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Sustainability Agenda

Sustainability news and perspectives

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Summary

Sustainability moves from ambition to implementation

Across this Q3 issue, the common thread is implementation: sustainability commitments are turning into trade conditions, disclosure rules, carbon-market obligations, and investment decisions. The global coverage follows this shift from Europe's updated GSP and ESRS frameworks to Australia's next climate-reporting cohort, the EU's new ESG-rating supervision, and detailed CBAM guidance. Together, these developments make product emissions, reporting quality, and implementation capacity more important to companies and their supply chains.

Europe's July electrification plan and ETS review set out a proposed route toward more electrified demand and industrial decarbonisation; they remain proposals. Other rule changes are further along: the Commission adopted carbon-farming certification methodologies, and the UN Article 6.4 body approved a methodology for grid-connected renewable electricity. Green bonds and project announcements show capital beginning to follow infrastructure needs: IFC's consecutive dollar and euro benchmarks, TenneT's €3.5 billion European Green Bond, Google-Fortum's long-term power deal, Moeve's Onuba construction, and ExxonMobil's CCS project for Nucor. Announced capacity and expected emissions benefits in these stories are targets or design estimates, not measured results.

In Türkiye, Scope connects regulatory implementation with an expanding project pipeline. This issue covers TSRS 2 greenhouse-gas amendments, provincial climate-action planning, new sustainable-finance guides, the national ETS regulation and pilot, and Ministry of Trade guidance for exporters facing EU CBAM. It also tracks 2.4 GW of wind and solar YEKA competitions, offshore-wind tender preparation, and financing for a motorway, distributed renewables with storage, and an energy-efficient data centre. An interview with TÜRKÇİMENTO brings an industry view of emissions data, verification, CBAM, ETS readiness and investment needs.

The climate pages set these policy and financing shifts against August 2026 heat and ocean indicators, while the September UNCTAD update shows that digital-services trade is growing unevenly across economies. The issue also includes research summaries and market indicators. Across the sections, the central question is how rules, data and finance can move announced goals into measurable implementation and where outcomes are still expected rather than achieved.

sTRC News

News from the World

G7 Launches Expanded Critical Minerals Resilience and Production Alliance

At the G7 Leaders' Summit in Evian, G7 countries, supported by Australia as a partner, established a non-binding Critical Minerals Resilience and Production Alliance aimed at reducing vulnerabilities in strategically important mineral supply chains. Leaders cited high market concentration and the growing use of trade restrictions as risks to economic and energy security. Cooperation will focus on six areas: industrial production and cooperation, mobilisation of public and private capital, development of appropriate market conditions, transparency and traceability, stockpiling capacity, and recycling. The initiative consolidates and broadens existing G7 efforts around critical minerals and explicitly links mineral security to digital technologies and the energy transition.



EU Signs New 10-Year GSP Framework Linking Trade Preferences to Sustainability

The European Union signed its updated Generalised Scheme of Preferences (GSP) Regulation on 18 June, completing the legislative process for a regime that will apply from 1 January 2027 for ten years. The GSP grants reduced or zero tariffs to imports from 65 developing and least-developed countries, while strengthening links between preferential market access and compliance with international commitments on human rights, labour rights, environmental protection, climate action and good governance. The revised framework expands the international conventions relevant to GSP+ eligibility, strengthens monitoring and introduces mechanisms allowing preferences to be withdrawn in serious cases of non-compliance. The Everything But Arms arrangement for least-developed countries will continue indefinitely.



Australia's Mandatory Climate Reporting Expands to Group 2 Companies

Australia entered the second phase of its mandatory climate-related financial reporting regime, with Group 2 entities required to prepare sustainability reports for financial years beginning on or after 1 July 2026. Companies subject to the Corporations Act reporting requirements generally enter Group 2 when they meet at least two of three size tests: consolidated revenue of more than A$200 million, assets of more than A$500 million or more than 250 employees. Reports must contain climate-related financial information prepared under the Corporations Act and AASB S2 Climate-related Disclosures. The Australian Securities and Investments Commission is responsible for administering the regime, which is being phased across three company cohorts.

The expansion materially increases the population of companies subject to mandatory climate disclosure in a major commodity-exporting economy. It also raises the importance of comparable emissions, transition-risk and value-chain information for investors and international counterparties dealing with Australian businesses.



EU ESG Ratings Regulation Starts Applying Under ESMA Supervision

The EU's ESG Ratings Regulation (EU) 2024/3005 became applicable on 2 July, introducing an EU-wide supervisory framework for providers of ESG ratings. The European Securities and Markets Authority (ESMA) becomes the direct supervisor of providers offering ESG rating services in the Union, with rules intended to improve methodological transparency, governance and management of conflicts of interest. Existing non-small providers were required to notify ESMA of their intention to continue operating and subsequently seek authorisation or recognition; small providers are subject to a separate transitional route. ESMA states that the new supervisory mandate is intended to make ESG ratings more transparent and strengthen investors' ability to rely on them. ESG ratings increasingly affect capital allocation, sustainable funds, corporate financing conditions and issuer assessments. Direct EU supervision changes ESG data and ratings from a largely market-led activity into a regulated component of sustainable-finance infrastructure.



European Commission Adopts Streamlined ESRS with Major Datapoint Cuts

The European Commission adopted revised European Sustainability Reporting Standards (ESRS) designed to substantially simplify reporting under the Corporate Sustainability Reporting Directive. The revised standards reduce mandatory datapoints by more than 60% and total datapoints by more than 70%, while introducing additional flexibility and streamlined reporting processes. The Commission estimates that the revisions can lower sustainability-reporting costs by more than 30% per company. It also adopted a voluntary reporting standard for smaller companies outside the CSRD's scope. Importantly for supply chains, the package introduces a "value-chain cap", limiting the sustainability information that CSRD-covered companies may request from smaller companies to what is included in the voluntary standard. The delegated acts subsequently entered the Parliament-and-Council scrutiny phase.



IFC Raises $2bn and €1bn in Back-to-Back Green Benchmarks

The International Finance Corporation significantly expanded its green-bond funding with two major benchmark transactions on consecutive days. On 7 July, IFC priced a $2 billion five-year green bond, its first US-dollar green benchmark since 2017 and its first transaction under a newly updated Green Bond Framework. Orders reached approximately $8 billion from 120 investors. A day later, IFC issued its first-ever euro benchmark: a €1 billion seven-year green bond, which attracted a €2.7 billion orderbook from 56 investors. Proceeds under the updated framework can support climate mitigation, adaptation and resilience, biodiversity and nature, oceans and water, and circular-economy investments in developing countries.



EU Adopts CRCF Carbon-Farming Certification Methodologies

The European Commission adopted three certification methodologies for carbon farming under the Carbon Removals and Carbon Farming (CRCF) Regulation, moving the EU's voluntary carbon-removal framework toward practical implementation. The methodologies cover agriculture and agroforestry on mineral soils; rewetting and restoration of peatlands and other organic soils; and afforestation. They establish technical rules for quantifying and certifying climate benefits and are intended to provide a credible basis for result-based payments to farmers, foresters and land managers. Once the delegated regulation enters into force, certification schemes will be able to seek Commission recognition against the methodologies and the CRCF's minimum governance and certification requirements.



TenneT Germany Issues €3.5bn Landmark European Green Bond

TenneT Germany issued a €3.5 billion multi-tranche European Green Bond, which the European Investment Bank described as the largest corporate debt-market issuance to date aligned with the European Green Bond Standard Regulation. The EIB invested €74 million. Proceeds will finance investments in Germany's electricity transmission system that meet EU Taxonomy requirements, including new onshore and offshore high-voltage infrastructure, connections for North Sea offshore wind and wider integration of renewable generation into the European grid. The financing was split across four maturities, four, eight, twelve and twenty years, and demand reached approximately 6.3 times the amount offered at peak levels.



EU Proposes Major ETS Overhaul and 2040 Electrification Drive

The European Commission proposed a major post-2030 revision of the EU Emissions Trading System alongside an Electrification Action Plan. The Commission wants electricity's share of EU final energy demand to rise from about 23% to an indicative 46% by 2040, potentially reducing fossil-fuel import costs by €260 billion annually. The ETS proposal would change the cap trajectory, create a €100 billion Industrial Decarbonisation Bank, require Member States to devote 50% of national ETS revenues to decarbonising ETS sectors and integrate permanent carbon removals. It also proposes limited use of high-integrity international carbon credits, changes to free allocation and CBAM interaction, and expanded ETS treatment of aviation, maritime transport and waste incineration. These measures remain legislative proposals rather than final law.



UN Carbon Market Opens Crediting Route for Grid-Connected Renewables

The Article 6.4 Supervisory Body approved a new methodology for electricity generation from renewable sources connected to an electricity system, adding an important project category to the Paris Agreement's centralised carbon-crediting mechanism. Methodology A6.4-AMM-003 entered into validity on 30 July and will remain valid for five years. It incorporates tools covering issues such as common-practice analysis, investment analysis and emissions from electricity generation and consumption, helping determine whether projects meet the mechanism's requirements. The Supervisory Body also adopted version 3.0 of the Article 6.4 mechanism registry procedure on the same date, further developing the operational infrastructure needed to issue, hold and transfer units under the mechanism.



EU CBAM Moves Deeper into Its Definitive Phase with Detailed Operator Guidance

The European Commission published ten new guidance documents for non-EU operators implementing the Carbon Border Adjustment Mechanism during its definitive phase. Four horizontal guides cover core CBAM concepts, implementation, embedded-emissions calculations and the free-allocation adjustment, while six sector guides address cement, hydrogen, fertilisers, iron and steel, aluminium and electricity. The Commission also corrected certain official default emission values during late July and August. Separately, the Q2 2026 CBAM certificate reference price was set at €75.28 per tonne of CO_2, reflecting EU ETS auction prices. Importers must submit their first annual CBAM declaration, covering 2026 imports, and surrender the corresponding certificates by 30 September 2027.

For exporters into the EU, CBAM is moving from a reporting exercise to a real carbon-cost mechanism. Product-level emissions measurement, verified installation data and carbon prices paid in the country of origin increasingly affect the landed cost and competitiveness of carbon-intensive goods.

California Opens First SB 253 Corporate Emissions Reporting Cycle

The California Air Resources Board released guidance and a voluntary intake platform for the first reporting cycle under Senate Bill 253, California's Corporate Climate Data Accountability Act. SB 253 covers US-based companies doing business in California with annual revenues exceeding $1 billion and requires annual reporting of corporate greenhouse-gas emissions. First-year 2026 reporting focuses on Scope 1 and Scope 2 emissions, while Scope 3 reporting is scheduled to begin in subsequent years from 2027. CARB established 10 August 2026 as the first-year SB 253 reporting deadline for Scope 1 and Scope 2 emissions. CARB also made a reporting template available for voluntary use during the 2026 reporting cycle. CARB noted that the initial regulation establishing that deadline was still subject to approval by California's Office of Administrative Law.



UK Finalises Core CBAM Emissions and Verification Rules Ahead of 2027 Launch

The UK government advanced the final implementation architecture for its Carbon Border Adjustment Mechanism, laying the 2026 Emissions and Verification Regulations and updating HMRC's policy documentation. The UK CBAM takes effect on 1 January 2027 and will apply to specified imports from the aluminium, cement, fertiliser, hydrogen and iron and steel sectors. Businesses importing £50,000 or more of covered goods over the relevant threshold period can become liable to register. The tax rate will be linked to UK domestic carbon pricing, including the UK ETS and the effect of free allowances, while relief mechanisms recognise qualifying carbon prices already paid overseas. The September regulations provide further rules for calculating, monitoring and verifying embodied emissions. The UK will join the EU in applying a carbon-border price to imported industrial goods. Exporters selling into both markets will increasingly need jurisdiction-specific embedded-emissions data, verification processes and evidence of domestic carbon costs to manage potential liabilities.



Google and Fortum Pair a 22-Year Nuclear PPA with €13bn Finnish Expansion

Google and Fortum announced a strategic energy partnership centred on a 22-year power purchase agreement supporting the lifetime extension and power uprate of Finland's Loviisa nuclear plant. Google will contract up to 50% of the plant's generating capacity, providing Fortum with long-term revenue certainty for investments required to operate through 2050. At the same time, Google announced €13 billion of Finnish infrastructure, energy and partnership investment for 2027-2028. Its broader electricity package includes additional onshore-wind PPAs that bring Google's contracted new Finnish wind capacity to 629 MW and a planned 94 MW battery system. The companies will also explore new nuclear, renewables, flexibility and energy-management solutions.



