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sigma

Time to build

Expanding the frontier of insurability for the capex super-cycle

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Executive summary

The global capex super-cycle is creating larger, more interconnected risks…

The global economy has entered a capital expenditure (capex) super-cycle that is reshaping commercial insurance demand. Investment is shifting from asset-light digital applications and intangible assets toward large physical infrastructure, including energy systems, electricity grids, battery storage, artificial intelligence (AI) data centres, semiconductor fabrication and advanced manufacturing. The investment themes differ by region – AI data centres in the US, semiconductor fabrication across Asia, renewable energy and industrial supply chains across Europe – but they share common characteristics: large, capital-intensive physical assets that expand the stock of insurable value.

…creating a major commercial P&C growth opportunity.

For insurers, the capex super-cycle could represent one of the largest commercial property and casualty (P&C) opportunities in decades. We estimate that AI data centre construction and operation could generate around USD 91 billion in cumulative premiums by 2030, while renewable energy investment could generate around USD 111 billion over the same period. Insurance covers needed during construction account for the first wave of insurance demand, but the larger and more durable opportunity lies in decades of operational risk. As new infrastructure enters operation, insurers will underwrite more high-value property, business interruption and liability exposures.

Insurability is the main constraint, not the availability of capital.

The defining challenge is not the availability of capital, but insurability. Many of the assets being built are unusually large, technologically complex and only partly tested through operational loss experience. At the same time, they are more interconnected than previous generations of infrastructure, reducing diversification and raising the potential for losses to spread across multiple insureds, sectors and lines of business.

Risk accumulation arises from shared infrastructure, supply chains and operational dependencies.

Risk accumulation is driven by networks rather than geography alone. Individual asset sites, valued in billions, are clustered around access to energy, land, water, skilled labour, logistics and policy incentives. They depend on common networks of suppliers, electricity, telecommunications and cloud infrastructure. Hyperscale data centres illustrate the challenge: facilities costing billions of dollars cluster in hazard-prone regions while sharing critical infrastructure, networks and suppliers. As a result, a single disruption can affect multiple insureds, sectors and lines of business at the same time. Understanding risk creates capacity: insurers are improving their understanding of emerging risks through engineering-led underwriting, technical due diligence and improved modelling.

Insurability evolves through advances in engineering, underwriting, modelling and capital structures.

Hyperscale commercial risks are today fundamentally insurable through private-market solutions. Insurance markets have repeatedly expanded the boundaries of insurability as economies have evolved, adapting to new technologies and emerging risks through advances in engineering, underwriting, modelling and capital structures. The capex super-cycle represents the next stage in that evolution. As risks grow in size and accumulate, risk transfer needs to be spread across a wider range of shoulders. Insurance markets help to expand insurability efficiently with the use of captives, layered programmes, syndication, reinsurance and alternative capital. Reinsurance plays a central role by providing capacity while also supporting accumulation management, tail-risk absorption and knowledge transfer. For the largest and most interconnected assets, insurance availability is increasingly relevant for funding availability, making the gap between probable maximum loss (PML) and full asset value highly significant.

Insurers combining underwriting expertise with efficient capital deployment will capture the growth.

We see a flight to quality opportunity in all these developments: insurers that can combine underwriting expertise with efficient capital deployment may be well placed to capture the growth opportunity created by the capex super-cycle.

Key takeaways

The capex super-cycle is changing the structure of risk, not just creating more of it.

Capital that once flowed into asset-light software, services and platforms is now flowing toward AI infrastructure, advanced manufacturing and strategic industry. The result is larger, more capital-intensive, more concentrated assets and greater correlation potential than the previous digitalisation wave. This fundamentally changes commercial insurance exposures.

Dimension	Digitalisation wave (2000–2020)	Capex super-cycle (2020s+)
Primary growth driver	Software, services, platforms	Energy, compute, industry, defence
Capital intensity	Low	High
Physical asset dependence	Low	High
Infrastructure dependence	Moderate	High
Exposure concentration	Low-medium	High
Policy dependence	Low	High
Supply chain complexity	Moderate	High
Replacement times	Short	Long
Insured value per site	Lower	Higher
Correlation potential	Lower	Higher

Source: Swiss Re Institute

The investment boom represents a large commercial P&C growth opportunity.

AI data centres and renewable energy alone could generate around USD 200 billion in cumulative premiums by 2030, with additional opportunities across engineering, property, marine, liability, credit & surety and specialty lines. AI data centres could generate USD 91 billion in cumulative premiums, and renewable energy USD 111 billion. Premium growth will come from operational assets rather than construction alone.

Line of business	Data centre premiums generated by 2030 (USD)	Data centre premium share by 2030	Overall commercial premium share in 2024
Marine	5bn	5%	5%
Engineering	18bn	20%	2%
Property	49bn	54%	25%
Liability	10bn	12%	26%
Credit & Surety	9bn	10%	3%
Total	91bn	100%	62%

Note: The USD 91 billion total corresponds to a baseline. Under a high capex growth scenario, cumulative data centre insurance premiums could reach USD 105 billion by 2030, compared to USD 80 billion in a low capex growth scenario. The overall commercial premium share column provides the corresponding share of each line out of the total global commercial premiums in 2024 for comparison. Figures may not add up due to rounding.
Source: Swiss Re Institute

Risk accumulation follows networks rather than geography alone.

Accumulation increasingly arises through shared power grids, cloud infrastructure, suppliers, telecommunications and logistics alongside traditional geographic concentration. A single disruption can now trigger losses across multiple insureds, sectors and lines of business simultaneously.

Channel	What creates concentration	Insurance implications	Examples
Single-risk severity	Large values in a single site or data centre campus.	Strained limits, higher retentions, more complex layer structures.	Hyperscale data centres, semiconductor fabrication plants, LNG terminals, nuclear plants.
Geography	Asset clusters based on access to energy, land, labour, water, or policy incentives.	Exposure accumulation for natural catastrophe and man-made risks across multiple lines.	Data centre clusters in Texas, Virginia, in the "FLAP-D" area of Europe (Frankfurt, London, Amsterdam, Paris and Dublin), major ports, western Taiwan.
Supply chain interdependencies	Dependency on a small number of suppliers, technologies, inputs or unique supply chains.	Increased CBI risk (including longer repair times), correlated losses if a bottleneck fails, higher inflation.	Rare earth processing, advanced lithography, industrial gases for semiconductor fabrication plants, specialised cables, nuclear fuel cycle, large turbines.
Networks	Losses propagate through shared infrastructure, both physical and online/AI.	Losses in CBI, cyber, trade credit, D&O, liability can correlate across insureds worldwide.	Grid outage, cloud outage, AI providers outage, supply shock for semiconductor plants and specialised industrial goods, cyber-attacks.

Source: Swiss Re Institute

Insurability rather than capital is becoming the binding constraint.

Re/insurance capital remains available, but deploying it requires confidence in risk quantification, accumulation management and maximum loss. Hyperscale data centres illustrate how multiple insurability constraints can become simultaneously binding.

Insurability constraint	Energy infrastructure	AI data centres	Advanced manufacturing
Risk quantification	Moderate	Significant	Moderate
Diversification	Significant	Significant	Moderate
Maximum loss	Significant	Significant	Moderate
Economic viability	Moderate	Moderate	Limited
Overall insurability pressure	Significant	Significant	Moderate

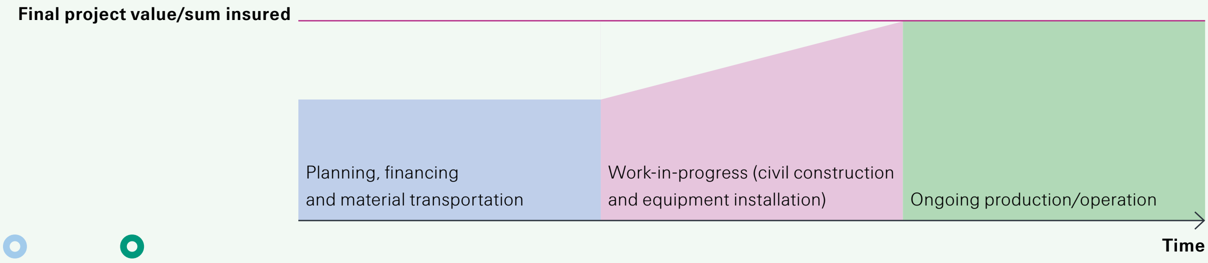
Significant Moderate Limited

Source: Swiss Re Institute

The next frontier is operational insurability.

Engineering markets have adapted well to construction risks. The next challenge begins after commissioning, when business interruption (BI), contingent business interruption (CBI), liability and network accumulation risks rapidly increase values at risk.

Insurance solutions	Development phase	Construction phase	Operation phase
Marine Cargo	High	Low	
Engineering (CAR/EAR)	Low	High	Low
Surety insurance (bid, performance, payment bonds)	High	Medium	
Property insurance		Low	High
Project delay (DSU/ALOP)		High	
Business interruption (BI, CBI)			High
Liability (GL, Professional, D&O)	Low	Medium	High
Cyber/OT	Low	Low	High
Trade credit/Project Finance	Low	Medium	Medium
Environmental/Political Risk (optional)	Low	Medium	Medium



High Medium Low

Source: Swiss Re Institute

Insurance markets have repeatedly expanded the boundaries of insurability, and are doing so again.

Historically, insurers have adapted to risks from nuclear power, changes to liability regimes, offshore energy, terrorism and cyber risks through better engineering, underwriting, modelling and capital structures. Today's capex cycle requires another wave of innovation rather than a retreat from risk.

Era	Emerging risk	Binding insurability constraint(s)	How it was addressed
1950s–70s	Nuclear power	Maximum loss	Price-Anderson, government backstops
1980s	Liability crisis	Pricing, maximum loss	Higher prices, exclusions, ART
Late 1980s	Offshore energy	Maximum loss	Engineering standards, improved risk management
1990s	Environmental liability	Long-tail measurability, diversification (retroactive liability)	Specialised policies, exclusions, claims-made policy terms
2001–present	Terrorism	Diversification, maximum loss	Terrorism Risk Insurance Act, Pool Re
2020s	Cyber	Risk quantification (man-made), diversification (man-made)	Better modelling, segmentation, exclusions
Today	AI infrastructure	Risk quantification, diversification, maximum loss, pricing	Engineering, structured programmes, capital innovation

Source: Swiss Re Institute

The capex super-cycle increases exposures and rewires risk

The global economy is entering a capex super-cycle. Energy investment is estimated to reach USD 3.4 trillion in 2026, AI-related capex over USD 1 trillion, and defence spending a record USD 2.9 trillion with momentum building across Asia, Europe and the US. Capital that once flowed into asset-light software and services during the 2000–2020 digitalisation wave is now being directed into large, physical infrastructure: energy systems, AI and data centres, semiconductor fabrication and defence production. The result is not just more insurable value, but a different kind of risk that is larger, more concentrated, and harder to diversify than previous cycles. Defence is the clearest exception: spending has never been higher, yet most of it remains self-insured or uninsurable. For insurers, the opportunity is significant but realising it will depend on how well these new, more interconnected risks can be underwritten.

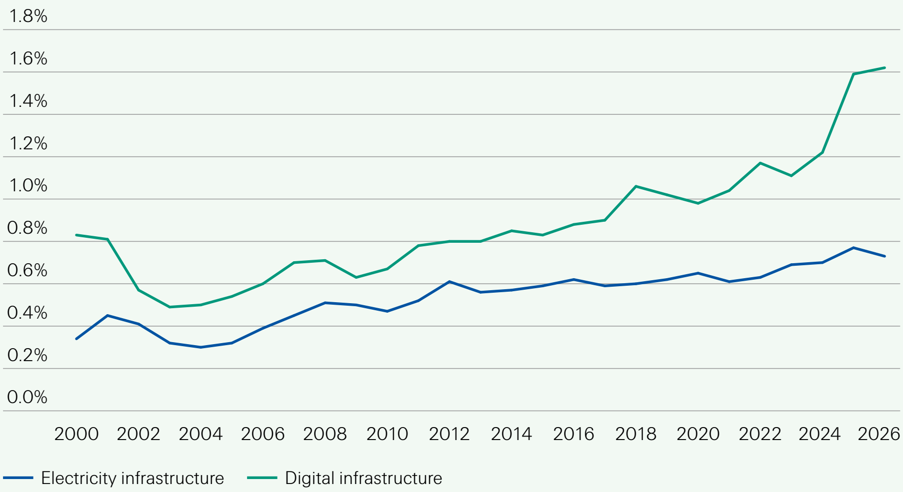
Global capital is increasingly flowing into large, physical infrastructure.

