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A YEAR IN CLIMATE CRISIS: KEY EVENTS AND CLIMATE ACTION DEVELOPMENTS IN 2024

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Introduction and Summary

Since 2021, through our members-exclusive monthly newsletter we have been analyzing key developments and reports on climate change mitigation. The year 2024 has been marked by increasingly severe climate impacts and critical developments at both national and international levels.

Over the past year, global summits, scientific reports, and natural disasters have highlighted the severity of the climate crisis and its far-reaching impacts. Despite this, current policies and financial commitments remain inadequate for addressing the challenge effectively. At the World Economic Forum (WEF) in Davos, the urgency for climate action was emphasized, with UN Secretary-General António Guterres warning that continued reliance on fossil fuels is steering the world toward disaster. While reports note unprecedented investments in clean energy, much larger financial commitments are necessary to achieve net-zero emissions.

The spring, South American nations—Chile, Argentina, and Colombia—witnessed record-setting temperatures and devastating wildfires. Concurrently, the European Environment Agency (EEA) released the inaugural European Climate Risk Assessment (EUCRA), outlining significant threats to ecosystems, food security, public health, and the economy. Meanwhile, the U.S. National Oceanic and Atmospheric Administration (NOAA) cautioned that marine ecosystems could face serious risks, as global ocean temperatures stayed at historic highs for 365 consecutive days.

The summer saw Europe and North America endure some of their hottest periods on record. Simultaneously, protests by European farmers against agricultural policies shed light on the socioeconomic impact of environmental regulations. At the NATO Summit, discussions addressed the security dimensions of climate change, particularly its effects on military operations and infrastructure. Meanwhile, the rising energy consumption of artificial intelligence and cryptocurrency mining emerged as a new challenge for global energy policies. A study revealed that AI-generated images consume significant amounts of electricity, raising fresh concerns about the rapidly growing energy demands of artificial intelligence. In March, the *First Nuclear Energy Summit* in Brussels underscored the role of nuclear power in achieving net-zero targets, highlighting the expansion of new technologies such as small modular reactors in the global energy transition.

In the fall, the European Court of Human Rights (ECHR) issued a landmark ruling, recognizing state responsibility in climate action. However, the COP29 Summit failed to make expected progress on climate finance, delaying crucial debates on fossil fuel phase-out until COP30. The ECHR ruling, which set an important precedent, stemmed from a case filed by the Swiss organization *KlimaSeniorinnen Schweiz*, arguing that the Swiss government had not taken adequate measures to combat climate change.

By December, the thawing of Arctic permafrost—releasing massive greenhouse gases and fueling wildfires—further underscored the long-term effects of climate change. Concerns mounted that global temperature rise may be accelerating toward an irreversible tipping point. Meanwhile, the UN International Court of Justice (ICJ) launched its most significant case to date, aiming to clarify state obligations in addressing climate change. The case, brought by small island nations arguing that rising sea levels threaten their existence, became a focal point for developing countries pushing for greater accountability from industrialized nations. The ICJ proceedings are widely seen as an effort to establish new legal precedents for international climate justice.

Despite these developments, the failure to secure a global agreement on plastic pollution revealed deep divisions in environmental negotiations, as oil-producing nations resisted restrictions on plastic production, stalling progress. Meanwhile, Japan's new climate strategy faced criticism for falling short in promoting renewable energy and cutting carbon emissions, failing to align with scientific targets and drawing international scrutiny.

Amidst these challenges, China accelerated its energy transition, expanding renewable energy production—growing its wind and solar capacity tenfold over the past decade. According to the *National Energy Administration (NEA)*, China's investments in energy transition have played a key role in curbing global carbon emissions. However, experts argue that more ambitious steps are needed to reduce emissions from its industrial sector.

The year 2024 has been a mix of high hopes and disappointments, where scientific realities clashed with political and economic constraints. The upcoming COP30 Summit and new global climate commitments will be critical in ensuring stronger action on environmental justice and climate finance. In 2025, energy policies, agricultural sustainability, climate security, and carbon markets will remain key priorities on the global agenda. As the Global Relations Forum, we will continue to closely monitor these developments and provide our members with in-depth insights through our monthly newsletter.

January 2024

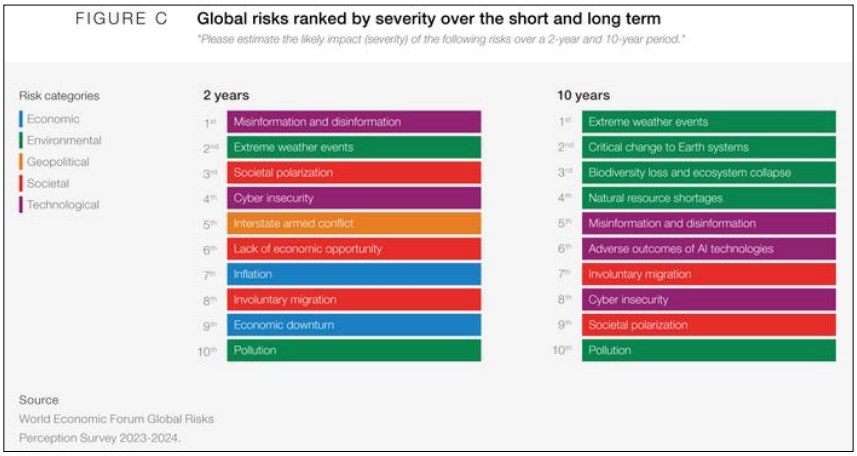
1 World Economic Forum / Benedikt von Loebell

During the 54th session of the World Economic Forum (WEF), held from January 15-19, the urgency of combating climate change and transforming energy systems took center stage. Discussions underscored the existential threat posed by the climate crisis and the critical need for swift action. Leaders stressed the importance of moving beyond traditional business models that deplete natural resources and highlighted energy efficiency as essential for both competitiveness and sustainability. The session also explored the interconnections between climate change, health, the economy, and social justice, emphasizing the necessity of a just transition, fair financing, and global cooperation as key pillars in addressing climate change. Additionally, leaders called for widespread infrastructure reforms and urged developed nations to support developing countries in climate finance, aiming to reduce inequalities and rebuild global trust.

In his address, United Nations Secretary-General António Guterres warned that nuclear war is no longer the sole existential threat to humanity, highlighting the climate crisis and the unchecked growth of artificial intelligence as equally significant risks. Criticizing reliance on fossil fuels, Guterres condemned financial and industrial institutions for backtracking on climate commitments, calling such actions a betrayal of history, science, and consumer expectations. He further underscored the inadequacy of global governance systems in tackling today's crises and stressed the urgent need for institutional reforms, asserting that true transformation requires strong political will.[1]

[1] United Nations. "At Davos, Guterres Slams Backsliding on Climate Commitments." UN City, January 22, 2024. https://un.dk/at-davos-guterres-slams-backsliding-on-climate-commitments.

As part of WEF's annual Global Risks Report for 2024,[2] global risk perceptions were analyzed across economic, environmental, geopolitical, societal, and technological domains. Environmental and climate-related threats ranked among the top ten, with extreme weather events, critical shifts in Earth's systems, biodiversity loss, and ecosystem collapse identified as key risks. The report emphasized the urgent need for action to mitigate these threats, given their far-reaching impacts on human life, economic stability, and natural ecosystems.



Meanwhile, global efforts to curb climate change gained momentum as clean energy transition spending reached record levels in 2023. Investments surged 17% to $1.8 trillion, covering renewable energy installations, electric vehicle purchases, hydrogen production facilities, and other clean technologies. According to a January report by Bloomberg New Energy Finance (BNEF), an additional $900 billion was allocated to developing clean energy supply chains, bringing the total 2023 clean energy funding to approximately $2.8 trillion.[3]

Despite these substantial investments, BNEF estimates that achieving net-zero emissions will require more than double the current level of investment in clean technology. The report analyzed the leading markets in this sector, showing that China remained the largest investor, with $676 billion in spending—an increase of just 6% from the previous year. By contrast, investments in the US, the UK, and Europe surged at least 22%, reaching $718 billion, fueled by the US's Inflation Reduction Act, rising electric vehicle sales in the UK, and growing demand for renewable energy across Europe. Investments in electric vehicles surged by 36%, reaching $634 billion, while spending on electric grids

[2] World Economic Forum. *The Global Risks Report 2024.* 19th ed. Insight Report, January 10, 2024. https://www.weforum.org/reports/global-risks-report-2024.

[3] BloombergNEF. "Global Clean Energy Investment Jumps 17%, Hits $1.8 Trillion in 2023, According to BloombergNEF Report." BloombergNEF, January 30, 2024. https://about.bnef.com/blog/global-clean-energy-investment-jumps-17-hits-1-8-trillion-in-2023-according-to-bloombergnef-report/.

totaled $310 billion. Ultimately, the report emphasized that achieving net-zero emissions will require a 170% increase in investment, urging governments to take more decisive action.