Commission Sends EU-India FTA to Council with Sustainability Commitments

The European Commission submitted proposals to the Council for the signature and conclusion of the EU-India Free Trade Agreement, moving the deal from concluded negotiations toward formal ratification. Bilateral goods trade was €120 billion in 2024, and overall liberalisation under the agreement would cover 96.6% of tariff lines/value coverage for India and 99.3% for the EU under the Commission's calculation. The agreement contains a dedicated Trade and Sustainable Development chapter covering climate and environmental protection, labour rights and implementation of multilateral environmental agreements including the Paris Agreement. It also includes cooperation on renewable energy, maritime emissions, circular economy and natural resources, as well as an annex addressing carbon border adjustment measures. The FTA is not yet in force.



Google and Terradot Sign Megaton-Scale Brazil Methane and Carbon-Removal Deal

Google announced a partnership with Terradot for a rice-growing project in southern Brazil that Reuters described as its largest carbon-removal deal to date. The project combines alternate wetting and drying, which reduces methane emissions from flooded rice paddies, with enhanced rock weathering, where crushed rock is applied to farmland to remove atmospheric CO_2. The agreement covers two distinct outcomes: 1 million metric tonnes of methane-abatement credits by 2030 and 1 million tonnes of carbon-removal credits by 2040. The planned deployment spans more than 200,000 hectares in Rio Grande do Sul and was described by Reuters as the largest enhanced-rock-weathering project announced to date.



ExxonMobil Starts CCS Operations for Nucor's Louisiana Steel Facility

ExxonMobil began carbon capture and storage operations serving Nucor's direct-reduced-iron facility in Convent, Louisiana. The project is designed to capture, transport and permanently store up to 800,000 metric tonnes of CO_2 annually and is ExxonMobil's third active commercial CCS operation for a third-party customer. This links CCS directly to lower-carbon steel production. ExxonMobil's wider Gulf Coast storage network is also expanding: the Rose carbon storage site in Jefferson County, Texas, has approval for three Class VI injection wells capable of storing up to 5 million metric tonnes of CO_2 per year for 13 years.



Moeve Starts Construction of €1bn Onuba Green Hydrogen Project

Moeve started construction of the first phase of its Andalusian Green Hydrogen Valley in Huelva, Spain, moving one of Europe's largest renewable-hydrogen investments from planning and final investment decision into physical construction. The Onuba phase will initially install 300 MW of electrolysis capacity, with an option to add another 105 MW. Total joint investment exceeds €1 billion and includes associated infrastructure and a dedicated self-consumption photovoltaic plant. The project is expected to produce around 45,000 tonnes of renewable hydrogen annually and reduce emissions by approximately 250,000 tonnes of CO_2 per year. Moeve holds a 51% stake, alongside partners including Hy24, COFIDES, Enagás Renovable and Alter Enersun.



Services Are Reshaping Global Trade, but Least Developed Countries Lag in Digital Exports

In September 2026, UN Trade and Development (UNCTAD) published its Global Trade Update, highlighting the growing role of services in global production, exports and economic transformation. In 2022, services accounted for 71 per cent of global intermediate inputs, while digitally deliverable services represent 56 per cent of global services exports. However, the report emphasizes a widening gap between developed and least developed countries, driven by differences in digital infrastructure, connectivity, payment systems, skills and regulatory capacity. It also warns that the rapid expansion of artificial intelligence could deepen existing inequalities in digital trade. UNCTAD therefore calls for better trade data, stronger digital infrastructure and skills, and more inclusive international cooperation to ensure that developing economies can benefit from the continuing servicification of global trade.

1. **Services accounted for 71 per cent of global intermediate inputs in 2022, while their share of global exports increased from 23 per cent in 2015 to 27 per cent in 2025.**
2. **Global services exports grew by about 6.7 per cent annually over the past decade, outpacing goods exports and recording an 8.3 per cent increase in 2025.**
3. **Digitally deliverable services expanded even faster, growing by an average of 7.1 per cent per year and now accounting for 56 per cent of global services exports.**
4. **Least developed countries have benefited far less from this expansion, with their share of global services exports falling to just 0.6 per cent in 2025.**
5. **Digitally deliverable services represent around 61 per cent of services exports in developed economies, compared with only 16 per cent in least developed countries.**
6. **Services embodied in industrial goods exports account for 33 per cent of intermediate inputs in developed economies, compared with 27 per cent in developing economies and 13 per cent in LDCs.**
7. **Limited digital infrastructure, costly cross-border payments, skills gaps and fragmented regulatory frameworks continue to restrict developing countries' participation in digital services trade.**
8. **Mobile money use in sub-Saharan Africa increased from around 27 per cent of adults in 2021 to about 40 per cent in 2024, showing progress in digital financial inclusion.**
9. **Artificial intelligence could widen existing trade gaps, as AI preparedness remains substantially higher in developed economies and fewer than one-third of developing countries have adopted national AI strategies.**
10. **Of the 487 preferential trade agreements signed between 2000 and 2025, 55 per cent include e-commerce or digital trade provisions, highlighting the rapid shift of digital trade rulemaking toward regional and bilateral agreements.**





Interview

Exclusive interviews directly on sustainability efforts

In an interview conducted by research assistants Ezgi Eylem Erdoğan and Arda Akgül, Canan Derinöz Gencel discussed the green transformation of the Turkish cement sector. Her remarks highlighted emissions data reliability, adaptation challenges regarding CBAM and the national ETS, investment and infrastructure needs for CCUS and clean technologies, and the growing presence of women in heavy industry. ■

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TÜRKÇİMENTO page

1) Creating sound datasets for corporate sustainability disclosures can be quite complex, particularly when tracking Scope 1, Scope 2 and Scope 3 emissions under standards such as TSRS and GRI. What are the main challenges facing the Turkish cement sector in terms of data transparency? How do you assess the reliability of the current metrics presented to investors?

We closely follow the reports of our sector. Frankly, I feel quite confident about the reliability of the data. This is because our sector's data, particularly Scope 1 greenhouse gas emissions, are subject to continuous monitoring, reporting and verification systems. These reports are therefore prepared regularly and submitted to the Ministry. Before submission, they are also approved by verifiers. As a result, the reports contain data that have been approved and verified.

*Turkish Cement Manufacturers' Association

Scope 2 emissions are energy-related emissions. The relevant coefficients are published by the Ministry of Energy. Energy consumption figures are also based on invoiced records. Therefore, I consider the data in both of these areas to be highly reliable.

Our Scope 3 emissions are also relatively low in our sector. **The sector also has a strong command of the logistics side.** For this reason, I believe we are in a very reliable position in terms of the data presented in sector reports.



2) With today's decarbonisation pressures and the integration of new technologies such as artificial intelligence and automation into energy management, are we witnessing a fundamental restructuring of cement production?



There has not been such a fundamental or large-scale restructuring. Particularly in our country, this has been a gradual process. Environmental limit values in Türkiye have been revised within the framework of alignment with the EU acquis. They have been updated over the past 20-25 years, and each new piece of legislation has brought another step of improvement. At the same time, older technologies have also been phased out.

For example, wet kilns were used in the past; their energy consumption was very high and their efficiency was lower. Today, there is not a single wet kiln left in Türkiye; they have all been replaced by new and modern kilns. The limit values for dust emissions have also been aligned with European Union regulations for a very long time. Dust treatment equipment was replaced in order to comply with these limits. On the carbon side, we are already subject to international regulations.

Therefore, in the sector we represent, there has not been a situation where "a revolution happened, everything suddenly changed and everything was rebuilt from scratch." The state where our sector is today is the result of a gradual improvement process extending over 20-30 years.

3) How effectively can the Turkish cement sector utilize industrial and household waste as alternative fuels or raw materials? What are the legislative or infrastructure bottlenecks preventing us from reaching European averages? Is TÜRKÇİMENTO conducting any work in this area?

The circular economy has particular importance for our sector. Cement kilns can use by-products or waste from other industries either as an energy source or as an alternative raw material. For example, waste containing calcium or magnesium, such as marble fragments or lime waste, can be used as alternative raw materials. Waste containing energy can be used as fuel.

These last figures are due to be released soon: In 2025, our sector used 2.3 million tonnes of waste in production by making use of its energy content. This corresponds to a 14% substitution rate in terms of thermal; in other words, 14% of the sector's thermal energy demand is met by waste-derived alternative fuels.

There is also approximately 7.7 million tonnes of alternative raw material use. This corresponds to around 6% of the total. These materials may include by-products from other industries, such as slag from the iron and steel sector, ashes or other forms of waste. The basic condition is that the waste must contain materials that are also present in the raw materials used for cement production, and it must be non-hazardous. The circular economy therefore has particular importance for our sector and also makes a useful contribution to the country’s waste management.

That said, our figures are still considerably below those of the European Union. In Europe, alternative fuel use can reach levels of around 50%. In Türkiye, however, the system for converting waste into fuel is not sufficiently developed. Abroad, there are facilities that collect this waste, process it and place it on the market as fuel. We do not have a sufficient number of such facilities.

Another issue concerns the import of alternative fuels and raw materials. In Europe, these materials can be traded between countries. In Türkiye, however, there are restrictions on their import. Without imports, the sector has to rely on whatever resources are available domestically. As a result, we have difficulty increasing this rate; this is one of the bottlenecks we face.

Individual factories implement their own practices. At TÜRKÇİMENTO, we explain the importance of this issue both to public authorities and on other platforms. We are also making efforts to enable imports, presenting our technical explanations and justifications to the relevant authorities. **We are doing everything we can to achieve a positive outcome.**

4) How do you assess the current position of women professionals, particularly those shaping climate and sustainability strategies, in a heavy industry such as cement, which has traditionally been male-dominated?

When we look at our sustainability reports, we see that female employment is increasing. We also see an increase in the number of women in management positions. In this respect, we observe that our sector is making efforts particularly to increase female employment in white-collar positions. I have personally witnessed this issue being discussed and encouraged.

Of course, this is a demanding field of work. It requires fieldwork, which sometimes involves physically demanding tasks, and may require working under difficult conditions until late hours. However, when more suitable working conditions are created, we definitely see an increase in the number of women employees.

The number of women managers is also increasing considerably. In fact, we can say that the number of women is increasing more rapidly in management positions. We have women CTOs, general managers, plant managers, supervisors and senior executives in our sector.

5) The transition to clean energy in cement production requires significant capital expenditure. How can the sector access sustainable finance for these green investments?

Financing is very important because these investments require very substantial financial expenditure. However, there is also an ecosystem that needs to be considered. This ecosystem needs to be established before sustainable finance can be effectively used.

For example, suppose we secure financing and provide substantial funding to a facility. We make an investment in carbon capture. Then, the questions appear: What are we going to do with the carbon we capture, where will that carbon be used? A facility must also be established to process the captured carbon, or, if we are going to store it, as Türkiye does not have many storage sites, carbon dioxide is to be transported elsewhere; **we also need the infrastructure to transport it.**

We also need to focus specifically on hydrogen as a fuel. Suppose we make a major investment in a kiln capable of using hydrogen. Where that hydrogen will come from and how it will reach the facility safely should be answered. Safe infrastructure must be established and the necessary pipeline systems must be in place. In other words, this is an ecosystem. Once all of these elements are established, financing is of course extremely important. We are talking about very large amounts. In Europe, projects under Horizon can reach 300-400 million EUR, incorporating grants as well as co-financing.

Therefore, simply saying that financing has been secured is not enough. The infrastructure that allows the facility to make effective use of that financing must also be in place. The entire process needs to be considered as a whole process.

6) How do you assess the Turkish cement sector's process of adapting to the Carbon Border Adjustment Mechanism (CBAM) and the emerging national Emissions Trading System (ETS) while maintaining its competitiveness?

Our sector has been preparing for this process for a long time. Our Emissions Trading System Regulation was also published quite recently. However, there are still some points that remain unclear. It will begin with a pilot phase, and this will be a learning-by-doing process.

CBAM has also entered into force. On the Emissions Trading System side, the conditions will become clearer over time. This will be a learning-by-doing process for all of us. We will learn how to manage the process together with the sector. Facilities will also assess where they can make reductions and where they can achieve savings. Not all of our members may be at the same level. Some are more prepared, some are at an intermediate level, and others are less prepared. Ultimately, each facility needs to be assessed individually.

However, I can say that the Turkish cement sector has a very strong infrastructure, institutional capacity, and a base of expertise. I, therefore, believe its capacity to adapt will also be strong.

