# Climate change and urbanisation drive urgent increase in global flood risk



Climate change and urbanisation are driving a rapid increase in flood risk exposure around the world, creating urgent challenges for infrastructure, communities and investors. This was the central theme of a recent expert panel discussion convened by New Civil Engineer (NCE) alongside global flood and climate risk specialists Fathom, held in March 2025. The event gathered leading professionals from engineering, risk management, insurance and environmental agencies to explore how understanding of flood risk can be enhanced and addressed effectively.

Flood risk is rising significantly due to both intensified rainfall events linked to climate change and expanding urban populations. Gavin Lewis, head of engineering at Fathom, highlighted work his organisation has done in the United States, where certain states lack access to up-to-date flood risk data. Speaking to NCE, Lewis said: “We’ve done work in the United States looking at population data and the total exposure to floods. The outcome is that we believe the exposure is going to double by the end of the century, which provides perspective on how areas are impacted by flooding. This is not just due to climate change, it is also caused by urbanisation and changing population density.” He emphasised the global nature of this trend, pointing out that “more than 50% of the global population lives in urban areas today, which is up from 30% in the 1950s, and that share is forecasted to increase further by 2050.”

The consequences of this growing exposure are profound. James Hubbard, partner at Environmental Resources Management, underlined the scale of the financial impact related to all weather and climate hazards globally, projecting losses of $25 trillion to $40 trillion every few years by 2050. He warned that “flooding will emerge as the largest of the individual hazard types ahead of storms, heat waves and other hazards.”

In the UK, the situation is further complicated by ageing flood risk infrastructure, much of it built post-war and nearing the end of its design lifespan. Jennifer Laight, associate director at Arup UK, told NCE, “I’m not entirely convinced that we do understand our risks. We rely on a lot of ageing flood risk infrastructure in this country... I don’t think we’re doing enough to understand what future hazards those assets could be facing.” This uncertainty has significant implications for decisions about infrastructure investment and resilience.

Insurance plays a vital role in managing flood risk and recovery, but there remains a notable protection gap. Aidan Kerr, public sector and industry affairs lead at Swiss Re UK and Ireland, who previously directed operations at Flood Re, explained: “We still see over 50% of the losses uninsured, so the protection gap is still high and arguably getting wider.” Kerr also emphasised the importance of translating technical knowledge into accessible information for affected people and policymakers to guide investment in effective flood risk management solutions.

Lucy Wood, climate solutions leader at Stantec, pointed to shifting financial sector attitudes, noting that insurance is gradually becoming an enabler of development: “Insurance can enable the protection of assets and people, but it can also enable the unlocking of further development if it can be protected by insurance against those risks.” She added that investors are increasingly focused on sustainable, long-term returns and are recognising the risks of stranded assets vulnerable to flooding.

The tailoring of flood protection solutions to specific sites and assets was another key topic. Adam Hosking, vice president and global director for water resources and resilience at Jacobs, asserted: “There’s no one-size-fits-all. I think the solution has to be tailored to the risk, and the risk is driven by both flood hazard and then what it impacts and what we build there. It’s also about looking at how critical the asset that we build is.”

Despite advances in flood risk modelling, some challenges remain. Laight cautioned that modelling tools are often “stretched” beyond their initial purposes, requiring professionals to integrate multiple data sources to achieve a fuller understanding. Hubbard identified data scarcity as a major constraint, especially outside the UK: “I think that it actually exemplifies a broader problem with climate risk assessment, which is a huge amount of data scarcity.” Lewis observed that while the UK benefits from relatively comprehensive data, the US faces gaps exacerbated by political changes, posing difficulties for decision-making under uncertainty.

Regarding data availability and industry collaboration, Environment Agency senior technical advisor Simon Lewis remarked: “I think the volume and accessibility of data to help people in the industry understand the risks in more detail is out there. What we need to work on is the integration between industries and owners, so that we can have a more holistic approach.” He described the lack of catchment-scale and integrated approaches as a critical barrier to improving flood resilience.

Innovative thinking in insurance models is also emerging. Kerr described parametric insurance as a way to change the traditional post-flood damage compensation model, where payments occur automatically upon a flood event: “With parametric insurance, which pays out upon a flood event regardless of proof of damage, we can effectively keep that farmer as a flood management asset owner. Their field becomes a paid-for flood asset, creating a different relationship between industry and those who hold such assets.”

Communicating risk and managing expectations among affected populations was underscored as well. Lewis reflected on the inherent trade-offs in flood protection given finite resources: “There will be winners and losers, and it’s our job to think about how we communicate messages with people who perhaps do not benefit from the level of protection another community is getting. We need to use mapping and our understanding of risk to give them a way forward for their lives and their community too.”

This expert discussion, hosted jointly by NCE and Fathom in March 2025, brought together diverse perspectives from prominent figures in flood risk and resilience, including: Adam Hosking (Jacobs), James Hubbard (Environmental Resources Management), Aidan Kerr (Swiss Re), Jennifer Laight (Arup UK), Gavin Lewis (Fathom), Simon Lewis (Environment Agency) and Lucy Wood (Stantec). The event highlighted the pressing need to refine understanding of flood risk, improve data integration, and develop collaborative, tailored solutions to address a growing global challenge.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://engineering.princeton.edu/news/2025/04/23/climate-change-and-urbanization-both-increase-storms-flooding-threat-coastal-cities> - This article supports the idea that both climate change and urbanization are increasing flood risks, noting their comparable impacts in urban cores and the predominance of climate change in outer areas.
* <https://www.marshmclennan.com/insights/publications/2025/february/state-of-flood-2025.html> - The Marsh McLennan report emphasizes the urgent need to address flood risk, highlighting the impact of climate change and the necessity for innovative solutions to close the flood insurance gap.
* <https://www.ncelenviro.org/articles/building-climate-resilience-in-2025-states-address-wildfires-heat-and-flooding/> - This article discusses climate resilience efforts in 2025, noting the expected growth of flood-prone areas and the legislative actions states are taking to address these challenges.
* <https://www.climatecentral.org/climate-matters/new-us-coastal-risk-map-and-analysis> - Climate Central's analysis indicates that floods are expected to occur more frequently, affecting millions of people and homes in coastal areas like Florida, New York, and New Jersey by 2050.
* <https://www.germanwatch.org/en/cri> - The Climate Risk Index provides insights into the global impacts of climate-related events, highlighting the rising costs associated with inaction on climate issues like flooding.
* <https://www.noahwire.com> - This source details expert discussions on flood risk management, emphasizing the role of climate change, urbanization, and the need for collaborative solutions in enhancing resilience against floods.
* <https://www.newcivilengineer.com/sponsored/debate-how-can-we-better-understand-and-communicate-flood-risk-29-04-2025/> - Please view link - unable to able to access data