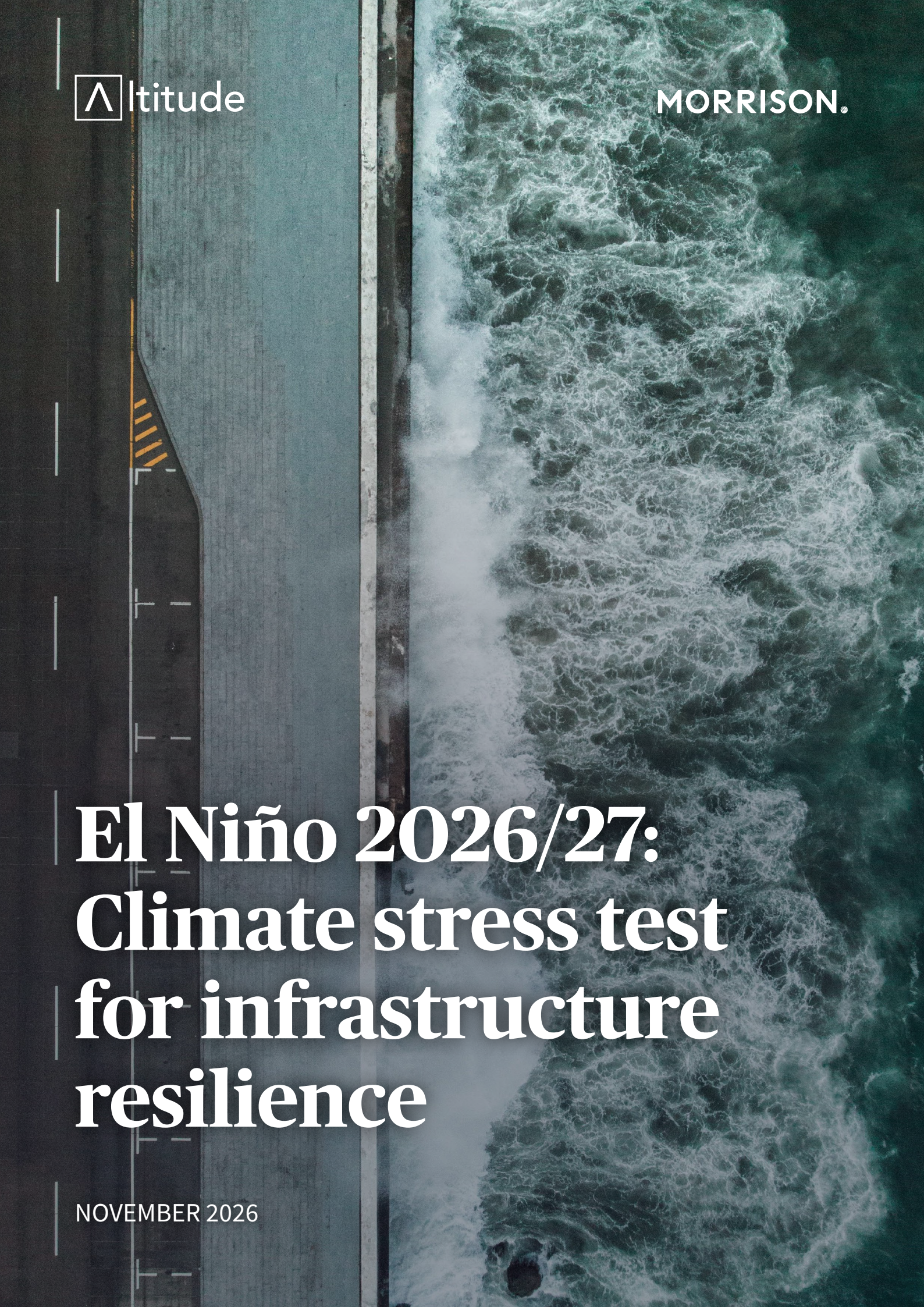