A new investment cycle is emerging

The defining feature of the current investment cycle is not simply its scale, but the structure of the assets it is creating. Across advanced and emerging economies, capital is increasingly flowing into energy systems, electricity networks, energy storage, AI infrastructure,[1] semiconductor fabrication, advanced manufacturing, and logistics systems (see Figure 1 for growth capex trends in these sectors). What unites these sectors is that they are larger, more capital intensive, more infrastructure dependent and more strategically important than many of the assets that dominated the previous "digitalisation" investment cycle of the early 2000s. As a result, today's capex super-cycle is not only expanding the stock of exposed assets; it is changing the nature of exposure itself.

This shift is evident in the capital expenditure patterns of US listed companies: digital infrastructure investment (ranging from AI data centres and cloud infrastructure to telecommunications and fibre networks) has risen in value to over 1.6% of GDP today, up from 0.6% two decades ago (see Figure 1).

Figure 1
Capex as a share of GDP, US listed companies, by sector, 2000–2026



Note: Digital infrastructure represents Information Technology and Communication Services combined; Electricity infrastructure comprises the Utilities sector excluding gas and water.
Source: Swiss Re Institute analysis based on S&P Capital IQ data

1 The terms "AI data centres", "hyperscale data centres", "data centres", "AI infrastructure" or "AI capex" are used interchangeably throughout the document. They refer to the physical infrastructure required to train and operate AI models, including data centres, computing hardware and related enabling assets.

Capital is flowing into four strategic pillars.

The investment cycle spans multiple strategic asset classes

The capex super-cycle is not concentrated in a single sector. Capital is flowing into four broad investment pillars, each characterised by different assets, investment dynamics and insurance implications. Each of the four pillars in Table 1 should translate into strong demand for each of the main categories of commercial P&C insurance – property, casualty and specialty – and opportunities are large across the board. However, defence stands out from the other pillars due to its risk profile and more constrained usage of private insurance capital. We view energy infrastructure and AI data centres as the largest drivers of new insurance demand.

Table 1
The four asset investment pillars of the capex super-cycle.

Pillars of capex	Insurable assets	Size of investments	Risks and opportunities for insurers	Relative momentum
Energy infrastructure	Electrification and grid, renewables and energy storage, fossil fuels, nuclear, BEVs and heat pumps…	Global investments of USD 3.4 trillion in 2026 alone. Two-thirds of which for electrification and low-carbon emissions technologies.	Shift from hydrocarbon-related assets to renewable energy assets.	
AI and data centres	Data centre building shells, electrical infrastructure, cooling equipment, servers, semis, cables, on-site energy assets, grid connections…	This includes USD 800 bn in AI capex planned by the five largest US hyperscalers in 2026, with the global estimate exceeding USD 1 trillion.	Significant near-term opportunity.	
Defence	Factories of ammunition, weapons and other equipment, and their related supply chains (metals, critical materials, IT components, transport…).	Global military expenditure reached a record USD 2.9 trillion in 2025. Only a small fraction translates into industrial capex spending.	Impetus for spending remains strong, including in Europe, due to geopolitics. Partly uninsurable or self-insured.	
Strategic industries and infrastructure	Public push to reshore or rebuild critical industries and infrastructure. Semiconductor design and manufacturing, batteries, cloud and IT, critical minerals, chemicals, ports and transports, other	Semiconductor manufacturing equipment spending alone reached USD 135 billion globally in 2025.	More momentum in Europe than in the US. Risk assets are mostly well-known to insurers.	

pillar with the most momentum; pillar with moderate momentum; pillar with the least momentum
Source: Swiss Re Institute. For investment amounts, see citations in the text below.

For insurers, not all defence investments are equal

Global defence spending has entered a sustained expansion phase.

Global defence spending has entered a sustained expansion phase alongside investment in energy systems, AI infrastructure and advanced manufacturing. Global military expenditure reached a record USD 2.9 trillion in 2025.[2]

Defence is similar in nature to the other key areas of the capex boom…

Defence reinforces the broader shift toward large scale strategic capital investment. Governments are directing resources towards production facilities, specialised manufacturing, logistics, critical minerals, semiconductors and resilient supply chains that often overlap with civilian industrial policy.

…but defence does not translate into insurance demand in the same way.

However, the transmission of defence spending into insurance demand should not be overstated. Military budgets are dominated by personnel, operations, procurement of sovereign assets and classified programmes. Governments typically self-insure these exposures, limiting direct premium growth for commercial insurers.[3] The most meaningful insurance opportunity lies within the defence industrial base itself, including new manufacturing facilities, logistics infrastructure, construction, marine, cyber and business interruption risks. Even there, growth is uneven, with some production increase achievable with the current productive capital stock.[4] Large defence manufacturers typically invest around 3–5% of revenues in capital expenditure.[5] This number might increase with a step up in orders.

2 *Trends in World Military Expenditure in 2025*, SIPRI, 2026.
3 *Insuring against war: How to protect investments, businesses and households in times of geopolitical uncertainty*, OECD. 28 April 2026.
4 *Revving up American manufacturing to unleash the defense industrial base*, McKinsey & Company, 12 February 2026.
5 *The defense capacity gap is widening. It's time to close it*, PWC, July 2026.

High-hazard defence production often falls outside commercial insurance capacity.

Capacity expansion is often concentrated in high-hazard activities such as ammunition, explosives and missile production, where war exclusions, captive programmes and aggregation concerns can constrain commercial insurance capacity. When a contract involves unusually hazardous or nuclear risk, which insurers may decline to cover, the government may indemnify defence contractors.[6]

Defence is unlikely to generate insurance demand in proportion to the growth in defence expenditure.

As a result, defence reinforces the broader trend towards larger, more specialised and strategically important industrial assets, but is unlikely to generate insurance demand in proportion to the rapid growth in defence expenditure.

Energy infrastructure is the largest pillar of the capex super-cycle

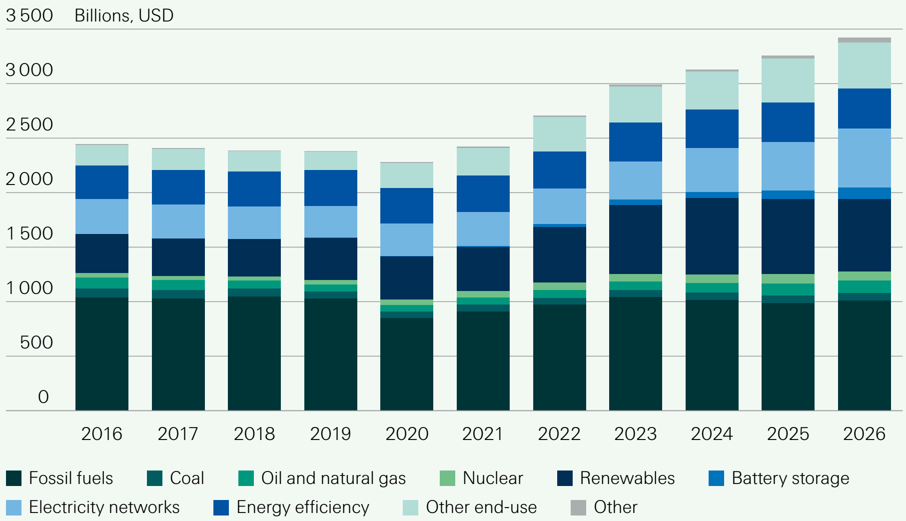
Energy now accounts for around one-eighth of all global investment.

Energy sits at the centre of this shift. Notably, almost two-thirds of this cycle's capital expenditure is now directed toward electricity networks, storage, and low-emissions technologies rather than traditional fossil fuel supply. These investment themes reinforce one another. The buildout of AI infrastructure is becoming a major source of electricity demand, driving investment in power generation, grids, storage and enabling infrastructure.

Global energy investment is set to hit USD 3.4 trillion in 2026, with the US and China leading in different ways.

According to the International Energy Agency (IEA),[7] global energy investment is expected to reach USD 3.4 trillion in 2026, up roughly 40% from 2016 and equivalent to roughly 3% of global GDP (see Figure 2). Put differently, energy now accounts for around one-eighth of all global investment, underscoring the scale of capital being directed toward the physical infrastructure underpinning the capex cycle.

Figure 2
Global investment in energy, 2016–2026e, USD billions



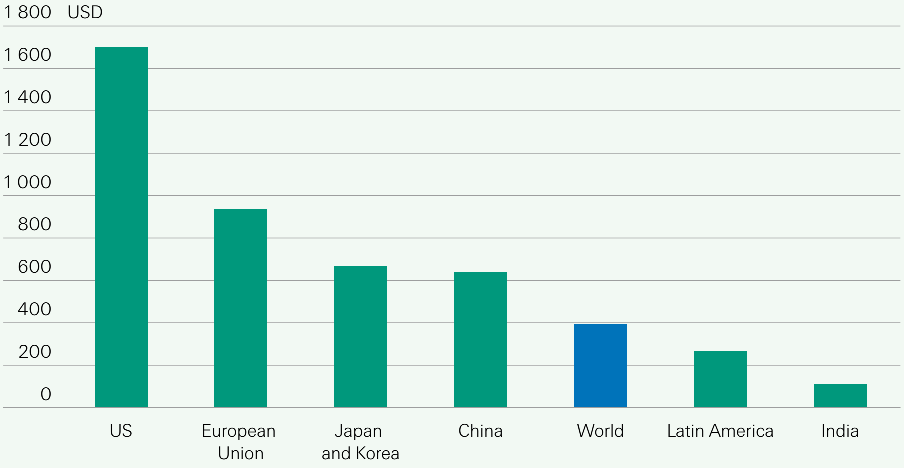
Source: IEA

The investment cycle also exhibits distinct regional characteristics.

The investment cycle also exhibits distinct regional characteristics (see Figure 3). The United States leads in per-capita investment, driven by the rapid buildout of AI infrastructure, data centres and electricity networks. China invests substantially more in absolute terms, reflecting the scale of its industrial base and continued spending on electricity grids, manufacturing and industrial upgrading. Europe occupies a middle ground, with investment shaped by energy security, electrification and industrial competitiveness. Despite these regional differences, the direction of travel is remarkably consistent: across major economies, capital is flowing into large-scale strategic infrastructure rather than traditional fossil fuel supply or asset-light investment.

6 *Defense Contracting – DOD Should Encourage Greater Use of Existing Expertise to Review Indemnification Request*, United States Government Accountability Office, 2024.
7 *World Energy Investment 2026*, International Energy Agency, 28 May 2026.

Figure 3
Energy investment per capita 2026, USD



Source: IEA

Electricity-related investment accounts for nearly 60% of energy spending this year.

The composition of energy investment has shifted decisively towards electricity infrastructure. Approximately USD 2.2 trillion of the USD 3.4 trillion expected investment this year will be directed towards renewables, nuclear, grids, storage, low-emissions fuels, efficiency and electrification, nearly doubling the USD 1.2 trillion investment in oil, natural gas and coal. However, this does not only include large industrial assets, as electrification investments also capture housing (eg, heat pumps) and individual transport (eg, electric vehicles). More broadly, investment across electricity systems – including power generation, electricity networks and storage – now accounts for nearly 60% of total energy investment globally this year, up from roughly parity with fossil fuel supply investment a decade ago. China provides a clear example of this shift, planning to invest more than USD 700 billion (5 trillion yuan) in upgrading its power grid between 2026 and 2030.[8]

AI is turning data centres into strategic infrastructure

Investments in AI infrastructure are at the centre of the current capex boom.

