



# SERI

Net-Zero Future



# Standard for Environment, Risk and Insurance (SERI)

## Potential Transformation of the Insurance Market



UK Research and Innovation

Laudes ———  
— Foundation



Climate-KIC

Climate-KIC is supported by the EIT, a body of the European Union



gen

This document is open to public comment.



# SERI: The Potential Transformation in the Insurance Market

Lead Author  
Jeremy Hindle

This project is co-funded by UK Research and Innovation, EIT Climate KIC, Laudes Foundation, and Dgen

V2021-06-30

---

## Contents

<b>Executive Summary</b>	<b>4</b>
<b>Overview</b>	<b>5</b>
<b>The Problem: Data Flows In The Insurance Industry</b>	<b>5</b>
<b>The Solution: The SERI Business Model</b>	<b>7</b>
Climate-Ready Financial Products	8
New Product Enablement	9
Net-Zero Underwriting	9
<b>What Is The Value Proposition?</b>	<b>10</b>
<b>Conclusion</b>	<b>12</b>

---

## Executive Summary

The insurance industry has a 300+ year history of product innovation that has allowed businesses to focus their efforts on sales, while insurers play a risk mitigation role, freeing up capital for investment. The “Protection Gap” (the difference between total economic loss and that which is insured) continues to rise as the impacts of climate change impact all classes of insurance. The opportunity<sup>1</sup> presented to transition towards net zero business requires a technology enabled data sharing infrastructure. Whilst, Open Data is one solution that is gaining momentum from stakeholders in the insurance space, the reality is that Shared Data, with a trusted governance framework, offers greater opportunities to search, find, access and consume data elements that will support the development of climate-ready financial products.

As momentum builds for green products, insurers need to do more to incentivise net-zero behaviours that go beyond the traditional focus on understanding and building resilience to natural and man-made catastrophes. The Standard for Environment, Risk and Insurance (SERI<sup>2</sup>) business model provides a useful starting point for data discovery to augment the risk factors used in pricing decisions. Access to data allows for greater customisation of product design, more accuracy in pricing that leads to greater transparency for the buyer. The volume of data and the potential for this to explode with the advent of 5G mobile-network technology and the deployment of sensors will allow for real-time risk assessment. This should lead to more innovative products, likely based on parametric solutions. These in turn offer the potential for truly climate-ready financial products, with insurance offering incentivisation to mitigate as well as being resilient to climate change.

The insurance market is trying to embrace digitalisation, not least as a means to reduce acquisition expense ratios<sup>3</sup>. Commercial lines expense ratios have increased<sup>4</sup> from 34% to over 40% from 2013-2018, squeezing tight margins where gross loss ratios are over 60%. The market is highly competitive, with outdated systems and processes built around them. There are massive opportunities to disrupt the market for those that are able to consume data, automate processes and use artificial intelligence to assist with risk selection and pricing. Changing from a Closed Data to Shared Data business model will facilitate this change.

---

<sup>1</sup> [Global Risks, Trends and Closing the Protection Gap](#)

<sup>2</sup> [Standard for Environment, Risk and Insurance \(SERI\)](#)

<sup>3</sup> [What Is the Expense Ratio in the Insurance Industry? \(investopedia.com\)](#)

<sup>4</sup> [2020 UK Insurance Outlook](#)

---

## Overview

The SERI (Standard for Environment, Risk and Insurance) project brought stakeholders together from across the insurance market to examine how and what data was consumed that might be repurposed to commercialise climate-ready products. Insurers are unique in that they have both assets and liabilities exposed to physical and transition risks from climate change. As yet, their focus seems to be on understanding and modelling these impacts from a capital perspective in the form of stress-testing. Shareholder action is driving change in underwriting policy and investments to limit overt coverage of the largest contributors to carbon emissions. So far, there does not seem to be much focus on how data could be used to support the generation of new products that could incentivise net zero behaviours.

The SERI project established that by creating a new way of working with data, similar to the changes banks now operate under with Open Banking,<sup>5</sup> data elements not currently accessible could be integrated into the underwriting process. In turn, this might enable new products to be developed that focus on mitigation of carbon emissions. Further, to remain relevant to consumers and support the necessary transition of the economy as a whole, insurers have to support innovative technologies across manufacturing, construction, transportation and energy where historical data is not available. A trusted, shared data infrastructure would support insurers in reaching this goal.

## The Problem: Data Flows In The Insurance Industry

The insurance market has long operated a Closed Data<sup>6</sup> business model, using bilateral licences (e.g. with catastrophe model vendors) to access valuable data on hazard and vulnerability to assess and price risk. With the exception of data used to combat fraud in motor insurance<sup>7</sup>, intracompany sharing of data is limited to back-office functions (such as accounting messages<sup>8</sup>), or where panels of (re)insurers are quoting to co-re/insure individual or portfolios of risks. The relevant exposure information is captured from systems designed for policy issuance and claims administration and then shared (usually by brokers) to assist in risk assessment.

