



Lifting the lid on volcanic risk

How volcanic eruption could cast a cloud over global economies

To many nations around the world volcanic eruptions can seem like the stuff of disaster fiction. That is, until the heat is on the global economy to withstand the pressure on its supply chains. Aviation, tourism, and telecoms - just a few industries that could face significant disruption in the event of a volcanic eruption.

To help you understand the most severe impacts of a volcanic eruption, we've developed a scenario that analyses which businesses are most at risk from a volcanic eruption, and how the global economy could be impacted from the moment of the eruption and for the following 5 years.

Picture the scene: a Decade Volcano situated near a modern, densely populated urban centre, erupts with little to no warning

Eruption – One of the 16 Decade Volcanoes identified by the IAVCEI erupts. Hot gases, lava and volcanic matter are ejected from the volcano for over 48 hours, and many other harmful chemicals are now airborne. A 30km high ejecta column sends ash and tephra deposits into the atmosphere.

Lives and homes lost – Loss of life and property is reported in the immediate areas due to lahar flow, ash inhalation, flood, landslide, and related health complications.

Travel and transport shut down – Ash impacts visibility and mechanical functions forcing all airports and seaports in the affected areas to shut, and airspace is temporarily closed. Disruption to travel & transport lasts several days, while disruption for supply chains last months.

Adverse seasonal weather events – Ash and tephra that reached the stratosphere causes 'radiative forcing', the effect of volcanic aerosols and clouds absorbing radiation from the sun, lasting for two to three years. In the most severe scenario, global temperatures cool contributing to seasonal changes that can affect crops and contribute to a period of food instability globally.



How severe could the situation get?

There are currently 16 Decade Volcanoes that pose a risk to populated areas, identified by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).

Level	Scenario severity descriptions	Historical reference
Major	Volcanic eruption 5cm ash layer: Ash cloud covers local area to 5cm depth, resulting in a lengthy recovery.	2010 Eyjafjallajökull eruption
Extreme	Volcanic eruption 1 meter ash layer: Ash cloud covers local area to a deeper 1m depth, resulting in a more complex recovery potentially with longer timeframe.	79 CE Pompeii eruption
Extreme	Volcanic winter: A caldera creating explosion contributes to a 2 meter ash coverage. This is followed by a volcanic winter, which contributes to increased rainfall, flooding, and crop failures. The recovery time is considerable, with potential long-term impacts on global temperatures.	1815 Mount Tambora eruption

\$1.6trn

5-year global economic loss from a major volcanic eruption

How vulnerable is the economy?

If this scenario were to take place, the global economic impact could reach \$1.6 trillion over a five-year period (this represents the probability weighted average across the three severities we have modelled), with an expected loss of \$14 billion (the economic loss multiplied by the probability of the event occurring).

Which sectors might be most at risk?

Transportation: Aviation is likely to suffer most in the immediate aftermath of an eruption as flights are grounded until the ash cloud dissipates. Losses can build as airlines face business disruption through cancelled flights, rerouting customers and returning stranded aircraft to home airports. Other modes of transport may also be susceptible depending on infrastructure damage. There will likely be knock-on impacts on supply chains across all sectors if goods cannot be transported.

Communications: The communications sector could also expect to see disruption as ash clouds may damage sensitive communication equipment, or cable damage may prevent internet access for areas.

Retail and food and drink: In addition to the short term supply chain disruptions, long-term impacts may be felt through food instability caused by weather events, causing scarcity and price rises, and reducing consumers' disposable income and shifting spending habits.

Healthcare: As well as having to deliver an emergency response, healthcare providers in the region directly affected by an eruption could also suffer business disruption and backlogs due to potential power and internet outages..

What can businesses do?

Prepare for the fallout: Faced with an eruption from one of the Decade Volcanoes, there would be serious economic consequences. Businesses might be affected in a similar way to a global systemic food shortage, for example. By modelling their risk based on their exposure to other potentially systemic risks, businesses can create a broad plan of action to cope with a volcanic eruption.

Financial challenges: As with many other systemic risks, there is likely to be economic uncertainty in the wake of an extreme event. That means investments particularly in directly affected industries such as aviation could dip. Anticipating which sectors are most likely to be affected and managing exposures accordingly could help to avoid the worst impacts.



Next steps

Work proactively to build resilience in your risk management against these threats and connect with your broker to discuss risk transfer for volcanic eruptions.

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