

The 2026/27 El Niño and risks to global growth

Assessing the potential implications of a very strong El Niño

El Niño is a recurring climate phenomenon, but the ongoing 2026/27 event may warrant particular attention. Forecasts suggest it could become very strong, potentially ranking among the strongest on record. This Policy Brief assesses what such a strong El Niño could mean for global growth. Building on existing empirical estimates, our calculations point to a significant downside risk, with substantial differences across countries. Effects for the euro area are comparatively limited. The numbers illustrate the potential scale of the risk.

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Growth effects vary widely across countries

Countries differ considerably in how strongly their weather responds to El Niño, implying large differences in potential economic effects



Meaningful downside risk to global growth

Our calculations imply potential output losses of around 0.4–0.7% of global GDP, with larger effects in countries where weather conditions respond more strongly to El Niño



El Niño as an external risk to the euro area

Calculated growth effects are comparatively limited, but a very strong El Niño can affect the euro area through broader global spillovers and therefore warrants close monitoring

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1 A potentially exceptional El Niño: what it is and why it matters now

The return of El Niño has brought renewed attention to a recurring climate phenomenon with potentially far-reaching economic consequences. The ongoing 2026/27 event¹ is expected to become very strong and could potentially reach exceptional intensity. To understand the potential economic implications, it is useful to first consider what El Niño is and how a climate phenomenon originating in the tropical Pacific can affect weather conditions around the world.

The El Niño–Southern Oscillation (ENSO) is a naturally recurring climate phenomenon originating in the tropical Pacific. It has three phases: El Niño, La Niña, and a neutral phase. El Niño is its warm phase, characterized by unusually warm surface waters in the central and eastern equatorial Pacific (see for example NOAA, 2026a). While ENSO is a naturally occurring phenomenon, its effects occur on top of ongoing global warming and can amplify climate extremes (Acosta Navarro et al., 2026).

What happens in the tropical Pacific does not remain there, however. Changes in ocean temperatures alter tropical rainfall and atmospheric circulation, which can in turn affect temperature and precipitation patterns in distant parts of the world. Such long-distance relationships in the climate system are referred to as *teleconnections*. The resulting climate effects can therefore extend far beyond the tropical Pacific, while differing substantially across regions (NOAA, 2022).

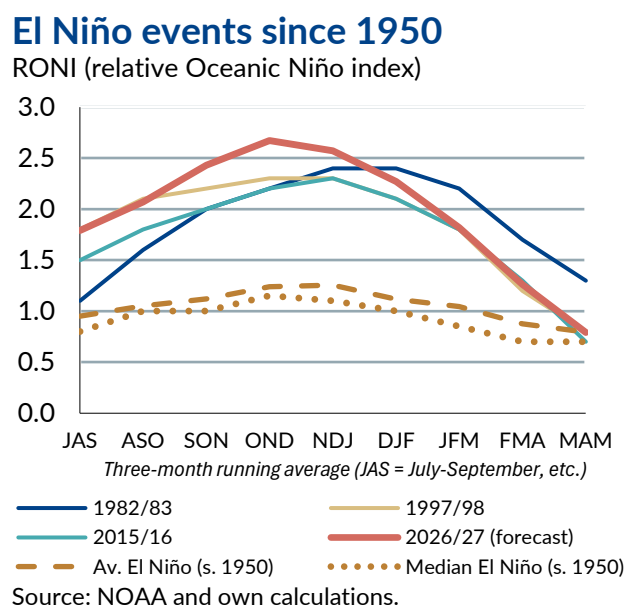
The resulting weather implications of El Niño can be substantial. El Niño is typically associated with warmer-than-normal conditions in many affected regions and pronounced shifts in rainfall patterns. For example, drier-than-normal conditions tend to occur in Australia and parts of Southeast Asia, southern Africa and Central America, while parts of southeastern South America and Eastern Africa tend to experience above-normal rainfall. These shifts can increase the risk of droughts and floods in affected regions. In Europe, El Niño's influence on climate is more indirect and less certain than in the tropics. Overall, the precise effects on weather vary across regions and seasons (see for example Acosta Navarro et al., 2026).