Electricity is not the only strategic asset being reshaped by this cycle. The same forces are transforming digital infrastructure, where artificial intelligence has become the breakthrough technology driving a wave of capital expenditure. What was once a distributed technology exposure is becoming a concentrated infrastructure exposure. Historically, the largest capital programmes in the global economy were concentrated in sectors such as energy, transportation and heavy industry; increasingly, digital infrastructure belongs in the same category. The five largest US hyperscalers are expected to invest more than USD 800 billion in AI-related capital expenditure in 2026 alone.[9] Estimates for global data centre capex exceed USD 1 trillion.[10] Data centres are evolving from information technology assets into strategic infrastructure platforms, with power demand measured in gigawatts, asset values measured in billions of dollars and operating dependencies spanning electricity systems, telecommunications networks, cooling infrastructure and cloud ecosystems.

Data centres are a key driver of new electricity demand.

The IEA estimates that energy-sector investment linked to data-centre infrastructure exceeded USD 100 billion in 2025, including generation, grid upgrades and power equipment. More broadly, global investment in electricity networks is expected to reach around USD 550 billion in 2026, while battery storage investment exceeds USD 100 billion. Yet the pace of grid expansion is failing to keep pace with the demands being placed upon it. Permitting delays, equipment shortages and supply chain constraints are turning electricity grids and system flexibility into important constraints on economic expansion.

[8] *China's massive infrastructure push targets domestic demand, growth stabilization*, China SCIO, 26 May 2026.
[9] *Power Struggle: AI, Data Centers & Local Backlash*, Morgan Stanley, 14 July 2026.
[10] *2H26 Spending to Accelerate with NVIDIA Rubin Ramp*, Dell'Oro Group, 10 June 2026.

Reindustrialisation includes massive capital expenditures for strategic industries.

Reindustrialisation is concentrating value in physical, hard-to-replace assets

The same pattern extends beyond energy and digital infrastructure. Reindustrialisation is directing capital toward sectors characterised by large, fixed assets, specialised equipment and long investment horizons. US manufacturing construction spending reached USD 190 billion on a seasonally adjusted annual basis in March 2026,[11] compared with USD 95 billion at the end of 2021; even after adjusting for construction cost, spending remains roughly two-thirds higher than in late 2021, underscoring the scale of the current reindustrialisation cycle. Semiconductor manufacturing equipment spending reached USD 135 billion globally in 2025 – more than triple the level recorded in 2016 – while global fabrication plant investment is expected to increase further in 2026.[12] Although these sectors differ in purpose, they share a common risk characteristic: they concentrate growing amounts of economic value into a relatively small number of strategic assets.

The composition of investment is fundamentally shifting.

Together, these pillars mark a new composition of investment

This marks a fundamental shift in the composition of investment (see Table 2). During much of the previous two decades, growth in advanced economies was driven by software, services and other relatively asset-light activities, leading to the accumulation of intangible assets. Today, according to UNCTAD, strategic sectors including AI infrastructure, semiconductors, critical minerals and energy-transition technologies accounted for 44% of global greenfield investment in 2025,[13] up from 16% in 2020, highlighting a broad reallocation of capital towards strategic, capital-intensive industries.

Table 2
Comparing today's capex to the digitalisation wave

Dimension	Digitalisation wave (2000–2020)	Capex super-cycle (2020s+)
Primary growth driver	Software, services, platforms	Energy, compute, industry, defence
Capital intensity	Low	High
Physical asset dependence	Low	High
Infrastructure dependence	Moderate	High
Exposure concentration	Low-medium	High
Policy dependence	Low	High
Supply chain complexity	Moderate	High
Replacement times	Short	Long
Insured value per site	Lower	Higher
Correlation potential	Lower	Higher

Source: Swiss Re Institute

Economic growth is becoming increasingly concentrated.

The current investment cycle reflects energy security, electrification, artificial intelligence and industrial policy as driving forces behind a new phase of capital formation. Unlike earlier digital technologies, AI requires large-scale physical infrastructure, including GPU clusters, hyperscale data centres, electricity networks, cooling systems and fibre connectivity. In practical terms, economic growth is becoming dependent on a relatively small number of critical infrastructure platforms, including electricity systems, cloud infrastructure, semiconductor manufacturing and logistics networks. Their size, concentration and dependence on shared infrastructure fundamentally change the nature of insured risk.

[11] *Total Construction Spending: Manufacturing in the United States*, Federal Reserve Economic Database, 12 June 2026.
[12] *Worldwide Semiconductor Manufacturing Equipment Sales Reach Record USD 135 Billion in 2025*, SEMI, 12 June 2026.
[13] *Investment in strategic sectors is expanding*, UNCTAD, 9 July 2026.

AI capex is now an important contributor to equity market performance and business investment in the US and euro area.

This is most evident in the concentration of the US equity market, where beneficiaries of AI capital expenditure are expected to account for roughly half of total S&P 500 earnings growth this year and next.[14] Europe is following a similar path: ECB analysis shows that digital investment has grown more than three times faster than euro area GDP since 2014, while firms expect to allocate around 9% of total investment to AI in 2026. Together, these trends suggest that AI and digital infrastructure are becoming important drivers of business investment.[15]

Financing needs of the current capex super-cycle also differ sharply from the prior "digitalisation" wave.

Today's strategic investments also require a different financing model. Unlike software and other asset-light investments, many of these projects involve substantial upfront capital expenditure, long development timelines and debt financing.[16] For infrastructure and industrial projects, insurance is often a prerequisite for financing, helping lenders and investors manage construction, operational and natural catastrophe risks. Taken together, these developments point to a shift in the composition of investment toward strategic physical infrastructure and tangible assets. For insurers, the implication is that risk is determined not only by the volume of investment, but also by the physical characteristics, location and resilience of these assets being financed.

The capex boom is global in nature, despite divergent regional priorities.

The capex super-cycle is taking on a more global character, although regional priorities differ. In Asia, China (mainland) is accelerating investment in electricity networks, advanced manufacturing and industrial upgrading, while Japan, South Korea and Taiwan are expanding semiconductor capacity and AI-related manufacturing as part of broader economic security strategies. Across Europe, Germany is scaling up public infrastructure investment and industrial modernisation, while the European Union is directing capital towards energy security, electricity networks, semiconductor production and defence capabilities to strengthen resilience and competitiveness. Rather than a collection of isolated national programmes, these initiatives reflect a broader shift in which industrial policy and geopolitical priorities are reshaping capital allocation across the global economy.

[14] *The S&P500 is Forecast to Climb as Earnings Growth Powers Stocks Higher*, Goldman Sachs, 28 May 2026.
[15] *AI and the euro area economy*, European Central Bank, 23 March 2026.
[16] *Hyperscalers' asset-heavy models spur massive capital raising and increase credit risks*, Moody's Ratings, 22 July 2026.

Insurance demand across lines and lifecycle

The capex super-cycle is generating substantial new demand for commercial insurance. We estimate that AI data centres and renewable energy alone could generate around USD 91 billion and USD 111 billion, respectively, in cumulative premiums by 2030. That demand shifts shape across the project lifecycle: specialty lines such as engineering, marine cargo and credit and surety dominate during planning and construction, while liability, property and BI take over once assets go live. This is only part of the picture as these two pillars alone capture a limited share of the capex cycle's total premium potential, and the estimates themselves carry real uncertainty over how fast and how fully this exposure converts into insurable demand.

Large and widespread new opportunities for insurers

Large-scale infrastructure investment and complex projects will create sizeable insurance capacity needs.

The capex super-cycle and its focus on capital-intensive industries is likely to translate into significant demand for insurance coverage across multiple lines of business. It could create one of the greatest opportunities the insurance sector has seen in recent decades. Meeting that demand will require significant capacity, since such large and complex engineering risks call for a combination of commercial insurance and reinsurance markets. Exposure growth will be concentrated in commercial property and smaller specialty lines of business that reward good risk assessment and underwriting, though demand growth factors will vary by line of business, geography and across development phases.

Potential additional premiums generated by the capex boom

Data centres and renewable energy investments are estimated to create ~USD 200 billion in cumulative premiums by 2030.

We estimate that investments in AI data centres and renewable energy alone could generate around USD 200 billion of cumulative commercial P&C premiums between 2026 and 2030. This amount is sizeable relative to global commercial property premiums, equivalent to about 12% of cumulative global premiums in commercial property between 2026 and 2030. Moreover, these premiums represent almost entirely new business created by the current investment cycle, rather than incremental exposure growth from inflation or GDP.

AI data centres may add USD 91 billion of cumulative premiums by 2030.

In our view, the construction and operation of AI data centres could generate around USD 91 billion of cumulative premiums by 2030. Property insurance would account for more than half of this total, reflecting both the higher insured values during the operational phase compared with construction, and the inclusion of business interruption cover (see Table 3). Compared to exposures across all commercial risks, the data centre opportunity triggers more demand for engineering as well as trade credit and surety covers, driven in part by the ongoing construction phase. Cyber insurance is not included in our calculations, as it primarily covers tenants rather than data centres themselves. Cumulative premiums for AI data centres between 2026 and 2030 could amount to roughly 6% of global cumulative commercial property premiums over the same period. This is equivalent to the size of the commercial P&C markets of countries such as Italy or Australia, and broadly comparable to the projected global cyber insurance market. These figures sit within a similar range to other industry estimates. Aon estimates that annual data centre premiums already reached USD 10.6 billion in 2026, implying more than a doubling by 2030,[17] and projects around USD 85 billion of cumulative premiums between 2026 and 2030; Howden's more conservative methodology arrives at USD 26 billion between 2024 and 2030.[18]

[17] *Insuring AI: data centre value accumulation risks*, Swiss Re Institute, 27 March 2026.
[18] *Re-balancing: Howden's 1.1.26 market report*, Howden, 2 January 2026.

Table 3
Estimated cumulative global AI data centre premiums generated by 2030, by line of business

Line of business	Data centre premiums generated by 2030 (USD)	Data centre premium share by 2030	Overall commercial premium share in 2024
Marine	5bn	5%	5%
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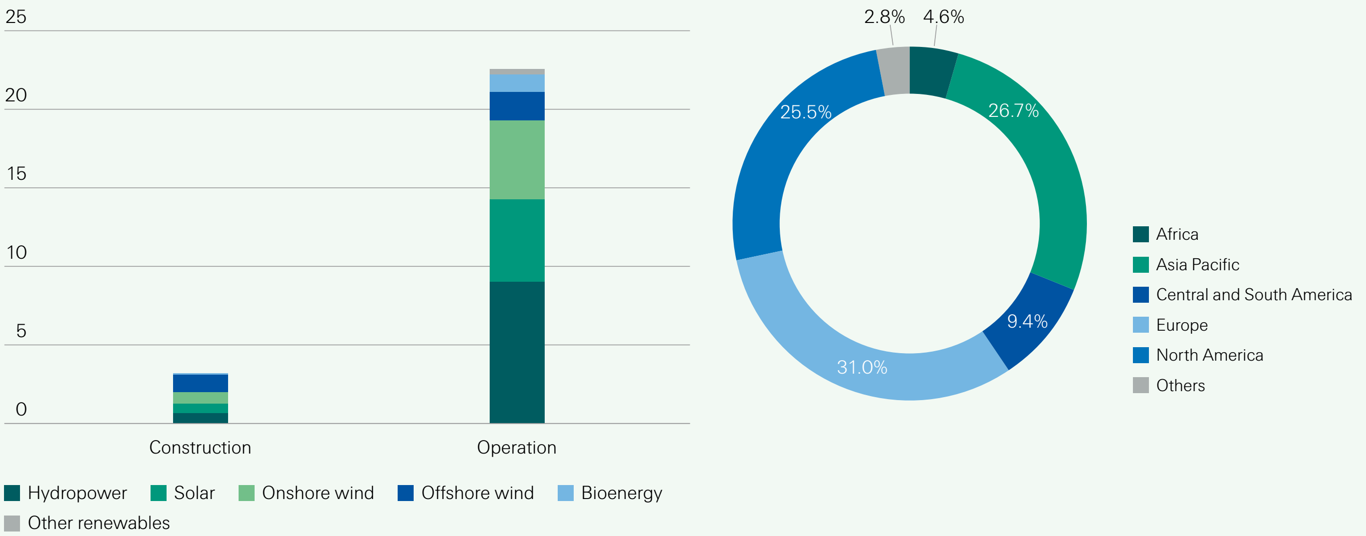
Source: Swiss Re Institute

Renewable energy investments may generate USD 111 billion of cumulative premiums by 2030.