The process of risk modelling includes many closed loops<sup>9</sup>, with repeated data handovers using legacy tools, sometimes with formats that require manual entry. At

---

<sup>5</sup> [Open Banking: Home](#)

<sup>6</sup> [Open, Shared, Closed — understanding data ► Icebreaker One](#)

<sup>7</sup> [Welcome to MIB](#)

<sup>8</sup> [DXC Insurance BPaaS](#)

<sup>9</sup> [📄 slides: SERI Commercialisation & User Needs AG Meeting II - 2021-05-10 #open](#)

renewal the process is repeated, with little opportunity for data quality enhancement over time at an industry scale. The focus is on understanding resilience and adaptation to natural and man-made catastrophes, with scenario analyses<sup>10</sup> to stress test the impacts of climate change.

Insurers understand the logic and advantages of Open Data and standards; indeed, Acord<sup>11</sup> was established by the industry 50 years ago to facilitate data exchange between market participants. More recently, other non-profits like Oasis Loss Modelling Framework<sup>12</sup> are encouraging the use of Open Exposure Data, together with the development of packages to capture Open Results Data through the umbrella curation of Open Data Standards<sup>13</sup>. Both Lloyd's, through its Future at Lloyd's<sup>14</sup> programme and the Insurance Development Forum<sup>15</sup>, which represents stakeholders across the industry, are looking to change market practices to improve interoperability through digitalisation with the goal of reducing costs.

**“Building efficiency and reducing cost and duplication in the risk modelling and data ecosystem, through continuous development of open platforms, an industry wide interoperability programme and advocacy development of open standards” –**

*Risk Modelling Steering Group, Insurance Development Forum<sup>15</sup>*

While the emphasis might have shifted from Closed Data to an aspiration of Open Data, the focus of data capture continues to be geared towards enabling insights on how the built environment is resilient to current and future climate risks. Catastrophe model inputs are designed to assess primary risk factors (e.g. the type and age of construction, what it is used for and how its location might exacerbate the risk) as well as secondary features that reflect site specific construction and occupancy. Elements that make a building more sustainable (e.g. solar panels and heat pumps) or that could provide insights on its use (beyond occupancy type) may not be captured at all. Parameters that might mitigate greenhouse gas (GHG) emissions or anything else that might incentivise net zero behaviour by customers is lacking.

<sup>10</sup> [Key elements of the 2021 Biennial Exploratory Scenario: Financial risks from climate change](#)

<sup>11</sup> [ACORD | Home](#)

<sup>12</sup> [Oasis Loss Modelling Framework | Open source catastrophe modelling platform](#)

<sup>13</sup> [OasisLMF/OpenDataStandards: Open data standards curated by Oasis.](#)

<sup>14</sup> [Welcome to the Future at Lloyd's](#)

<sup>15</sup> [Risk Modelling \(RMSG\)](#)

Against this background, the built environment contributes<sup>16</sup> 40 % to GHG emissions in the UK, of which over 70 % is driven by building operations. Over 85 % of the buildings in use today will still be in use by 2050, so it is imperative that action is taken to understand how these buildings can be made to be climate-ready. While the cost of insurance is small relative to the capital expenditure required to retrofit buildings, the demand for “green” products is increasing and insurers could benefit from this trend.

## The Solution: The SERI Business Model

The SERI project explored<sup>17</sup> through several Advisory Group meetings the use case for a data sharing framework of a climate-ready building passport<sup>18</sup> application, demonstrating how insurers might capture additional data elements in support of mitigation that go further than just understanding how the built environment performs in given loss scenarios.

The SERI business model highlights the advantages of Shared Data, enabled through the creation of a data sharing framework<sup>19</sup>, where authorised users could search, find, access, and consume data they don't currently capture. This secure and trusted environment could provide the necessary ingredients for product innovation that could support mitigation of GHG emissions including net-zero underwriting becoming an active activity with dedicated new products rather than a passive<sup>20</sup> one, where insurers are responding to shareholder pressures and simply withdrawing insurance cover.

For insurers, the benefits of embracing a data sharing framework include:

- Improving efficiency and reducing operating costs through digitalisation and automation;
- Solving the challenges of accessing new data to support net-zero underwriting;
- Integrating design and construction data from building information modelling (BIM);
- Capturing operational data on buildings;
- Providing data on which a new generation of parametric insurance products could be launched.