On the CBAM side, meanwhile, there are still issues that have not been fully completed by the European Union. For example, the reporting template, verifiers, and details relating to offsetting need to be clarified in a timely manner. It is not easy to expect every country outside Europe to adapt within a few months to conditions that require reporting in the way Europe demands and verification in the form required by the verifiers.



The regulations are highly comprehensive and written in formal language. Reading and understanding them, putting them into practice, implementing them and having them verified all require time. At the very least, if a template had been defined earlier and the verifiers had already been announced, preliminary verification might have been possible. This is a difficult process, and it applies not only to Türkiye but to all countries outside the European Union.

7) How can the cost and competitiveness gap between countries with different levels of environmental regulation be reduced? Are mechanisms such as CBAM sufficient on their own to ensure fair international trade?

In my view, one of the unfair aspects here is the way CBAM has been implemented. The rules were suddenly presented to countries in a very comprehensive form, but the tools that would facilitate their implementation were not established to the same extent. If you expect compliance with the rules, you also need to provide the tools and mechanisms that make compliance easier.



At the same time, the European Union applies many environmental requirements internally and expects other countries to comply with similar standards. Türkiye's Emissions Trading System, meanwhile, is only now being introduced and will begin with a pilot phase.

However, environmental performance should not be considered solely in terms of greenhouse gas emissions. It is a whole, involving many different environmental issues. As I mentioned earlier, Türkiye has been working on alignment with the EU acquis for at least 20-25 years.

CBAM alone is not sufficient either. There are other factors to consider. In addition to carbon, quality is also very important; product quality must be taken into account. A product may be purchased more cheaply from another country and may even have a lower carbon footprint, but it may not provide the same quality or may create problems in terms of security of supply.

For example, the quality of Turkish cement is certified; there are standards and certification bodies. The factories operating here are well-established businesses. They can enter into contracts one, two or even three years in advance.
Therefore, carbon is not the only parameter. Environmental performance needs to be considered as a whole. But the environment is not the only parameter either; quality also matters. Quality standards must also be taken into consideration.

8) How do you assess the adoption of next-generation technologies such as green hydrogen and carbon capture, utilisation and storage in the Turkish cement sector, as well as the investment required?

When we talk about clean energy, one of the important issues that comes to mind is the use of hydrogen in industry. Carbon capture and storage is also an important area when we talk about advanced green investments.

However, these are long-term investments; they are not short- or medium-term investments. There is a Low-Carbon Roadmap prepared by the Ministry of Industry, and we have also been involved in that work.

Türkiye does not yet have pilot facilities for these technologies. **Once the technologies become more commercially viable, replicable and scalable in the places where they are applied, they will either come to Türkiye or we will develop them ourselves as a country.** Over time, they will become more widespread, be implemented and enter into operation. Their costs are currently very high. We are therefore talking about a long-term process. I believe that net-zero targets can only be achieved through such long-term investments.

9) To what extent does the cement sector's low-carbon roadmap align with Türkiye's 2053 Net Zero target? What level of investment and cooperation will be required to achieve this transition?

This roadmap is already a roadmap prepared by the Ministry of Industry. Türkiye also has an officially announced 2053 net-zero target. Under the net-zero scenario in the report, an emissions reduction of approximately 93-96% is mentioned. However, there are important conditions attached to achieving this. These reductions can be achieved if carbon capture, storage and hydrogen investments are made in the long term.

According to the figure I took from the report before the meeting, the scenario refers to an investment of USD 30.7 billion over 30 years. USD 30.7 billion is genuinely a very large amount.
As I mentioned earlier, suppose you find this money and resolve the technical side of the issue. The financing still needs to be provided. **Therefore, regulatory arrangements are needed, the ecosystem needs to be established, and financing is required.** Even compared with sector revenues, these are very substantial figures. It needs to be understood that this will not be an easy process and that the required level of investment is very high.



These calculations were made using the current costs of these technologies over the past few years. In the future, if these technologies become more accessible, more replicable and applicable in different locations, the costs may fall. However, we cannot see or know that today.

I wish we could develop these technologies within our own country. If TÜBİTAK, universities and our sector can work together to develop clean technologies, we could manage this process more easily. That is certainly what we hope for.

I always give the same example: 30 years ago, mobile phones were very large and extremely expensive. Back then, they represented the only and most advanced technology available. **Today, we can access far more advanced technologies much more easily.** Perhaps these technologies will reach a similar point over the next 20–30 years.

We are moving very rapidly into the space age, with the speed of artificial intelligence. Yet, I would leave the discussion of how safe or beneficial these developments are to the relevant experts.



10) How has your career journey in environmental and climate strategies within heavy industry developed? What advice would you give to young researchers, economics students and engineering students who wish to specialise in environmental economics, climate policy and sustainability?

First of all, thank you very much for those kind words. I am genuinely very pleased. It has been a long career; it has been 30 years since I graduated from the Department of Environmental Engineering at Middle East Technical University.

We were among the earlier generations of environmental engineers. We were not the very first, but when we entered the labour market, there were not many environmental engineers. At the time, many engineers have switched to the banking sector; over time, the number of people working in our field increased.

However, you do not have to be an environmental engineer to work in this field. As we can see, we are all working on similar issues together. This is a whole, and everyone contributes to one part of it. As engineers, we learned about economics. Economists learned about climate, and also some of the science behind it, the reasons and mechanisms involved. We all work together on the same platforms.

Careers are shaped partly by time and partly by circumstances. Thirty years ago, we could not have predicted that carbon dioxide and greenhouse gases would become such a major part of our agenda today. The subject developed over time and has now become extremely important.

I believe that people starting in this field today should also go beyond their own areas of expertise. Engineers should develop themselves in the area of finance as well. Today, there are many opportunities available, including online courses, different educational programmes and postgraduate study.

Those working in economics should also spend some time thinking about the scientific side of the issue, looking at the equations and understanding the physical processes involved. They should try to understand the issue not only from the financial side but also from the scientific perspective. Someone who understands economics and mathematics can also understand the other side.

I believe that when this happens, people working in different disciplines can understand each other more easily. I hope that in the future we will meet again on different platforms, projects and in professional work.



We would like to thank TÜRKÇİMENTO and Ms. Derinöz Gencel for her time and contribution.

Scope

Sustainability landscape of Türkiye

Limak Motorway Secures EUR 400m Sustainability-Linked Financing

Garanti BBVA acted as Sustainability Coordinator for a EUR 400 million sustainability-linked loan arranged for Limak's Kınalı-Malkara Motorway Project, alongside a EUR 575 million sustainability-linked interest-rate swap. The bank developed the sustainability framework underpinning both transactions, including performance indicators and coordination of the independent Second Party Opinion. Domestic and international financial institutions participated in the financing. The structure is notable because it embeds sustainability-linked terms not only in project borrowing but also in interest-rate risk management. Garanti BBVA described the hedge as the largest sustainability-linked interest-rate swap executed in Türkiye to date, bringing measurable environmental and social performance criteria into a major transport-infrastructure financing package.

Türkiye Opens Draft Framework for Its Offshore Wind YEKA Tender

Türkiye's Ministry of Energy and Natural Resources published the draft specification for the YEKA DURES-2026 offshore wind competition and invited stakeholders to submit comments by 17 August 2026. The notice is a concrete market-design step for the country's planned offshore wind tender, moving the process from general policy ambition toward tender documentation that investors, developers and supply-chain participants can assess. By circulating the draft before the final competition, the Ministry created a formal consultation window on the commercial and technical rules that will shape project bankability. Offshore wind requires substantially different permitting, grid, marine infrastructure and financing arrangements from onshore renewables, so publication of the tender draft is itself an important milestone for Türkiye's next phase of renewable-energy development.

Türkiye Launches 2.4 GW of New Wind and Solar YEKA Capacity

Türkiye launched the YEKA RES-2026 and YEKA GES-2026 competition processes, creating a combined 2,400 MW pipeline of new renewable-electricity capacity. The programme consists of seven wind competitions totalling 1,500 MW and fourteen solar competitions totalling 900 MW, with applications scheduled for 13 October 2026. The Ministry presented the round as part of a continuing policy of regular renewable-capacity auctions, while also highlighting the country's expanding installed renewable base. The scale and frequency of YEKA tenders are important because they provide a more predictable investment pipeline for developers, lenders, equipment suppliers and industrial electricity users. The 2026 round therefore represents a significant market signal rather than a single project announcement.



New Regulation Streamlines Planning and Licensing for Wind and Solar Projects

Türkiye published a new regulation governing zoning-plan and licensing procedures for wind and solar electricity-generation facilities. The Ministry stated that the regulation was prepared within the framework of amendments introduced through Law No. 7554 to the Renewable Energy Law No. 5346. The measure provides a dedicated administrative basis for project-development processes that sit between energy licensing, spatial planning, construction and operation. For renewable developers, these procedures can materially affect project timelines, financing costs and the point at which construction risk becomes manageable. Establishing a more standardised regulatory route is therefore significant even without a new capacity target: it addresses the permitting and administrative layer that determines how quickly announced renewable projects can become operating assets.



KGK Incorporates ISSB Greenhouse Gas Amendments into TSRS 2

KGK incorporated the ISSB's targeted amendments on greenhouse-gas disclosures into TSRS 2 Climate-related Disclosures, preserving close alignment between Türkiye's sustainability-reporting framework and the IFRS Sustainability Disclosure Standards. The amendments address implementation questions around greenhouse-gas measurement, circumstances in which a jurisdiction or exchange requires a particular measurement method, Scope 3 Category 15 disclosures and financed-emissions information for financial institutions. They also introduce related transition provisions. The amendments were adopted by KGK's Board on 22 July and published in the Official Gazette on 28 July. They apply to annual reporting periods beginning on or after 1 January 2027, with early application permitted when disclosed by the reporting entity.



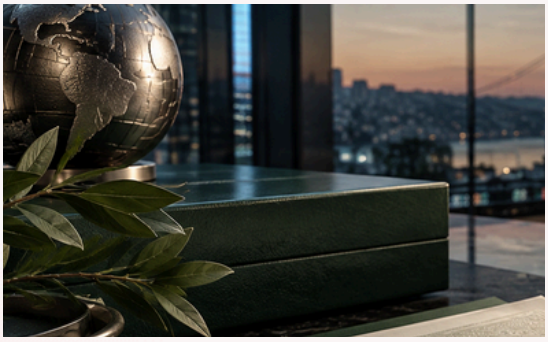
Türkiye Requires Provincial Climate Action Planning under the Climate Law

Türkiye issued the Regulation on Local Climate Change Action Plans and Provincial Climate Change Coordination Boards, creating a formal subnational implementation layer for the Climate Law. The regulation establishes procedures for preparing, approving, implementing, monitoring and evaluating local climate action plans and defines the role of provincial coordination boards. The plans are intended to address both greenhouse-gas mitigation and climate adaptation while remaining consistent with national climate-policy objectives. This matters because many of the investments required for decarbonisation and resilience - including urban transport, buildings, waste, water, local energy systems and disaster preparedness - depend on provincial and municipal implementation. The regulation therefore moves climate governance from national targets toward place-based planning and accountability.



Capital Markets Board Expands Türkiye's Sustainable-Finance Rulebook

The Capital Markets Board adopted two major sustainable-finance guides: the Green, Sustainable and Social Capital Market Instruments Guide and the Sustainability-Linked Capital Market Instruments Guide. The first expands the existing labelled-debt framework to include social projects, while the second creates a formal domestic framework for sustainability-linked instruments. The guides draw on widely used ICMA principles and set expectations for framework documents, eligible projects, reporting, external review, key performance indicators and sustainability performance targets. Sustainability-linked instruments may include changes to coupon payments or other financial or structural characteristics depending on whether predefined targets are achieved. The Board also decided on a 50% reduction in regulatory fees for qualifying issuances under the guides.



Garanti BBVA Completes USD 125m Green/Sustainable Tier-2 Eurobond

Garanti BBVA completed a USD 125 million green/sustainable Tier-2 Eurobond issuance in international markets. According to the bank's investor-relations disclosure, the subordinated transaction was divided between a USD 75 million issuance in the United States and a USD 50 million issuance in Germany. The deal combines regulatory capital funding with a sustainability-labelled structure, illustrating how sustainable finance in Türkiye is extending beyond senior green bonds and conventional project loans. For banks, Tier-2 instruments strengthen capital while supporting funding diversification, and attaching a green or sustainable label can connect that capital-raising activity with the institution's sustainable-finance framework. The cross-border placement also demonstrates continued investor demand for sustainability-labelled exposure to Turkish financial institutions.