We estimate that renewable energy could generate a total of USD 111 billion in new premiums cumulatively between 2026 and 2030 across construction and operational phases – roughly 22% higher than data centres. This amounts to USD 26 billion in annual premiums by 2030, split between USD 23 billion from the operational phase and USD 3 billion from construction (see Figure 4, left). The operational phase spans a broader mix of technologies – solar, wind and hydro power – across different geographies with higher exposure to weather volatility, which can increase both insured values and pricing intensity. Europe offers the biggest opportunity across regions, just ahead of Asia (see Figure 4, right).

Figure 4
New premiums generation in 2030 from renewable energy by category, USD billions (left); by region (right)



Source: Swiss Re Institute

The composition of energy-related insurance demand may gradually change.

As the share of investment directed to renewable energy increases, the composition of energy-related insurance demand may gradually change, while significant hydrocarbon-related investment and exposures remain. Some of the premium growth described in Figure 4 may therefore be gradually offset by limited growth in coverage for oil and gas extraction facilities, pipelines, and refining assets. IEA estimates show that investment in coal, natural gas and oil has fallen from roughly half of total global energy investment in 2016 to around a third in 2026.[19] This suggests a stable or slightly falling fossil-fuel risk pool, as investment barely offsets depreciation.[20] We

[19] *World Energy Investment 2026*, IEA, 28 May 2026
[20] *The Implications of Oil and Gas Field Decline Rates*, IEA, September 2025

project renewable-energy investments could reach USD 18 trillion cumulatively by 2030, compared with around USD 6 trillion for hydrocarbons, a sizeable figure close to twice annual global military spending.

Insurance needs shift across the asset lifecycle (development, construction and operation).

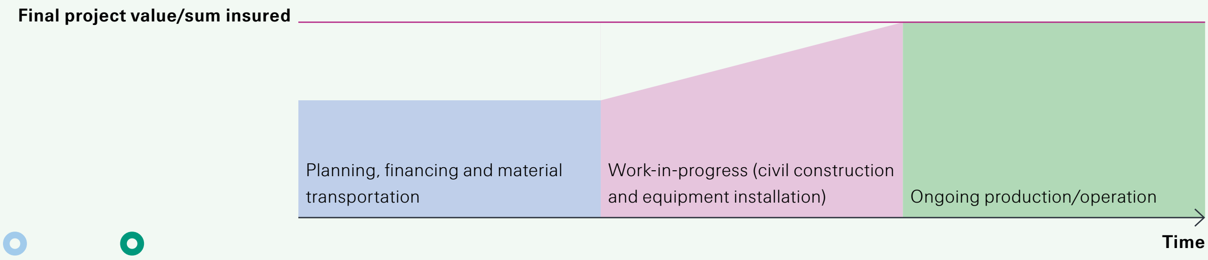
The insurance product footprint evolves across a project lifecycle

Insurance opportunities arise across the whole lifecycle of the assets developed (see Figure 5). The development phase captures risks related to the planning (eg, design error), material transportation (project cargo) and financing. In some cases, primarily in the US, owners may request the usage of surety bonds.[21] Financing via lenders can be covered by project finance, an important but little discussed line covering non-payment risks, for example from data centre tenants.

The construction phase captures risks associated with the physical buildout (eg, damage to assets under construction, damage to equipment and machinery, defects, financial losses from delays), as well as delivery risks including relations with contractors and liability to other parties (bodily injury and damage, environmental damage, data breaches, delays…). At this stage of the capex boom, the buildout remains the most active phase for data centres, but it is also relevant across the other three capex pillars. It offers the main momentum in new opportunities in the near-term.

Figure 5
A stylised mapping of insurance product relevance during a project cycle

Insurance solutions	Development phase	Construction phase	Operation phase
Marine Cargo	High	Low	
Engineering (CAR/EAR)	Low	High	Low
Surety insurance (bid, performance, payment bonds)	High	Medium	
Property insurance		Low	High
Project delay (DSU/ALOP)		High	
Business interruption (BI, CBI)			High
Liability (GL, Professional, D&O)	Low	Medium	High
Cyber/OT	Low	Low	High
Trade credit/Project Finance	Low	Medium	Medium
Environmental/Political Risk (optional)	Low	Medium	Medium



High Medium Low

Source: Swiss Re Institute

[21] Surety is an area of significant growth opportunity. *The role of surety in the development and operation of data centers*, Marsh, 11 November 2025

While project insurance is a one-time cover, operational insurance creates renewable coverage needs.

Once in operation, assets need to be protected against physical damage from both natural disasters and man-made events including terrorism, and political violence, as well as liability to third parties including employees, users and partners and environmental risk. For most asset classes, this phase typically generates the largest and most persistent premium pool, since it is associated with the stock of capital rather than its investment flow. How much the operational layer matters relative to construction depends on the asset. Assets with slow depreciation and long lifecycles, such as nuclear plants, electricity grids, dams, ports and railways, may generate insurance premiums for decades, sometimes for more than 50 years,[22] while battery factories, wind farms and defence manufacturing have shorter operational lifecycles, typically below 30 years.[23] As for data centres, while computing hardware is refreshed regularly as technology evolves, the building, electrical infrastructure, cooling systems and utility connections are designed to operate for up to 40 years.

Operational risks get compounded through interconnectivity.

Risk can spill over across covers through physical and digital networks, shared infrastructure, complex supply chains and connected users. This has important implications for the underwriting of risk, broadly leading to a more concentrated and connected risk landscape compared to historical investment booms (see a more detailed discussion in Chapter 3: *Increasing accumulation of risk driven by four main channels*). For instance, physical damage at data centres, energy production facilities, grids, water systems, railways, and ports may trigger contingent business interruption claims where the damage disrupts a named supplier, customer, utility, or service dependency covered under the policy extension. There is currently little capacity provided for contingent BI or non-damage BI. These exposures require careful management of accumulation and limits, since a single failure may simultaneously affect multiple insureds, tenants or dependent businesses – particularly in concentrated data centre clusters (see a discussion of potential market solutions in Chapter 4: *How markets are adapting*).

Liability and credit insurance are critical to cover governance and payment related risks.

Liability insurance is also necessary due to the ecosystem complexity and diversity of interconnected users, partners and suppliers around shared data centre infrastructure. A single breach or utility outage can affect multiple parties and trigger disputes over responsibility between data centre operators and service providers. In a programme context, the risks of third-party damage or bodily injury are usually covered through a combination of general liability, cyber, professional indemnity, environmental liability, and, where governance or disclosure issues arise, directors and officers liability (D&O). Trade credit is also crucial to cover the payment risks stemming from those linkages, especially when they are new and fast developing.

High-exposure lines of business are becoming structurally more relevant

Commercial property, engineering and surety are the lines most exposed to physical infrastructure investment.

Together, the lines most exposed to the physical investment boom accounted for slightly under 30% of global P&C premiums as of 2024 (see Table 4). Commercial property, engineering and surety are the most sensitive to capital expenditure, given their direct links to physical assets. Engineering insurance is the biggest short-term opportunity during the buildout phase, while commercial property will generate by far the largest premiums increment in absolute terms beyond construction and over the project lifecycle, especially once the business interruption component is included. Regional specialisation matters too: the US, for example, is the main construction surety market globally,[24] while the largest opportunities for marine insurance sit with London Market insurers.

[22] For Nuclear, see *Life beyond 40*, Nuclear Engineering International, 6 November 2025. For electrical grids, see for example *America's Power Grid Crisis: Infrastructure Beyond Its Lifespan*, Tradesafe, 28 August 2025.
[23] For wind farms, see for example *What is the lifespan of a wind turbine?*, Business Norway, 25 March 2026.
[24] A detailed discussion of surety as a form of insurance, and its economic drivers including public construction spending, is available in *Credit and surety in the age of economic uncertainty*, Swiss Re Institute, September 2023.

Table 4
Size of the insurance markets most relevant for the capex boom, 2024, USD billions.

Lines of business	Global premiums (USD bn)	Share of P&C total	Doubled since	US premiums (USD bn)	Europe premiums (USD bn)	Asia premiums (USD bn)	Capex sensitivity
Commercial Property	280	12%	2006	123	85	33	Very high
Liability	290	12%	2005	165	78	38	Medium
Marine	~50	2%	2001	5.7	29	12	High
Construction / Engineering*	~25	1%	NA	NA	NA	NA	Very high
Surety	22	0.9%	2009	10.7	4.8	2.3	Very high
Trade Credit	14	0.6%	2005	1.4	6.6	4.5	High
Cyber	15	0.7%	2020	10.6	3.3	1.0	High

Note: *C&E premiums are difficult to measure globally, as they are often reported under commercial property without publicly available splits.
China and the US are the largest markets with roughly similar premium volumes.
Source: Munich Re, IUMI, Swiss Re Institute

This investment wave should increase the share of property premiums within P&C.

This capex boom and creation of physical assets should bring about a durable increase in the share of commercial insurance premiums, in particular property lines. This differs from the investment cycle of the late 1990s, which did not durably increase the share of commercial property.[25] How quickly that growth materialises will depend on insurers' ability to provide the capacity, knowledge and products needed to match the scale, concentration and complexity of these risks. Most premium growth will initially come from the construction and commissioning phases; once assets move into operation, insurance demand develops more proportional to the (growing) asset base. In aggregate, demand for operational insurance will grow its relative share as the investment cycle matures.

[25] In the US, the share of commercial property within P&C stayed roughly constant at around 11% throughout the mid and late 1990s. The dynamic is similar in other large P&C markets with available data.

More correlated and concentrated insurance risks

The capex super-cycle is accumulating and concentrating risk. New investment is clustering in a small number of strategic locations, connected through shared infrastructure, specialised suppliers and digital networks. Individual sites now carry values that were unthinkable a decade ago, and some AI data centre campuses, including GPUs, can reach USD 50 billion in total replacement value. Four structural forces drive this transformation: larger single risks, geographic clustering, supply-chain dependencies and shared physical and digital networks. Together, they reduce risk diversification and increase the potential for losses to spread across multiple insureds, sectors and lines of business. As operational dependencies deepen, BI and CBI are becoming important drivers of loss severity.

The relevant unit of analysis for insurers is no longer the single asset, but the cluster.

Risks in the current capex cycle are becoming larger and more concentrated, with shared systemic and network dependencies. The relevant unit of analysis for insurers is now a full cluster of assets, with a corresponding infrastructure network and chain of dependency. This concentration challenges the principle of risk diversification across independent assets that underpins global re/insurance.

Larger concentrations translate into loss correlation and higher loss severity.

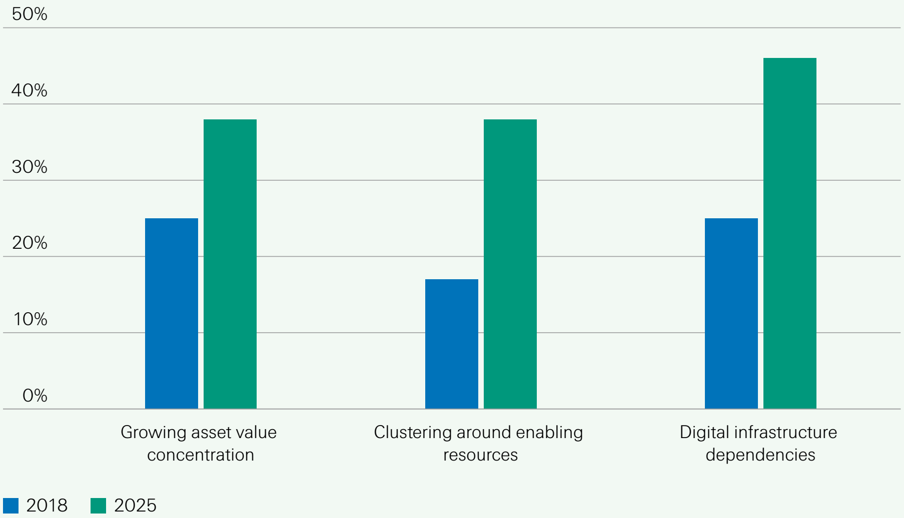
As a result, losses can become more correlated and more severe, particularly with business interruption as a driver. Individual events affect larger pools of value, while specialised equipment, supply chain bottlenecks and long replacement timelines increase the cost of recovery.