The ongoing El Niño could become an exceptionally strong event. El Niño conditions have been present since June 2026 and have continued to strengthen since then. According to NOAA's latest forecast (from September 10, 2026), there is a greater than 90% probability that this El Niño will become "very strong" during autumn and winter 2026/27. Moreover, there is a 75% probability that the Relative Oceanic Niño Index (RONI)² will reach at least 2.5°C in the October-December period – a level that would exceed all previous El Niño events in NOAA's record, which goes back to 1950 (NOAA, 2026b). As chart 1 illustrates, the forecast RONI path for 2026/27 would place the ongoing event among the strongest El Niño events since 1950. This is broadly consistent with the assessment by the European Commission's Joint Research Centre (JRC), which already in June pointed to a very high likelihood of a very strong event and the possibility of an unprecedented one (JRC, 2026).

¹ The onset of El Niño conditions has been declared in June 2026. El Niño has since strengthened and is expected to intensify further. We therefore refer to the "ongoing" rather than the "upcoming" El Niño throughout the brief.

² The Relative Oceanic Niño Index (RONI) measures sea-surface temperature anomalies in the Niño-3.4 region of the east-central equatorial Pacific relative to average sea-surface temperature anomalies across the tropics, using a three-month running average. Positive values indicate relatively warmer conditions in the Niño-3.4 region, with higher values indicating a stronger El Niño according to this measure (NOAA, 2026c).

Chart 1



The exceptional strength of this event also raises the likelihood of pronounced regional climate impacts, although the strength of El Niño does not translate mechanically into the magnitude of local impacts. The JRC's June assessment points towards elevated risks of extreme heat across the tropics and subtropics, droughts in several strongly affected regions, and excess rainfall elsewhere. For Europe, the JRC analysis indicates a potentially nonlinear response: an exceptionally strong El Niño could result in warmer-than-usual conditions in autumn, in contrast to the colder conditions found for less intense El Niño events in their analysis (Acosta Navarro et al., 2026; JRC, 2026). The prospect of an unusually strong 2026/27 El Niño event raises the question of its economic implications. Climatic effects differ substantially across countries, reflecting differences in their exposure to El Niño. Past events suggest that these effects can translate into sizeable consequences for economic activity. Against this background, the following sections discuss the potential implications of the ongoing El Niño for global economic growth and growth in selected countries.

2 From El Niño to GDP: transmission channels and empirical evidence

The economic consequences of El Niño can arise from both local weather impacts and international transmission channels. Countries across the world differ substantially in their exposure to the associated temperature and precipitation anomalies, while trade and commodity-market linkages can transmit effects to countries that are less directly exposed.

El Niño-induced changes in temperature and precipitation can affect economic activity through a range of channels, including agricultural production and labor productivity (see, for example, Cashin et al., 2017), while associated extreme weather can also disrupt or damage productive activity and physical infrastructure. Economic effects need not remain confined to directly exposed sectors or countries, but can propagate through trade and global commodity markets. Cashin et al. (2017), for example, find that such international spillovers can materially shape countries' overall GDP response to El Niño.

Empirical estimates of the resulting GDP effects vary considerably, however. While some studies find relatively short-lived and, for some economies, even positive output effects (Cashin et al., 2017; Dufrénot

et al., 2024), others find sizeable negative effects, especially for more exposed economies (Smith and Ubilava, 2017; Callahan and Mankin, 2023).