Ministry of Trade Issues New CBAM Guidance for Turkish Exporters

Türkiye's Ministry of Trade highlighted ten new European Commission guidance documents for the definitive phase of the EU Carbon Border Adjustment Mechanism, which started on 1 January 2026. Four horizontal guides cover core CBAM concepts, implementation for non-EU operators, embedded-emissions calculations and the adjustment for EU ETS free allocation. Six sector-specific guides address cement, hydrogen, fertilisers, iron and steel, aluminium and electricity. The Ministry stressed practical changes from the transitional period, including the use of actual emissions data, monitoring plans and sector-specific calculation approaches. The publication is especially relevant for Turkish exporters because CBAM has moved from a reporting-only transition toward a compliance regime in which emissions data quality increasingly affects commercial exposure.



KGK Advances Türkiye's Sustainability Assurance Architecture

KGK opened its draft Framework for Assurance Engagements to public consultation, adding an important conceptual layer to Türkiye's developing assurance infrastructure. The draft is based on the framework issued by the International Auditing and Assurance Standards Board and explains the elements and objectives of assurance engagements across independent audit, limited assurance, sustainability assurance and other assurance standards. KGK explicitly stated that the framework is not itself an assurance standard and does not create additional engagement obligations; instead, it is intended as a common reference for auditors, report users, contracting parties and standard setters. The consultation was opened on 26 August, with comments requested by 21 September 2026 and effectiveness planned upon publication.



Türkiye's National Emissions Trading System Regulation Enters into Force

Türkiye published the Türkiye Emissions Trading System Regulation, establishing the main operational legal framework for the national carbon market envisaged under the Climate Law. The regulation connects greenhouse-gas monitoring, reporting and verification with emissions permits, allowance allocation, surrender obligations and market procedures. It classifies installations by annual verified emissions: Category A covers installations at or below 50,000 tCO2e, Category B covers those above 50,000 and up to 500,000 tCO2e, and Category C covers those above 500,000 tCO2e. Categories B and C form the core population relevant to the ETS pilot architecture. The regulation provides the compliance backbone needed for Türkiye to move from emissions measurement toward an explicit domestic carbon-pricing system.



Carbon Market Board Defines the 2026-2027 TR ETS Pilot

Türkiye's Carbon Market Board defined the structure of the 2026-2027 pilot period for the national emissions trading system shortly after the ETS Regulation entered into force. The pilot covers Category B and C installations in five sectors: electricity generation, cement, iron and steel, aluminium and fertilisers. For the 2026 system year, covered installations are subject to reporting obligations, while the pricing mechanism is scheduled to begin in 2027. The decision also establishes a benchmark-based approach to free allocation during the pilot, with the allocation rate set at 100% of the relevant benchmark. Electricity uses plant-specific historical emissions-intensity benchmarks, while other covered sectors use benchmark approaches based on sectoral performance data.



TSKB Secures EUR 200m World Bank Financing for Distributed Renewables and Storage

Türkiye Sınai Kalkınma Bankası (TSKB) signed a EUR 200 million financing agreement with the International Bank for Reconstruction and Development under the Accelerating the Market Transition for Distributed Energy Program Additional Financing. The facility is provided within a Program-for-Results structure and carries a guarantee from Türkiye's Ministry of Treasury and Finance. According to TSKB's KAP disclosure, the financing will support distributed wind and solar investments together with battery energy-storage systems across Türkiye. The transaction channels long-term multilateral finance through a domestic development bank toward decentralised clean-energy assets, complementing utility-scale renewable auctions. Inclusion of battery storage is particularly important as growing wind and solar penetration increases the value of flexibility and grid-balancing capacity.



Garanti BBVA Structures USD 40m Green Loan for Energy-Efficient Data Centre

Garanti BBVA arranged a USD 40 million project-finance package for a data-centre investment by NGN and Star of Bosphorus, acting as Lead Arranger and Facility Agent. The financing was structured as a Green Loan because of the project's energy-efficiency and sustainable-operation objectives, with the bank highlighting performance indicators including power usage effectiveness in line with international standards. The transaction is notable because data centres are becoming a rapidly growing source of electricity demand as cloud computing and artificial intelligence expand. Applying green-finance criteria to Turkish digital infrastructure therefore extends sustainable-finance practice beyond traditional renewable-energy projects and places greater emphasis on the operational efficiency of an energy-intensive sector with a growing future power-demand footprint.



The World We Live In



What is going on in the world we live in?

The efforts put in, and attentions paid are what matter in this case. Sustainability and the data blend here to show a worse picture of our world.

August 2026 brings several Earth-system signals together in one current data package: record global surface temperature, record extra-polar ocean warmth, a record western European summer, widespread drought and exceptionally low river flows, and persistently low Antarctic sea ice. The result is a visually coherent narrative in which atmospheric heat, ocean heat and hydrological stress reinforce the same message: the latest climate extremes are occurring against an already elevated global baseline.

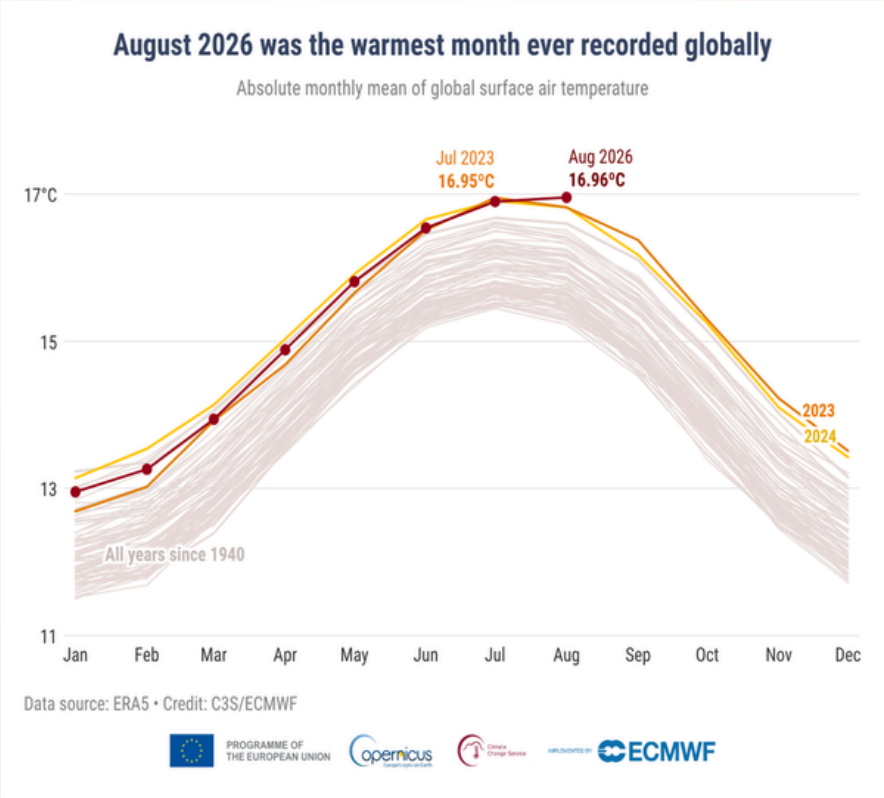
Photo Credit: Vecteezy.com

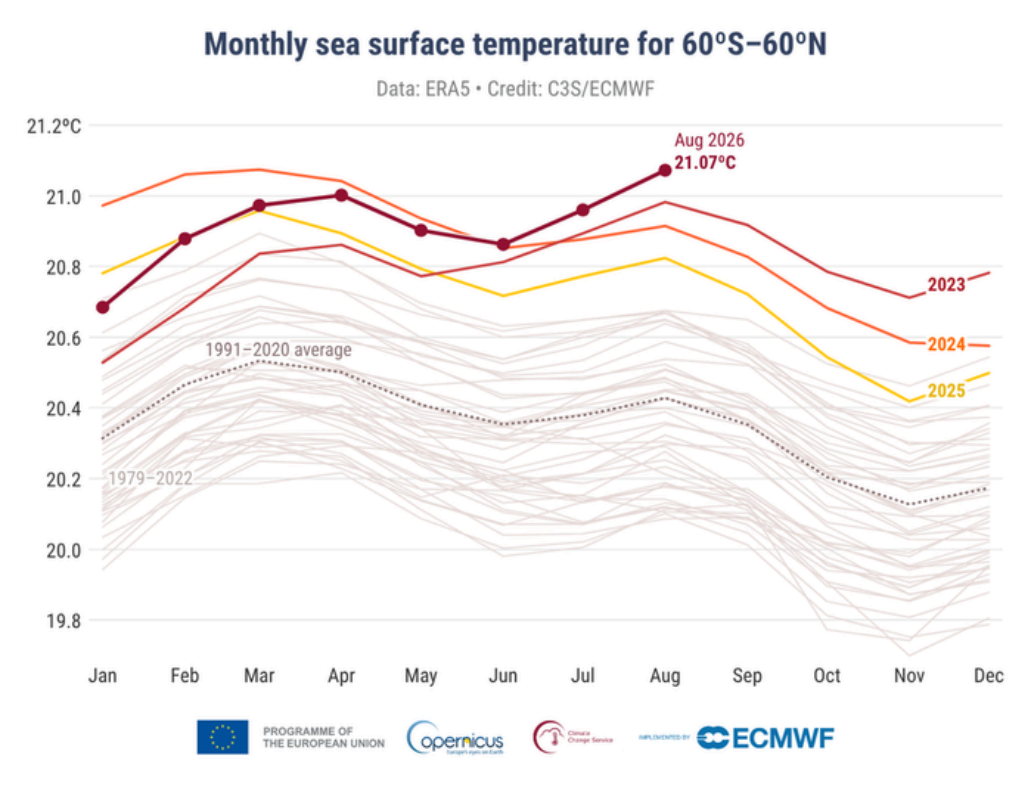
Why this is the strongest current-climate story

- 16.96°C - global mean surface air temperature in August 2026, the warmest August in ERA5 and effectively tied with July 2023 as the warmest calendar month in the record.
- +0.85°C - August 2026 anomaly relative to the 1991-2020 monthly average.
- +1.65°C - August 2026 relative to the estimated 1850-1900 pre-industrial level; the first month above +1.5°C since November 2025.
- +1.48°C - average global temperature for September 2025-August 2026 relative to 1850-1900.
- 21.07°C - August mean sea-surface temperature across 60°S-60°N, a record for August and joint-highest monthly value across all calendar months.
- 21.11°C - daily extra-polar SST on 24-25 August, above the previous 21.09°C record from March 2024.
- 21.69°C - western Europe's summer 2026 mean temperature, 2.54°C above 1991-2020 and the highest seasonal value in the ERA5 record.
- 17.0 million km^2 - Antarctic sea-ice extent in August, 1.2 million km^2 (6.5%) below average and the fourth-lowest August in the 48-year satellite record.

A single month at +1.65°C does not mean the Paris Agreement's 1.5°C long-term warming threshold has been permanently crossed. Copernicus reports the 12-month value separately at +1.48°C above 1850-1900.

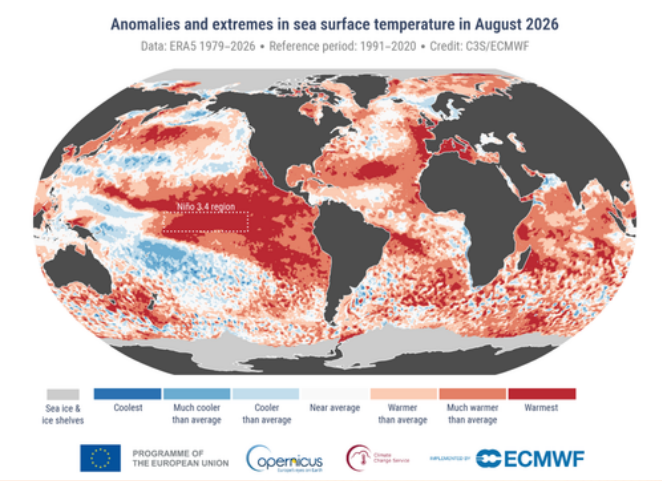
Absolute monthly mean of global surface air temperature. Data source: ERA5. Credit: C3S/ECMWF. Why it works: the chart makes the headline immediately legible. August 2026 reached 16.96°C, marginally above July 2023 (16.95°C), while the historical monthly curves sit visibly below the recent record years.