February 2024

2 A wildfire burns on the slopes of the mountains surrounding Nemocon, north of Bogota, Colombia, on Jan. 23, 2024. AP Photo/Ivan Valencia

Since January, South America has been grappling with soaring temperatures and severe wildfires. Central regions of Chile, Argentina, and Colombia have recorded extreme heat, further highlighting the escalating impacts of climate change this month. In Chile's capital, Santiago, temperatures surged to 98.1°F (~36.7°C), marking the third-highest temperature recorded in 112 years. Similarly, in Colombia, where several cities have been struggling with above-average temperatures, with records hitting 104.7°F (~40.38°C). According to the World Meteorological Organization (WMO), the current rise in temperatures is closely linked to El Niño, which has been active since May 2023. El Niño's influence is expected to persist throughout the summer, intensifying heatwaves across the continent and leading to below-average rainfall in some regions.[4] In Colombia, where fires have reached Bogotá, 42,000 acres of land have been destroyed, while massive wildfires spreading across the Patagonia region between Chile and Argentina have escalated to uncontrollable levels. In Los Alerces National Park, more than 1,480 acres have already burned, highlighting the escalating climate crisis.[5]

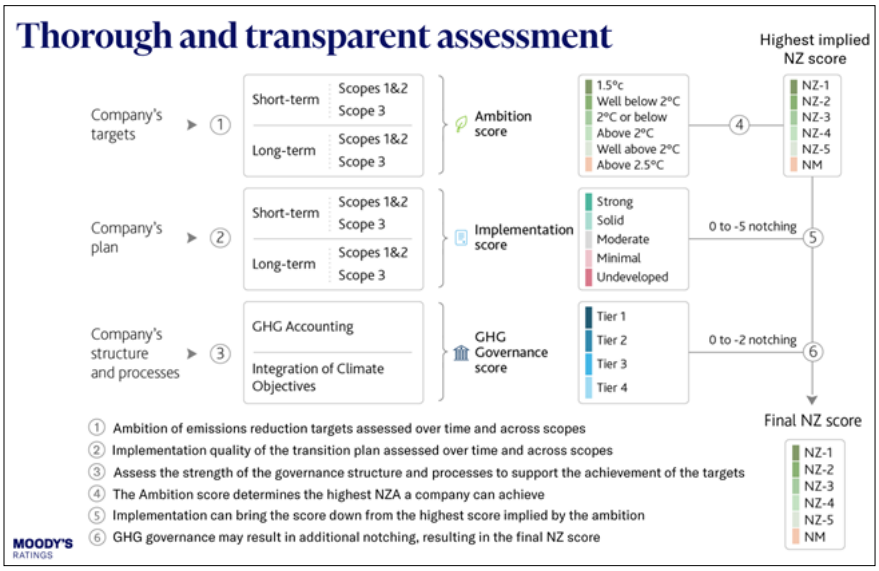
On February 8, the European Union-funded Copernicus Climate Change Service (C3S) reported that global temperatures over the past 12 months averaged 1.52°C above pre-

[4] María Mónica Monsalve S., "Heat Waves in Chile and Argentina, Fires in Colombia: What Is Happening in South America?" *EL PAÍS*, February 1, 2024, https://english.elpais.com/climate/2024-02-01/heat-waves-in-chile-and-argentina-fires-in-colombia-what-is-happening-in-south-america.html.

[5] Jeff Abbott, "Climate Change Is Fueling Wildfires Across South America," *The Progressive*, February 23, 2024, https://progressive.org/latest/climate-change-is-fueling-wildfires-across-south-america-abbott-20240223/.

industrial levels.[6] This raises urgent concerns over whether the 1.5°C limit set by the Paris Agreement has already been exceeded. Experts note that defining these *"thresholds"* is not straightforward, as the concept of *"pre-industrial levels"* is open to interpretation, with different institutions using varying reference periods. For instance, the Intergovernmental Panel on Climate Change (IPCC), which provides a scientific framework for global climate policy, bases its measurements on the average temperature between 1850 and 1900. However, the reliability of data from that period is questioned due to the technological limitations of measurement instruments at the time. Another challenge lies in defining how *"global average temperature"* should be measured and which time frame should be used. While daily temperature spikes have exceeded the 1.5°C threshold for years, annual global temperature averages fluctuate due to numerous factors beyond greenhouse gas emissions, such as El Niño and La Niña, which cause year-to-year variations in global temperatures.

Based on these challenges, experts have proposed different measurement criteria and methodologies. A study published in *Nature* in December 2023 by a group of researchers from the UK Met Office proposed using the current year as the midpoint of a 20-year window, rather than relying solely on the past 20 years of data. According to this approach, historical data would be used for one decade, while projections for the future would be incorporated for the other.[7]



3 Vincent Allilaire (MIS), https://ieefa.org/

[6] *The Economist*, "How to Know When the World Has Passed 1.5°C of Global Warming," *The Economist*, February 9, 2024, https://www.economist.com/the-economist-explains/2024/02/09/how-to-know-when-the-world-has-passed-15degc-of-global-warming.

[7] Richard A. Betts, Stephen E. Belcher, Leon Hermanson, Albert Klein Tank, Jason A. Lowe, Chris D. Jones, Colin P. Morice, Nick A. Rayner, Adam A. Scaife, and Peter A. Stott, "Approaching 1.5 °C: How Will We Know We've Reached This Crucial Warming Mark?" *Nature*, December 6, 2023, https://www.nature.com/articles/d41586-023-03775-z.

Meanwhile, regulatory measures binding and incentivizing companies to achieve net-zero emissions are increasing. In February, Moody's announced the launch of a new rating system called the Net Zero Assessment[8] (NZA) to help investors assess companies' corporate decarbonization plans. The NZA ranks companies on a five-tier scale (NZ-1, highest score to NZ-5, lowest score), based on their alignment with the Paris Agreement's net-zero goals. In its first NZA assessment, Moody's assigned Italy's energy infrastructure provider Snam an "NZ-3" or *"significant"* score, evaluating its climate transition plan as being aligned with keeping global warming *"well below 2°C"* under the Paris Agreement. Moody's also deemed Snam's implementation *"solid,"* particularly in managing Scope 1 and 2 emissions with proven technology but noted challenges in controlling Scope 3 emissions.

4 European Commission President Ursula von der Leyen speaking during a debate at the European Parliament in Strasbourg, France, on February 6, 2024. Frederick Florin/AFP/Getty Images

On February 6, the European Commission proposed a 2040 emissions reduction target as part of its broader strategy to achieve climate neutrality by 2050.[9] The proposal recommends a net reduction of greenhouse gas emissions by 90% by 2040 compared to 1990 levels. To reach this target, which aligns with the EU's commitments under the Paris Agreement, the proposal highlights the necessity of implementing existing legislation, ensuring industrial competitiveness, focusing on a just transition, and maintaining a level playing field with international partners. It also emphasizes the economic and social benefits of setting a 2040 climate target, including increased resilience, energy independence, and job creation. The EU aims to achieve full decarbonization of the energy sector shortly after 2040 while outlining plans for decarbonizing other sectors, such as transportation and agriculture. The Commission stresses the importance of stakeholder dialogue and the

[8] Mark Segal, "Moody's Rolls Out New Scoring System of Companies' Net Zero Transition Plans," *ESG Today*, February 9, 2024, https://www.esgtoday.com/moodys-rolls-out-new-scoring-system-of-companies-net-zero-transition-plans/

[9] European Commission. *Commission Presents Recommendation for 2040 Emissions Reduction Target to Set the Path to Climate Neutrality in 2050.* Press Release, February 6, 2024, Strasbourg. https://ec.europa.eu/commission/presscorner/detail/en/ip_24_588.

need for a global approach to carbon pricing and financing. The recommendation follows the 'Fit for 55' legislative package, designed to meet the EU's 2030 climate targets and ensure its path toward climate neutrality by 2050.

However, one notable omission in the final recommendation was the absence of concrete targets for reducing emissions in the agricultural sector, despite being included in earlier drafts. This omission is believed to be influenced by ongoing farmer protests across multiple European cities, which began on February 1st.[10] European farmers are demanding higher prices for agricultural products due to rising production costs and expressing discontent with EU agricultural policies, environmental and climate restoration targets, subsidy cuts, high energy, fuel, and fertilizer costs, and competition from cheap grain imports from Ukraine and other countries. They are also calling for solutions to bureaucratic hurdles and regulatory processes. Speaking at the European Parliament's plenary session in Strasbourg, European Commission President Ursula von der Leyen acknowledged that the Sustainable Use Regulation (SUR)—a pesticide reduction proposal introduced in June 2022—had become *"a symbol of polarization."* She announced her intention to recommend that the EU Council withdraw the proposal. The withdrawal of the bill will require approval from European Commission representatives. Despite opposition, von der Leyen stated that the issue of pesticide regulation would remain on the agenda, emphasizing the need for *"more dialogue and a different approach"* to make progress.[11] Any new proposal on this matter will be addressed by the next Commission after the European Parliament elections in June.

March 2024

On March 11, the European Environment Agency (EEA) published the first-ever European Climate Risk Assessment (EUCRA),[12] compiled using research and data from the Intergovernmental Panel on Climate Change (IPCC), the Copernicus Climate Change Service (C3S), and the European Commission's Joint Research Centre (JRC). The

[10] Weise, Zia. "EU Calls for 90 Percent Emissions Cut by 2040." *Politico,* February 6, 2024. https://www.politico.eu/article/eu-90-percent-emission-cut-2040/.

[11] Liboreiro, Jorge, and Gerardo Fortuna. "Von der Leyen withdraws contentious pesticide law amid right-wing backlash and farmer protests." *Euronews,* February 6, 2024. https://www.euronews.com/my-europe/2024/02/06/von-der-leyen-announces-withdrawal-of-contentious-pesticide-law-the-first-defeat-of-the-gr

[12] European Environment Agency. *European Climate Risk Assessment (EUCRA).* EEA Report 01/2024. https://www.eea.europa.eu/en/analysis/publications/european-climate-risk-assessment.

assessment identifies 36 major climate risks for Europe across five key areas: ecosystems, food, health, infrastructure, and economy and finance. The report highlights that risks to marine and coastal ecosystems are particularly severe. It emphasizes that ecosystems provide multiple services to humans, meaning these risks have the potential to spread across other areas, including food security, health, infrastructure, and the economy. The food sector, in particular, is at critical risk due to rising temperatures and droughts in Central and Southern Europe, which threaten food security and crop production. As a solution, the report suggests a partial transition toward sustainably produced plant-based proteins.

One of the most urgent risk factors identified for human health is extreme heat. The report underscores that certain population groups—including outdoor workers, the elderly, and residents of poorly constructed housing—are at high risk, particularly in urban heat island areas or regions with limited access to cooling systems. Rising sea levels and changes in storm patterns are also highlighted as having devastating effects on people, economic

Table ES.1 Assessment of major risks

Climate risks for 'Ecosystems' cluster	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Coastal ecosystems		+++	+++	+++	Medium	Medium	Co-owned
Marine ecosystems		+++	+++	++	Medium	Medium	EU
Biodiversity/carbon sinks due to wildfires (hotspot region: southern Europe)		+++	++	++	Medium	Medium	Co-owned
Biodiversity/carbon sinks due to wildfires		+++	++	++	Medium	Medium	Co-owned
Biodiversity/carbon sinks due to droughts and pests		+++	++	++	Long	Medium	Co-owned
Species distribution shifts (*)		+++	++	++	Medium	Medium	Co-owned
Ecosystems/society due to invasive species		+++	++	++	Medium	Medium	Co-owned
Aquatic and wetland ecosystems		+++	++	++	Medium	Medium	Co-owned
Soil health (*)		+++	++	++	Medium	Medium	Co-owned
Cascading impacts from forest disturbances		+	+	+	Long	Medium	Co-owned

Legends and notes

Urgency to act
- Urgent action needed
- More action needed
- Further investigation
- Sustain current action
- Watching brief

Risk severity
- Catastrophic
- Critical
- Substantial
- Limited

Confidence
Low: +
Medium: ++
High: +++

(*) Wide range of evaluations by authors and risk reviewers.