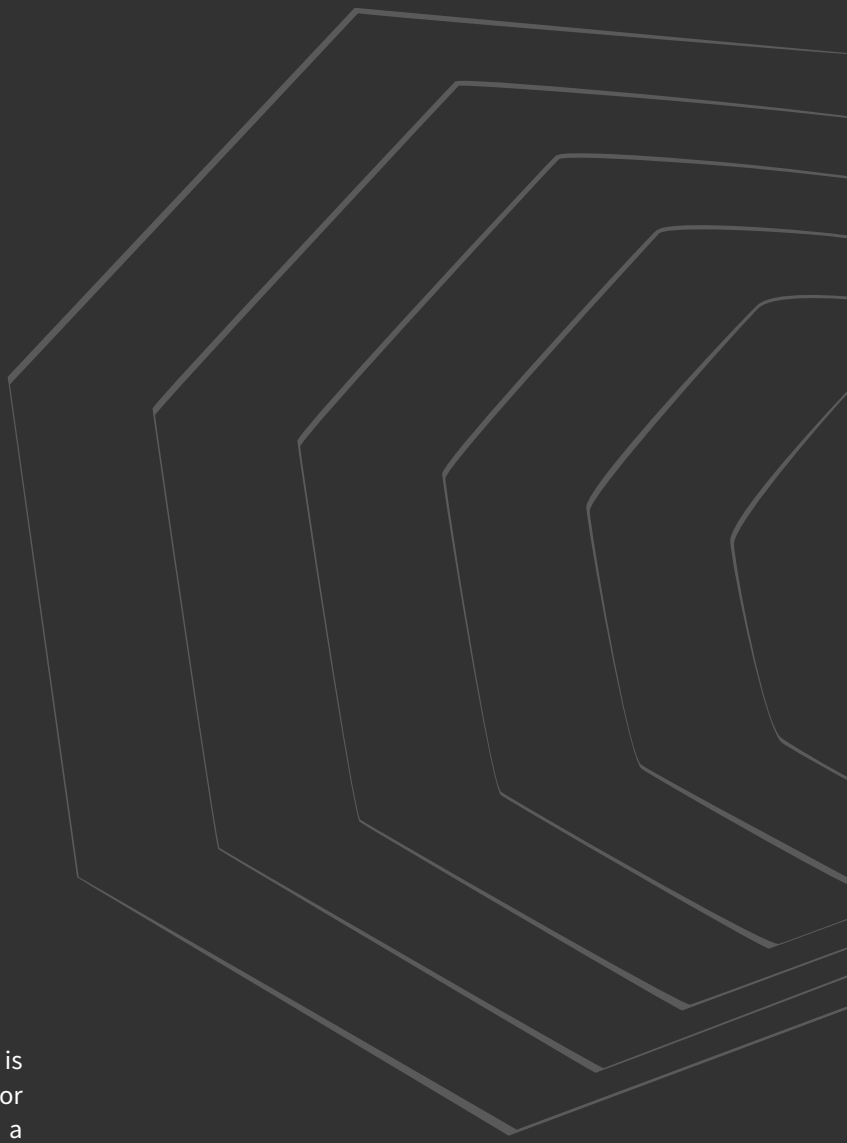