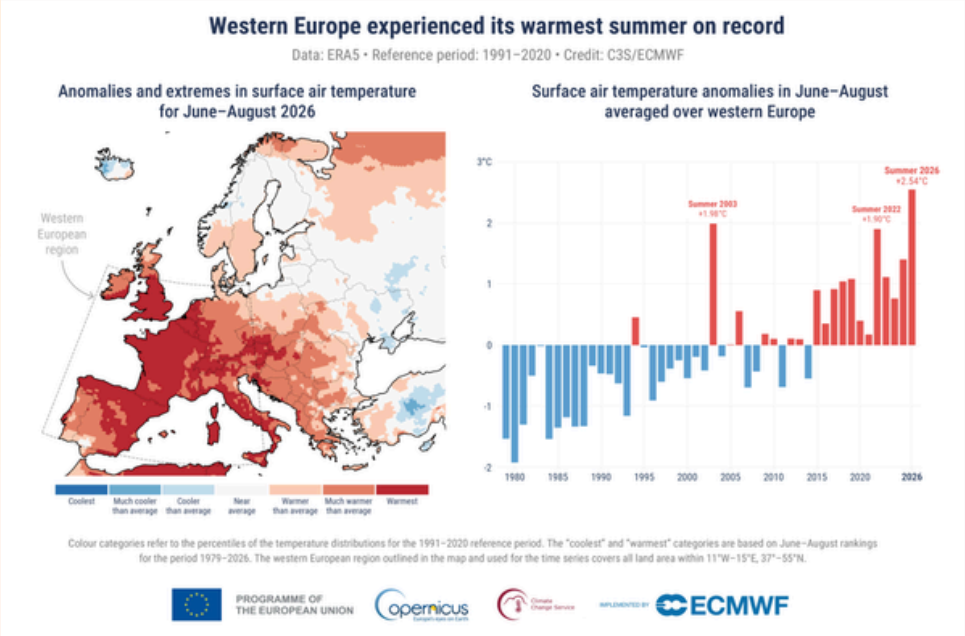
August 2026 averaged 21.07°C across the extra-polar ocean, the highest August value in the record and joint-highest monthly value across all calendar months. Since 19 June, daily SST was the highest recorded for each corresponding calendar day; 24-25 August reached 21.11°C.

Ocean heat was geographically widespread



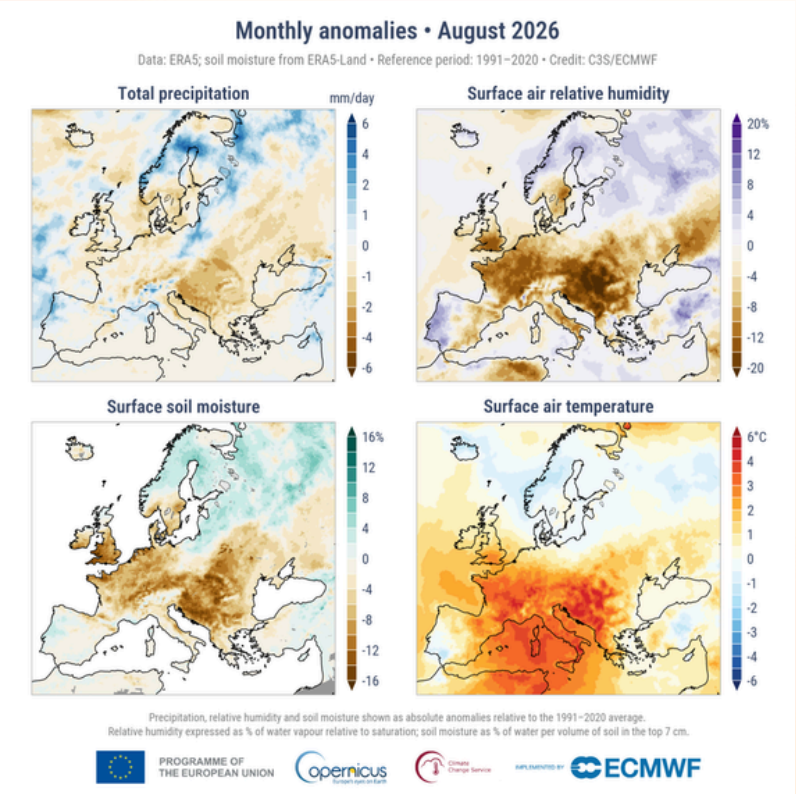
The record warmth was not confined to one ocean basin. Large areas of the central and eastern tropical Pacific reached record August temperatures, while much-warmer-than-average or record conditions also appeared across the North Pacific, subtropical North Atlantic, Southern Hemisphere oceans and European seas. Copernicus links many of these areas to strong-to-severe marine heatwaves.

Western Europe's old heat benchmark was overtaken



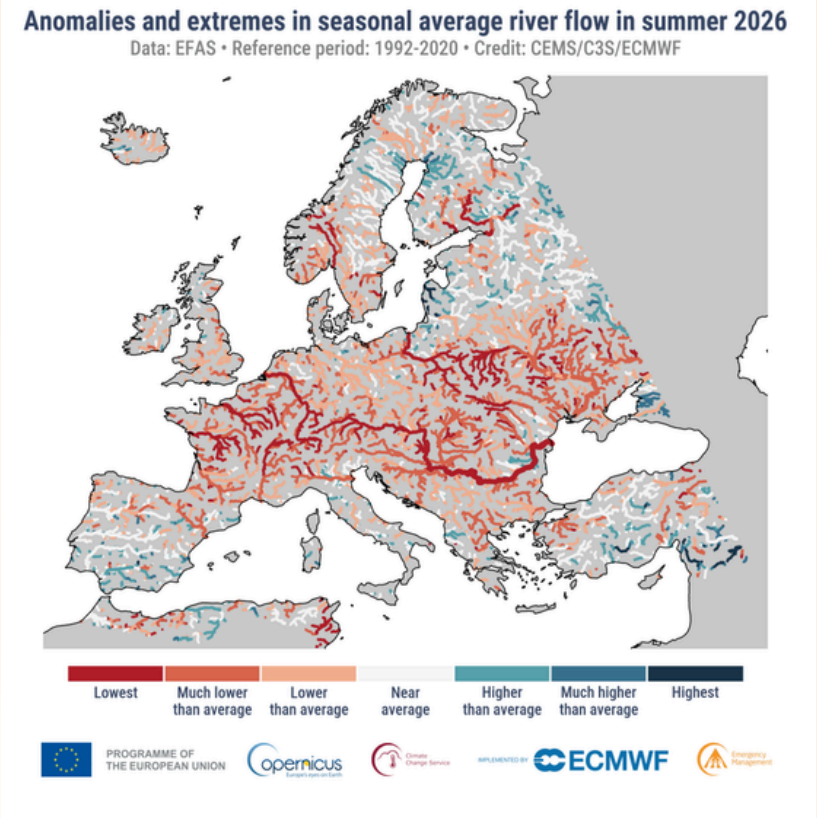
Western Europe's June-August mean reached 21.69°C, or +2.54°C relative to 1991-2020. The previous record, the historically exceptional 2003 summer, was +1.98°C. The figure also shows that every summer since 2015 has been warmer than the reference average.

Heat and drying occurred together



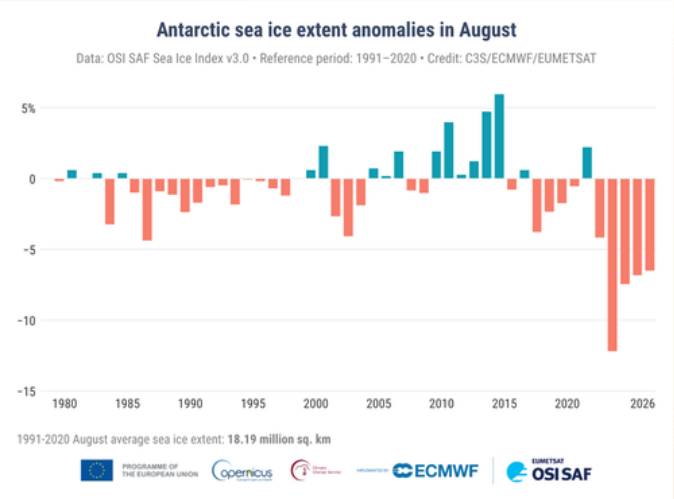
The compound-event signal is the key point: much of central and eastern Europe combined high temperatures with below-average precipitation, low relative humidity and exceptionally low surface-soil moisture. Copernicus reports that European average relative humidity was the lowest for any August in the ERA5 record.

Europe's river network carried the drought signal



For the summer as a whole, record-low flows affected large stretches of the Seine, Rhône, Loire and Dnieper, while similarly exceptional conditions extended along almost the full lengths of the Rhine, Danube and Vistula. Copernicus reports resulting impacts on navigation, energy production, irrigation, water use and ecosystems.

Antarctic sea ice remained exceptionally low



Antarctic sea-ice extent averaged 17.0 million km^2 in August 2026, 1.2 million km^2, or 6.5%, below the 1991-2020 average. It was the fourth-lowest August in the 48-year satellite record, and all four of the lowest August values have occurred since 2023.

A Planet Breaking Records Above and Below the Surface

August 2026 offered an unusually stark snapshot of the warming climate. Global surface temperature reached 1.65°C above the estimated pre-industrial level, while the extra-polar ocean recorded both its hottest August and its highest daily surface temperature in the ERA5 record. The same summer brought western Europe its highest average temperature on record, widespread marine heatwaves and exceptionally low river flows across major European basins. Taken together, the indicators show that today's temperature records are increasingly accompanied by parallel stress in the ocean, the hydrological cycle and cryosphere.

+1.65°C	*August 2026 global temperature relative to the estimated pre-industrial level.*
21.11°C	*Highest daily extra-polar sea-surface temperature recorded in ERA5.*
+2.54°C	*Western Europe's summer temperature anomaly relative to 1991-2020.*

PRIMARY SOURCE	Copernicus Climate Bulletin, August 2026
INSTITUTION	Copernicus Climate Change Service (C3S), implemented by ECMWF

Cutting-Edge Publications

A summary of what's published in sustainability field.

The Effectiveness of Carbon Pricing: A Global Evaluation

Sen, S., Sadikoglu, S., Ji, C., & van der Werf, E. (2026). The Effectiveness of Carbon Pricing: A Global Evaluation. Environmental and Resource Economics, 89(9), Article 61.

Carbon pricing is central to climate policy, yet surprisingly few studies have estimated its global real-world effectiveness using causal methods that account for countries adopting policies at different times. Sen and co-authors assemble a panel of 138 countries covering 1981-2017 and apply modern staggered difference-in-differences estimators to evaluate carbon taxes and emissions-trading systems. Their results provide unusually strong evidence that carbon pricing has materially reduced emissions. Across implemented policies, per-capita CO_2 emissions from fossil-fuel combustion decline by roughly 8-12% on average, with the effect strengthening gradually to 19-23% about ten years after implementation. The authors estimate that global fossil-fuel emissions in 2017 would have been at least 8% higher without carbon pricing, equivalent to approximately 2.5 $GtCO_2$ of avoided emissions that year and around 13 $GtCO_2$ cumulatively since 1990. Importantly, the mechanism is not primarily higher energy efficiency. Instead, the evidence points to substitution away from more carbon-intensive energy resources toward cleaner alternatives. The estimated effects are also robust to controlling for renewable-energy policies. The study therefore suggests that carbon pricing works less as an immediate price shock than as a durable policy signal that shapes expectations and medium-term investment decisions, although existing regimes alone remain insufficient for a net-zero pathway.

Carbon Leakage and Carbon Tax Differentiation: Evidence from a Developing Economy

Nguyen, D. C., & Lai, N. D. (2026). Carbon leakage and carbon tax differentiation: Evidence from a developing economy. Energy Economics, 161, 109502.

This study challenges a standard assumption behind carbon-leakage policy: when domestic carbon pricing raises production costs, imported products substitute for domestic output and emissions are displaced abroad. Nguyen and Lai show that this mechanism can behave very differently in assembly-oriented economies deeply embedded in global value chains. Using a computable general equilibrium model calibrated to Vietnam's 2023 Social Accounting Matrix and benchmarking the results against the multi-region GTAP-E model, they estimate an aggregate unilateral import-substitution leakage rate of 0.475 under a US$10/$tCO_2$ tax in the single-country framework, but only 0.061 once global supply, price and trade-diversion responses are incorporated. Some highly integrated sectors, including textiles, machinery and metals, display negative leakage because lower domestic production also reduces demand for imported intermediate inputs. This matters for policy design: a leakage-weighted differentiated carbon tax generates 24% less net abatement than a uniform carbon tax under a revenue-neutral schedule. An EU-style CBAM reduces leakage in the single-country framework but has almost no effect on aggregate leakage in the multi-region benchmark, while progressive revenue recycling can improve both distributional outcomes and net abatement. The paper shows that carbon taxation and border adjustment cannot be designed independently of global-value-chain structure, particularly in export-oriented developing economies.