5 *'European Climate Risk Assessment', EEA Report 01/2024, European Environment Agency*

activities, and infrastructure. The report warns that worsening climate conditions could lead to increased insurance premiums, higher government spending, and rising credit costs, further exacerbating vulnerabilities for low-income households. The assessment evaluates risks based on four categories: severity of risk, policy horizon (forecast period

and decision-making timeframe), policy preparedness, and risk ownership. While the EU and its Member States have taken significant steps in understanding and preparing for climate risks, the report finds that societal preparedness remains insufficient. EUCRA attributes this gap to policies failing to keep pace with rapidly escalating risks. Many of the key climate risks identified in the report are classified as co-owned risk ownership, meaning they require shared responsibility among the EU, Member States, and other entities. To effectively address and mitigate climate risks in Europe, the report stresses the need for urgent and coordinated action, emphasizing the inclusion of regional and local stakeholders in decision-making processes.

As threats to ecosystems become increasingly visible and severe, recent studies from the U.S. National Oceanic and Atmospheric Administration (NOAA) and Climate Reanalyzer, operated by the University of Maine's Climate Change Institute, have yielded alarming findings.[13] Global ocean temperatures have set record highs for 365 consecutive days, reaching 21.2°C in March. This surge has intensified concerns among scientists regarding the potential impacts of climate change on marine ecosystems. Human-induced climate change, combined with the cyclical El Niño phenomenon, which further warms the Pacific Ocean, is expected to have serious consequences. In particular, coral reefs in regions such as the Eastern Pacific and the Greater Caribbean are at risk of heat stress. Additionally, although El Niño is now weakening and transitioning toward La Niña, which has a cooling effect, experts warn that the upcoming Atlantic hurricane season could be more destructive than usual due to persistently high ocean temperatures. Richard Spinrad, Under Secretary of the U.S. State Department and Director of NOAA, noted that while hurricane season traditionally lasts from June to November, recent climate shifts have resulted in abnormally high temperatures in the Mid-Atlantic as early as March.

Another significant development this month in the fight against climate change was the convening of the 1st Nuclear Energy Summit,[14] the world's first high-level summit dedicated entirely to nuclear energy. Held in Brussels on March 21, the summit was hosted by the International Atomic Energy Agency (IAEA) and Belgium, which currently holds the rotating Presidency of the Council of the EU. The event brought together leaders from over 30 countries, as well as the European Union and representatives from various

[13] Climate Reanalyzer. "Daily Sea Surface Temperature, World (60°S–60°N, 0–360°E)." Climate Change Institute, University of Maine. Accessed March 2024. https://climatereanalyzer.org/clim/sst_daily/?dm_id=world2.

[14] Fisher, Matt. "'A Turning Point': First Ever Nuclear Energy Summit Concludes in Brussels." *International Atomic Energy Agency (IAEA),* March 25, 2024. https://www.iaea.org/newscenter/news/a-turning-point-first-ever-nuclear-energy-summit-concludes-in-brussels.

sectors, to discuss the role of nuclear energy in ensuring energy security, meeting climate goals, and promoting sustainable development. Turkey also participated in the summit. Discussions centered on the importance of nuclear energy in achieving energy security, climate targets, and sustainable development, with a strong emphasis on increasing financial support, enhancing the workforce, and providing proactive assistance to countries newly embarking on nuclear energy programs. Representatives from governments, businesses, and civil society reaffirmed the vital role of nuclear energy in combating climate change and meeting net-zero carbon emission targets. They also highlighted ongoing initiatives to develop and deploy new technologies such as small modular reactors (SMRs).

6 Rafael Mariano Grossi, IAEA Director-General, delivers his remarks at the opening of the Nuclear Energy Summit, "Powering tomorrow, Today", held at the Brussels EXPO, 21 March 2024. Photo Credit: Dean Calma / IAEA

In his opening remarks, IAEA Director General Rafael Mariano Grossi, who co-chaired the summit alongside Belgian Prime Minister Alexander De Croo, stressed the urgency of taking immediate action to achieve net-zero carbon emissions. He stated, *"Recognizing the necessity of nuclear power is not enough. It is the duty of political leaders to create the right conditions for nuclear development. Without decisive action, nuclear energy's potential to support the green transition could be lost."* French President Emmanuel Macron echoed this sentiment, saying, *"Our fight is to succeed in addressing climate change, reducing CO2 emissions, securing our energy supply to strengthen sovereignty, and at the same time, enhancing our competitiveness to create jobs."*

Fatih Birol, Executive Director of the International Energy Agency (IEA), reiterated the IEA's forecast that global nuclear energy production will reach record levels by 2025. He declared, *"Today, I assure you—nuclear is making a comeback, and it's coming back strong."* Industry representatives issued a joint statement affirming their readiness to support governmental efforts to expand nuclear energy. John Podesta, Senior Advisor

7 Fatih Birol (@fbirol), X account

to U.S. President Joe Biden for Clean Energy, Innovation, and Implementation, stated, *"Companies have pledged to work closely with relevant governments to continue operating existing nuclear facilities, build new ones, and advance nuclear infrastructure both in the U.S. and worldwide."*[15]

At the summit, China—represented by Vice Premier Zhang Guoqing, Vice Chairman of the China Atomic Energy Authority Liu Jing, and Vice President of the China National Nuclear Corporation (CNNC) Shudong Cao—announced its goal of achieving approximately 400 GW(e) of installed nuclear capacity by 2060, surpassing the total capacity of the existing global reactor fleet. Cao outlined China's strategy to expand its nuclear capacity through a mix of technologies, including large conventional reactors and innovative designs such as high-temperature gas-cooled small modular reactors (HTR-PM), the first of which was commissioned last year. Guoqing emphasized the unique advantages of nuclear energy in addressing climate change and ensuring energy security. He stated that China follows a rational, coordinated, and balanced nuclear safety strategy outlined by President Xi Jinping, implementing policies and measures to actively, safely, and systematically develop its nuclear energy sector.

April 2024

8 Miriam Kuenzli/Ex-Press

On April 9, 2024, the European Court of Human Rights (ECHR) announced its rulings on three climate change-related cases. One of these cases involved KlimaSeniorinnen Schweiz, an association consisting of over 2,000 women with an average age of 70, along with four individual members. The organization was founded out of concern that the Swiss government's CO_2 Act failed to take sufficient measures to meet climate targets, which would lead to higher temperatures, posing a particular risk to its members over the age of 75. In 2016, the group initiated legal action, calling on the Swiss Federal Council to take more decisive steps and, with the support of

[15] World Nuclear News. "Industry Ready to Help Deliver Governmental Nuclear Ambitions." *World Nuclear News (WNN),* March 21, 2024. https://www.world-nuclear-news.org/Articles/Industry-ready-to-help-deliver-governmental-nuclea.

Greenpeace, filed a lawsuit against the government. However, in 2020, Swiss authorities dismissed the case, ruling that the plaintiffs' rights had not been directly affected and that political activism would be a more appropriate avenue for their concerns.

After the Federal Supreme Court of Switzerland also rejected the case, KlimaSeniorinnen Schweiz took the matter to the ECHR in 2020. The case, *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland*, is significant as it is the first climate-related lawsuit to be heard by the ECHR. The applicants argued that Switzerland had failed to fulfill its positive obligations under the European Convention on Human Rights (ECHR), particularly regarding the right to effective protection of life (Article 2) and the right to respect for private and family life and home (Article 8), in light of the precautionary principle and the principle of intergenerational equity in international environmental law.

In its ruling on April 9, the ECHR Grand Chamber found that Switzerland's climate action measures were inadequate and not effectively implemented.[16] The Court ruled that Switzerland had violated Article 8 (right to respect for private and family life) and Article 6/1 (right of access to court) of the Convention. The judgment acknowledged climate change as *"one of the most urgent issues of our time"* and a threat to human rights. The ruling criticized Switzerland for falling *"far short"* of its carbon reduction commitments and reaffirmed that states have a positive obligation to take measures to mitigate climate change. This decision is seen as an important step in shaping future legal precedents concerning human rights violations caused by climate change, the legal standing of those affected, and the accountability of states in contributing to climate change.

However, in the cases of *Carême v. France*[17] (Carême Case) and *Duarte Agostinho and Others v. Portugal and 32 Others*[18] (Duarte Case), the Court dismissed the applications on procedural grounds. In the Carême Case, the former mayor and resident of Grande-Synthe Municipality filed a lawsuit against the French government, arguing that its inadequate measures to combat global warming violated his right to life and the right to

[16] European Court of Human Rights (ECHR). *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland [GC].* Judgment date: April 9, 2024, Application No. 53600/20. https://hudoc.echr.coe.int/eng?i=002-14304.

[17] European Court of Human Rights (ECHR). *Carême v. France.* Judgment date: April 9, 2024, Application No. 7189/21. https://hudoc.echr.coe.int/eng?i=001-233174.

[18] European Court of Human Rights (ECHR). *Duarte Agostinho and Others v. Portugal and 32 Other States [GC].* Judgment date: April 9, 2024, Application No. 39371/20. https://hudoc.echr.coe.int/eng?i=002-14303.

respect for private and family life. However, the ECHR declared the application inadmissible, ruling that the applicant did not meet the victim status criteria under Article 34 of the Convention.