Corporate disclosures show rising concern about clustering

Companies are recognising interconnection as a material risk.

Companies themselves are growing more concerned about the concentration of risk. Our analysis shows that the top 25% of Fortune 100 companies now cite asset concentration, clustering around enabling resources, and digital infrastructure dependencies as key risks in their public disclosures far more frequently than in 2018. Concern around enabling resources, such as energy and water, more than doubled, from 17% to 38% between 2018 and 2025. Mentions of digital infrastructure dependencies as a risk increased from 25% to 46% in the same period. Disclosures citing growing asset value concentration risks rose by about 13 percentage points (see Figure 6).[26]

Figure 6
Change in risk factor disclosures of corporations from 2018 to 2025



Note: Figure reflects largest 25% of US companies as measured by market capitalisation.
Source: Swiss Re Institute

[26] Swiss Re Institute analysis of annual filings of the largest 25% of Fortune 100 companies by market capitalisation across sectors (representing over USD 31 trillion in market capitalisation). The analysis shows a marked increase in interconnected risk disclosures between 2018 and 2025 across every category tracked.

Sources of accumulation represent a new structural challenge.

Increasing accumulation of risk driven by four main channels

We identify four major channels of risk accumulation in the capex super-cycle: single-risk severity, geographic concentration, supply chain bottlenecks and network dependencies (see Table 5). Together, they have the potential to structurally challenge insurability beyond the near term, particularly as they begin to amplify one another.

Table 5
The main channels behind the increase in risk accumulation and their impact on insurers.

Channel	What creates concentration	Insurance implications	Examples
Single-risk severity	Large values in a single site or data centre campus.	Strained limits, higher retentions, more complex layer structures.	Hyperscale data centres, semiconductor fabrication plants, LNG terminals, nuclear plants.
Geography	Asset clusters based on access to energy, land, labour, water, or policy incentives.	Exposure accumulation for natural catastrophe and man-made risks across multiple lines.	Data centre clusters in Texas, Virginia, in the "FLAP-D" area of Europe (Frankfurt, London, Amsterdam, Paris and Dublin), major ports, western Taiwan.
Supply chain interdependencies	Dependency on a small number of suppliers, technologies, inputs or unique supply chains.	Increased CBI risk (including longer repair times), correlated losses if a bottleneck fails, higher inflation.	Rare earth processing, advanced lithography, industrial gases for semiconductor fabrication plants, specialised cables, nuclear fuel cycle, large turbines.
Networks	Losses propagate through shared infrastructure, both physical and online/AI.	Losses in CBI, cyber, trade credit, D&O, liability can correlate across insureds worldwide.	Grid outage, cloud outage, AI providers outage, supply shock for semiconductor plants and specialised industrial goods, cyber-attacks.

Source: Swiss Re Institute

High asset values drive single-risk severity.

Single-risk severity grows as asset values concentrate

Economies of scale, winner-take-all dynamics and the push for domestic strategic autonomy are concentrating ever more value and productive capacity in a small number of mega-projects. Extreme power and space requirements, and dependence on shared utilities are also favouring project scale.[27] These sites often combine multiple buildings, production units, storage systems and utility infrastructure within a single integrated campus, limiting the extent to which exposures can be separated or diversified. As project size increases, a single event can therefore impair a substantial share of the asset base and halt operations across the entire site. Bespoke equipment, limited redundancy and long replacement lead times can further extend downtime, meaning business interruption losses may exceed the cost of the physical damage itself.

AI data centre campuses and semiconductor plants valued in billions are the new norm.

Individual campus values of many AI data centres now exceed USD 10 billion and can reach as much as USD 50 billion in replacement values.[28] Meta's Lebanon, Indiana campus at over USD 10 billion is only one example among others.[29] A larger, more exceptional campus is Meta's Hyperion project, where costs surpass USD 50 billion. A single such campus may house tens of thousands of GPU servers alongside bespoke power distribution, liquid cooling loops and battery energy storage systems. Replacement values for a single leading semiconductor fabrication plant can also reach USD 20–30 billion. TSMC's Arizona Fab 21 complex is budgeted at approximately USD 165 billion across its phases.[30]

Energy facilities may push total values per site beyond capacity placement.

Single-risk severity in energy facilities can also climb into the tens of billions. Construction costs for new large-scale nuclear reactors have escalated dramatically (eg, Hinkley Point C in the UK is estimated at more than USD 40 billion).[31] LNG terminals present concentrated severity exposures due to high-value cryogenic process equipment with replacement cost of USD 5–8 billion. Mega-projects such as

[27] Rui Du, Xiaojin (Aaron) Sun, Siqi Zheng, Bits and Mortar: The Microspatial Economics of Data Centers, MIT Center for Real Estate Research Paper No. 26/05, May 2026
[28] *Building Bankable, Resilient Data Centers: From Site to Operation*, Aon, 16 March 2026
[29] *Meta's New Data Center in Lebanon, Indiana Marks a Milestone AI Investment*, fb.com, 11 February 2026.
[30] *Unleashing Global Innovation*, tsmc.com, accessed 24 July 2026.
[31] Jillian Ambrose, *Hinkley Point C nuclear plant delayed to 2030 as costs climb to £35bn*, theguardian.com, 20 February 2026.

QatarEnergy's North Field Expansion (USD 28.75 billion for the first phase)[32] may push total values per site beyond even the deepest capacity placements. Individual solar complexes have also grown: the two-gigawatt Al Dhafra project in Abu Dhabi carries a project value exceeding USD 3.2 billion.[33] A full offshore wind farm such as Dogger Bank represents concentrated project value of around USD 15 billion with around USD 1 billion in transmission assets alone.[34]

Geographical concentration of new assets creates tail risks

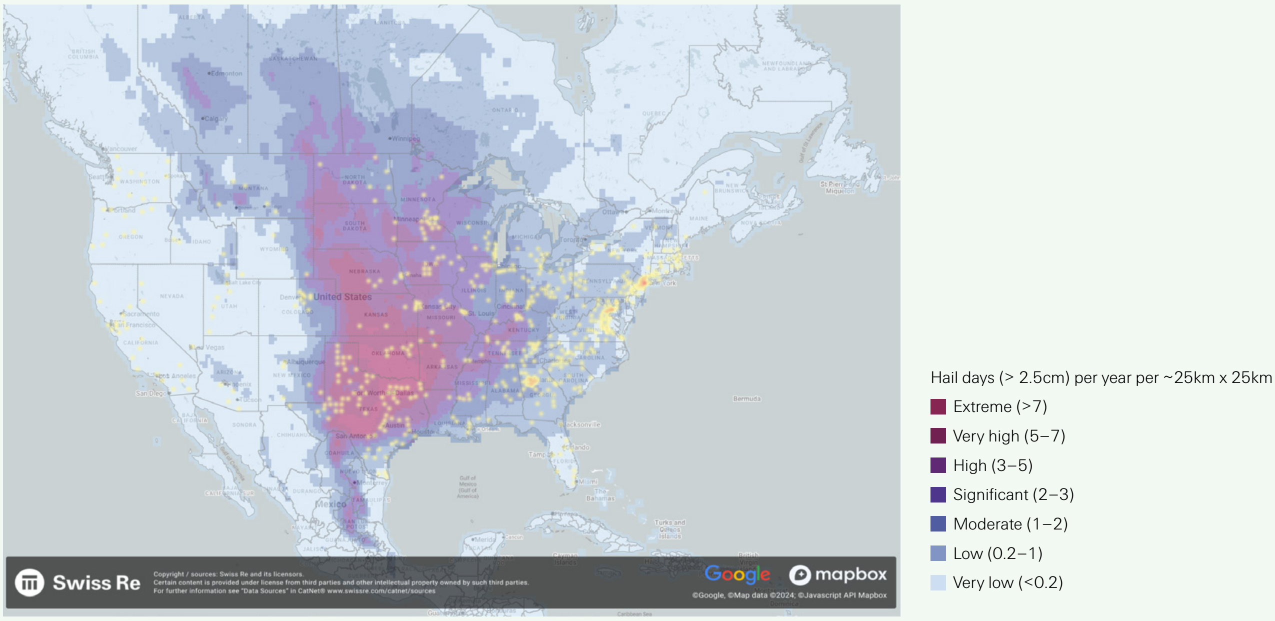
Geographic concentration hampers risk diversification and amplifies accumulation.

Strategic industries tend to cluster around locations offering access to energy, skilled labour, logistics networks and policy support. Clustering can reduce costs and investment needs, through self-reinforcing economies of scale and network effects but it also concentrates exposure geographically. Many of the emerging clusters sit in high-risk natural catastrophe areas. This clustering is not just at the state level. Facilities are being built within miles of each other. Our analysis finds that Texas and Virginia together represent over 40% of US data centre capacity (current and future). Within states, capacity is being built in tight geographic corridors as a result of which mega-clusters are forming, and co-location of facilities within 10–20 miles is driving correlated risks.

Exposure to severe convective storms is particularly challenging.

Severe convective storms are a particular challenge for many of the new assets. Data centres, solar photovoltaic farms and electricity grid infrastructure are all vulnerable to hail, strong wind and flash floods. This peril is also less-well modelled than primary perils such as earthquakes. In the US, over a quarter of US data centre capacity is in areas that could experience ≥ 3 days of large hail per year. For tornadoes, around 40% of US capacity is located in areas where EF1 tornado-days per year could exceed or equal 3. This suggests US data centres could face elevated exposure to severe natural disasters (see Figure 7).[35]

Figure 7
US data centres, planned and operational in yellow dots. Hail hazard coloured by risk degree based on Swiss Re risk models.



Source: U.S. Department of Energy (DOE)/NLR/ALLIANCE; ETH Zurich, NSF National Center for Atmospheric Research (NCAR) in Blanc et al. 2024 (under review), Swiss Re CatNet®

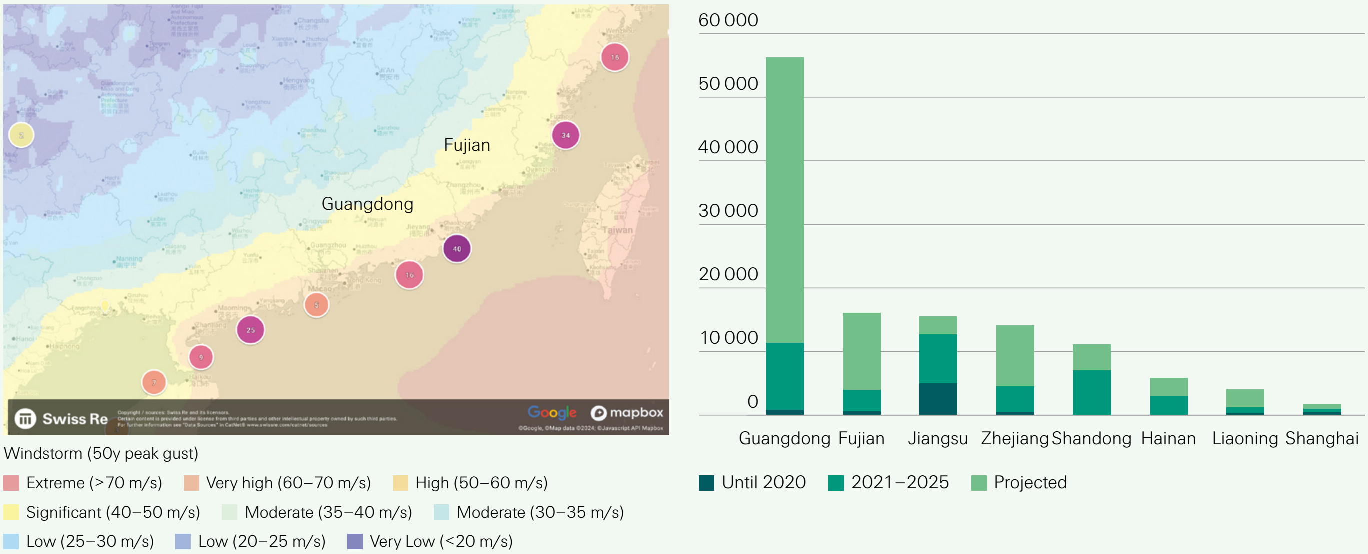
[32] *QatarEnergy selects ConocoPhillips as the third partner in the North Field East expansion project*, qatarenergy.com, 20 June 2022.
[33] *TAQA and Masdar-led Consortium Announce Financial Closing for the World's Largest Solar Power Plant*, masdar.ae, 22 December 2020.
[34] *Dogger Bank C reaches financial close*, doggersbank.com, 2 December 2021.
[35] See more on the data and modelling in *Insuring AI: data centre value accumulation risks*, Swiss Re Institute, March 2026.