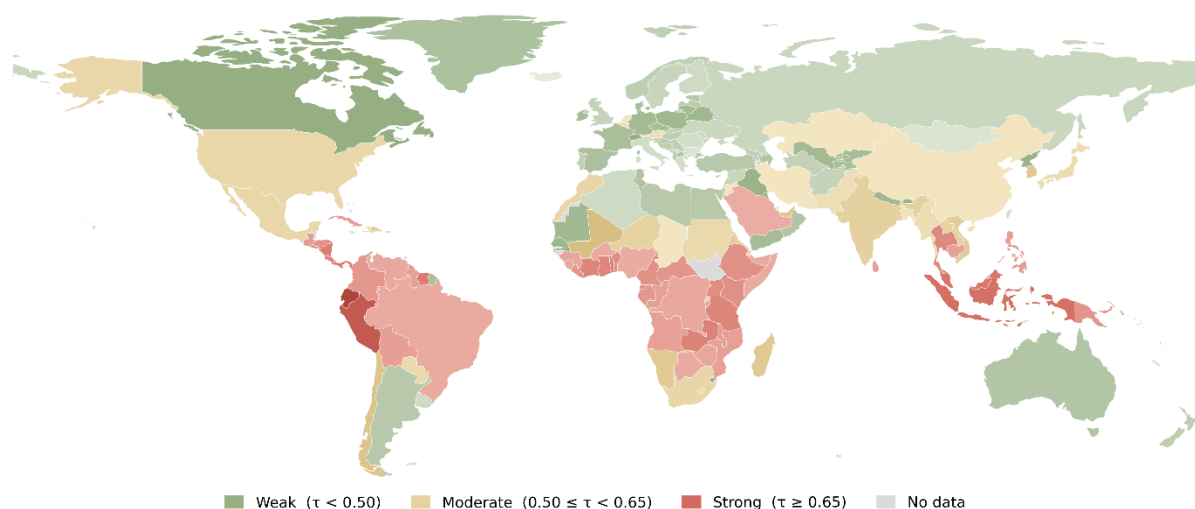
Callahan and Mankin (2023) do not separately identify the individual transmission channels described above. Rather, their estimates capture the overall GDP growth response to El Niño, conditional on countries' climatic exposure. As such, the estimated effects can also encompass economic spillovers associated with the initial climatic shock, rather than measuring only the direct effects of *local* weather conditions. Their approach is particularly useful for assessing the ongoing event because it explicitly allows the economic effects of El Niño to vary with countries' climatic exposure.

Callahan and Mankin (2023) measure countries' climatic exposure by how strongly temperature and precipitation in individual countries historically respond to El Niño – the countries' *teleconnection strength*. This provides a framework for translating the highly heterogeneous climatic effects of El Niño into correspondingly heterogeneous potential economic impacts.

Figure 1

Exposure to El Niño: teleconnection strength across countries

Stronger values indicate greater historical sensitivity of local temperature and precipitation to El Niño.



Note: Teleconnection strength (τ) reflects the historical relationship between El Niño variability and local temperature and precipitation. The classification into weak ($\tau < 0.50$), moderate ($0.50 \leq \tau < 0.65$) and strong ($\tau \geq 0.65$) exposure is the author's own.

Source: Author's visualization based on Callahan and Mankin (2023), supplementary material.

Figure 1 provides our visualization of the country-level teleconnection strength (τ) estimated by Callahan and Mankin (2023). The resulting pattern varies substantially across countries, with particularly pronounced exposure in many tropical countries and weaker teleconnections across large parts of Europe and other higher-latitude regions. Within the euro area, only four countries – Austria, Belgium, the Netherlands and Luxembourg – fall into the group of moderately exposed economies, while all other euro area countries³ are classified as weakly exposed. The four moderately exposed countries lie only slightly above the threshold between the two groups, while several other euro area countries lie relatively close below it. This classification should therefore not be overinterpreted.

³ Malta is excluded from this assessment, as Callahan and Mankin (2023) do not provide a teleconnection estimate for Malta.

In their empirical analysis, Callahan and Mankin (2023) estimate how the economic effects of El Niño vary with both the intensity of the event and countries' teleconnection strength.⁴ Their results show a clear relationship between climatic exposure and economic impacts: countries that are more strongly teleconnected to El Niño experience larger reductions in GDP per capita growth, while estimated effects become smaller and statistically indistinguishable from zero at low levels of teleconnection strength. Moreover, the estimated growth effects in strongly exposed countries persist for several years after the El Niño event.