The Duarte Case, previously covered in the September 2023 issue of this newsletter, was a historic lawsuit filed by a group of six young people, aged 11 to 24, against 27 EU member states, Turkey, the United Kingdom, Switzerland, Russia, and Norway. The plaintiffs argued that government inaction on climate change constituted a human rights violation. Had they won, the ruling could have set legally binding obligations for the defendant governments. However, the ECHR determined that the Convention provided no legal basis for extending extraterritorial jurisdiction in the manner requested by the applicants. Additionally, since the plaintiffs had not pursued any legal action within Portugal, their complaints against the Portuguese government were deemed inadmissible due to failure to exhaust domestic legal remedies.

This month, several significant reports on the negative impacts of the climate crisis have also been released. The Potsdam Institute for Climate Impact Research (PIK) conducted a comprehensive study analyzing climate change's economic impact based on data collected from over 1,600 regions worldwide over the past 40 years. The findings suggest that by 2049, the global economy could suffer a 19% decline in income.[19] Published in Nature, the study estimates that extreme weather conditions will cause losses amounting to $38 trillion due to declining agricultural productivity, reduced labor efficiency, and infrastructure damage. Leonie Wenz, the project director, warned: *"Climate change will cause significant economic damage in almost every country within the next 25 years... We must drastically and immediately reduce emissions—otherwise, economic losses will escalate further in the second half of the century, reaching an average of 60% by 2100."*

Meanwhile, on April 11, the U.S.-based think tank Global Energy Monitor published its annual report, revealing that global coal-fired power plant capacity grew by 2% last year, marking the highest annual increase since 2016.[20] The expansion was primarily driven by new construction in China and slower-than-expected closures of existing plants elsewhere. The study found that despite record investments in renewable energy last year,

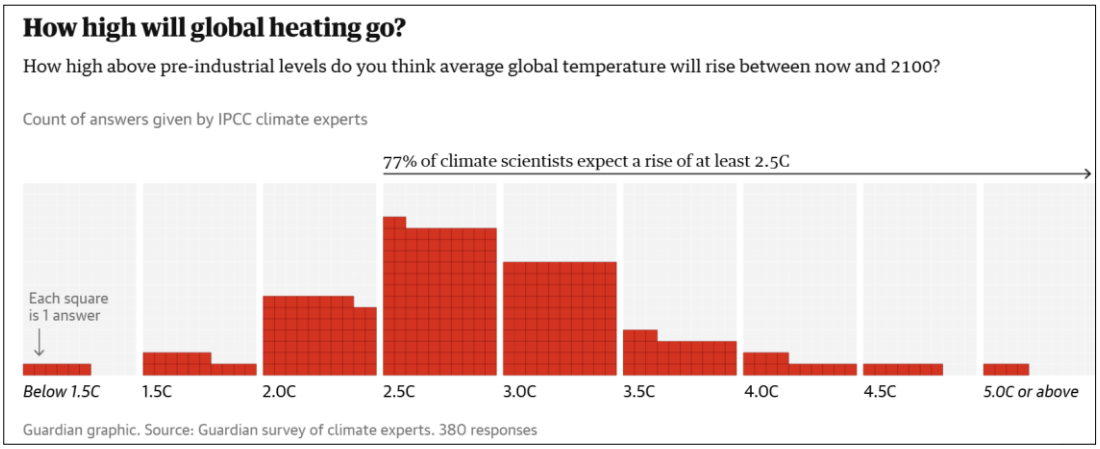
[19] Kotz, Maximilian, Anders Levermann, and Leonie Wenz. "The Economic Commitment of Climate Change." *Nature* 628, no. 551–557 (April 17, 2024). https://www.nature.com/articles/s41586-024-07219-0.

[20] Stanway, David. "Global coal power grew 2% last year, the most since 2016, GEM survey says." *Reuters,* April 11, 2024. Edited by Tom Hogue. https://www.reuters.com/sustainability/climate-energy/global-coal-power-grew-2-last-year-most-since-2016-gem-survey-says-2024-04-11/

around 70 GW of new coal capacity was commissioned globally, with 47.4 GW of this increase occurring in China. Additionally, for the first time since 2019, coal-fired capacity outside China also increased, while only 21.1 GW of global coal capacity was retired.

May 2024

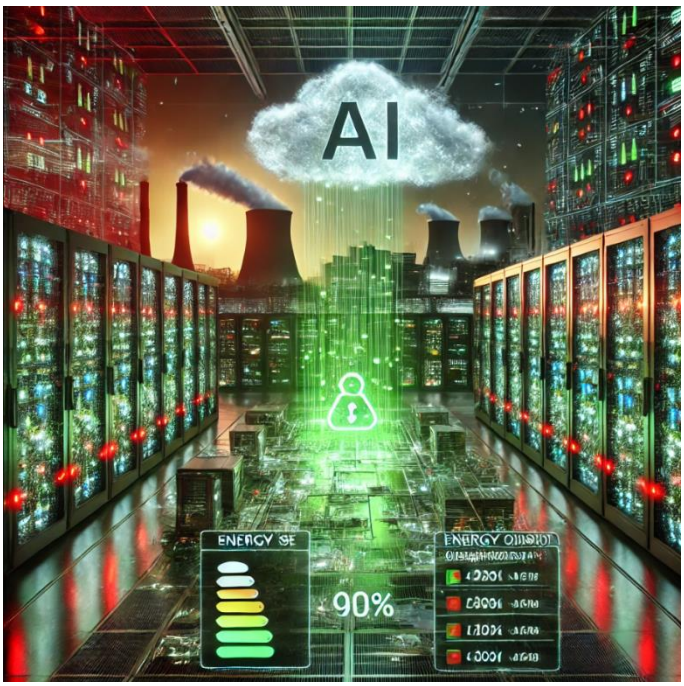
With the arrival of summer, temperatures are rising, and recent research findings are raising significant concerns for the future. A study conducted by The Guardian—based on the work of leading climate scientists—reveals that global temperatures are expected to surpass internationally recognized targets, exceeding pre-industrial levels by at least 2.5°C this century.[21] Among the respondents, all of whom are experts from the Intergovernmental Panel on Climate Change (IPCC), approximately 80% predict that global warming will reach at least 2.5°C, while nearly half believe it will be at least 3°C. Only 6% of the participating climate scientists think the internationally agreed 1.5°C threshold will be met.



Despite this alarming outlook, scientists emphasize that every step taken to combat global warming will reduce the severity of future risks and challenges for humanity. However, in interviews conducted as part of the study, experts identified the lack of political will and corporate interests as the main obstacles to climate action.

[21] Carrington, Damian. "World's Top Climate Scientists Expect Global Heating to Blast Past 1.5°C Target." *The Guardian,* May 8, 2024. https://www.theguardian.com/environment/article/2024/may/08/world-scientists-climate-failure-survey-global-temperature.

In January, the International Energy Agency (IEA) published its "Electricity 2024"[22] report, projecting that electricity consumption in data centers—driven by advancements in artificial intelligence (AI) and cryptocurrency technologies—could double by 2026 compared to 2022 levels. According to the report, these technologies accounted for approximately 2% of global electricity demand in 2022. Experts noted that this increase could add to global electricity consumption *"at least as much as Sweden or as much as Germany."*



9 The image was generated using artificial intelligence. Its production took approximately 10–15 seconds and consumed around 1.5 Wh of energy. This is equivalent to powering an LED bulb for approximately 9 minutes or briefly charging a smartphone.

In connection with this issue, an article published this month in MIT Technology Review highlighted the high energy demands of certain AI-generated images. Experts noted that some AI models, such as Stable Diffusion XL—which has been described as a *"breakthrough in creative use cases for generative AI images"*—consume as much electricity as charging a smartphone for every image they generate.[23] The article further reported that producing 1,000 images using this model results in carbon dioxide emissions equivalent to those produced by a gasoline-powered car traveling more than four miles. This has raised concerns about the rapidly increasing electricity demand due to the growing integration of AI into daily life.

[22] International Energy Agency (IEA). *Electricity 2024: Analysis and Forecast to 2026.* 2024. https://www.iea.org/reports/electricity-2024/executive-summary.

[23] Crownhart, Casey. "AI Is an Energy Hog: What It Means for Climate Change." *MIT Technology Review,* May 23, 2024. https://www.technologyreview.com/2024/05/23/1092777/ai-is-an-energy-hog-this-is-what-it-means-for-climate-change/.

A newly released report this month on carbon taxation, a key step toward industrial decarbonization, presents striking figures. The World Bank's annual "State and Trends of Carbon Pricing 2024" report[24] reveals that despite economic challenges such as high inflation and energy crises, revenues from carbon taxes and Emissions Trading Systems (ETS) reached a record $95 billion. Commenting on the findings, Jennifer Sara, the World Bank's Global Director for Climate Change, emphasized that carbon pricing plays a crucial role in integrating the costs of climate change into economic decision-making, thereby incentivizing climate action.

The report's foreword highlights that the total number of carbon pricing mechanisms has increased, with 75 national instruments now in operation, including recent initiatives in Australia, Hungary, Slovenia, Taiwan, and China, as well as subnational plans in Mexico. This marks a significant expansion from a decade ago when carbon pricing covered only 7% of global emissions; today, this figure has risen to 23% due to the implementation of new mechanisms and expanded coverage of existing programs. The report also notes that these policies are becoming increasingly adaptable to national contexts and new sectors.

According to the report, Brazil, India, Chile, Colombia, and Turkey, among other major middle-income countries, have made substantial progress toward implementing emissions trading schemes. It further highlights that under the Paris Climate Agreement, international cooperation on carbon markets is being encouraged. The report underscores that carbon pricing is an essential tool for revenue generation, directing financial flows, and fostering innovation, while also contributing to broader sustainability and development goals.

June 2024

Under the Paris Climate Agreement, governments are required to submit their emissions reduction plans to the United Nations (UN) every five years, starting in 2020. In this context, a new coalition called Mission 2025 has been established, bringing together business leaders, mayors, governors, and investors to advocate for stronger climate targets ahead of the February 2025 deadline. Mission 2025, led by former UN Framework Convention on Climate Change (UNFCCC) Executive Secretary Christiana Figueres, aims to counter concerns that some governments are backtracking on their climate

[24] World Bank. *State and Trends of Carbon Pricing 2024.* Washington, DC: World Bank, 2024. https://openknowledge.worldbank.org/entities/publication/b0d66765-299c-4fb8-921f-61f6bb979087.

commitments. Figueres stated that the coalition seeks to debunk the idea that taking faster action against the climate crisis is *"too difficult, too unpopular, or too expensive."*[25] Mission 2025 is pushing for robust national climate plans, known as Nationally Determined Contributions (NDCs), aligned with the goal of limiting global temperature rise to 1.5°C above pre-industrial levels.