Altitude

MORRISON

El Niño 2026/27: Climate stress test for infrastructure resilience

NOVEMBER 2026



Teaser

A very strong El Niño is developing in the Pacific and is expected to peak between late 2026 and early 2027. For infrastructure asset managers, its relevance is not as a prediction of asset-level outcomes, but as a practical reminder that acute climate conditions can test operational resilience across multiple geographies and sectors at the same time.

This paper explains what the developing “super El Niño” is, how it could affect key infrastructure geographies, and how past major events have created disruptive conditions for infrastructure operations. It then provides a practical lens for how infrastructure assets in key sectors and geographies can approach resilience planning under heightened climate conditions, such as those associated with the developing 2026/27 El Niño.

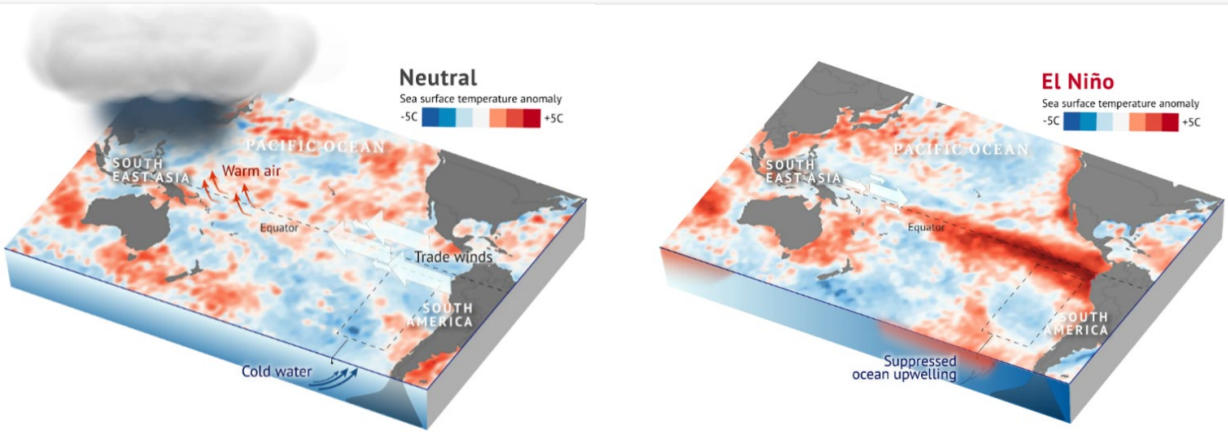
The paper concludes with practical questions for infrastructure asset managers to consider when reviewing business continuity, insurance, maintenance, supply chains, health and safety, redundancy, restoration and stakeholder communications.



1. El Niño and La Niña, and what drives them

El Niño and La Niña are the two opposite phases of the El Niño-Southern Oscillation (ENSO), a naturally occurring climate cycle in the tropical Pacific Ocean. ENSO swings between a warm phase (El Niño), a cool phase (La Niña) and neutral conditions, usually every two to seven years, though the timing is irregular. Scientists understand the mechanism well, although the exact timing and strength of individual events cannot be predicted years in advance.

In a normal year, easterly trade winds across the Pacific Ocean push warm surface water towards Asia and Australia and draw cold water up off South America. In an El Niño, those winds weaken, warm water and the rain it carries spread back east across the Pacific, and more ocean heat is released into the atmosphere. Weather patterns then shift on a global scale with that redistribution of heat. La Niña is the mirror image, with stronger winds and a colder eastern Pacific. Because the ocean and atmosphere reinforce each other, once the cycle tips it tends to build.



In neutral conditions (left), trade winds push warm surface water towards Asia and Australia, allowing cooler water to rise in the eastern Pacific. During El Niño (right), those winds weaken, warm water spreads eastwards and less cool water rises to the surface, altering weather patterns around the world. Source: NOAA OISST data (1 Jan 2000).

While El Niño begins in the tropical Pacific Ocean, the resulting redistribution of heat influences atmospheric circulation and weather patterns around the world, particularly across tropical and subtropical regions. El Niño and La Niña events typically last around nine to 12 months, although some persist for longer. Their effects are not uniform: ENSO shifts the probability of certain weather patterns rather than determining specific outcomes, and impacts vary by region, season and local vulnerability.

The phenomenon is a natural climate oscillation which existed long before humans began increasing atmospheric greenhouse gas concentrations, though the effects of climate change on the intensity and frequency of El Niño events remain unclear. However, El Niño events, which tend to increase temperatures around the world, now occur against a significantly warmer climate background. As a result, they can amplify already elevated temperatures, leading to more intense heatwaves, droughts, wildfire conditions and precipitation extremes than would otherwise have occurred in a cooler climate.

Approaching summer 2026 in the Southern Hemisphere, a very strong El Niño has been developing in the Pacific, and forecasters expect it to rank among the most powerful on record. Because this event is forming on top of an already warm ocean and atmosphere, it offers a useful real-time case study for the operating conditions infrastructure assets may endure around the globe more frequently as the climate warms further. In that sense, it is both a near-term preparedness issue and a practical resilience stress test.



2. The 2026/27 super El Niño forecast

A ‘super’ El Niño is generally defined as central Pacific sea-surface temperatures, measured in the Niño 3.4 region1, running more than 2°C above the long-term average for several months. Only a handful of events have reached this threshold since modern records began. Multiple forecasting agencies now expect the developing 2026/27 event to rank amongst the strongest on record:

It is confirmed and strengthening.