The relationship estimated by Callahan and Mankin (2023) therefore provides a basis for assessing how an El Niño of the strength currently anticipated for 2026/27 could affect economic growth globally and across countries. The next section builds on this estimated relationship to assess the potential implications of the ongoing event.

3 Translating the ongoing El Niño into potential growth effects

To assess potential growth implications of the ongoing El Niño, we build on the relationship between climatic exposure and economic growth estimated by Callahan and Mankin (2023). We combine their country-level estimates of climatic exposure with two alternative calibrations of the intensity of the ongoing El Niño to derive country-level and aggregate growth effects.⁵

The two calibrations are based on the very strong El Niño events of 1982/83 and 2015/16. Both reached intensities broadly similar to those currently forecasted for the 2026/27 El Niño according to NOAA's RONI measure. However, the economic estimates of Callahan and Mankin (2023) are based on a different measure of El Niño intensity, the E-index. The two measures capture somewhat different characteristics of El Niño, and there is no direct conversion between them. Importantly, although the 1982/83 and 2015/16 events were similarly strong according to RONI, their E-index values differed considerably.

Using the E-index values observed during these two historical events therefore provides two alternative calibrations for the ongoing El Niño and, in turn, a range of potential growth effects. For each calibration, the resulting growth effects vary across countries according to their climatic exposure to El Niño.⁶

Given the considerable uncertainty surrounding the economic implications of the 2026/27 event, the results should be interpreted as scenarios illustrating the potential magnitude and geographical distribution of growth risks, rather than as forecasts.

4 Potential implications for global growth and growth in selected countries

The results of this analysis are displayed in table 1. As described above, we consider two alternative calibrations based on the very strong El Niño events of 2015/16 and 1982/83. Both reached RONI

⁴ More specifically, Callahan and Mankin (2023) interact teleconnection strength with a continuous measure of El Niño intensity (the so-called E-Index) in a distributed lag model of GDP per capita growth.

⁵ The calculations use country-specific teleconnection strengths from the supplementary material to Callahan and Mankin (2023) and 2025 nominal GDP from the World Bank's World Development Indicators. Further methodological details are provided in the Annex.

⁶ Effects are calculated using the continuous country-specific variation in teleconnection strength. For countries with teleconnection strengths in the range for which Callahan and Mankin's estimated effects are statistically indistinguishable from zero, effects are set to zero. Please see the Annex for further details.

intensities broadly similar to current forecasts for 2026/27, but were associated with considerably different E-Index values and hence provide a lower- and a higher-impact calibration.

The results suggest that a very strong El Niño could pose a meaningful downside risk to global growth, although the estimated magnitude varies considerably across the two calibrations. Under the lower-impact, 2015/16-like calibration, estimated output losses amount to around USD 430 billion, equivalent to close to 0.4% of global GDP. Under the higher-impact, 1982/83-like calibration, the corresponding loss rises to around USD 810 billion, or roughly 0.7% of global GDP. The upper end of this range is broadly in line with Hendrix (2026), who estimates a first-year loss of around 0.8% of global GDP using a related application of Callahan and Mankin (2023).

Table 1

Illustrative GDP effects of the 2026/27 El Niño under two historical calibrations

	# countries	GDP (billion USD)	2015/16-like El Niño		1982/83-like El Niño	
			Potential loss in GDP (billion USD)	Potential loss in GDP (% of GDP)	Potential loss in GDP (billion USD)	Potential loss in GDP (% of GDP)
Strongly exposed countries	51	9,796	-124	-1.27	-235	-2.40
Moderately exposed countries	37	69,649	-303	-0.43	-573	-0.82
Strongly + moderately	88	79,445	-427	-0.54	-808	-1.02
Global GDP		118,175	-427	-0.36	-808	-0.68

Note: Country-level effects are calculated continuously; exposure categories are used for presentation only. Country-level effects on GDP per capita growth are translated into changes in GDP and aggregated across countries. The reported GDP effects reflect the contemporaneous impact of El Niño and do not include effects estimated for subsequent years.

Source: Author's calculations based on Callhan and Mankin (2023), NOAA data, and World Development Indicators.