Additionally, a report published in June by the think tank Energy Transitions Commission, titled "Credible Contributions: Bolder Plans for Higher Climate Ambition in the Next Round of NDCs", suggests that the declining costs of clean technologies could make a 2°C pathway feasible.[26] The report highlights the need for greater collaboration between industry and government to enhance NDCs before COP30, which will take place in Brazil in November 2025. It underscores the importance of leveraging technological advancements to set more ambitious targets aligned with national policies and accelerate the deployment of clean energy technologies.

The world is witnessing the devastating effects of the climate crisis with increasing frequency. As summer arrives, extreme heat and drought have triggered large-scale wildfires both in our country and in various regions around the world. A study published on June 24 in Nature Ecology & Evolution analyzed daily data from NASA satellites and identified approximately 3,000 extreme wildfire events by detecting the 0.01% most intense wildfires.[27] Over the past two decades, the frequency of extreme wildfires has increased more than tenfold in temperate coniferous forests such as those in the western United States and the Mediterranean, while in boreal forests in northern Europe and Canada, the increase has been sevenfold. Australia remains a critical hotspot for devastating wildfires. The report states that since 2003, the frequency and intensity of extreme wildfires have doubled, with the most severe fires continuing to rise since 2017. Scientists warn that these fires pose immediate threats to human life, property, and

[25] Mooney, Attracta. "New Climate Coalition Urges Stronger Targets as 'Greenlash' Fears Mount." *Financial Times,* June 24, 2024. https://www.ft.com/content/8540ac9a-5d36-45f7-bcc3-8459f86d3f14.

[26] Energy Transitions Commission. *Credible Contributions: Bolder Plans for Higher Climate Ambition in the Next Round of NDCs.* June 2024. https://www.energy-transitions.org/publications/credible-contributions-bolder-plans-for-ndcs/#download-form.

[27] Cunningham, Calum X., Grant J. Williamson, and David M. J. S. Bowman. "Increasing Frequency and Intensity of the Most Extreme Wildfires on Earth." *Nature Ecology & Evolution,* June 24, 2024. https://doi.org/10.1038/s41559-024-02452-2.

ecosystems, while also releasing large amounts of carbon dioxide, further exacerbating global warming.

Beyond wildfires, rising sea levels and flooding disasters have also affected numerous countries. Global sea levels are expected to rise by an average of half a meter over the next 50 years, with low-lying regions in West Africa particularly at risk. A study commissioned by the Senegalese government found that 80% of Saint Louis, often referred to as *"Africa's Venice",* will be at risk of flooding by 2080. Several other cities in West Africa are also facing the gradual threat of being swallowed by rising tides.

10 The houses in Saint-Louis, located between the Senegal River and the Atlantic Ocean, are under serious threat due to rising sea levels. Photo: Leo Correa/AP.

An article published in The Economist highlights that many major cities in West Africa, built by European colonial powers over a century ago, were constructed on fragile sandy coastlines, often between river estuaries, lagoons, and mangrove swamps, primarily for transport and trade.[28] For instance, Lagos, Nigeria's economic capital, is situated on a chain of islands and is sinking by up to 87mm per year. In Nouakchott, Mauritania, much of the city lies below sea level and is protected only by a narrow sand dune barrier, which could be breached by powerful waves. Rapid urbanization, low incomes, and weak infrastructure are exacerbating the problem, pushing more people into vulnerable coastal areas. According to the World Bank, 42% of West Africa's Gross Domestic Product (GDP) is generated in coastal regions, which are also home to one-third of the region's population.

[28] The Economist. "The 'Venice of Africa' Is Sinking into the Sea." *The Economist,* June 24, 2024. https://www.economist.com/middle-east-and-africa/2024/06/24/the-venice-of-africa-is-sinking-into-the-sea.

July 2024

July marked an unprecedented increase in global temperatures, with July 21 and 22 recorded as the two hottest days in history. United Nations (UN) Secretary-General António Guterres, speaking to journalists at the UN headquarters, stated, *"If there is one thing that unites our divided world, it is the rising temperatures that affect us all."*[29] He pointed out that temperatures are rising everywhere for everyone, impacting billions of people, with some regions experiencing highs of 50°C. Guterres noted that half a million people die each year due to extreme heat, emphasizing that these deaths can be prevented and their impact mitigated. He issued a renewed call for global action, stressing the urgent need to protect the most vulnerable communities first. *"The message is clear. The heat is rising. Extreme temperatures are affecting people and the planet. The world must act to combat escalating heatwaves."*

At the NATO Summit, held in Washington, D.C., from July 9-11, a report titled "Climate Change and Security Impact Assessment" was published,[30] highlighting the growing speed and intensity of climate change and its adverse effects on the security of NATO member states. The report, part of NATO's Climate Change and Security Action Plan,[31] which was adopted at the 2021 Brussels Summit, examines the impact of climate change on NATO's operations, missions, and resilience efforts. It particularly assesses security risks such as the melting of Arctic ice and extreme weather events triggering migration in North America and Europe.

The report underscores that climate-induced changes in maritime conditions—including ocean and air temperatures, salinity levels, wind speeds, rainfall patterns, surface and subsurface currents, and shifts in marine ecosystems—have a direct impact on naval capabilities. It warns that the weakening of the Atlantic Meridional Overturning Circulation (AMOC) could lead to sudden and dramatic changes affecting maritime

[29] United Nations. "Rising Temperatures: UN Secretary-General Says We Must Overcome the Challenges of Increasing Heat." *United Nations Turkey,* July 26, 2024. https://turkiye.un.org/tr/275066-s%C4%B1cakl%C4%B1k-art%C4%B1yor-bm-genel-sekreteri-artan-s%C4%B1cakl%C4%B1klar%C4%B1n-yaratt%C4%B1%C4%9F%C4%B1-zorlu%C4%9Fun-%C3%BCstesinden.

[30] NATO. *The Secretary General's Report Third Edition 2024: NATO Releases 2024 Climate Change and Security Impact Assessment Report.* July 9, 2024. https://www.nato.int/nato_static_fl2014/assets/pdf/2024/7/pdf/240709-Climate-Security-Impact.pdf.

[31] NATO. *NATO Climate Change and Security Action Plan.* June 14, 2021. https://www.nato.int/nato_static_fl2014/assets/pdf/2023/7/pdf/230710-climate-change-best-practices.pdf.

operations. Additionally, increased ocean acidity and salt levels may accelerate ship corrosion, while rising seawater temperatures could disrupt ship cooling systems, increasing the risk of overheating. The report also highlights challenges posed by extreme weather events and rising temperatures in land operations, affecting both troops and military equipment, including helicopters and cargo aircraft.

Another report addressing climate-related security risks, the 2024 World Climate and Security Report, was published on July 9 by the International Military Council on Climate and Security (IMCCS).[32] Developed in partnership with the Council on Strategic Risks (CSR), Clingendael, The Hague Centre for Strategic Studies (HCSS), and the French Institute for International and Strategic Affairs (IRIS), the report emphasizes the accelerating climate impacts and the ongoing energy transition, which necessitate greater consideration of carbon footprints in military operations, infrastructure, and supply chains. It identifies gaps in measuring, reporting, and reducing emissions, reviews existing initiatives in various countries to enhance military efficiency and reduce carbon footprints, and explores how military research and innovation can support emission reduction efforts while strengthening infrastructure and operational resilience. While the report provides recommendations relevant to armed forces worldwide, it particularly focuses on NATO member states.

Another significant event in July was the Ministerial on Climate Action (MoCA), an annual conference organized by the European Union, China, and Canada. Hosted by the Chinese Ministry of Ecology and Environment in Wuhan on July 22-23, this year's 8th MoCA focused on "Advancing and Strengthening Global Climate Action in Line with the Paris Agreement's Objectives and Long-Term Goals."[33]

[32] International Military Council on Climate and Security. *World Climate and Security Report 2024: Military Innovation and the Climate Challenge.* Edited by Francesco Femia and Erin Sikorsky. The Hague: Clingendael Institute, 2024. https://www.clingendael.org/sites/default/files/2024-07/WCSR_Report_2023_24.pdf.

[33] Wuhan Municipal Government. "8th Ministerial on Climate Action Takes Place in Wuhan, Hubei." *Wuhan News,* July 25, 2024. https://english.wuhan.gov.cn/H_1/NWP/202407/t20240725_2433204.shtml.

11 Photo: Ministry of Environment, Urbanisation and Climate Change Official Website

Launched in 2017 to support the Paris Agreement, MoCA aims to address challenging issues in climate negotiations at a higher political level. Experts emphasized the importance of resilience and leadership in global climate governance amid economic challenges and political uncertainty. They highlighted the need for China to submit an ambitious Nationally Determined Contribution (NDC) and for countries to reach an agreement on a new climate finance target at COP29, especially given the stalemate in technical negotiations in Bonn.[34]

In addition to Turkey, the meeting was attended by representatives at the Ministerial and Delegation Head level from around 30 countries, including Azerbaijan and Brazil, which will host COP29 and COP30, respectively, as well as the United States, the United Kingdom, Australia, Denmark, Norway, the European Union, Chile, South Korea, the United Arab Emirates, Uganda, and Malawi, along with United Nations officials. The conference was seen as crucial in aligning national climate strategies with the Paris Agreement and maintaining momentum for COP29 in Baku this November. Discussions included a comprehensive review of COP28 outcomes and key topics for COP29 and COP30, focusing on strengthening international cooperation and accelerating the energy transition.

[34] Greenpeace East Asia. "Greenpeace East Asia's Comment on the 8th Ministerial on Climate Action (22-23 July, China)." *Greenpeace East Asia,* July 18, 2024. https://www.greenpeace.org/eastasia/press/8587/greenpeace-east-asias-comment-on-the-8th-ministerial-on-climate-action-22-23-july-china/.