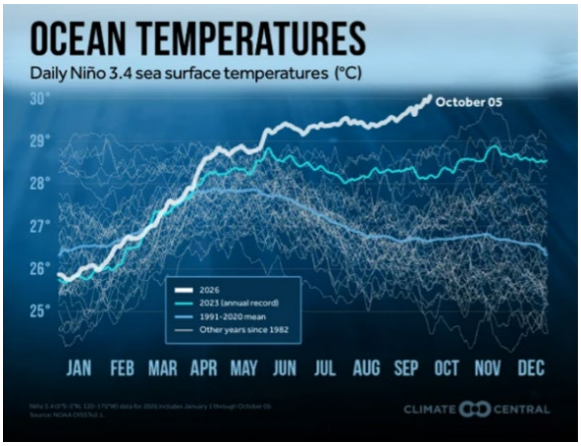
El Niño conditions became apparent in the first half of 2026, with the National Oceanic and Atmospheric Administration (NOAA) issuing an El Niño Advisory in June, its formal indication that El Niño conditions are present and expected to continue. Forecast models are closely aligned, supporting unusually high confidence in the event’s development.

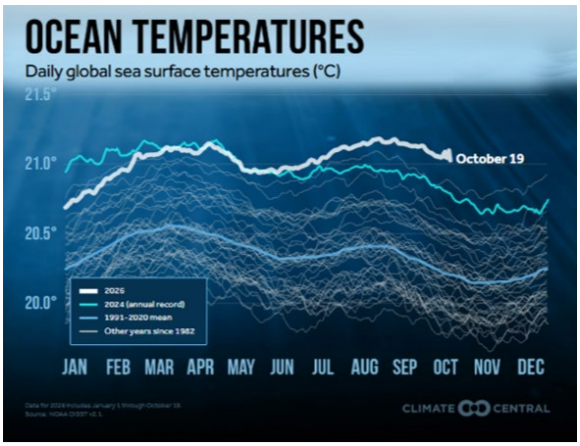
It is intensifying quickly.

The Niño 3.4 index rose around 0.5°C in a fortnight in late July, and by early October the region was running roughly 3°C above the 1991-2020 average, already well in super El Niño territory.

It could be the strongest on record.

Current forecasts point to a peak between late 2026 and early 2027, with a real chance it exceeds any event since 1950.

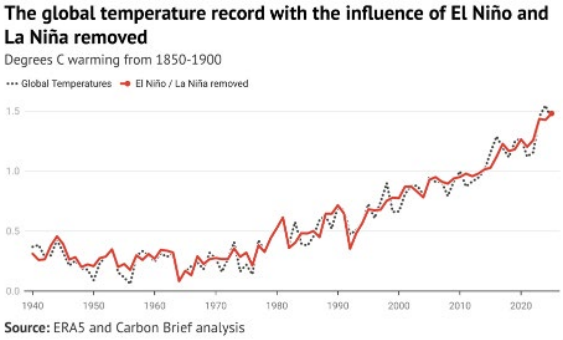




Daily sea-surface temperatures in the Niño 3.4 region (top) and across the global ocean (bottom). Both are currently tracking above the 1991-2020 average and previous record years, illustrating the unusually warm conditions underpinning the developing El Niño event. Charts are published and updated daily by Climate Central using NOAA sea-surface temperature data and can be explored interactively via Climate Central’s Daily SST tool.

[1]‘Niño 3.4’ is the central equatorial Pacific region where El Niño and La Niña signals are most clearly observed, making it the location where the primary indicator is measured to monitor the development and strength of ENSO events.