---

<sup>16</sup> [Climate change - UKGBC](#)

<sup>17</sup> <https://icebreakerone.org/2021/06/15/an-update-from-the-third-seri-advisory-group-meeting/>

<sup>18</sup> [Does your building need a climate-ready passport? ►](#)

<sup>19</sup> [slides: SERI AG Meeting 3 - Combined AG Commercialisation & User needs and Systems & ...](#)

<sup>20</sup> [Lloyd's takes action to accelerate transition to sustainable economy](#)

Buildings data, through the use of sensors, can now be readily accessed from a variety of sources<sup>21</sup>. Our Advisory Group revealed that operational data is key to understanding where the biggest environmental gains can be had in the built environment without infrastructure changes. By opening up access to data not currently consumed in the insurance underwriting process, stakeholders could be incentivised for climate-ready product innovation.

## Climate-Ready Financial Products

A climate-ready<sup>22</sup> financial product is defined as a product that actively mandates that the outcomes from its use are demonstrably net zero. If a climate-ready building is one that minimises its own emissions during construction, its ongoing consumption footprint during use, and is resilient to the changing environment in which it exists, it would be logical to assume that mortgages and related financial products that embrace this building could be climate-ready too. Insurance enables businesses to de-risk their investments from physical and liability shocks, freeing capital to be deployed elsewhere. This role is currently seen by consumers as mostly supporting businesses to manage the consequences of climate change; it does not deliver net zero or stop emissions.

As one of the biggest financial market investors, holding assets worth more than 100% of UK GDP<sup>23</sup> in 2019, insurers are on the hook for their claims liabilities (from both physical and transition risks) as well as the assets held to support payment for future claims. The UK government's announcement<sup>24</sup> for mandatory reporting of climate-related financial disclosures<sup>25</sup> by 2023, provides a massive impetus for insurers to play a pivotal role in facilitating net-zero behaviours. The UK government's 10-point plan<sup>26</sup> for a green industrial revolution will again put insurers at the forefront of innovation, without which project finance could not take place. The opportunity for insurers is to find new products that would not just support, but incentivise, these behaviours.

---

<sup>21</sup> [Big data for buildings](#)

<sup>22</sup> [What is Climate-Ready? ► Icebreaker One](#)

<sup>23</sup> [Funded Pensions Indicators : Personal pension funds' assets as a % of GDP](#)

<sup>24</sup> [UK joint regulator and government TCFD Taskforce: Interim Report and Roadmap](#)

<sup>25</sup> [A Roadmap towards mandatory climate-related disclosures](#)

<sup>26</sup> [The Ten Point Plan for a Green Industrial Revolution \(HTML version\)](#)



---

## New Product Enablement

The SERI programme established<sup>27</sup> that a new mind-set is emerging whereby traditional indemnity insurance will increasingly be supplemented by products triggered by more transparent means. Parametric insurance products, enabled through better interoperability, manifested by the increased availability of Open and Shared Data, will support narrowing the protection gap between economic and insured losses.

Technological advances, Shared Data, and increased use of machine learning and artificial intelligence are all changing the way insurance is bought and sold. These could enable a change in mind-set about the purchase of insurance, in much the same way as people might hire a car or van by the hour, rather than the traditional long-term purchase commitment. Sensors, leveraging the 5G network's capacity, speed and lower latency, can monitor and capture a broad, and expanding set of metrics, enabling real-time risk management solutions that will contribute to the change of how we think of buying insurance.

There are seedlings of this new approach as insurers examine ways<sup>28</sup> to encourage the reduction of carbon emissions. Motor insurers have been using tracking devices to monitor driver aggression and mileage, with incentives to drive slower and less, rewarded with lower premiums. Products have been developed<sup>29</sup> for buildings insurance to provide rapid access to and swift claims payment from floods. This tackles the omnipresent threat from increased climate risks. It is not too big a leap to imagine products that reward building owners for demonstrating that their relative building performance (measured in real-time) accessed through a data sharing governance framework is a better risk than a similar adjacent building.

## Net-Zero Underwriting

A number of leading (re)insurers have established the Net-Zero Insurance Alliance, affirming their commitments that the industry "can play a key role in accelerating the transition to a resilient, net-zero emissions economy"<sup>30</sup>. However, it would seem that this focus is again on selling resilience rather than offering product solutions for mitigation incentives. Some insurers are already withdrawing<sup>31</sup> insurance coverage for

---

<sup>27</sup> [How can insurance incentivise a change in behaviour that aligns with decarbonisation and increased investments in climate solutions? ►](#)

<sup>28</sup> [Insurers examine cutting premiums for greener motoring customers](#)

<sup>29</sup> [FloodFlash - rapid payout flood insurance for any business](#)

<sup>30</sup> [UN-convened Net-Zero Insurance Alliance – United Nations Environment – Finance Initiative](#)

<sup>31</sup> [How the Insurance Industry Could Bring Down Fossil Fuels](#)

activities that directly contribute to GHG emissions, such as fossil-fuel extraction. Others are restricting their investment activities as a result of activist investor action and to protect their reputation. There is a potential upside though as the energy market switches to renewables, where insurance is key to mitigate risk.