Emissions and System-Level Decarbonization Pathways for Global Petrochemical Production

Meng, F., Cullen, L., Mitchell, P., Christopher, P., Cabrera Serrenho, A., Masanet, E., Ryan, A. J., Lupton, R., & Cullen, J. M. (2026). Emissions and system-level decarbonization pathways for global petrochemical production. Nature Sustainability.

Decarbonizing petrochemicals has been difficult partly because global emissions inventories remain too aggregated to show where intervention would have the greatest effect. Meng and colleagues address this gap with an unusually detailed bottom-up model of 37,379 production facilities, 81 chemicals and 2,043 manufacturing processes. They estimate that global petrochemical production generated 2.0 ± 0.8 $GtCO_2e$ in 2023, around 13% of industrial and 3.5% of total global greenhouse-gas emissions, and could rise to 3.0 ± 1.2 $GtCO_2e$ annually by 2050 under business as usual. The most striking result is the concentration of emissions: only 10% of facilities account for 53% of the sector's emissions. Upstream production is similarly important, with approximately 83% of emissions attributed to downstream petrochemical products actually embodied in primary and intermediate chemical production. Scenario analysis shows that no single technological intervention is sufficient. Efficiency, alternative fuels and feedstocks, grid decarbonization, carbon capture and demand measures must be combined. Crucially, prioritising mitigation at the highest-emitting facilities could save an additional 23 ± 3 $GtCO_2e$ cumulatively by 2050 compared with an untargeted rollout. The results make a strong business and policy case for facility-level emissions data, upstream supply-chain accounting and targeted capital allocation rather than uniform sector-wide decarbonization strategies.

New Labour and Agricultural Damages Improve Climate Cost Estimates

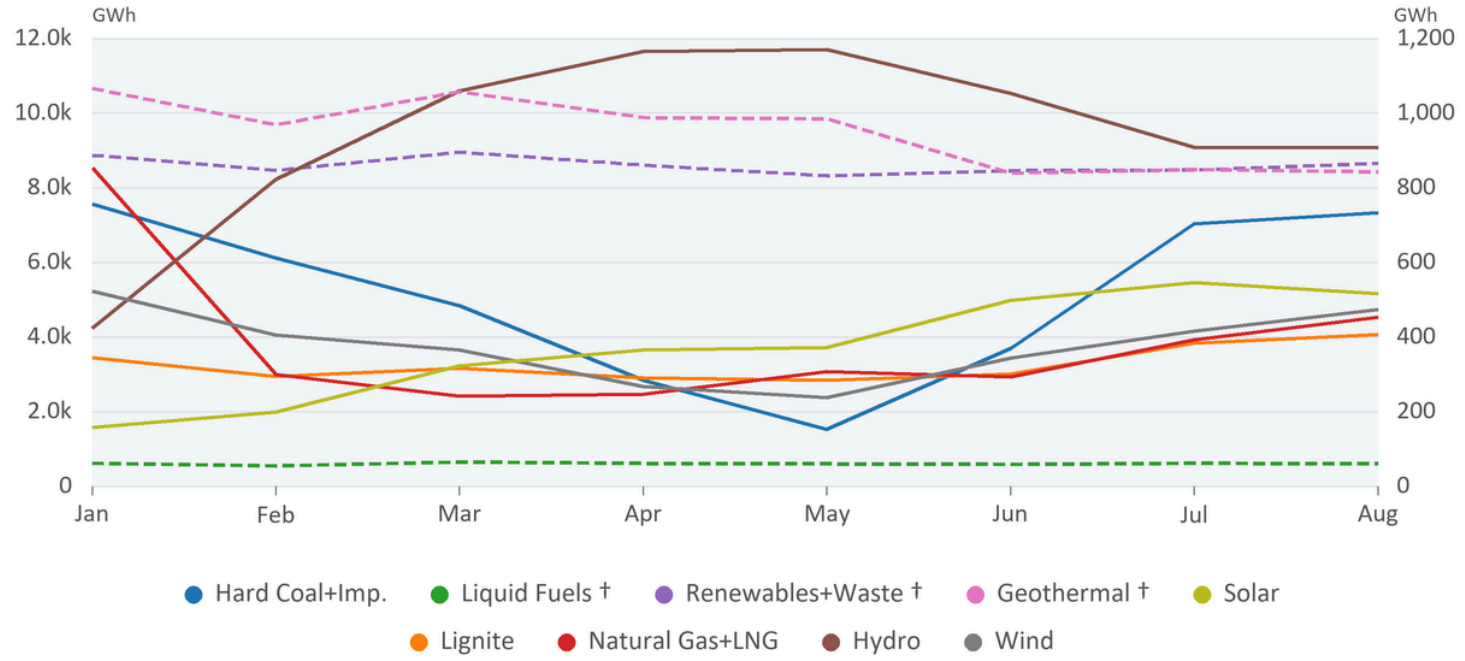
Moore, F. C., Haqiqi, I., Kong, Q., Rennels, L., Baldos, U., Ganapathi, H., Huber, M., & Hertel, T. (2026). New labour and agricultural damages improve climate cost estimates. Nature Climate Change.

Heat stress is one of the most direct economic consequences of climate change, yet its effect on labour productivity has remained largely absent from many estimates of the social cost of carbon. Moore and colleagues combine bias-corrected CMIP6 climate projections, alternative heat-labour response functions, global general-equilibrium modelling and a modern integrated assessment framework to quantify this missing damage channel. They estimate that heat-related reductions in worker productivity generate climate damages of about US$41 for every tonne of CO_2 emitted in 2025, with a 90% uncertainty interval of US$1-108 per tonne. These losses are highly unequal geographically, with the largest burden concentrated in South, East and Southeast Asia and Africa, where climate exposure and labour-intensive economic activity overlap. The authors simultaneously update agricultural climate damages using more recent evidence assessed by the IPCC, reducing the estimated agricultural component from US$95 to US$29 per tonne. Incorporating both revisions slightly reduces the expected 2025 social cost of carbon from US$204 to US$179 per tonne, while substantially narrowing uncertainty. The paper demonstrates why climate-economics estimates can change materially as damage functions improve: adding an overlooked impact does not mechanically increase the total estimate when other sectors are simultaneously updated. For business and policy, it places occupational heat exposure firmly within the economic valuation of climate risk.

DATA CORNER

Taking a look at metrics

FIGURE 1 | Electricity Generation by Source (Jan – Aug 2026)



† Dashed series use the right axis. Left and right axes use different scales.

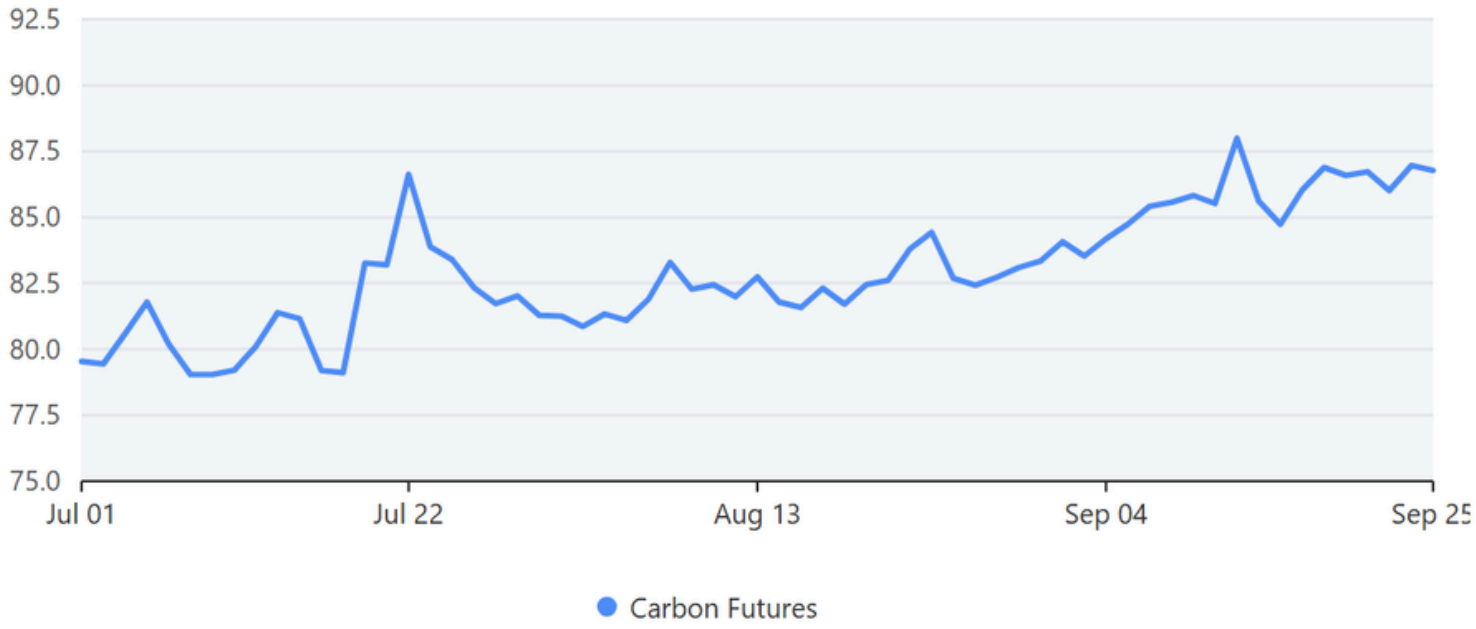
Source: TEİAŞ (Aug 2026 Report). 2026 data are provisional.

Türkiye's generation mix shows a strong seasonal shift. Hydropower rises sharply from January to April-May because winter precipitation and spring snowmelt increase reservoir inflows. As Türkiye enters the drier summer period, hydro output falls from its spring peak. At the same time, electricity demand rises because of air-conditioning and tourism-related consumption. This helps explain why hard coal and imported coal, natural gas and lignite generation all recover strongly from June onward. Solar shows the opposite seasonal pattern. Longer daylight hours, stronger irradiation and rapidly expanding installed capacity push solar production steadily upward. July was particularly important: the Ministry of Energy reported a record 5.37 billion kWh of solar generation, the highest monthly level ever recorded in Türkiye. By the end of August, national installed capacity had reached 126.9 GW, with solar representing about 22% of capacity. TEİAŞ also reported cumulative 2026 generation of 248.4 TWh by end-August.