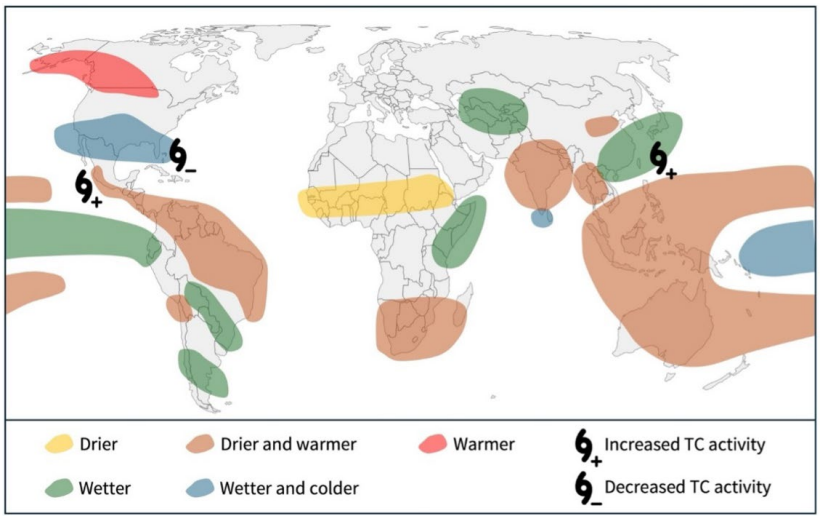
El Niño influences how heat moves around the system, but the ocean itself has been warming steadily for decades. A useful analogy is that El Niño is the wave, while climate change is the rising tide. The wave adds short-term variability, while the tide lifts the baseline from which each cycle begins. Because this event is forming on top of an exceptionally warm ocean, its impacts could exceed those of past events of comparable strength.



Overall, El Niño is associated with higher global temperatures, although its impacts vary and are generally more pronounced in tropical regions and in the Southern Hemisphere. Opposing effects can even be observed in neighbouring regions: for example, drier conditions are expected in southern Africa and the Sahel, while wetter conditions may be observed in equatorial East Africa.

While precipitation and the risk of flooding could increase in Peru and southern Brazil, a decrease in precipitation is often seen over the Amazon rainforest. Drier conditions are often observed in Oceania, India and South Asia, with a weakening of the Monsoon, while precipitation tends to increase along the coasts of China and Japan. Opposite trends are also visible in North America, with usually colder and wetter conditions over the southern US and slightly warmer temperatures over Canada.

In Europe, the impacts of El Niño are more variable, with slightly warmer summers and cooler autumns. However, the magnitude of this year's episode could be sufficient to bring visible impacts in Europe and for warmer conditions to extend through the winter.



Generic expected trends in precipitation patterns during an El Niño event: drier conditions in South Asia, Indonesia and Oceania, as well as the Sahelian and South African regions. Relatively wetter conditions are often seen in East Asia or over the southern US (AXA Climate, modified from IRI Columbia Climate School, EU JRC).



3. The impact of past super El Niño events

History provides the best indication of scale, although two El Niños might not look alike. Previous super El Niño events have reshaped weather patterns globally, intensifying floods, droughts, heatwaves and wildfires, with knock-on supply-chain disruption across multiple regions simultaneously.

EVENT	PEAK	ESTIMATED IMPACTS	WHAT HAPPENED
1982–83	**≈ +2.1°C**	• ~US$8bn direct damage; • ~1,300–2,000 deaths. • A 2023 macro study later put the long-run cost near US$4.1tn.	Drought and fires in Australia and Indonesia; record rainfall and flooding in Peru; severe coastal erosion and landslides in California. Elevated sea levels and storms caused coastal flooding and damage to transport and coastal infrastructure across parts of California.
1997–98	**≈ +2.4°C**	• US$32–96bn direct damage (World Bank estimated the cost to governments at ~US$45bn); • ~23,000 deaths. • The 2023 macro study put lasting losses at ~US$5.7tn over five years.	Flooding in coastal Peru and Ecuador; one of Indonesia's worst droughts with major fires and haze; East African floods and disease; ~16% of the world's coral reefs died. In California, storms, flooding and landslides caused widespread infrastructure damage, including over US$150m of landslide losses in the San Francisco Bay region and extensive transport disruption.
2015–16	**≈ +2.6°C**	• No single agreed global total. • Indonesian fires alone ~US$16bn (1.9% of GDP); • Tens of millions pushed into hunger across Africa.	The strongest El Niño in the modern index record until now. Severe drought and food insecurity in East and Southern Africa, widespread coral bleaching, and Southeast Asian drought and haze. California experienced wetter conditions, coastal flooding risks and storm-related infrastructure disruption, although impacts varied regionally.