The exercise further shows that the effects are concentrated among countries that are more strongly exposed to El Niño, but their economic significance extends beyond the most strongly teleconnected economies. For strongly exposed countries, the calculated GDP effect ranges from around –1.3% under the 2015/16-like calibration to –2.4% under the 1982/83-like calibration. Moderately exposed countries experience smaller relative effects, of around –0.4% to –0.8%. However, because this group accounts for a much larger share of global economic activity, it contributes the larger share of the estimated global output loss in both scenarios. A more conservative calculation focusing only on strongly exposed countries implies considerably smaller, but still non-negligible, global effects. Restricting the calculation to these countries results in estimated output losses equivalent to around 0.1–0.2% of global GDP (not displayed in table 1), compared with 0.4–0.7% when moderately exposed countries are included.

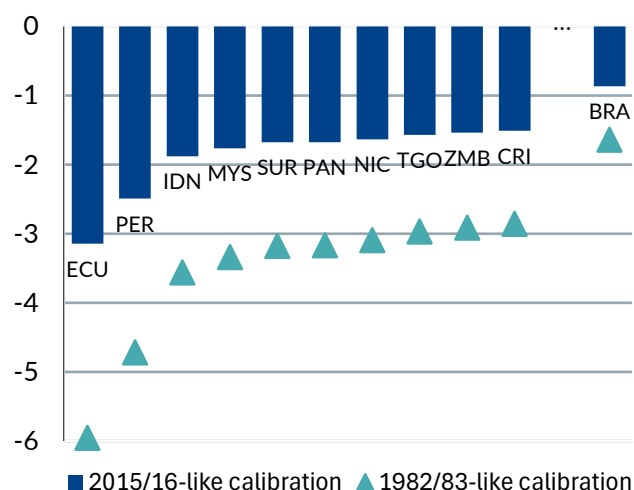
The sizeable difference between the two calibrations also illustrates the importance of uncertainty about the spatial pattern of Pacific warming: despite broadly similar RONI intensities of the two historical benchmark events, their different E-index values translate into markedly different estimated economic effects.

Looking beyond these aggregate effects, the framework also allows us to examine results at the country-level. These country-level results should, however, be interpreted with caution. Teleconnection strength varies continuously across countries, and several countries lie close to the threshold at which the estimated growth effects become statistically indistinguishable from zero. The results are best interpreted as illustrating the geographical distribution and relative magnitude of potential growth effects rather than as precise predictions for individual economies.

Chart 2

Selected strongly exposed countries

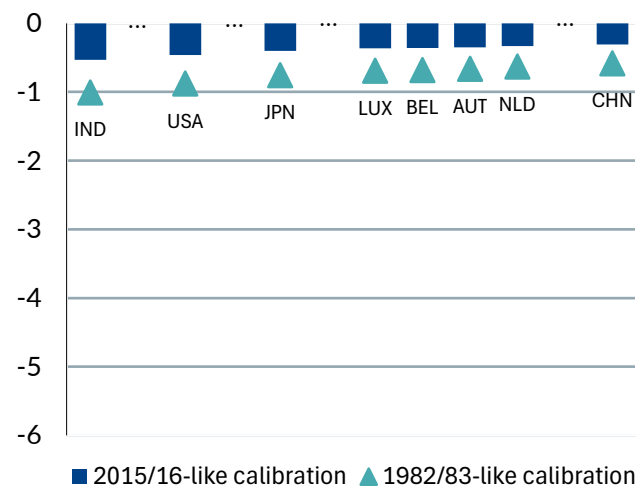
illustrative GDP per capita growth effect (pp)



Source: Author's calculations based on Callhan and Mankin (2023).

Selected moderately exposed countries

illustrative GDP per capita growth effect (pp)



Source: Author's calculations based on Callhan and Mankin (2023).

Note: Bars and triangles show results based on the 2015/16-like and 1982/83-like E-index calibrations, respectively. Country-level effects are calculated continuously based on countries' teleconnection strength; exposure groups are used for presentation only. Effects on GDP per capita growth correspond to effects on aggregate GDP growth assuming that El Niño does not affect population growth. Countries are selected for illustrative purposes, including large economies and euro area countries in the moderately exposed group.