12 ©Paris 2024 – Florian Hulleu

A related major development occurred in Paris on July 26, with the launch of the 2024 Olympic Games. Paris 2024 aims to halve its carbon footprint compared to London 2012 and Rio 2016, targeting a reduction of 3.5 million tons of CO_2 equivalent.[35] To achieve this, the event has implemented measures such as minimizing new venue construction, using renewable energy, and offering more plant-based food options. Additionally, a "Climate Coach for Events" tool has been introduced to help organizers assess and mitigate the carbon impact of Olympic-related activities.

This tool allows event organizers to input data across ten categories—including food, accommodation, travel, infrastructure, energy, sports equipment, logistics, venue preparation, promotional materials, digital content, and waste—to estimate and analyze their carbon footprint while providing customized measures to reduce emissions. However, despite these calculations and initiatives, experts note that the sheer scale of the Olympics, with athletes and officials from 200 countries and 13 million spectators traveling from around the world, will inevitably result in a significant carbon footprint.[36]

August 2024

As with every month, August has once again highlighted the stark realities of the climate crisis. This year, Earth Overshoot Day, the date when humanity's demand for ecological resources exceeds what the planet can regenerate in a year, was marked on August 1.

[35] International Olympic Committee (IOC). *Paris 2024 Olympic Games.* https://www.olympics.com/en/olympic-games/paris-2024.

[36] Gökçam, Başak Nur. "Paris' Claim of Being 'The Greenest' Falls Flat." *Dünya,* July 29, 2024. https://www.dunya.com/dunya/parisin-en-yesil-olma-iddiasi-havada-kaldi-haberi-738679.

Determined by the Global Footprint Network, Earth Overshoot Day is calculated by comparing humanity's ecological footprint—the total demand placed on ecosystems—with the planet's biocapacity, or the ability to regenerate these resources.[37] The *ecological footprint* is a metric that measures human demand on ecosystems, encompassing elements such as carbon footprint, land and water used for food and fiber production, grazing land, built-up areas, and fishing grounds. The carbon footprint, which stems from fossil fuel combustion, represents the largest portion of the ecological footprint. Meanwhile, biocapacity refers to the planet's ability to renew resources and absorb waste, particularly carbon dioxide. Key components of biocapacity include forests, croplands, grazing areas, and fishing grounds, while built-up areas reduce biocapacity but are still considered part of the overall productive land area.

The date of Earth Overshoot Day is calculated by dividing the planet's biocapacity by humanity's ecological footprint and multiplying the result by 365 days. If the ratio is less than one, it indicates an ecological overshoot, and the specific date when this occurs is designated as Earth Overshoot Day for that year.

In addition to the global calculation, national overshoot days are also tracked. Data from over 200 countries and regions, accounting for more than 15,000 data points per country each year, are used to determine both global and national overshoot days, providing insights into the sustainability levels of individual countries and the planet as a whole. According to 2024 data, Qatar had the earliest overshoot day on February 11, while Kyrgyzstan, at December 30, had the latest. Turkey's overshoot day for this year was recorded as June 11.

Since the 1970s, the trend of earlier overshoot dates has persisted, with last year's date set at August 2. Experts estimate that humanity is consuming resources 1.7 times faster than the Earth can regenerate, meaning that, at the current rate of consumption, we would need 1.7 Earths to sustain our lifestyle.[38]

Meanwhile, wildfires continued to rage worldwide throughout the month. In Turkey, more than 70 wildfires broke out, most notably in Izmir, with some brought under control while firefighting efforts continued for others. In Europe, similar wildfires erupted in

[37] Global Footprint Network. https://www.footprintnetwork.org.

[38]Global Footprint Network. "Earth Overshoot Day 2024 Falls on August 1st." *Global Footprint Network,* 2024. https://overshoot.footprintnetwork.org/newsroom/press-release-2024-english/.

Greece, Bulgaria, and Portugal. Fires on the Greek islands of Corfu, Evia, and Rhodes devastated thousands of hectares of forestland, forcing the evacuation of more than 30,000 tourists and residents. Multiple EU countries and Turkey provided assistance in firefighting efforts. In Portugal, wildfires on Madeira Island destroyed over 5,700 hectares of forest.[39]

In Western Canada, ongoing wildfires severely impacted air quality across North America, with smoke reaching as far as Europe.[40] According to data from the Copernicus Atmosphere Monitoring Service (CAMS), Canada recorded over 80 megatons of carbon emissions in August, nearing 2023's record levels. The fires caused sharp increases in emissions and fire intensity, particularly in the Northwest Territories. In 2023, Canada's wildfires burned seven times more land than the 40-year average, resulting in the deaths of eight firefighters and the displacement of 180,000 people. New research shows that these fires emitted 647 million metric tons of carbon, making Canada the fourth-largest emitter globally.[41] Experts warn that climate change could further exacerbate fire seasons, leading to even more severe wildfires in the future.

September 2024

Once again, September has been marked by the devastating effects of climate change worldwide. According to the latest Climate Newsletter from the European Union's Climate Monitoring Service, Copernicus (C3S), 2024 has been the hottest summer on record.[42]

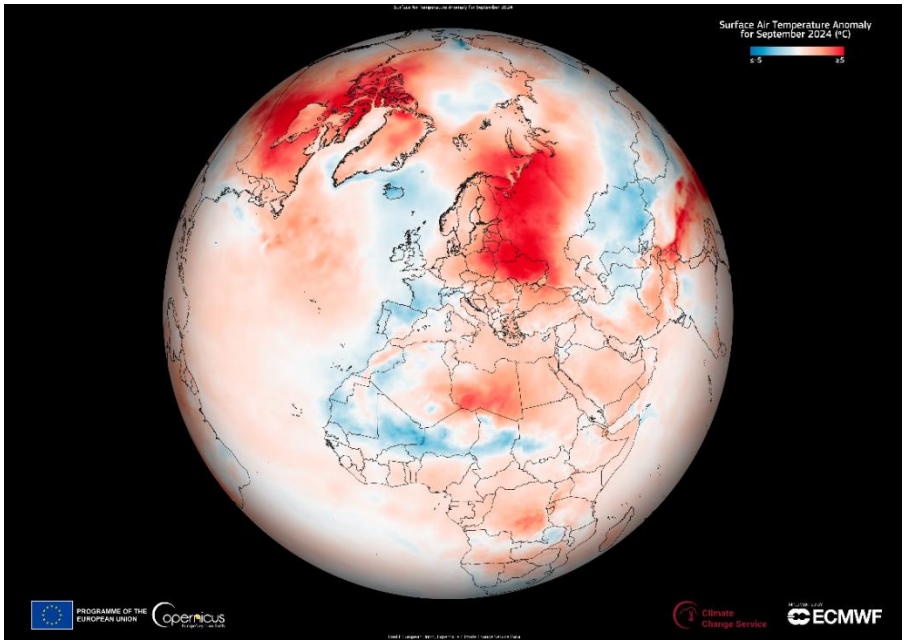
[39] NASA Earth Observatory. "Smoke Streams from Fires in Madeira." Last updated August 17, 2024. https://earthobservatory.nasa.gov/images/153219/smoke-streams-from-fires-in-madeira.

[40] Copernicus Atmosphere Monitoring Service. "Smoke from Canadian Wildfires Reaches Europe." Last updated August 20, 2024. https://atmosphere.copernicus.eu/smoke-canadian-wildfires-reaches-europe.

[41] Byrne, Brendan, Jun Liu, Kevin W. Bowman, et al. "Carbon Emissions from the 2023 Canadian Wildfires." *Nature* 633: 835–839. Published August 28, 2024. Issue date September 26, 2024. https://doi.org/10.1038/s41586-024-07878-z.

[42] Copernicus Climate Change Service (C3S). "September 2024: The Second Warmest September on Record." *Copernicus,* October 10, 2024. https://www.copernicus.eu/en/media/image-day-gallery/september-2024-second-warmest-september-record.

The global average temperature in September was 0.73°C above the 1991-2020 average and 1.54°C above the pre-industrial (1850-1900) average, reinforcing projections that 2024 is on track to become the hottest year on record.



13 European Union, Copernicus Climate Change Service Data

Similar trends were observed in Europe, where the average temperature in September 2024 reached 16.47°C, 1.74°C above the 1991-2020 average, making it the second-hottest September on record in Europe, following 2023.

Rising global temperatures are also increasing the frequency and intensity of natural disasters. South America has witnessed unprecedented levels of carbon emissions during the 2024 wildfire season. Fires have spread rapidly across the continent, especially in Brazil and Bolivia.[43] In Brazil, total carbon emissions exceeded 180 megatons, approaching the record set in 2007. In the states of Amazonas and Mato Grosso do Sul, fire intensity reached record levels, significantly deteriorating air quality. São Paulo recorded the highest number of fires in its history in August, and by early September, it was classified as the world's most polluted major city. Smoke plumes from these wildfires

[43] Copernicus Atmosphere Monitoring Service (CAMS). "South America Sees Historic Emissions During 2024 Wildfire Season." *Copernicus News Center,* September 20, 2024. https://atmosphere.copernicus.eu/south-america-sees-historic-emissions-during-2024-wildfire-season.

have spread across a vast area, affecting cities from Quito to Montevideo and Buenos Aires.

These extraordinary wildfires in South America have been exacerbated by drought, extreme heat, and the conclusion of El Niño. While El Niño, which contributed to rising global temperatures in 2023 and 2024, is now ending, experts warn that its residual impact continues to disrupt climate balance by adding extra heat to the atmosphere. The Pacific Ocean is expected to transition into La Niña, a cooler phase, in the coming months. This shift could lead to severe droughts in some regions while triggering intense rainfall in others.

14 In this undated file photo, technicians install photovoltaic panels at a solar power farm in Dongshan county, Fujian province. (PHOTO / XINHUA)

Meanwhile, China is accelerating its energy transition. According to the 'China Energy Transition' white paper,[44] released by the National Energy Administration (NEA), China's investment in energy transition exceeded $676 billion in 2023. The country significantly increased its renewable energy capacity, scaling wind and solar energy production tenfold compared to 2013. Additionally, China's energy transition efforts prevented 810 million tons of CO_2 emissions in 2023. To further cut carbon emissions in the steel and industrial sectors, China has halted approvals for new steel plants, a move expected to support its goal of peaking emissions by 2030 and achieving carbon neutrality by 2060.[45]

In terms of Africa-China relations, China is prioritizing investment in energy transition. As part of the Forum on China-Africa Cooperation (FOCAC), Chinese President Xi

[44] State Council of China. "China Issues White Paper on Energy Transition." *Official Website of the People's Republic of China,* August 29, 2024. https://english.www.gov.cn/news/202408/29/content_WS66d012d3c6d0868f4e8ea52d.html.