Note: two types of loss estimates are commonly cited. Lower figures reflect direct damages (property, agriculture and infrastructure), whilst higher estimates reflect broader economic impacts over multiple years. For infrastructure investors, direct damage estimates are generally the more useful benchmark. Sources: Dartmouth College (Callahan & Mankin, 2023); NOAA; World Bank; UN OCHA; event studies.

The row below applies the same lens to the developing 2026/27 event, setting out the main regional stresses already emerging and how a further strengthening of the event into 2027 could exacerbate them.

2026 (current conditions)	**≈ +3°C / developing**	The developing event may already be contributing to • **Asia-Pacific:** drier and hotter conditions resulting in increased water stress and wildfire risk across most of the region, increased flood risk in eastern China • **Americas:** elevated risk of storms and flooding in the southern US, drier conditions over most of the Amazonian basin • **Europe:** while the relationship with El Niño is less direct and harder to model, the region is already experiencing hotter, drier and more volatile conditions that a stronger El Niño could amplify. The aim is not to attribute each event with certainty. Rather, it is to identify potential elevated risks early, acknowledging that 2026 is already showing the kinds of regional stresses commonly associated with El Niño, and a stronger event in 2027 could exacerbate these impacts against an already warmer climate baseline.

The key read-across is not any single event, but the concurrence of impacts. Super El Niño events can affect several regions and sectors at once, meaning geographic diversification may not fully mitigate the risk. A single climate driver can disrupt water availability, fire risk, agriculture, transport, energy systems and asset operations across multiple markets at the same time.

For infrastructure assets, these conditions could affect service continuity, operating costs and repair and restoration, resilience capex, insurance assumptions, contractual performance and counterparty readiness. Assets that have adequate resilience programmes and prepare and invest early to manage physical risks are better placed to protect service continuity, reduce volatility and maintain confidence with customers, communities, regulators and investors.



4. Resilience planning under heightened climate conditions



Drawing on AXA Climate's climate science expertise and Morrison's infrastructure asset management experience, this section provides a practical lens for how infrastructure assets in key sectors and geographies can approach resilience planning under heightened climate conditions, such as those associated with the developing 2026/27 El Niño. It maps selected climate risks to different asset types and considers how these conditions can inform preparedness, continuity arrangements and capex prioritisation.

This is not a forecast of individual weather events or associated impacts. It is a preparedness screen: the relevant question is how asset owners and managers can preserve operational resilience if two or more climate events occur together or in quick succession, rather than as isolated events. The regional and sector lenses below focus on infrastructure markets where El Niño impacts are well documented and where major ENSO events have historically created disruptive conditions for infrastructure operations. The sectors selected reflect areas where physical climate risks are typically most relevant to infrastructure investors, including energy, utilities, transport, digital infrastructure and related services.

While every asset is unique and requires its own risk materiality assessment, this preparedness screen provides a practical guide for approaching resilience planning under heightened climate variability.

Because ENSO influences probabilities rather than prescribing outcomes, the analysis is illustrative rather than exhaustive. Its purpose is to support structured discussions with asset managers and operators on preparedness, continuity planning, capex prioritisation and stakeholder confidence, rather than to predict outcomes for any specific asset, company or investment portfolio.

ASIA

The signal points to weaker monsoons and drier conditions across Indonesia, the Philippines and parts of South Asia, with altered typhoon patterns in East Asia, peaking August 2026 to February 2027. Drought, haze and agricultural stress dominate, with coastal storm risk in places.

SECTOR	POTENTIAL CLIMATE-RELATED STRESSES	RESILIENCE READINESS CONSIDERATIONS
Renewables / energy	Weaker monsoons, drought and low river flows can reduce hydro output and cooling-water availability; heat can increase demand and grid stress; haze, wildfire smoke, typhoon shifts and flooding can affect solar yield, access and construction, as well as employees' health.	Ensure generation availability and cooling capacity are monitored; plan for grid stress, maintenance access and worker safety; review repair readiness and resilience capex.
Digital infrastructure & connectivity	Heat, humidity and haze can increase cooling loads, filter maintenance and access constraints; grid stress due to higher demand and water scarcity can affect reliability; storms, flooding or landslides can damage and disrupt sites, routes and expansion works.	Ensure cooling, power continuity and site access plans are robust; plan for workforce safety during heat or haze; reinforce backup power, repair response and route diversity; review SLA resilience.
Logistics	Heat, haze and poor air quality can affect warehouse conditions, staff safety and transport routes; drought and low river levels can disrupt freight; typhoons, floods or landslides can affect ports, roads and rail.	Plan for route alternatives, inventory buffers and cold-chain resilience; ensure worker safety and site access arrangements are clear; review throughput, customer commitments and route resilience.