New physical assets in Asia also face geographic accumulation leaving them exposed to natural disasters.

Energy assets show a similar pattern, including outside of the US. About 64% of China's offshore wind capacity (in GW) is clustered in the provinces of Guangdong and Fujian (see Figure 8 left) which are exposed to high windstorm risk (see Figure 8 right). That infrastructure is vulnerable to typhoons, which could have knock-on effects on energy markets and industrial production in China.

Figure 8

Number of wind farms in bubbles and windstorm hazard map coloured by risk degree based on Swiss Re models (left); China offshore wind capacity (GW), existing and planned (right).



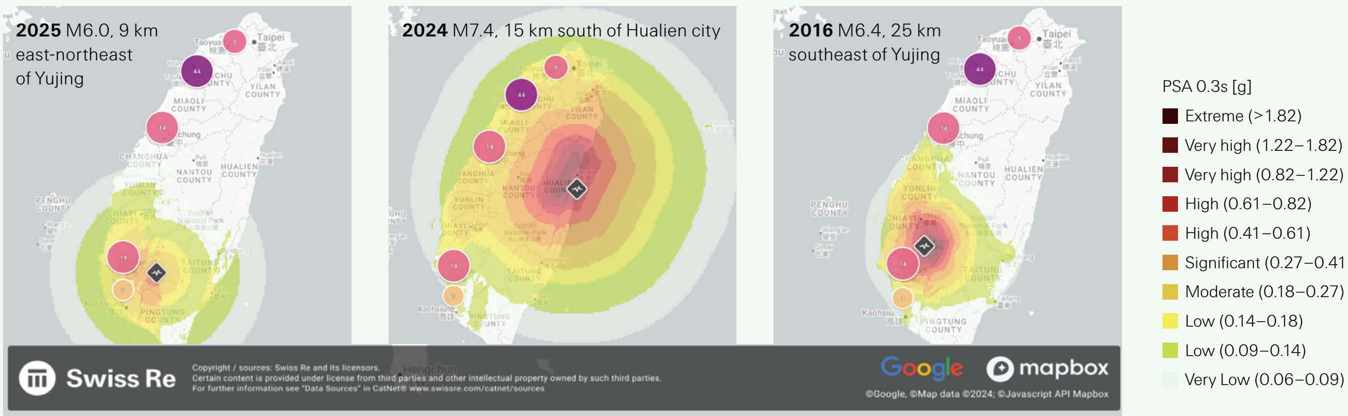
Source: Global Wind Power Tracker, Physical Sciences Laboratory (PSL) of National Oceanic and Atmospheric Administration (NOAA), Swiss Re CatNet® (left); Global Wind Power Tracker, Swiss Re Institute (right)

Taiwan has a high concentration of chip manufacturing assets sitting in high seismic risk zones.

Taiwan's high exposure to earthquake and typhoon risk similarly challenges its clustered semiconductor industry. About 88% of Taiwan's semiconductor fabrication plants sit in extreme to very extreme seismic risk zones, built around access to talent and infrastructure. While the plants follow strong anti-seismic construction norms, an earthquake stronger than the 3 April 2024 event, with an epicentre further west, could still cause substantial economic losses. Given Taiwan's central role in global supply chains – housing 18% of the global semiconductor manufacturing capacity, including 92% of the most advanced chips – such an event could have a large downstream impact on industries including automotive and smartphones (see Figure 9).

Figure 9

Number of semiconductor plants in bubbles and historical earthquake footprints.



Source: U.S. Geological Survey (USGS) Earthquake Hazards Program, Swiss Re CatNet®, Swiss Re Institute

Local pushback against buildout has implications for data centre accumulation.

For data centres, local pushback against buildout also has implications for accumulation. If permitting is denied in a specific locale, the data centre will likely be built elsewhere, meaning accumulation can ease or worsen based on the degree of local opposition, or on state and regional regulation, as seen for example in New York's state moratorium on hyperscale data centres.[36]

Supply disruptions can amplify correlated losses

Imbalanced supply and demand dynamics for certain key components are another source of accumulation.

The industries driving the capex buildout share many of the same critical supply chains. They all require specialised electrical equipment, skilled contractors, advanced semiconductors, industrial gases, turbines, cables and regulatory-qualified components. In the most extreme cases, certain inputs are provided by a highly concentrated group of global manufacturers, or even single-sourced. Inability to source a key input, or to repair a crucial component, can delay the start of operations, extend downtimes, and lead to significant financial losses.

Bottlenecks can increase delay coverage losses.

For insurers, these bottlenecks can increase losses under delay-related covers (ie, delay in start-up, BI, CBI, or project cargo). Delays have become one of the main issues facing the data centre buildout, with reports suggesting that close to 40% of projects due in 2026 were at risk of being completed late. As of April, more than 60% of projects scheduled for 2027 had not yet begun construction. Contributing factors include permitting delays, as well as shortages of skilled labour and critical components.[37] In the US, lead times for inputs such as high-voltage transformers and gas turbines can reach multiple years.[38]

Supply bottlenecks also make losses more correlated.

These dependencies also make losses more correlated, not just more delayed. Issues at one supplier or with one input could affect many industry players at the same time, even across geographies. Common or repetitive design, for example in battery technology, cooling architecture and firmware, causes similar problems, with higher risks of serial losses across geographies, similar to what can also happen with cyber accumulation. Custom-made equipment can also create substantial replacement delays after damage or failure. Claims severity for physical damage losses could also go up due to price increases for inputs, including higher wages for specialist workers.

Ad-hoc solutions can bring new risks.

Those challenges have forced operators and contractors to find unusual ad-hoc solutions such as reusing old inputs, a practice that requires closer monitoring from underwriters, since such alternative solutions could increase the risk of a breakdown or damage.

Many of these dependencies are only partially visible before a loss occurs.

Many of these dependencies are only partially visible to insureds before a loss occurs. Public corporate disclosures show that many companies have a poor view of their own supply chain dependencies. While 43% of Fortune 500 Europe companies report assessing physical risk to their own facilities, only 7% publicly disclose extending such assessments to supplier facilities.[39] Underwriting and accumulation management require detailed mapping of supplier networks, infrastructure dependencies and logistics bottlenecks.

High risk of loss propagation through physical and digital networks

Shared infrastructure creates common dependencies between otherwise unrelated assets.

Economic regime shifts are not simply creating larger assets; they are creating larger networks. A grid failure can affect manufacturers, data centres and logistics operators simultaneously and a cloud outage can affect multiple industries at once. Network effects can become more severe when amplified by other sources of accumulation.

New risks go far beyond geographic accumulation, challenging risk modelling and diversification.

For insurers, the interconnectivity of risks means that individual losses at any point in the network are more likely to impact multiple insureds at the same time. For data centres specifically, insurance programmes often split building, equipment and power assets into different placements, which complicates the assessment of accumulation risk. The same applies across operational phases, where separate insurance often covers the many parties involved (eg, developers, users, investors, energy providers, or construction and operational contractors).

[36] *First Statewide Moratorium on New Hyperscale Data Centers Launched by Governor Kathy Hochul*, governor.ny.gov, 14 July 2026.
[37] *Data centre delays threaten to choke AI expansion*, Financial Times, 17 April 2026
[38] *US fossil fuel power spending to beat China for the first time in decades*, Financial Times, 1 July 2026.
[39] This finding is discussed more in depth in another recent Swiss Re report. *Emerging risks: hidden dependencies in global supply chains*, Swiss Re Institute, 23 July 2026.

A network loss event may cut across multiple lines of business.

Network failure, such as a grid or cloud outage, can also lead to indirect losses spanning BI and CBI, as well as parts of liability such as D&O. These exposures are particularly challenging, as financial losses may substantially exceed the associated physical damage,[40] driving uncertainty around maximum loss and accumulation. This requires prudent underwriting, with precise delimitation of coverage. This has parallels with cyber insurance, which also covers accumulation risks that are indirect and partly intangible, and where penetration remains low.

The electricity network is a crucial part of the current capex cycle.

Electricity is one of the most important networks in the current capex cycle. The IEA has dubbed the coming decades the "Age of Electricity". Advanced manufacturing, semiconductor production and digital infrastructure all rely on the same underlying electrical grid. Electricity systems are becoming more interconnected with gas infrastructure, energy storage, communications networks, and digital control systems. At the same time, they often operate close to capacity, leaving limited room for redundancy.

Extreme weather makes electricity grids more vulnerable to outages.

Extreme weather conditions can disrupt electricity grids in multiple ways. High temperatures increase electricity demand driven partly by higher cooling needs, which places additional strain on grids. The IEA reported that more than 40 countries set new electricity demand records during heatwaves in 2024, in some cases contributing to power outages.[41] Heat can also reduce electricity generation efficiency, lower network capacity and reduce nuclear output when river temperatures become too warm for cooling. It may also directly damage infrastructure, as seen in France in June 2026, when 68 000 households lost power after a transformer failed due to the heat.[42] Extreme cold carries similar risk. During winter storm Uri in February 2021, generator failures left more than four million Texas households without power.[43]

Targeted investments could strengthen grid resilience.

Targeted investments in resilience could significantly reduce the vulnerability of electricity networks. Modelling of the Texas transmission network suggests that strengthening just 1% of the most critical lines against weather damage could reduce the probability of the most destructive tropical cyclone-related outages by a factor of five to twenty.[44]

Site selection is driven by access to power rather than access to demand.

As data centres are sited around energy sources, they are growing more distant from their end users, relying more on long-distance communications networks. China illustrates this broader trend, with new computing capacity deployed inland while serving demand concentrated in coastal regions through extensive network infrastructure.[45] While this may reduce the physical concentration of new AI infrastructure, it also creates new operational dependencies on shared transmission and communications networks.

Shared internet infrastructure creates cyber loss accumulation across geographies and industries.

Digital connectivity such as cloud and AI usage, operating software and cybersecurity tools adds another layer of accumulation. In an Uptime Institute survey on the main causes of network outages, 41% of global respondents cited configuration or change management as one of the most common causes, and 34% of respondents cited third-party network provider failure. Together, these two issues were mentioned more frequently than hardware failure (34%), highlighting the importance of digital networks for IT. In general, network outages accounted for the largest share of overall IT service outages.[46]

[40] *Downtime doesn't compute at AI data centers*, FM, 23 October 2025.
[41] *How can energy efficiency alleviate rising heatwave-driven electricity demand?*, IEA, November 2024.
[42] *Power Outage Hits 68,000 Homes as France Faces Record-Breaking Heatwave*, Climatefactchecks.org, 26 June 2026.
[43] *Understanding the 2021 Texas Power Crisis*, Ben Alexander, 16 December 2025.
[44] Stürmer, J., Plietzsch, A., Vogt, T. et al., *Increasing the resilience of the Texas power grid against extreme storms by hardening critical lines*, Nat Energy 9, March 2024.
[45] Based on China's national "Eastern Data, Western Computing" Initiative.
[46] *Annual outage analysis 2026*, Uptime Intelligence, May 2026.

Hyperscale data centres

Data centres exemplify multiple risk exposure challenges.

Hyperscale data centres bring together many of the risk exposure challenges emerging across the capex super-cycle. Facilities costing tens of billions of dollars combine complex construction projects with highly interconnected operational ecosystems. As projects progress from development to operation, dominant risks and needed insurance covers shift from engineering risk to operational resilience (see Table 6).

Data centres are subject to new forms of accumulation.

