-centre/press-releases/lloyds-launches-climate-action-plan-to-accelerate-the-transition-to-net-zero

Lockton	Briscoe, D., *Making Carbon Credits a Strong Currency*[16]
Marsh	Carbon Capture and Storage Insurance[3]
Oka	Fritsch, L., *Carbon Insurance, The Role of Insurance in the Carbon Transition* (2023, September)[17]
Parhelion	*Carbon Capture and Storage*[18]
SCOR	*SCOR Syndicate Leads Carbon Capture and Storage Insurance Facility* (2024, January)[1]
Swiss Re	Repmann, M., Schelske, O., Colijn, D., Prasad, S., *The Insurance Rational for Carbon Removal Solutions* (2021, July)[4]
Volante	*Carbon Offset Credit Insurance*[19]
WTW (Willis)	Clark. P., Richardson, W., Van Der Merwe, *Energy Market Review 2024 - Carbon capture and storage: Has the insurance market adequately responded to operator needs?* (2024, April)[20]
Zurich	*How carbon capture can help heavy industries on the road to net-zero* (2021, September) [21]

[16] https://global.lockton.com/us/en/news-insights/making-carbon-dioxide-credits-a-strong-currency
[17] https://carboninsurance.co/carbon-insurance-the-role-of-insurance-in-the-carbon-transition/?access=download
[18] https://parhelion.co.uk/about-us/sector-info/
[19] https://volanteglobal.com/products/carbon-offset-credit-insurance/
[20] https://www.wtwco.com/en-us/insights/2024/04/carbon-capture-and-storage-has-the-insurance-market-adequately-responded-to-operator-needs
[21] https://www.zurich.com/en/knowledge/topics/climate-change/how-carbon-capture-can-help-heavy-industries-to-net-zero

Scope of Coverage Offered

For risks to human health and the environment, the industry offers policies originally developed for the oil and gas industry that can be modified and applied to CO_2 storage projects. Pollution liability policies provide coverage for clean-up, bodily injury, property damage and associated defense costs. Additional coverages may be added to a project policy to cover business interruption, disposal liability, and transportation liability. For damage caused to the environment, such as groundwater pollution, environmental impairment liability insurance (EIL) covers clean-up costs (for sudden and gradual pollution), third-party claims, legal costs, and expenses. Site pollution insurance may also provide coverage for monitoring, remediation, potential fines, and penalties.

Insurance for risk to the project financial performance is relatively new. Several insurance companies offer coverage for business interruption caused by both known risks and newly identified risks specific to CO_2 storage, such as CO_2 leakage to the atmosphere from the storage reservoir.

Leakage is the common theme as the most important unknown aspect of insurance for CO_2 storage projects. Leakage may:

- cause damage to the environment, human health and property
- cause risk to project financial outcome and potential for commercial success
- cause the project to be out of compliance with regulations, resulting in potential fines, or in some jurisdictions, loss of earned tax credits[22]

WTW (broker Willis) characterized the concern about leakage as follows:

> "Pre-injection insurance considerations concern physical damage, business interruption, tax insurance and third-party liability policies to cover for damaged plant, lost income, and potential environmental liability for CO_2 leakage. Post-injection insurance requirements should focus on the liability of leakage from a sealed reservoir"[2].

Evaluating risk and providing insurance coverage for long-term liability for CO_2 leakage is challenging for private sector companies. The development of policies and calculation of premiums is based upon the analysis of a statistically meaningful number of projects with performance and loss history. For long-term CO_2 storage projects, this history has yet to be developed. Insurance thought leaders report that one option for addressing the need for long-term coverage are public/private partnerships, one example of which is when governments assume liability for leakage upon the successful completion of post-injection project care.

Carbon credit insurance is an emerging insurance product that protects the generation or purchase of carbon credits from risk of loss due to a variety of reasons, including leakage of CO_2 from a storage project. Coverage is split between non-delivery risks (relevant before

[22] Snider, M., (2021, January) DGS Law Website*: Treasury Issues Final Regulations on Section 45Q Tax Credits for Carbon Capture and Sequestration.* https://www.dgslaw.com/news-events/treasury-issues-final-regulations-on-section-45q-tax-credits-for-carbon-capture-and-sequestration

generation of a credit) and invalidation risks (relevant after delivery of a credit). Carbon credit insurance appears to have significant momentum as new offerings have been recently advertised by companies such as CarbonPool, Oka, Kita, and AJ Gallagher among others (see Table 1).

Duration of Coverage

The duration of policies is typically one year for property-type of insurance with annual renewals. It can be multiyear for casualty-types of insurance, dependent on project-specific needs and circumstances.

In general, policies offered for the construction phase are usually short-term, lasting until the construction is completed. In some cases, policies initiated in the construction or pre-construction (permitting phase) may be required to stay in place for the duration of the project. Policies offered for injection and storage operations are also renewed year by year. Post-closure policies, if available, are designed to cover long-term risks. However, post-closure open-ended liability coverage does not appear to be available at this time.

Coverage for CO_2 Transport (pipeline)

Broker and reinsurance agent SCOR noted for CO_2 transportation "While the risk of accidents during transportation is relatively low, the potential for leaks still exists. Transportation of CO_2 to the storage sites is also very costly, since significant energy is required to compress the CO_2 and maintain high pressure throughout the pipelines, which are expensive themselvesPotential leakage in high concentration can also cause problems for human health. Pipes can break or leak during the transportation to the storage sites due to the high pressure applied to liquify CO_2."[1]

Pollution insurance for the pipeline industry is widely available including from companies listed in Table 1. The industry generally covers risks associated with pipeline transportation of CO_2 based upon experience with similar operations in the oil and gas business.

Conclusions

New insurance products for coverage against risks associated with geological carbon storage have recently become available in the commercial market.

Coverage for risk of leakage of CO_2 from storage post-injection and post-closure care remains a challenge for the private sector insurance.

Increasing insurance industry interest in participating in the carbon storage and carbon credit markets suggest that coverage options for the variety of risks encountered may be anticipated to continue to expand.

Recommendations

This brief report identified certain insurance companies that are recently engaged in some way with carbon storage projects. Further research is needed in order to update and expand this list and to encourage the technical, project development, and financial communities to understand the potential and role of insurance in providing financial securities and regulatory compliance for the growing carbon storage and climate transition markets.

This report also introduced certain common industry terms and some of the types of insurance products and policies available, but further efforts to report on specifics of actual policy language and to provide policy examples for review and discussion will be beneficial, especially for project developers, risk assessors, and technical CO_2 storage and monitoring experts.

Since requirements for permitting and financial securities are defined on a national or sub-national basis, insurance coverage will vary by regulatory jurisdiction. Additional research focused on jurisdictionally-specific policies (i.e., in Canada, UK, Australia, USA, etc., and in jurisdictions with developing interest in carbon storage) and review of locally relevant project histories would be beneficial to the project development community, especially as "loss history" data can be collected and assessed.

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