Chart 2 illustrates selected country-level results underlying the aggregate calculations. The left panel shows calculated growth effects for the ten most exposed economies as well as for Brazil, the largest economy in the group of strongly exposed countries. Under the lower-impact calibration, the calculated reduction in GDP per capita growth reaches up to around 3 percentage points and is roughly twice as large under the higher-impact calibration. The right panel shows selected large economies from the group of moderately exposed countries, as well as the four euro area countries in this group. Calculated effects are substantially smaller: GDP per capita growth is estimated to decline by around 0.3–0.5 percentage points under the lower-impact calibration and by around 0.6–1 percentage point under the higher-impact calibration, with the largest effect estimated for India.

Calculated growth effects for the euro area appear limited overall. Only four euro area countries fall into the moderately exposed group, and their teleconnection strengths lie close to the threshold separating moderately from weakly exposed economies. Austria is one of these countries: its estimated teleconnection strength is only slightly above the threshold. This translates into a calculated reduction in GDP per capita growth of around 0.3 percentage points under the lower-impact calibration and 0.7 percentage points under the higher-impact calibration. Several other euro area countries, however, lie only slightly below the threshold for moderate exposure. More broadly, the relatively weak teleconnections across most of the euro area are associated with small and statistically insignificant growth effects in the Callahan and Mankin (2023) framework.

5 Conclusions

The ongoing 2026/27 El Niño is expected to develop into a very strong event and could rank among the strongest on record. Its exceptional strength makes it particularly important to assess the potential economic implications. Doing so, however, is challenging: El Niño affects weather conditions heterogeneously across the world, and the strength of an event alone does not determine its economic impact. What matters is how strongly a country's weather conditions respond to El Niño.

This policy brief builds on empirical estimates of Callahan and Mankin (2023) to assess potential economic implications of the ongoing event. Given the uncertainty surrounding how the event will develop, we use two historical very strong El Niño events as alternative calibrations. The resulting back-of-the-envelope calculations point to a substantial downside risk to global growth, but also to considerable uncertainty about its magnitude. Depending on the calibration, the calculated output loss amounts to around 0.4–0.7% of global GDP. Effects are highly uneven across countries and are concentrated in economies with stronger climatic exposure to El Niño.

For the euro area, the calculated growth effects are comparatively limited. Most euro area countries have relatively weak teleconnections to El Niño and, accordingly, their estimated growth effects are statistically indistinguishable from zero in the Callahan and Mankin (2023) framework. In our calculations, these statistically insignificant effects are therefore not included in the aggregate growth impact. Only four euro area countries fall into the moderately exposed group, and their teleconnection strengths lie relatively close to the range at which estimated effects become statistically indistinguishable from zero. More generally, the results should be understood as scenario-based estimates of the potential magnitude and geographical distribution of El Niño-related growth effects rather than as forecasts of the effect of El Niño on GDP growth in 2026/27.

Despite the comparatively limited calculated growth effects for the euro area, El Niño is relevant from a central bank perspective. A sizeable weakening of economic activity in more strongly exposed economies can spill over to the euro area through lower external demand and international trade. Moreover, El Niño can affect global commodity prices and thereby provide an additional channel of transmission to the euro area economy. Monitoring a potentially very strong El Niño and assessing its potential implications is therefore relevant for gauging risks to the euro area economic outlook.

Overall, the analysis suggests that an exceptionally strong El Niño represents a relevant downside risk to the global economic outlook. The eventual impact remains highly uncertain, however, and is likely to vary considerably across countries depending on how the ongoing event develops.

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Note: For online sources without a stated publication date, the year refers to the year of access. All online sources were last accessed in September 2026.