[45] Carbon Brief. "China Briefing 5 September 2024: 'Energy Transition' White Paper; Steel Permits 'Paused'; China's Investment in Africa." *Carbon Brief,* September 5, 2024. https://www.carbonbrief.org/china-briefing-5-september-energy-transition-white-paper-steel-permits-paused-chinas-investment-in-africa/.

Jinping pledged $51 billion in new investments for Africa, focusing on clean energy projects and sustainable development. In recent years, China has significantly increased its exports of electric vehicles, lithium batteries, and solar panels to Africa. These efforts are expected to enhance Africa's renewable energy capacity, improve energy access across the continent, and reduce its carbon footprint.

October 2024

The devastating floods in Spain have once again highlighted the world's lack of preparedness for climate change.[46] The disaster resulted in the loss of approximately 100 lives, caused severe traffic congestion on highways, and submerged agricultural lands in the region responsible for producing two-thirds of Spain's citrus exports.

Meteorologists reported that on October 29, some areas of Valencia received 491 mm of rainfall in just eight hours—equivalent to an entire year's worth of rain. This extreme event was caused by a weather system where cold and warm air masses collided, forming intense rain clouds.[47] A phenomenon known as *DANA* (Depresión Aislada en Niveles Altos)—a high-altitude isolated depression—is commonly observed in eastern and southern Spain due to the country's location between the Atlantic Ocean and the Mediterranean Sea. Scientists believe that climate change is increasing the frequency of such events. When cold air passes over the warm Mediterranean waters, it forces warm air rapidly upward, leading to the formation of dense, moisture-laden clouds. This results in prolonged heavy rainfall over the same area, significantly intensifying its destructive potential.

The floods caused widespread material and emotional damage, while emergency services were overwhelmed by the surge in distress calls, leaving many people without timely assistance. Experts noted that uncontrolled urbanization and inadequate infrastructure in Valencia worsened the impact of the floods. European Commission President Ursula von der Leyen described the disaster as a stark reminder of the climate crisis, emphasizing that Europe must improve its preparedness for such events. Spanish political leaders

[46] Manez, Eva, and Latona, David. "Spanish Floods Kill 95 as Year of Rain Falls in a Day in Valencia." *Reuters,* October 31, 2024. https://www.reuters.com/world/europe/heavy-rains-cause-flash-floods-spains-south-east-2024-10-29/.

[47] Khalip, Andrei, and Landauro, Inti. "What Caused Deadly Floods in Spain? The Impact of DANA Explained." *Reuters,* November 4, 2024. https://www.reuters.com/business/environment/spains-deadly-dana-weather-phenomenon-its-links-climate-change-2024-10-30/.

criticized local authorities for failing to communicate warnings in time, which resulted in workers commuting as usual and led to avoidable casualties. Reports indicate that Spain's National Meteorological Agency (AEMET) had issued a *"severe danger"* warning ahead of the floods, but Valencia's regional government failed to relay the alert promptly, only notifying the public eight hours after the flooding had begun.

Ahead of the COP29 Climate Summit, set to begin in Baku, Azerbaijan, in November, world leaders gathered at the United Nations Biodiversity Summit (COP16) to address urgent environmental challenges. The summit, which commenced on October 21 in Cali, Colombia, opened with UN Secretary-General António Guterres urging world leaders to take decisive action to reverse biodiversity loss. He warned that environmental crises were pushing humanity toward *"tipping points that could fuel hunger, displacement, and armed conflicts."*[48]

At COP15, held in Montreal in 2022, world leaders adopted the Kunming-Montreal Global Biodiversity Framework (GBF), committing to protect at least 30% of the world's land and water and restore 30% of degraded ecosystems by 2030 (the "30x30" goal).[49] However, during COP16, experts voiced concerns over the slow progress toward these targets. In particular, the lack of financial commitments and subsidy reforms raised fears that governments may once again fail to meet their biodiversity commitments.

While 195 countries presented plans to protect ecosystems and enhance biodiversity, only 25 countries and the European Union had developed concrete action plans. To implement conservation efforts, the framework calls for mobilizing $200 billion annually, including $20 billion per year for developing nations by 2025, increasing to $30 billion per year by 2030. Additionally, it proposes eliminating $500 billion in environmentally harmful subsidies, including fossil fuel subsidies.

The summit identified the global food system as one of the primary drivers of biodiversity loss and called for greater integration of biodiversity and climate policies with food systems and water security strategies. Environmental organizations, including WWF and

[48] Mishra, Vibhu. "At COP16, Guterres Urges World to 'Choose Wisely…Make Peace with Nature'." *UN News,* October 29, 2024. https://news.un.org/en/story/2024/10/1156261.

[49] Lo, Veronica, and Nicole Jang. "The Global Biodiversity Framework's '30x30' Target: Catchy Slogan or Effective Conservation Goal?" *International Institute for Sustainable Development (IISD),* December 6, 2022. https://www.iisd.org/articles/insight/global-biodiversity-framework-30x30-target.

Greenpeace, emphasized the need for stronger integration of biodiversity policies into future climate negotiations, urging EU leaders to take the lead. COP16 will continue until November 1.

November 2024

On November 7, the Organization for Economic Co-operation and Development (OECD) released the Climate Action Monitor 2024 report, one of the flagship publications of the OECD International Programme for Action on Climate (IPAC).[50] The report assessed the progress of 51 OECD member and partner countries toward global climate action and net-zero targets.

The findings indicated that current emission reduction commitments for 2030 fall far short of the Paris Agreement's goal of limiting global warming to 1.5°C. The report highlighted slow progress in implementing and expanding climate policies, especially in non-OECD countries. It projected that Nationally Determined Contributions (NDCs) would only reduce global emissions by 14% by 2030, significantly below the 43% reduction required to meet the 1.5°C goal. While 110 countries have pledged to achieve net-zero emissions by 2050, only 27 have enshrined these commitments into law.

The report also warned that climate-related risks and disasters have become more severe, with 2024 marking record-breaking global temperatures. It highlighted the significant impacts of heatwaves, floods, wildfires, and droughts on human life, economies, and ecosystems. The report emphasized the need for more ambitious and effective climate

[50] Organisation for Economic Co-operation and Development (OECD). *The Climate Action Monitor 2024.* OECD Publishing, Paris, 2024. https://doi.org/10.1787/787786f6-en.

policies to address the impact of climate change on agriculture, water resources, and coastal flooding.

Without a significant increase in national climate efforts, countries will struggle to achieve their net-zero targets, the report warned. It called for improvements in the implementation and monitoring of national adaptation strategies. Additionally, it stressed that global cooperation, stronger policies, and a just transition for vulnerable communities are essential for achieving net-zero goals.

The 29th UN Climate Change Conference (COP29), held in Baku, Azerbaijan, from November 11-24, reinforced many of the concerns outlined in the OECD report. The summit concluded with modest achievements but significant shortcomings, raising questions about the effectiveness of the COP process in addressing climate change.

Developing countries demanded $1.3 trillion annually in climate finance until 2035. However, the New Collective Quantified Goal (NCQG) was set at just $300 billion per year until 2035, well below actual financial needs.[51] A report published during COP29 estimated that by 2030, global climate finance requirements would reach $6.3-$6.7 trillion annually, with developing nations alone requiring $2.3-$2.5 trillion per year.[52]

While some progress was made on carbon markets under Article 6 of the Paris Agreement, funding for climate adaptation remained insufficient. The UN Adaptation Fund fell far short of its $300 million annual target, securing only $61 million. A phased transition away from fossil fuels remained unresolved, with discussions postponed to COP30 in Brazil in 2025.

[51] United Nations Framework Convention on Climate Change (UNFCCC). *New Collective Quantified Goal on Climate Finance (NCQG).* Bonn: UNFCCC, 2024. https://unfccc.int/sites/default/files/resource/NCQG.pdf.

[52] Independent High-Level Expert Group on Climate Finance. *Raising Ambition and Accelerating Delivery of Climate Finance.* Policy Publication. London: Grantham Research Institute on Climate Change and the Environment, November 14, 2024. https://www.lse.ac.uk/granthaminstitute/publication/raising-ambition-and-accelerating-delivery-of-climate-finance/.

Azerbaijani President Ilham Aliyev defended his country's fossil fuel industry, calling oil and gas *"a gift from God."*[53] He stated that Azerbaijan's emissions account for only 0.1% of global emissions, accusing Western media of unfair criticism. He also announced plans to increase gas production by one-third within the next decade. UN Secretary-General António Guterres dismissed Aliyev's remarks as *"nonsense,"* asserting that the clean energy revolution is now unstoppable.

15 Photo: EPA-EFE

At the summit, Turkish President Recep Tayyip Erdoğan reaffirmed Turkey's commitment to achieving carbon neutrality by 2053. He announced that Turkey had reduced atmospheric carbon by 5.9 million tons, pledged an additional 100 million-ton reduction by 2030, and planned to expand wind and solar capacity to 120 GW. Turkey also aims to generate 20 GW of nuclear power by 2050 and introduce a national carbon trading system through a new climate law.

Under the Paris Agreement, countries must submit updated voluntary climate commitments by February 2025. However, COP29 revealed a stark contrast in ambition levels. UK Prime Minister Keir Starmer pledged to cut emissions by 81% by 2035, positioning the UK as a global clean energy leader. In contrast, Brazil and the UAE faced criticism for failing to include a phase-out of fossil fuels, despite pledging this commitment at COP28.

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The rising temperatures in the Arctic region are causing significant environmental changes that affect not only the region itself but the entire world. The melting of Arctic ice sheets and the Greenland Ice Sheet is exacerbating coastal flooding. Additionally, wildfires in the Arctic and the release of heat-trapping gases from thawing tundra are

[53] Rannard, Georgina, and Maia Davies. "Oil and Gas Are a 'Gift of God,' Says COP29 Host." *BBC News,* November 12, 2024. https://www.bbc.com/news/articles/cpqd1rzw9r4o.

further accelerating global warming, intensifying extreme weather events, increasing pressure on food supplies, and amplifying threats linked to wildfires.