AUSTRALIA AND NEW ZEALAND

Australia and New Zealand typically experience some of the clearest and earliest ENSO-related weather signals, making the region a useful case study for how a strong El Niño can translate into operational challenges. Hotter and drier conditions are expected throughout the season.

SECTOR	POTENTIAL CLIMATE-RELATED STRESSES	RESILIENCE READINESS CONSIDERATIONS
Digital infrastructure & connectivity	Heat can increase cooling demand; water scarcity, bushfire smoke and poor air quality can affect sites and access, as well as employees' health; wildfires can damage ducts, connectors and routes.	Ensure cooling, power continuity and site access plans are tested; reinforce water-ingress and connector protection; plan for workforce safety, network availability, uptime and SLA resilience.
Renewables / energy	Lower rainfall can reduce hydro availability; heat can increase peak demand and reduce network efficiency; bushfire, wind and smoke can disrupt transmission, access, maintenance and construction.	Plan for generation availability, grid connection reliability and construction flexibility; ensure worker safety and maintenance access; review curtailment, restoration capability and resilience spend.
Transmission and distribution	Heat and peak demand can reduce network efficiency; bushfire and smoke can affect lines, substations and access, as well as increase restoration complexity.	Ensure restoration plans, vegetation management and critical-site access are ready; plan for worker safety, outage sequencing, spares and contractor availability; reinforce priority routes, customer communications and insurance assumptions.
Regulated utilities	Drought can reduce water availability as heat increases demand; lower reservoir or groundwater levels can increase water-quality pressure and use restrictions; wildfire can disrupt treatment, pumping and distribution sites.	Plan for supply reliability, leakage management and treatment capacity; ensure emergency arrangements and maintenance response are tested; review customer outcomes, regulatory expectations and allowed-revenue assumptions.
Transport	Extreme heat can affect runways, rail, roads, terminal cooling and aircraft performance; bushfire smoke can affect visibility and air quality and disrupt access, terminals, utilities and construction.	Plan for safe passenger and worker conditions, maintenance access and recovery arrangements; ensure availability and throughput are monitored; review contractual performance, insurance assumptions and capex for heat, smoke and flood resilience.

NORTH AMERICA

The El Niño signal typically brings a wetter, stormier track across the southern US and California, with drier, milder conditions in parts of the Pacific Northwest, peaking December 2026 to March 2027. The exposure profile is more about water, storms and flooding than drought.

SECTOR	POTENTIAL CLIMATE-RELATED STRESSES	RESILIENCE READINESS CONSIDERATIONS
Renewables / energy	A wetter southern storm track can increase flood, landslide and erosion risk; storms can affect substations, transmission and access roads; water-resource swings can affect hydro planning; wildfire or smoke can remain relevant in exposed western markets.	Plan for generation-site resilience, construction flexibility and grid connection reliability; ensure maintenance access and repair arrangements are clear; review vegetation management, curtailment exposure and interconnection resilience.
Transmission and distribution	Heavy rainfall, flooding, landslides and erosion can affect substations, corridors, networks and access roads; storms and high winds can increase outage risk; wildfire and smoke can remain relevant in western markets.	Ensure restoration capability, vegetation and corridor management and emergency access are tested; plan for worker safety, outage sequencing and supply-chain readiness; reinforce customer communications and priority routes.
Digital infrastructure & connectivity	Flooding, storms and high winds can affect sites, power supplies, fibre routes and access roads; water ingress, connector damage and cable cuts can affect exposed networks.	Ensure power continuity, backup power and emergency access plans are robust; reinforce flood, drainage and route resilience; review uptime, network availability, SLA performance, customer confidence and insurance assumptions.
Transport and logistics	Wetter winter conditions and storms can affect roads, rail, ports, airports and logistics facilities, particularly across the southern US and California; flooding can constrain access and disrupt construction seasons.	Plan for drainage, route access, maintenance flexibility and workforce safety; ensure construction phasing and recovery arrangements are practical; review customer commitments and business-continuity procedures.