DATA CORNER

Taking a look at metrics

FIGURE 2 | Carbon Emissions Futures (Jul – Sep 2026)



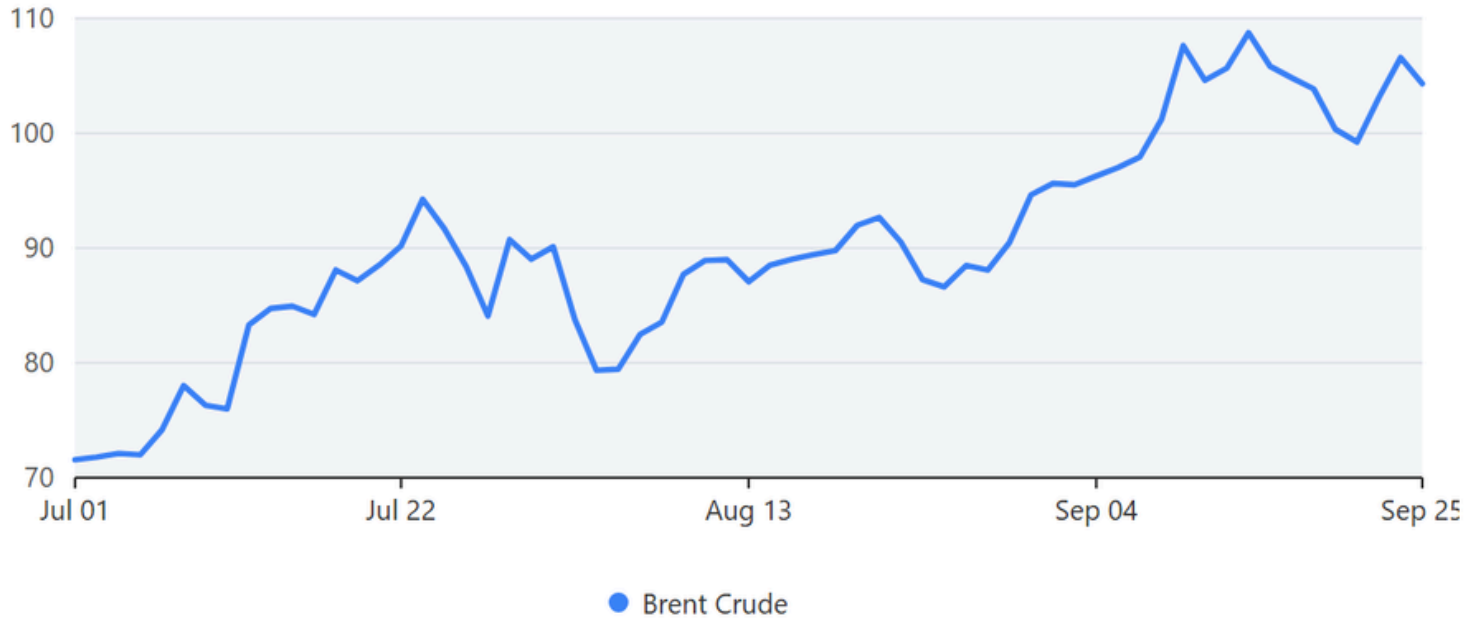
Source: Investing.com CSV

The carbon futures series rises from around 79-80 in early July to roughly 87 by late September, although the path is volatile. Assuming the series represents benchmark EU ETS allowances, an important structural driver was tightening expected allowance supply. On 30 July, the European Commission confirmed revised auction calendars reflecting the placement of 190.5 million allowances into the Market Stability Reserve from September 2026 to August 2027. Removing allowances from scheduled auctions reduces supply available to compliance entities and tends to support prices. The gradual August-September rise was also supported by stronger European energy markets and compliance-related buying. S&P Global reported in early September that market participants expected EUAs to remain supported above EUR 80, citing the strong energy complex and September compliance demand. The fluctuations matter, however. EU ETS reform discussions created policy uncertainty, so prices did not rise continuously. The overall upward direction therefore reflects tighter near-term allowance availability and compliance demand, while the short-term pullbacks reflect energy-price movements, positioning and uncertainty over future ETS reforms.

DATA CORNER

Taking a look at metrics

FIGURE 3 | Brent Crude Oil Futures (Jul – Sep 2026)



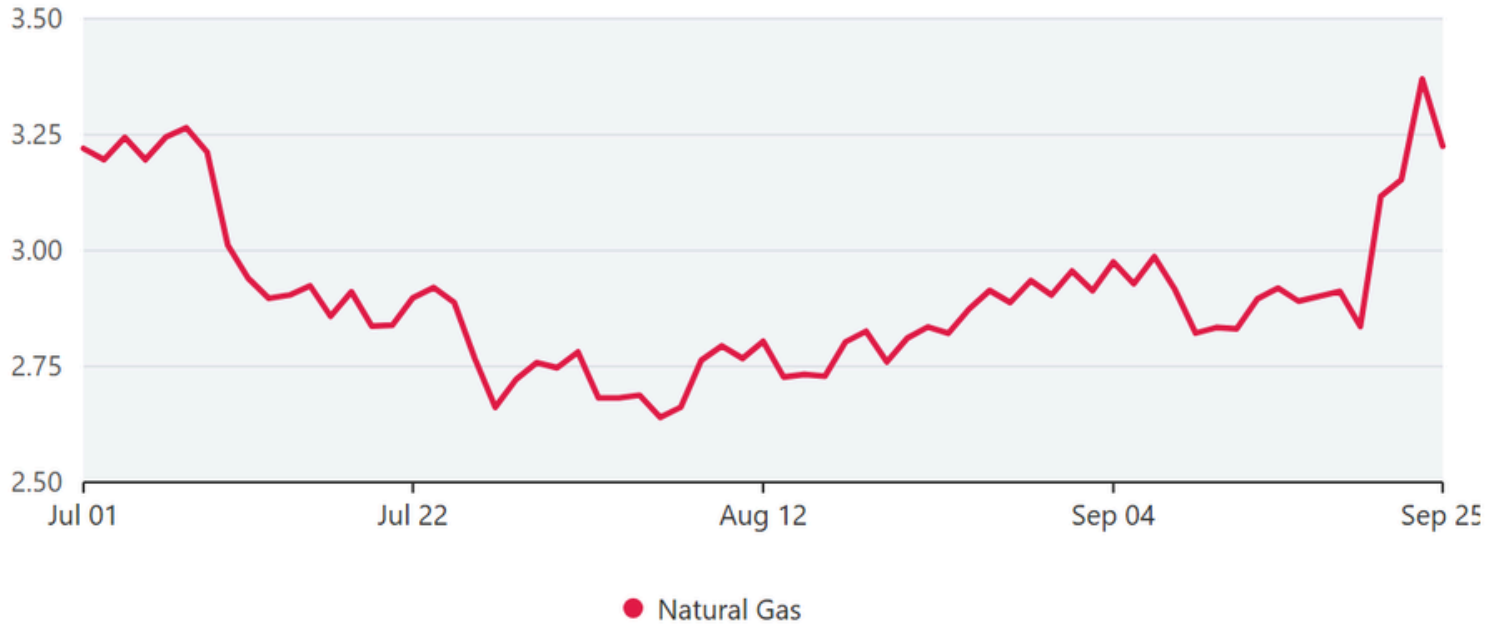
Source: Investing.com CSV

Brent's rise is mainly a geopolitical supply-risk story. Prices started July around the low $70s, but renewed conflict involving Iran and attacks on shipping progressively increased the risk premium attached to Middle Eastern oil. By 23 July, Brent had settled above $100 after Houthi attacks on Saudi tankers and severe disruption around the Strait of Hormuz and Red Sea routes. Reuters reported that Gulf loading activity had fallen sharply as tanker traffic became constrained. Prices then fell sharply in early August when diplomatic mediation raised hopes that the U.S.-Iran conflict could ease and traffic through Hormuz might normalize. Reuters reported a Brent decline of more than 5% on 4 August following signs of progress. The September surge above $105 followed renewed tanker attacks and continuing supply disruption, with Brent settling at $107.63 on 10 September. Late-September weakness reflects partial adaptation through alternative shipping arrangements and renewed Saudi flows, which reduced immediate fears of an extreme physical shortage.

DATA CORNER

Taking a look at metrics

FIGURE 4 | Natural Gas Futures (Jul – Sep 2026)



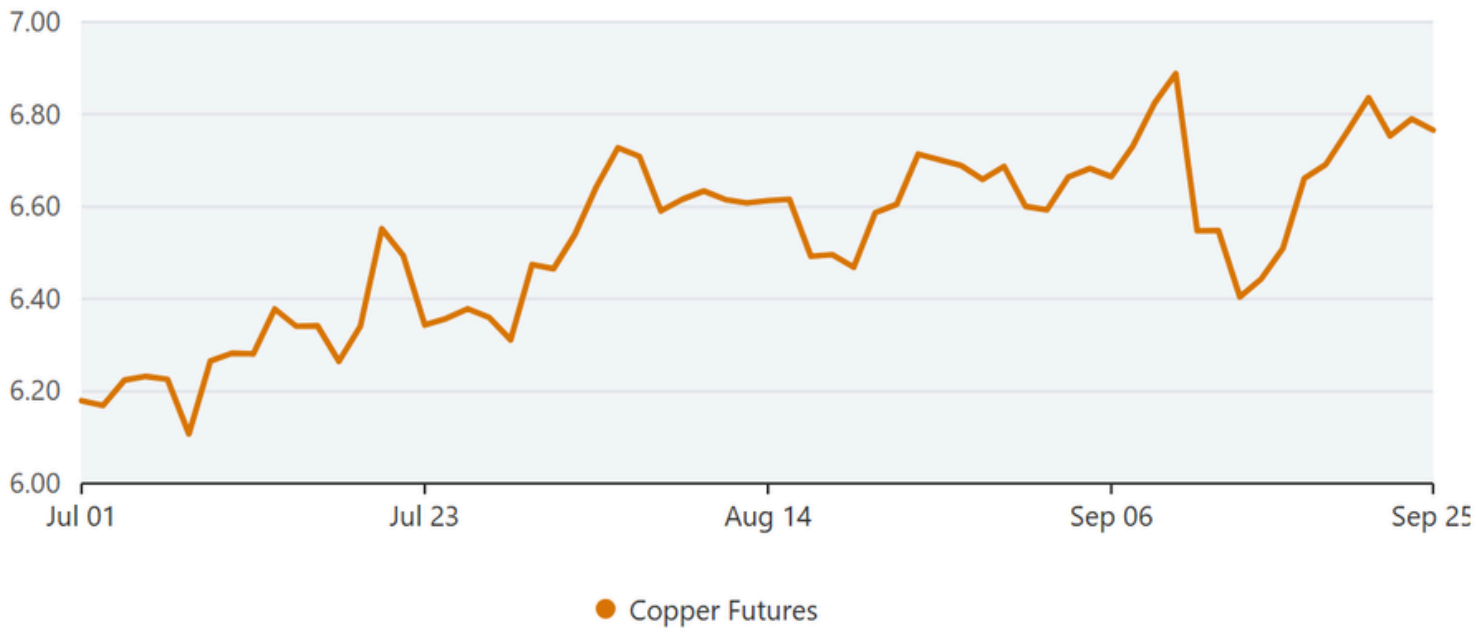
Source: Investing.com CSV

The U.S. natural-gas market moved in almost the opposite direction to oil during much of July. Prices fell from around $3.20/MMBtu to below $2.70 because domestic supply was abundant. Reuters reported that July Lower-48 production reached about 110.3 bcfd, LNG export demand was below previous peaks and storage remained comfortable. August futures closed at $2.888 on 16 July, their lowest level since May. Those conditions meant that even strong summer cooling demand was insufficient to create a sustained shortage. Prices stabilized during August and gradually recovered as the market began looking toward autumn and winter demand and stronger LNG export requirements. The sharp late-September increase has a clearer near-term explanation. Daily production fell, cooler weather forecasts increased expected heating demand and LNG feedgas flows strengthened. Reuters reported that October futures reached an 11-week high above $3.00 on 23 September as daily output fell toward 109.8 bcfd. The very sharp final movement therefore reflects a transition from a well-supplied summer market toward tighter short-term autumn expectations.

DATA CORNER

Taking a look at metrics

FIGURE 5 | Copper Futures (Jul – Sep 2026)