Ground-breaking work from ClimateWise<sup>32</sup> highlighted the role that insurers can play (both through underwriting and investment) in supporting the development of innovative technologies across manufacturing, construction, transportation and energy. Industry could face disruption from new technology, but insurers are not isolated from this risk. The challenge for insurers though is that pricing is normally a reflection of historical experience. To remain relevant, insurers need to provide cover without this security blanket. To do this, they have to be able to access different types of data that they do not normally use and leverage machine learning and artificial intelligence to create algorithmic pricing solutions.

## What Is The Value Proposition?

The UK commercial lines market had gross written premiums of £22.5 billion in 2018<sup>33</sup>, with an expense base of around £9 billion. Commercial lines expense ratios have increased from 34% to over 40% from 2013-2018. Even small percentage savings in the expense ratio would generate £100 million+ value for a market that is growing at 15%+ per annum. However, the commercial insurance market is highly competitive too, with low margins on top of this high cost base. The SERI vision of a shared data infrastructure could provide immense value, unlocking not just access to new data but creating the framework itself.

Data is a key component across the insurance value chain, but legacy systems, outdated processes and closed data business models make it challenging to change the status quo. The insurance market is trying to embrace digitalisation, not least as a means to reduce both acquisition and internal expense ratios. There are massive opportunities to disrupt the market for those that are able to consume data, automate processes and use artificial intelligence to assist with risk selection and pricing. Changing from a Closed Data to Shared Data business model will facilitate this change.

Creating a secure shared data infrastructure that would allow for authorised users to search, find, access, and consume data they don't currently capture, could allow for

---

<sup>32</sup> [Policy opportunities on the road to net zero underwriting: Highlighting three key areas of influence for the insurance industry | Cambridge Institute for Sustainability Leadership](#)

<sup>33</sup> [2020 UK Insurance Outlook](#)

---

product innovation that could support mitigation of GHG emissions: net-zero underwriting could become a focus for new product development and improved margins.

The value proposition for insurers could be felt across the following three main components:

- Improved loss ratios: access to better data
- Lowered expense ratios: lower acquisition costs through digitalisation
- Increased premiums: product innovation will allow for the development of new products

Improved loss ratios will come from access to better risk identification data, which in turn would allow for better risk selection. Quality risks will have fewer claims and produce a lower loss ratio. Increased digitalisation will lower the overhead of acquiring business. New products focussed on net-zero underwriting will generate increased revenue. Access to data allows for greater customisation of product design, more accuracy in pricing that leads to greater transparency for the buyer.


The SERI programme has presented potential commercial opportunities, with a focus on retrofitting<sup>34</sup> commercial buildings as a potential use case.<sup>35</sup> Through a series of questions, the idea was to prompt discussion and suggest solutions that could help insurers develop new products.

The questions included:

- What problem is to be solved?
- What is the net-zero angle?
- What is the insurance angle?
- How would a shared data infrastructure framework help?
- What is the potential business opportunity?

For the commercial building retrofitting example, we know that retrofitting has to happen to improve building energy performance. This will lower operating costs, leading to lower emissions with the potential that a retrofitted building could be more resilient to the impacts of climate change. In turn, these risks may represent a lower risk for insurers and competition for these risks will drive improved terms and conditions and potentially lower insurance premiums.

---

<sup>34</sup>  slides: SERI Commercialisation & User Needs AG Meeting II - 2021-05-10 #open

<sup>35</sup> [report: Climate-Ready Building Passport Use Case Data Sharing to Enable Net Zero Insurance](#)

---

## Conclusion

The UK commercial insurance market is highly competitive and overburdened with costs associated with acquiring and processing data with legacy systems. The SERI project has demonstrated the use case<sup>36</sup> for creating a new shared data infrastructure. This could unblock the current reluctance of stakeholders to consume new data elements that would go further than those required to assess the resilience of buildings to climate change.

The built environment is a key contributor to GHG emissions, partly from the “capital carbon” (or embodied carbon) of construction materials and its associated supply-chain. The principal emitter is driven by building operations. Commercial buildings, unlike residential property, will require private funding to retrofit them to meet the UK’s net-zero goals. Retrofitting is costly and there is low awareness of the benefits of energy renovation and insufficient knowledge of what measures to implement and in which order. Access to operational data would provide the opportunity for insurers to create “green insurance” products, in the same way that banks and others offer green mortgages. Continuing to use the current “Closed Data” business model will prevent much needed product innovation; only a shared data infrastructure can provide the ecosystem required.

---

<sup>36</sup> [report: Climate-Ready Building Passport Use Case Data Sharing to Enable Net Zero Insurance](#)