

European insurers are addressing new risks arising from climate change

Aki Ono
18 May 2022

lakyara vol.354

Executive Summary



Aki Ono

Expert Consultant

Financial Market & Digital
Business Research Department

With companies switching to renewable energy and ramping up investment in new technologies to decarbonize society, the insurance industry is confronting increasingly diverse and complex risks. European insurers are responding to new risks and expanding their business opportunities through such means as partnering with startups.

Insurers facing more diverse risks of climate changes

Insurance claim payouts have been growing uninterruptedly in recent years against a backdrop of increasingly severe natural disasters. In Japan, claims paid on losses from natural disasters exceeded ¥1tn in 2018, resulting in reinsurance premium increases and drawdowns of contingency reserves.

Meanwhile, insurers are underwriting a host of increasingly diverse and complex risks amid the transition to a decarbonized society, including litigation risk related to environmental pollution, renewable energy infrastructure construction defects and operational failures, and hydrogen energy plants' liability for third-party damages.

Given how rapidly energy sources are changing and new technologies are being adopted, there are concerns that insurance industry will not be able to adequately underwrite attendant risks. In the market for solar power plant insurance, for example, insurers have had to raise premiums and impose underwriting restrictions after incurring losses due to natural disasters and thefts¹⁾. Insurers are thus encountering novel risks associated with societal change and business innovation in addition to climate change risks.

NOTE

1) Willis Towers Watson, "Renewable Energy Market Review 2021;" General Insurance Research Institute of Japan, "Saiseikano Enerugi Jigyo niokeru Hoken Shijo no Doko," (GIRIJ Report 136; August 2021).

European insurers are leveraging technology and external alliances

European insurers have been proactively partnering with external entities and utilizing technology to respond to new risks engendered by climate change. Their approaches include:

- (1) Upgrading risk models through extramural collaborations and applying the models to underwriting decision-making and/or premium setting;
- (2) Facilitating risk taking by market participants within the value chain; and
- (3) Gaining expertise in assessing their own risks by investing in tech startups and/or participating in projects.

²⁾ Defined as risks stemming from climate change's physical effects. Physical risks are broadly classified as either acute (e.g., damage to production facilities or supply chain disruptions due to sudden events such as storms, flooding and heat waves) or chronic (e.g., business interruptions or productivity losses due to long-term climatic changes such as rising temperatures and rising sea levels).

As an example of the first approach, one insurer invested in a startup to refine its ability to identify and assess physical risks²⁾ posed by climate change. Using weather maps and satellite/drone data, it analyzed geographic storm-damage patterns and loss severities and applied what it learned to preventing and mitigating losses, thereby upgrading its underwriting capabilities. Such initiatives to refine risk models are gaining prevalence even in Japan. The second and third approaches are perhaps best exemplified by Axa and Swiss Re, respectively.

Axa fulfilling core role in value chain

The French insurer Axa and its group companies provide €100mn of insurance to renewable energy producers. It has utilized VC investments and M&A to build its business in the renewables space.

For example, Axa made a VC investment in New Energy Risk (NER), a specialist in energy engineering data analytics, in 2013. In collaboration with NER, Axa developed innovative performance insurance for Bloom Energy, a solid oxide fuel cell startup.

In 2013, Bloom had developed clean energy technology but it was struggling to obtain financing because its technology was not well understood by debt financiers. In response, Axa and NER quantified Bloom's technological and financial risks and structured 15-year performance insurance policies. The insurance enabled Bloom's creditors to hedge default risk and substantially improved Bloom's access to sufficient, timely financing³⁾. Axa is facilitating widespread deployment of clean energy by offering such performance insurance in the US and Korea.

³⁾ Bloom Energy went public in 2018. Companies that use its fuel cells include Google and Walmart.

Swiss Re's forward-looking investment in carbon capture startup

Next, as an example of an insurer that has gained expertise in assessing its own risks, Swiss Re has partnered with Climeworks⁴⁾, a direct air capture and storage (DACs) startup. Although DACs technology is expected to help achieve decarbonization targets, no insurance market exists for it even today because of uncertainty surrounding carbon price fluctuations and the risk of captured carbon being released back into the atmosphere.

Against such a backdrop, Swiss Re has partnered with Climeworks on DACs. In August 2021, it agreed to purchase \$10mn of carbon offset credits from Climeworks over 10 years⁵⁾. The two companies agreed to also collaborate on exploring future investment and project finance opportunities and developing risk management knowledge and risk transfer solutions.

The alliance makes medium/long-term business sense for Swiss Re. By purchasing the offset credits, Swiss Re will gain opportunities to invest in climate solutions as an institutional investor in addition to of course expediting reduction of its own carbon emissions. Another potentially big benefit is expertise in new technologies that could expand future insurance underwriting opportunities. With technologies that have unknown long-term ramifications like carbon capture, learning about their risks and costs through participation in projects from an early stage may pay off over the long run.

Major carbon removal technologies

		Development stage	Cost (USD/tCO ₂)	Energy required (GJ/tCO ₂)	Land required (ha/tCO ₂ /year)
Technological	DACS (direct air capture and storage)	Prototype	600 - 1,000	6.7 - 12.3	<0.001
	Enhanced weathering	Prototype	50 - 200	12.5	0.01
Nature-based	Improved forest management, afforestation	Mature	1 - 100	—	0.03 - 0.7
	Soil carbon sequestration	Early adoption – mature	0 - 40	—	—
	Blue carbon	Prototype – mature	10 - 100	—	0.2
Hybrid	Bioenergy with carbon capture & storage	Demonstration	15 - 400	(Energy production) 0.8 - 10.9	0.03 - 0.05
	Biochar	Demonstration	20 - 120	(Energy production) 0.1 - 5.1	0 - 0.01

Source: NRI, based on Swiss Re Institute, "The insurance rationale for carbon removal solutions" (July 2021)

4) Climeworks is a Swiss development-stage company founded in 2010 by two engineers formerly employed by the Swiss Federal Institute of Technology in Zürich. It aims to develop and commercialize technology that sequesters carbon captured directly from the atmosphere. Since September 2021, it has been operating the world's largest direct air capture plant in Iceland.

5) "Swiss Re and Climeworks launch partnership by signing world's first ten-year carbon removal purchase agreement," (August 25, 2021).

Insurance needs are set to grow

Companies committed to decarbonizing their operations will need to not merely change their energy mix but also drastically reform their business models. Insurance has a huge role to play in such opportunities. Going forward, the insurance industry will have to assess new energy sources and technologies' profitability from the standpoint of both underwriting and investing. If it can assess new risks by leveraging external technology and expertise, it should be able to meet growing insurance needs.

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Inquiries to : Financial Market & Digital Business Research Department
Nomura Research Institute, Ltd.
Otemachi Financial City Grand Cube,
1-9-2 Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan
E-mail : kyara@nri.co.jp

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