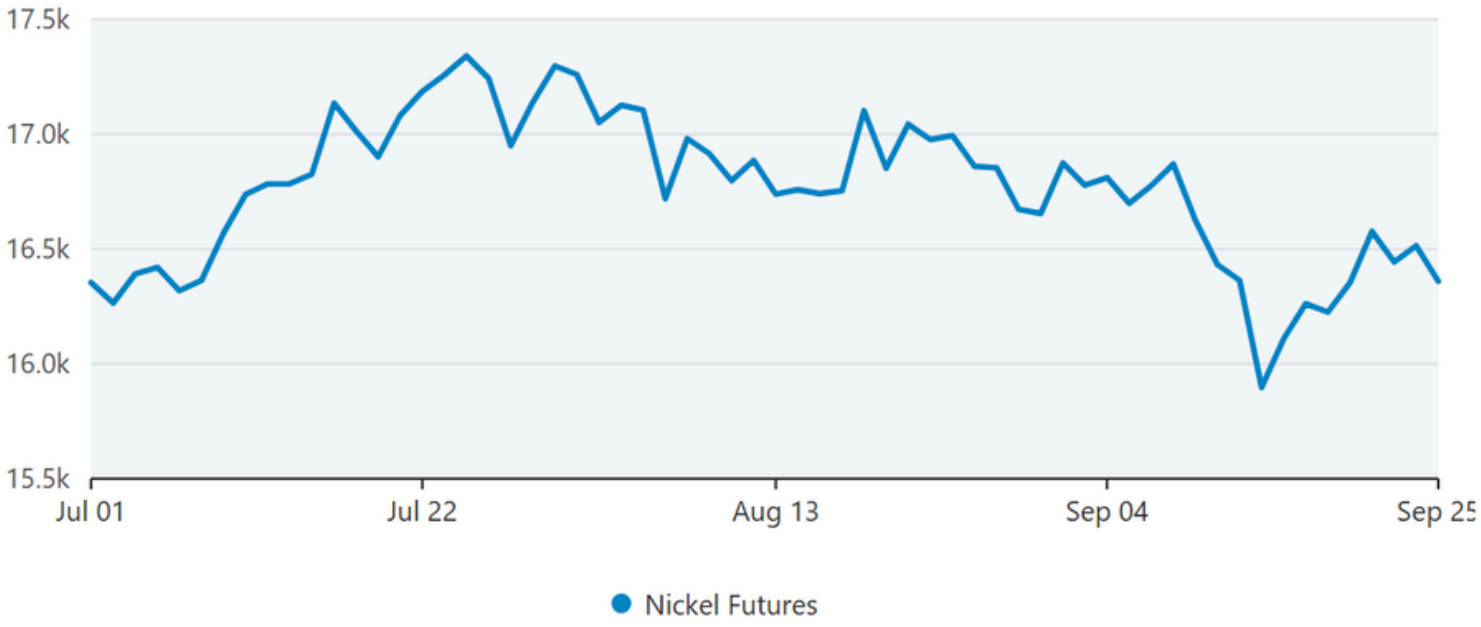
Source: Investing.com CSV

Copper's increase from roughly $6.15 to nearly $6.90 reflects both physical supply concerns and an unusual distortion created by anticipated U.S. tariffs. Expectations that Washington might impose tariffs on refined copper encouraged traders and industrial users to import unusually large quantities into the United States before any duties took effect. Reuters reported that U.S. imports reached about 885,000 tonnes in the first half of 2026, while COMEX inventories climbed to a record 675,185 tonnes. Metal was therefore being pulled into the U.S., tightening availability elsewhere even though the global market was not necessarily in an outright shortage. Chinese demand, mine disruptions and smelter outages added support. This explains the broad July-August appreciation. The abrupt September decline around 10 September is particularly important. Reuters reported that the White House had delayed a decision on refined-copper tariffs because of affordability concerns, causing traders to reconsider positions built around expected protection. Prices subsequently recovered because the underlying global inventory distortions and supply constraints had not disappeared.

DATA CORNER

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FIGURE 6 | Nickel Futures (Jul – Sep 2026)



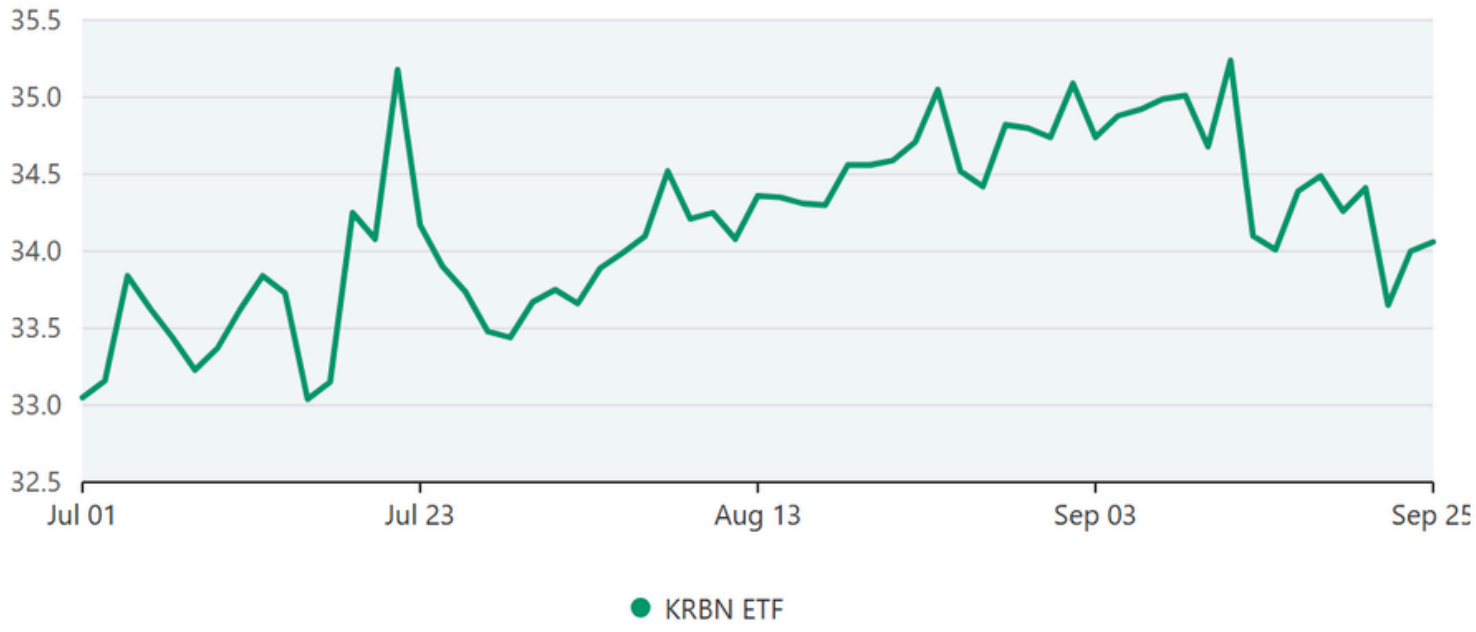
Source: Investing.com CSV

Nickel initially rises from roughly $16,300 per tonne toward $17,300, but the rally fades and prices eventually fall below $16,000 in September. The market was caught between two opposing forces. On the bullish side, Indonesia had been tightening mining approvals and production quotas. Earlier in 2026, Indonesia approved national mining quotas of roughly 260-270 million tonnes, substantially restricting some individual producers. For example, Weda Bay's initial 2026 permit was cut sharply compared with its 2025 allowance. That created periodic concerns about ore availability and helped support the July rally. Although the nickel market had experienced persistent oversupply, INSG's April 2026 forecast projected a shift to a modest deficit in 2026. The group forecast 3.715 Mt of primary nickel production and 3.747 Mt of usage, implying a 32 kt shortfall, compared with a 261 kt surplus projected for 2026 in October 2025. Indonesia was expected to produce around 68% of global mined nickel. September weakness was reinforced when Indonesia introduced a pricing formula that lowered the effective price of low-grade ore, reducing costs for some processors and weakening scarcity expectations.

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FIGURE 7 | KraneShares Global Carbon Strategy ETF - KRBN (Jul – Sep 2026)



Source: Investing.com CSV

KRBN's movement is related to carbon prices, but it should not be interpreted as a direct proxy for one carbon market. The ETF tracks several cap-and-trade systems. As of 18 September, approximately 58.6% of carbon exposure was an EUA-linked note and another 4.1% was EUA futures, while California allowances represented about 25%. Smaller positions included UK allowances, RGGI and Washington State allowances. The portfolio also had substantial euro currency exposure. This composition explains why KRBN generally rises alongside European carbon allowances during July-August but does not reproduce Figure 2 exactly. The tightening EU ETS auction outlook, including the planned movement of 190.5 million allowances into the Market Stability Reserve from September, supported the European portion of the portfolio. However, California, UK and U.S. regional carbon markets have their own regulatory and supply-demand dynamics. Currency movements also affect the ETF's dollar value. Consequently, the repeated moves between roughly $33.5 and $35.2 reflect a combination of rising European carbon prices, different regional carbon-market performance and portfolio-level currency effects.

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FIGURE 8 | S&P 500 vs. S&P 500 ESG - Relative Performance (Jul – Sep 2026)



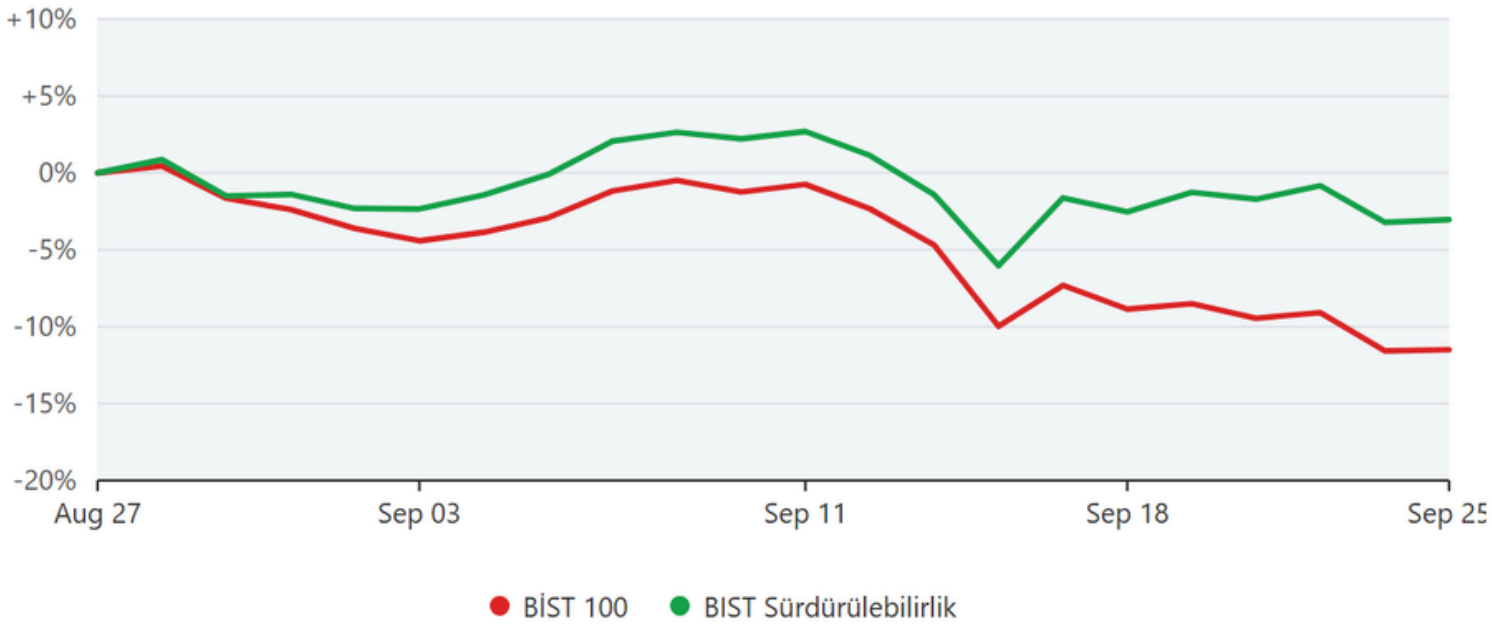
Source: Investing.com CSV

The most important feature of this graph is how closely the two lines move. That is expected because the sustainability-screened index is intentionally constructed to retain a market profile similar to the S&P 500. S&P describes the current S&P 500 Scored & Screened Index as a market-cap-weighted index that meets sustainability criteria while maintaining similar overall industry-group weights to the parent benchmark. The July decline therefore affected both portfolios. On 23 July, the S&P 500 fell 1.21% as investors reacted to heavy AI capital expenditure, weak reactions to major technology earnings and Brent oil above $100, which raised inflation and interest-rate concerns. August reversed that move: tame producer-price inflation and stronger technology stocks helped the S&P 500 reach a record 7,798.99 on 13 August. September volatility increased again after the Federal Reserve raised rates by 25 basis points to 3.75%-4.00%. The small gap between the two lines mainly reflects different constituent exclusions and weights rather than fundamentally different macroeconomic exposure.

DATA CORNER

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FIGURE 9 | BİST 100 vs. BIST Sürdürülebilirlik - Relative Performance (Aug – Sep 2026)



Source: Investing.com CSV

The divergence between the BIST 100 and BIST Sustainability Index becomes particularly pronounced during September. Both initially weaken, but the Sustainability Index recovers to approximately +2% to +3% in early September while the BIST 100 remains weaker. The critical event is the sharp mid-September selloff. Reuters reported that the BIST 100 lost more than 8% in one week as investment funds concentrated in illiquid, low-free-float shares faced redemption pressure. To raise cash, managers had to sell more liquid holdings as well, spreading the decline across the market. Regulators later ordered the liquidation of 131 funds. The Sustainability Index was also hit, but substantially less severely. Borsa Istanbul's sustainability benchmark contains a different constituent set based on sustainability assessments using LSEG data and the BIST index methodology. The most defensible interpretation is therefore a constituent and liquidity effect, rather than evidence that ESG characteristics themselves prevented losses. During this specific market stress episode, the sustainability-screened portfolio happened to have less exposure to the stocks and fund structures most severely affected by forced selling.



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