EUROPE

Europe entered the second half of 2026 with severe drought in places, record Mediterranean marine heatwaves, historically low river levels and high wildfire activity. The El Niño signal here is weaker and less direct, so the relevant question is whether the conditions already seen in 2026 will persist or intensify through 2027, and whether exposed assets can withstand them.

SECTOR	POTENTIAL CLIMATE-RELATED STRESSES	RESILIENCE READINESS CONSIDERATIONS
Digital infrastructure & connectivity	Prolonged heat can raise cooling demand and electricity consumption in the autumn; grid stress and water scarcity can affect cooling-dependent sites; flood, wildfire or ground movement can affect fibre routes, substations and access points.	Ensure cooling, power availability and maintenance access remain robust; plan for water ingress, connector protection and expansion constraints; review PUE, opex, SLA performance, customer confidence and resilience capex.
Water utilities	Hotter, drier conditions can increase demand while reducing water availability; lower river flows and warmer raw water can affect treatment and water quality; flooding, ground movement or heat can disrupt pumping, mains and network works.	Plan for supply reliability, leakage management and treatment capacity; ensure repair response and emergency arrangements are tested; review customer outcomes, regulatory engagement, public confidence, insurance assumptions and allowed-revenue assumptions.
Transport	Heat can affect airports, road and rail performance, terminal cooling and staff conditions; grid stress can reduce EV charging availability; flooding, wildfire, storms and low river levels can affect sites, access, grid connections and construction.	Plan for site availability, route access, passenger and workforce safety and chargepoint uptime; ensure repair times and grid connection reliability are understood; review customer experience, roll-out delivery and resilience capex.
Renewables	Drought and heat can reduce hydro output and network efficiency as cooling demand rises; low river levels can affect cooling-dependent assets and river transport; wildfire, storm or flood events can disrupt access, construction and maintenance.	Plan for generation and dispatch resilience, grid availability and construction scheduling; ensure worker safety and repair arrangements are clear; review curtailment exposure and capex for substations, grid connections and fire protection.
Transmission and distribution	Heat and peak demand can reduce network efficiency; wildfire, storms, flooding and ground movement can affect substations, lines, underground cables and access; weather disruption can affect maintenance, outage planning and reinforcement works.	Ensure restoration capability, vegetation management and critical-site access are ready; plan for worker safety, outage sequencing and supply-chain readiness; reinforce customer and regulator communications, insurance assumptions and priority routes.



For infrastructure investors, the relevance of a strong El Niño is not as a prediction of asset-level outcomes, but as a practical reminder that acute climate conditions can test operational resilience across multiple geographies and sectors at the same time. Moreover, it highlights the importance of recurring climate events and reduced recovery periods between them, which can magnify impacts on infrastructure assets.

The appropriate response is preparedness: understanding key dependencies, testing continuity arrangements, engaging with operators on exposed systems, and ensuring that resilience considerations remain integrated into asset management, capex planning and stakeholder engagement.

For asset managers, the key takeaway is to use the developing El Niño as a prompt to test practical resilience. Relevant questions include:

- Have business continuity procedures been tested against relevant El Niño-related hazards, such as heat, drought, wildfire, flooding, storms or grid disruption?
- Are insurance policies up to date, fit for purpose and aligned with the asset's current exposure profile?
- Should upcoming maintenance, capex or construction works be adjusted to reflect relevant climate hazards?
- Which critical suppliers, routes, components or services could be disrupted, and are mitigation measures in place, such as alternative suppliers, pre-ordering or stocking essential parts?
- How could these conditions affect staff, contractors and operations, and are additional health and safety measures, training or contingency plans required?
- Are redundancy, restoration and backup arrangements sufficient for priority services, including route diversity, critical-site access and spare parts availability?
- Are customer, regulator, community and investor communications ready if service continuity is tested?

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