The 2024 Arctic Report, published on December 10 by the U.S. National Oceanic and Atmospheric Administration (NOAA),[54] provides a comprehensive assessment of the state of Arctic wildlife, wildfires, sea ice, and land cover. The report states that, for the first time, the Arctic tundra has ceased to be a carbon sink and has instead become a source of greenhouse gas emissions. This shift is attributed to the warming of permafrost, increasing wildfires, and the broader impacts of climate change. It has been noted that the Arctic has been warming faster than the global average for 11 consecutive years. According to researchers, while the warming of this region—currently occurring at up to four times the global rate—encourages plant growth and aids in carbon absorption, it simultaneously leads to the thawing of permafrost, which releases previously trapped carbon dioxide and methane into the atmosphere.

Meanwhile, in January, the U.S. Bureau of Land Management announced plans to auction off 400,000 acres of the Arctic National Wildlife Refuge for oil and gas drilling.[55] This decision is linked to a tax regulation passed in 2017 under the Trump administration, which mandated the opening of parts of Alaska's protected lands for development.[56] However, this move has drawn sharp criticism from environmentalists, as it contradicts the climate commitments of the Biden administration, which was elected on a platform of environmental protection.

A study published in Science revealed that a marine heatwave in the Pacific Ocean between 2014 and 2016 caused significant declines in the population of common murres (Uria aalge), a widespread seabird species in Alaska.[57] The study described this as the largest recorded wildlife mortality event in modern history, with an estimated four million

[54] National Oceanic and Atmospheric Administration (NOAA). *Arctic Report Card 2024.* December 28, 2024. https://arctic.noaa.gov/report-card/report-card-2024/.

[55] Davidson, Amelia. "Biden Admin Finalizes Arctic Refuge Oil Lease Sale." *E&E News by POLITICO,* September 12, 2024. https://www.eenews.net/articles/biden-admin-finalizes-arctic-refuge-oil-lease-sale/.

[56] *Reuters.* "US to Offer Minimum Acreage Required at Alaska Oil and Gas Auction." December 10, 2024. https://www.reuters.com/markets/commodities/us-offer-oil-gas-leases-alaska-wildlife-refuge-jan-9-2024-12-09/.

[57] Renner, Heather M., John F. Piatt, Martin Renner, Brie A. Drummond, Jared S. Laufenberg, and Julia K. Parrish. "Catastrophic and Persistent Loss of Common Murres After a Marine Heatwave." *Science* 386, no. 6727 (December 12, 2024): 1272–1276. https://doi.org/10.1126/science.adq4330.

birds perishing. Between 2016 and 2022, population monitoring showed no signs of recovery, suggesting a permanent shift in the ecosystem. Researchers emphasized that marine heatwaves do not merely cause temporary disruptions but can fundamentally alter the building blocks of ecosystems.

Efforts for climate justice on a global scale have reached a significant legal turning point. On December 2, 2024, the United Nations International Court of Justice (ICJ) initiated the most significant climate-related legal case in its history, aimed at determining the legal obligations of states in combating climate change.[58] This case emerged after years of lobbying by Pacific island nations, which have long argued that rising sea levels threaten their very existence. More than 100 countries and international organizations participated in the hearings, with developing nations advocating for stronger legal accountability.

During the case's opening session, Vanuatu's Special Envoy on Climate Change, Ralph Regenvanu, stressed the vital importance of this process for regions like the Pacific islands, which are directly affected by the climate crisis. *"The outcome of this case will shape the future of nations and determine the fate of our planet,"* he stated, underlining the gravity of the situation. The ICJ is expected to clarify states' legal responsibilities under international law regarding greenhouse gas emissions and environmental protection. Additionally, it will assess the consequences of state inaction or harmful actions on small island nations and future generations.

Although the ICJ's ruling will not be legally binding, it could carry significant symbolic weight and serve as a legal precedent for future national and international cases.

During the proceedings, countries such as Palestine and Timor-Leste emphasized the historical responsibility of industrialized nations and called for stricter enforcement of international law. On the other hand, major fossil fuel-producing countries, including the United States, the United Kingdom, Russia, and China, attempted to evade legal accountability but ultimately remained in the minority. The Center for International Environmental Law (CIEL) noted that these countries were becoming increasingly isolated in the international arena.

[58] Quell, Molly. "A Landmark Climate Change Case Will Open at the Top UN Court as Island Nations Fear Rising Seas." *AP News,* December 2, 2024. https://apnews.com/article/un-court-climate-global-warming-island-nations-35d35cb3c8a49b980ce458d27cb24844.

Regenvanu criticized the failure to reach a meaningful emissions reduction agreement at COP29, stating, *"The global response to climate change must be rooted in international law, not political interests."* The ICJ's upcoming decision is expected to mark a significant milestone for vulnerable nations and future generations.

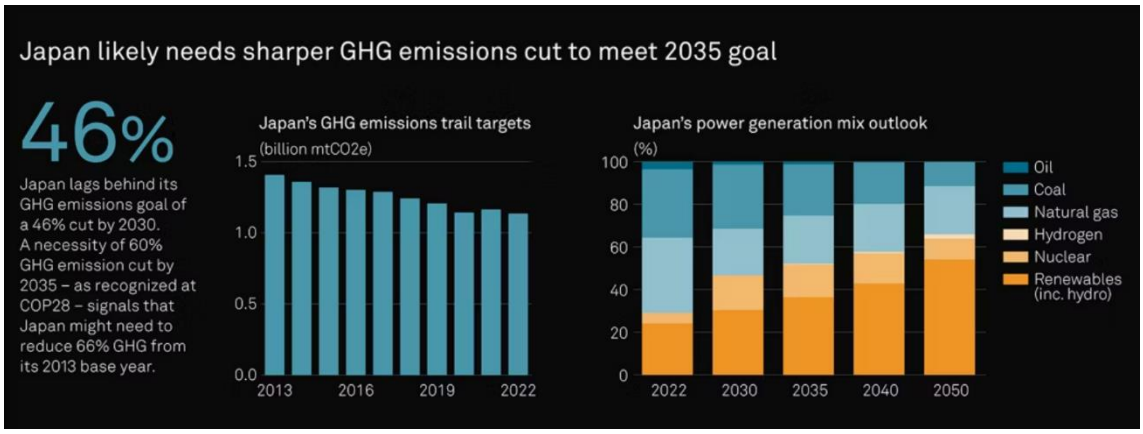
International cooperation faces obstacles not only in the legal sphere but also in political and economic domains. The inability to reach an agreement in negotiations for a Global Plastics Treaty—considered the most significant environmental initiative since the Paris Agreement—has highlighted deficiencies in international environmental cooperation.[59] At the Fifth Intergovernmental Negotiating Committee (INC-5) session held in Busan, South Korea, more than 100 countries supported imposing restrictions on plastic production. However, negotiations stalled due to opposition from oil-producing nations, which insisted on focusing solely on plastic waste management rather than limiting production. Saudi Arabia, China, and India rejected any restrictions on production, signaling that upcoming negotiations in 2025 will face significant challenges.

The proposal to limit plastic production was intended to serve as a guiding principle similar to the 1.5°C target in the Paris Agreement. However, concerns were raised that without a legally binding mechanism, ensuring effective implementation would be difficult. Other concrete proposals include increasing plastic recycling rates, utilizing alternative biochemical materials, and integrating carbon capture technologies. However, these solutions face challenges in terms of high costs and limited availability of renewable resources, making large-scale implementation difficult.

Japan's efforts to reduce carbon emissions have the potential to play a pivotal role in addressing the global environmental crisis, but its latest draft climate strategy has been criticized for lacking ambitious targets. The Japanese government has proposed a plan to reduce greenhouse gas emissions by 60% from 2013 levels by 2035.[60] However, experts argue that this falls short of the 66% reduction recommended by the United Nations Intergovernmental Panel on Climate Change (IPCC) for alignment with the 1.5°C target.

[59] Lee, Joyce, and Valerie Volcovici. "Countries Fail to Reach Agreement in UN Plastic Talks." *Reuters,* December 2, 2024. https://www.reuters.com/business/environment/over-100-countries-back-plastic-treaty-caps-talks-reach-fierce-finish-2024-11-30/.

[60] Obayashi, Yuka. "Japan Aims to Cut Greenhouse Gas Emissions 60% by 2035 vs 2013 Levels." *Reuters,* December 24, 2024. https://www.reuters.com/world/japan/japan-aims-cut-greenhouse-gas-emissions-60-by-2035-vs-2013-levels-2024-12-24/.



16 S&P Global Commodity Insights, Energy and Climate Scenarios 2023, Ministry of Environment, Organization for Cross-regional Coordination of Transmission Operators (OCCTO)

Japan's current energy policy seeks to balance economic growth and energy security while increasing investment in renewable energy and phasing out fossil fuels. However, the new draft of the country's Basic Energy Policy, released by the Ministry of Industry, aims to increase the share of renewable energy to 50% by the 2040 fiscal year but fails to provide a clear roadmap for exiting coal-based energy production, drawing criticism.

The Komeito Party, the coalition partner of the ruling Liberal Democratic Party, has called for the adoption of a 66% emissions reduction target in line with IPCC recommendations, urging a more scientific approach. This has increased pressure on the Japanese government to enhance its commitments when updating its Nationally Determined Contributions (NDCs) under the Paris Agreement in 2025.

As a regional energy leader, Japan is expected to take the lead in global renewable energy investments and develop innovative strategies. However, at a time when global efforts to reduce carbon emissions are intensifying, Japan's draft strategy has been deemed inadequate, potentially impacting its position in international climate negotiations. In an environment where countries like the United Kingdom have committed to reducing emissions by 81% from 1990 levels by 2035, there is growing sentiment that Japan must set more ambitious targets and demonstrate stronger leadership in the global climate agenda.

Ultimately, while some progress has been made in the fight against climate change, political and economic barriers continue to slow international cooperation. The negotiations set to continue in 2025 will be crucial not only for environmental impacts but also for shaping the future direction of global climate policy.