Interconnected operations create new forms of accumulation. Geography matters, especially where data centres cluster in hazard-prone regions, but losses propagate through networks rather than location alone. Shared electricity grids, telecommunications infrastructure, cloud services, and specialist suppliers can create correlated losses across multiple facilities. At the same time, facilities may be financed, owned, operated and occupied by different parties, creating overlapping property, business interruption, cyber and liability programmes. A single operational disruption can therefore generate losses across multiple insureds, policies and lines of business, even where physical damage is limited.

The industry is already adapting well to new construction risks.

Construction risks, by contrast, have become well understood. Construction depends on specialised contractors and constrained supply chains for equipment such as transformers, switchgear and semiconductors. The rapid pace of AI-related investment is also compressing construction schedules, placing greater pressure on design, procurement, commissioning and coordination across multiple contractors. The industry has adapted well to this phase through engineering-led underwriting, technical risk assessment and delay in start-up cover. The challenge posed by the sheer size of mega-projects is addressed via syndication and layering of programmes across many players in the P&C industry.

Insurance plays an important role in financing.

Insurance has become a more important consideration in project finance, influencing both credit quality and financing costs. However, insurance programmes are typically structured around PML rather than the full asset value. Recent hyperscale data centre financings have therefore relied on sponsor guarantees and other contractual protections to address residual tail risks beyond insured limits. In some cases, these sponsors have been the hyperscalers themselves, including Meta, Google, and Nvidia.

Table 6
Risk exposure challenges and degree of importance for different project stages

Dominant risks	Development	Construction	Operations
Financing, permitting & execution	High	Low	
Supply chain & critical suppliers	Medium	High	Low
Project delay	Low	High	
Physical asset damage	Low	High	High
Operational availability & SLA disruption		Low	High
Shared infrastructure (power, telecoms, cloud)		Low	High
Cyber risks		Low	High
Third-party liability	Low	Medium	High
Directors & Officers liability	Low	Medium	High

High Medium Low

Source: Swiss Re Institute

The operational phase comes with new challenges that require adaptation.

The risk profile changes after commissioning. The installation of high-value GPUs and the commencement of tenant operations can rapidly multiply values at risk. BI, CBI, and liability become important alongside traditional property cover. Many hyperscale operators also contractually guarantee availability through service-level agreements (SLAs). Significant outages may therefore trigger contractual service credits or indemnification obligations alongside property damage and business interruption losses, although this is often excluded in terms and conditions.

Early operational experience already illustrates these emerging challenges.

Early operational experience already illustrates these emerging challenges. Operational experience for hyperscale facilities remains limited, but data from traditional data centres suggests fire remains the dominant source of insured losses (42% of loss cost, according to FM Global),[47] particularly involving battery systems and electrical equipment. Fire frequency has risen, likely due in part to the growing use of lithium-ion batteries.[48] Losses have also resulted from wind, hail and utility outages, with business interruption often exceeding direct physical damage.[49]

Underwriting hard-to-insure risks requires new approaches

Claims trends are amplified by macro developments on top of sources of accumulation.

The investment cycle affects the claims costs of insurers through both macroeconomic and underwriting channels and goes beyond accumulation effects described above. Competition for labour, specialised equipment and critical components has increased replacement costs and business interruption losses, contributing to a higher claims severity than would otherwise have occurred. The more fragmented geoeconomic environment has led to higher and more volatile general inflation than in the past few decades. Changing natural catastrophe risk can further accentuate the sources of accumulation.[50] Together, these macro-level developments worsen claim trends and can amplify losses on top of the structural accumulation channels described above.

Larger and more complex risks require established risk-sharing mechanisms.

Developing an insurance market at scale for a given risk or asset is facilitated by a few conditions. Risks should be distributed uniformly, frequent and small in size, hard to self-insure and losses should be independent. Part of the risks created by the current capex cycle does not meet those conditions, requiring adaptation from insurers. The risk of severe business interruption losses, in particular, is currently underwritten prudently as a result, with little capacity provided for contingent and non-damage BI. Larger and more complex risks may require specific technical underwriting capabilities: this can be distributed among multiple independent market participants through mechanisms such as co-insurance, syndication and reinsurance.

[47] *Data Centres and Related Facilities: FM Property Loss Prevention Data Sheets 5–32*, FM Global, January 2026.
[48] *Mitigating lithium-ion fire risks: a review*, Uptime Intelligence, July 2026.
[49] *Insuring AI: data centre value accumulation risks*, Swiss Re Institute, 27 March 2026.
[50] For a detailed discussion of the growth trends of secondary perils, see *sigma* 1/2026 – Natural catastrophes in 2025: the persistent rise of wildfire and storm risk, Swiss Re Institute.

Expanding the boundaries of insurability

The capex super-cycle is creating increasingly large, complex and interconnected risks that challenge insurers' ability to deploy capacity with confidence. The key constraint is not the availability of capital, but insurability. Emerging assets such as hyperscale data centres test the limits of risk quantification, diversification, maximum loss and economic viability. Yet these risks are inherently insurable in private markets. Advances in engineering expertise, underwriting, risk modelling and programme design can be used to unlock capacity. Layered placements, syndication, reinsurance, captives and alternative capital can help distribute large and complex exposures and improve accumulation management. Expanding the boundaries of insurability will be essential for converting the capex super-cycle into sustainable long-term insurance growth.

The capex super-cycle creates insurance demand but also tests insurability

The capex super-cycle creates new insurance demand.

The capex super-cycle is creating one of the largest commercial insurance growth opportunities in decades. At a time when insurance markets are becoming more competitive, new sources of growth are attractive. Yet those new risks are also increasingly large, complex and depend on connected supply chains and networks.

Understanding unlocks capacity.

The central constraint is not a shortage of capital. Global re/insurance markets have repeatedly demonstrated their ability to attract capital when returns are sufficient. The greater challenge is limits to insurability, which prevent deploying that capital with confidence. Doing so requires insurers to understand new technologies, assess emerging risks, manage more complex accumulations and structure programmes that can support very large exposures.

Insurability risks arise through limited data.

Risks become difficult to insure when they cannot be measured with confidence, diversified across portfolios, financed with available capital, or written on economically sustainable terms.[51] The challenge is twofold: understanding entirely new risks and assessing how existing risks evolve over time. These constraints typically arise from limited data and model uncertainty, correlation and accumulation, extreme tail losses, operational dependencies, and uncertain coverage definitions (see Table 7).[52]

Table 7
Selective dimensions of insurability constraints

Dimension	Question	Illustrative challenges
Risk quantification	Can losses be estimated?	AI infrastructure, emerging technologies
Diversification	Are losses independent?	Cyber, shared utilities, power failures
Maximum loss	Can capital absorb extreme events?	Hyperscale data centres, nuclear
Economic viability/ overall pressure	Can coverage be written sustainably?	Property catastrophe, long-tail liability

Source: Swiss Re Institute

History shows insurability can expand

Markets have adapted to insurability constraints in each wave of economic progress.

Insurability constraints are not new, and insurance markets have repeatedly demonstrated their ability to adapt. Every major wave of industrial development has produced risks that initially appeared difficult or impossible to insure. Insurers have expanded insurability through advances in risk analysis, mitigation, underwriting, product design, capital structures, and public-private partnerships (see Table 8).

[51] Not every risk can always be insured. The concept underlying this is called "insurability." See *sigma* 4/2005: Innovating to insure the uninsurable for a broader discussion, Swiss Re Institute.
[52] See also the Baruch Berliner model of insurability constraints. *Limits of Insurability of Risks*, Baruch Berliner, 1982.

Nuclear power initially challenged insurability.

Commercial nuclear power illustrates this evolution. Its scope initially exceeded the capacity of private insurance markets alone. Government-backed liability regimes, including the Price-Anderson Act in the US, complemented private insurance capacity while preserving market participation.

Table 8
Past episodes of systemic challenges to insurability

Era	Emerging risk	Binding insurability constraint(s)	How it was addressed
1950s–70s	Nuclear power	Maximum loss	Price-Anderson, government backstops
1980s	Liability crisis	Pricing, maximum loss	Higher prices, exclusions, ART
Late 1980s	Offshore energy	Maximum loss	Engineering standards, improved risk management
1990s	Environmental liability	Long-tail measurability, diversification (retroactive liability)	Specialised policies, exclusions, claims-made policy terms
2001–present	Terrorism	Diversification, maximum loss	Terrorism Risk Insurance Act, Pool Re
2020s	Cyber	Risk quantification (man-made), diversification (man-made)	Better modelling, segmentation, exclusions
Today	AI infrastructure	Risk quantification, diversification, maximum loss, pricing	Engineering, structured programmes, capital innovation

Source: Swiss Re Institute

The capex super-cycle deepens the challenge

This investment cycle strains multiple dimensions of insurability at once.

Previous waves of industrial development typically pushed against one or two dimensions of insurability at a time. This capex super-cycle brings multiple constraints at the same time (see Table 9). Larger and more interconnected assets increase maximum loss potential while reducing the independence of risks. Many of the technologies being deployed (hyperscale data centres, next-generation energy infrastructure) have limited operating histories, making both loss frequency and severity difficult to estimate. Meaningful experience data will only emerge over the coming years as the first wave of facilities enters operation.

Table 9
Indicative assessment of insurability constraints by asset class

Insurability constraint	Energy infrastructure	AI data centres	Advanced manufacturing
Risk quantification	Moderate	Significant	Moderate
Diversification	Significant	Significant	Moderate
Maximum loss	Significant	Significant	Moderate
Economic viability	Moderate	Moderate	Limited
Overall insurability pressure	Significant	Significant	Moderate

Significant Moderate Limited

Source: Swiss Re Institute

Insuring nuclear assets

Nuclear investment illustrates evolving accumulation risks.

The growing need for electricity and push for reliable, low-carbon energy are bringing nuclear power back into investment plans. But nuclear investment also illustrates the challenge of risk accumulation. Reactors, fuel-cycle assets and supporting infrastructure depend on shared electricity networks, specialised suppliers, cooling water availability and skilled labour. As a result, insurers face not only larger individual risks but more interconnected exposures, which may require more modular solutions.

Opportunities span the nuclear asset lifecycle.

Renewed nuclear investment creates opportunities across the lifecycle, from construction through decades of operation to eventual decommissioning. Construction offers the greatest potential for premium growth as new projects are developed, but insurability is challenged by the technical complexity and the risks of delays and cost overruns. Once in operation, most of the catastrophic third-party liability risks sit in dedicated pools and government backstops (see Table 10). Other operational risks could generate new premiums in a market we currently estimate at around USD 1 billion in premiums globally. Risk syndication (via pools) and international reinsurance are key to providing sufficient capacity. Assets may stay in operation for 60–80 years.[53] Nuclear fuel-cycle infrastructure becomes an important source of insurable assets, as governments expand their enrichment, conversion and fuel-fabrication capacity to strengthen energy security.[54]

Table 10
Nuclear insurance solutions across key markets

	US	France	Japan	China
Third-party liability (public-private partnership)	American Nuclear Insurers (ANI), backed by the Price-Anderson industry retrospective pool (assessments) and ultimately US government.	Assuratome under the Paris/Brussels liability regime, with government compensation beyond the insured layer.	Japan Atomic Energy Insurance Pool (JAEIP), complemented by government indemnity and compensation mechanisms.	China Nuclear Insurance Pool (CNIP), with government support for catastrophic losses.
First-party insurance (industry pool/mutual)	Nuclear Electric Insurance Limited (NEIL), a mutual owned by operators of the US commercial nuclear fleet.	Assuratome, a pool comprising most French re/insurers, supplemented by reciprocal capacity from international nuclear pools.	JAEIP, made up of Japanese non-life insurers supported by international reinsurance, plus commercial insurers.	CNIP (29 member insurers) plus commercial insurers.
Fleet (reactors)	94	57	33 (15 in operation)	~60
Market characteristic	Largest mature market	Mature, concentrated	Recovering after Fukushima	Fastest-growing market
Primary underwriting challenge	Accumulation[55]	Fleet concentration[56]	Natural catastrophe accumulation	Construction and supply-chain accumulation

Source: Swiss Re Institute

How markets are adapting

Construction is understood. Operations are next.

Engineering insurers have successfully supported much of the construction phase of the capex super-cycle. Construction risks are relatively well understood and can be managed through detailed engineering oversight. Once assets such as hyperscale data centres become operational, however, the focus moves to managing long-term property, business interruption and liability exposures. BI, CBI, cyber-physical interactions, policy boundaries, and multi-line accumulation become key underwriting considerations.