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7 Annex: Further methodological details

This annex provides further methodological details on the calculation of the potential growth effects presented in the main text. The exercise builds on the relationship between El Niño exposure and economic growth estimated by Callahan and Mankin (2023), combining their country-specific estimates of climatic exposure with two alternative calibrations of the ongoing event's intensity. A recent analysis by Hendrix (2026) similarly builds on Callahan and Mankin (2023) to assess the potential economic effects of the ongoing El Niño.⁷

Data and inputs. We draw on supplementary material provided by Callahan and Mankin (2023), which contains the main inputs for the exercise. These include country-specific teleconnection strengths, available for 156 countries, the historical E-index the authors used to measure El Niño intensity, and the estimated relationship between El Niño intensity, teleconnection strength and GDP per capita growth. To translate the estimated growth effects into changes in economic output, we complement these data with nominal GDP for 2025 from the World Bank's World Development Indicators.⁸

From RONI to the E-Index. Assessing the growth implications of the ongoing event requires relating NOAA's forecast of El Niño intensity to the measure used in Callahan and Mankin's (2023) growth estimates. While Callahan and Mankin's estimated relationship is based on the E-index, which captures sea-surface temperature variability associated with El Niño in the *eastern* equatorial Pacific, NOAA's forecasts for the ongoing event are expressed in terms of the Relative Oceanic Niño Index (RONI), based on sea-surface temperature anomalies in the broader Niño-3.4 region of the east-central equatorial Pacific.

As there is no direct mapping between the two measures, we use two historical very strong El Niño events as benchmarks. Specifically, we consider the 1982/83 and 2015/16 events, which reached broadly similar RONI intensities, close to those currently projected for 2026/27 (see chart 1). Despite their similar strength according to RONI, the two events differed substantially in terms of their E-index values. This reflects differences in the spatial pattern of Pacific warming: events of similar overall strength according to RONI can be associated with different E-index values depending on where the warming is concentrated. We therefore use the E-index values observed during these two historical events as two calibrations of the ongoing El Niño, providing a range of potential growth effects.⁹

Calculating country-level effects. For each of the two E-index calibrations, we then apply the relationship estimated by Callahan and Mankin (2023) to each country's teleconnection strength to derive the corresponding effect on GDP per capita growth. Box 1 provides a schematic overview of the empirical approach and its application to the ongoing event.

Accounting for weak teleconnections. The estimated effect varies across countries according to their climatic exposure to El Niño events. For a given El Niño intensity, more strongly teleconnected countries

⁷ Hendrix (2026) assumes a single E-index value of 3.5 and applies group-level growth effects to strongly and moderately teleconnected countries. Our approach instead uses two historical E-index calibrations and retains the continuous country-specific variation in teleconnection strength when calculating growth effects.

⁸ 2025 GDP data are unavailable for five of the 156 countries for which teleconnection strengths are available: Cuba, Eritrea, North Korea, Greenland and Syria. The latter three belong to the group of weakly exposed countries according to the thresholds used in this analysis and therefore do not enter our growth-impact calculations.

⁹ In the E-index series used by Callahan and Mankin (2023), the three highest values are recorded for the 1997/98, 1982/83 and 2015/16 El Niño events. We use the latter two as alternative calibrations. Excluding the exceptionally high 1997/98 E-index provides a more conservative upper calibration.

experience larger effects, while effects become small and statistically indistinguishable from zero at low levels of teleconnection strength. In our calculations, we therefore set effects to zero for countries below the level at which Callahan and Mankin's estimates become statistically insignificant.

Box 1: Schematic overview of the empirical approach

Callahan and Mankin (2023) framework:

El Niño intensity	×	teleconnection strength	→	estimated GDP per capita growth effect
<i>E-index</i>		<i>country-specific climatic exposure</i>		

Application to the ongoing 2026/27 event:

El Niño intensity NOAA RONI forecast 2026/27 ↓ Historical El Niño benchmarks 1982/83 and 2015/16 ↓ Alternative E-index calibrations <i>Higher/lower E-index calibration</i>	×	tele-connection strength <i>country-specific; obtained from CM (2023)</i>	→ applying CM (2023) estimates	estimated GDP per capita growth effect applied to 2025 nominal GDP ↓ Country-level and aggregate output effects
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