Insurability expands through adaptation, including the central role of reinsurance.

These challenges do not imply that the risks are uninsurable. Instead, they require insurers to adapt underwriting, engineering, and capital solutions to expand the boundaries of insurability. Adaptation measures include more selective underwriting, higher retentions and self-insurance, greater use of captives, shared and layered programmes, enhanced capacity deployment, and potential use of parametric solutions (see Table 11). Reinsurance remains central through this process, not only by providing additional capacity but also by supporting knowledge transfer and accumulation management for emerging exposures.

53 *Status of Subsequent License Renewal Applications*, US Nuclear Regulatory Commission, updated July 2026.
54 *Investment decisions needed to avoid fuel cycle supply gaps*, world-nuclear-news.org, 5 September 2025.
55 Accumulation refers to multiple insured exposures being affected by the same event (common exposures through cyber, shared vendors, standardized reactor designs, transmission infrastructure and severe weather).
56 A single dominant operator (EDF), largely standardised pressurised water reactor technology and one regulatory regime mean technical defects or regulatory actions could affect a large share of the insured portfolio simultaneously.

Table 11
Market responses to key insurability constraints

Constraint	Nature	Primary response	Typical solutions	Strategic implication
Measurement uncertainty	Temporary	Engineering-led underwriting	Surveys, digital twins, technical due diligence, improved modelling, data transparency.	Better data should improve pricing over time.
Asset-specific risks	Temporary/mixed	Product innovation	Lifecycle covers, battery energy storage systems insurance, AI infrastructure products.	Creates fit-for-purpose coverage before standard products emerge.
Accumulation	Structural	Portfolio accumulation management	Accumulation modelling, exposure limits, portfolio steering, cat bonds.	Geographic, cyber and cloud concentration require capital discipline.
Maximum loss	Structural	Capacity expansion & syndication	Layered programmes, co-insurance, quota shares, market syndicates, parametrics, captives.	USD 20+ bn risks need syndicated and layered capacity.

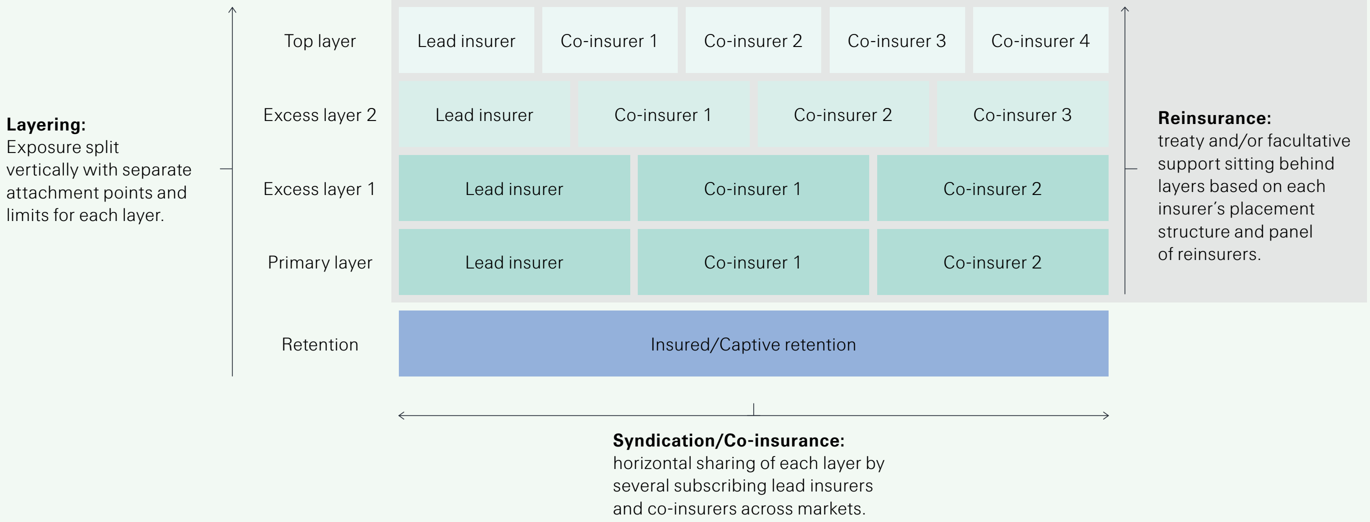
Note: The constraints and responses are not mutually exclusive. A single emerging risk may require multiple market mechanisms simultaneously.
Source: Swiss Re Institute

Layering and syndication enable insurers to provide multi-billion-dollar limits.

Risk syndication and layering are key to insuring very large risks

Large, multi-building data centre campuses can require insurance limits that exceed USD 10 billion.[57] Insuring such large, complex industrial sites far exceeds the capacity limits of individual insurance providers. The market response has therefore been to build coordinated, high-limit structures, typically based on PML, to provide the required covers. Capacity is assembled by brokers through two complementary mechanisms. Layering divides the potential loss vertically into bands with defined attachment points and limits. Syndication or co-insurance divides each layer horizontally among several insurers, each subscribing a specified share (see Figure 10). Both are further supported by reinsurance, which provides an additional level of risk sharing.

Figure 10
Stylised and hypothetical insurance tower structure for a large data centre



Note: Each insurance layer covers only the portion of a loss that falls within its attachment point and limit. Within each layer, losses are shared among the lead and co-insurers according to their respective participation shares.
Source: Swiss Re Institute

[57] *Reinsurance Market Dynamics January 2026 Renewal*, Aon, January 2026.

Reinsurance complements syndication for mega-projects.

The insured or its captive typically retains the first losses – they are relatively frequent, observable, and manageable. The first insurance layer absorbs the next band of loss, with the lead insurer typically proposing the policy wording, pricing and claims handling approach, ensuring efficiency for clients. Above this, successive excess layers are syndicated among multiple insurers, each subscribing a defined share of the risk. Different layers may have different leaders and insurer panels, reflecting differences in underwriting strategy, risk appetite and capital cost. Behind these placements, facultative reinsurance can provide additional project-specific capacity for individual insurers, enabling them to write larger lines while managing net exposure. Together with treaty reinsurance, it supports participation in large, syndicated programmes for complex infrastructure risks.

Syndication bundles capacity from multiple carriers to achieve scale.

Syndication is important not only for capacity, but for governance. The lead insurer or lead underwriter establishes the underwriting view, wording architecture, and often the engineering requirements (safety standards); following markets subscribe their shares against that common framework based on their individual assessments. Use of common wordings and terms and conditions can avoid fragmented programmes and provide greater claims certainty for the insured and participating carriers. This is especially important for complex risks such as AI data centres, where power generation, cooling, shell-and-core construction, and high-value technology can otherwise end up split across disconnected placements. Broker facilities represent an evolution of the subscription market, bringing together pre-selected panels of re/insurers that commit capacity under a common set of terms and conditions.[58] Facilities can streamline the placement of capacity committed by participating insurers.

Reinsurance and AC provide capacity for upper layers.

Reinsurance and alternative capital sit above and behind the subscription tower. For AI data centres and large energy infrastructure projects, reinsurance is key for providing necessary capacity for primary insurance companies. We see a future role for catastrophe bonds and sidecars to provide additional capacity for upper layers of property programmes exposed to large natural catastrophe scenarios such as earthquake, windstorm or flood, where risk accumulation is hard to diversify. Brokers and reinsurers are in prospective stages of developing catastrophe bond or sidecar structures for data centre risks.[59]

Captives complete the structure by absorbing the losses the market prices least efficiently.

Hyperscale data centres exhibit many of the characteristics for which captive insurers are now being deployed: very large insured values, substantial retained risk appetites, evolving operational exposures and commercial insurance capacity that may not fully reflect the owner's risk tolerance. Captives retain, aggregate and manage risk; they do not create external risk-bearing capital unless supported by reinsurance or capital-market protection. Over time, the captive also generates engineering and claims data that can improve underwriting confidence and facilitate broader commercial market participation. This approach is becoming more common for large industrial and infrastructure risks.

Public-private partnerships are best reserved for systemic risks beyond the efficient capacity of private markets.

Public-private partnerships are most appropriate where risks are systemic, difficult to diversify or subject to legal and public policy considerations that limit the capacity of private markets alone. Examples include pandemic risk, terrorism, cyber catastrophes and nuclear liability, where government participation or statutory backstops help address potentially extreme losses and ensure the continued availability of cover. By contrast, large commercial risks such as AI data centres and energy infrastructure remain, from the current point of view, fundamentally insurable through private-market solutions. Layered insurance programmes, syndication, reinsurance and alternative capital enable insurers to assemble capacity for more complex projects, allowing government intervention to remain focused on risks that cannot be efficiently managed by private markets alone.[60]

[58] Some recent examples include *Marsh Nimbus facility* with limits up to USD 2.7 billion and *Aon's Data Center Lifecycle Insurance Program (DCLP)* with limits of up to USD 5 billion.
[59] *Insurers turn to catastrophe bonds to offload data centre risks*, Financial Times, 3 April 2026.
[60] *sigma* 3/2024: World insurance: strengthening global resilience with a new lease of life, Swiss Re, 2024.

Implications for stakeholders

Insurability must be created; it is not a property of the risk alone.

Meeting the scale and complexity of emerging large risks, particularly where accumulation, interdependency and technological novelty converge, will require fresh thinking across risk assessment, capacity deployment and product design. Insurers, asset owners, investors and policymakers each have a role to play in enabling conditions that support resilient, high-capacity insurance markets. Some of these key enablers include:

A more engineering-led approach to risk quantification is needed.

Improve risk quantification. The slow accumulation of claims experience may not, on its own, be sufficient to make emerging technologies insurable in reasonable time. Instead, insurers are converting engineering surveys, commissioning reports, operational telemetry, digital twins and continuous monitoring into underwriting datasets that progressively substitute for historical loss experience. This approach is already evident in engineering-led underwriting for complex infrastructure and increasingly underpins specialist insurance solutions for emerging technologies. Although some uncertainty about new technology will diminish with time, investment in risk engineering, monitoring and analytical tools can accelerate learning and attract additional underwriting capacity before a mature loss history develops.

Secure data sharing between asset owners and insurers reduces underwriting uncertainty.

Improve data sharing. Emerging infrastructure generates large volumes of engineering and operational data. Secure sharing of design information, operational telemetry and dependency mapping from asset owners to insurers and reinsurers, can improve risk quantification, accumulation management and capital allocation while reducing underwriting uncertainty.

Accumulation management must now track dependency, not just physical proximity.

Manage accumulation and maximum loss. Growing concentrations of value and interdependencies require stronger exposure management at both the project and portfolio level. Traditional accumulation management focused primarily on physical proximity. Future portfolios will require mapping dependencies across electricity grids, cloud providers, telecommunications infrastructure, semiconductor supply chains, specialist contractors and critical equipment manufacturers. Improved accumulation modelling supports more effective programme design, underwriting decisions, and reinsurance purchasing, allowing capacity to be deployed more efficiently.

Building resilience into design early and using recognised standards improve insurability.

Integrating risk mitigation early in the design phase improves both resilience and insurability. In data centres, designing to recognised standards such as the Uptime Institute Tier Standard and incorporating redundant power and cooling systems can eliminate single points of failure and reduce downtime. Similarly, insurer guidance from FM emphasises designing in redundancy and tested contingency plans for critical equipment to limit PML and accelerate recovery. In energy infrastructure, standards such as IEEE 2800 and IEC 61850 strengthen grid resilience by improving the reliability and interoperability of critical systems. Together, these measures reduce dependency risk and PML, enabling insurers to provide higher capacity on more sustainable terms.

Financing structures need to reflect how insurance capacity for large risk is organised.

Align lender expectations with modern insurance market practice. Insurance markets cannot expand insurability efficiently if financing structures assume unlimited insurance capacity. For very large infrastructure assets, insurance programmes are designed around PML rather than full replacement value, with layered placements reflecting available market capacity and realistic loss scenarios. This approach has long been standard practice in sectors such as petrochemicals, power generation and offshore energy but remains less familiar to many investors financing AI infrastructure and advanced manufacturing.

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