LES ATELIERS
DU FUTUR

ADF
Quarterly Climate Review #4

Executive Summary

November 4th 2025

AGENDA

I | Call for actions

II | Climate

- II.1 | Recent Developments
- II.2 | Outlook

III | GHG Emissions

- III.1 | Recent Developments
- III.2 | Outlook

IV | Green Techs

- IV.1 | Recent Developments
- IV.2 | Outlook
- IV.3 | Synthesis

V | Public Policies

- V.1 | Recent Developments & Outlook

VI | Finance

- VI.1 | Recent Developments & Outlook

LES ATELIERS DU FUTUR

ADF QCR #4

Our Call for Action to Global Leaders

OUR CALL FOR ACTION TO GLOBAL LEADERS

ENHANCING THE WILL
Closer Cooperation, Higher ambitions

1. **NDCs of world top 10 emitters** should be issued as soon as possible, with more ambitious targets to reduce emissions by 43% by 2030 and by 60% by 2035 compared to 2019 levels. NDCs should include the definition of policy mix (standards and regulation, subsidies and incentives, pricing and taxations) associated with carbon pricing.
2. As part of more ambitious new NDCs, **mandatory transition plans, aligned with Paris agreement targets**, should be prescribed to corporations worldwide, over and above EU initial CS3D applicability scopes. Governments should notably prioritize **adequate power infrastructure investments, and strong support to electrification and critical material extraction and processing**.
3. In the absence of such audited transition plan, **corporates dividend distribution and share buy-back** should be capped e.g. to 20% of net income. The most critical sectors, such as energy production, should be targeted first. Transition plans should include adequate internal carbon pricing.
4. **COP 28 methane pledge** from global energy industry should be closely monitored with additional investment needed to reduce the industry methane emissions by 75% by 2030. Start working on a global convention requiring good practices implementation from all energy players.
5. **Global Climate Governance System:** Quaterly inter-COP meetings of the world leaders should focus on climate urgency to accelerate decision making process and improve monitoring.

ENHANCING THE MEANS
Easier financing of green projects worldwide

6. **Multilateral Development Banks** to be prescribed to issue 0% or very low interest rates for green energy projects, including power infrastructure, as long as necessary to align developed and developing nations with the Net Zero scenario. Developed countries/regions should collectively bear the cost.
7. Raise conditions to develop **private and Multilateral Development Banks financing in developing nations (**including through global risk insurance) as well as secure local regulations.

ENHANCING THE SKILLS
Know-hows and capabilities to be developed

8. Increase R&D to develop **solutions to reach 2050 targets** (e.g. batteries, hydrogen, SAF, CCUS) by requiring large corporations of high emission sectors to invest a minimum of 10% of net cash flows.
9. Increase subsidies to step up efforts in **geothermal, thermal storage and biogas**. O&G companies should be prescribed **growing targets for biogas production as a % of fossil gas sales.**
10. **Increase investment in data, climate modelling, to better understand climate dynamics**. In response to U.S. budget cuts, Europe and other Parties should step up funding and resources sharing.

Climate:

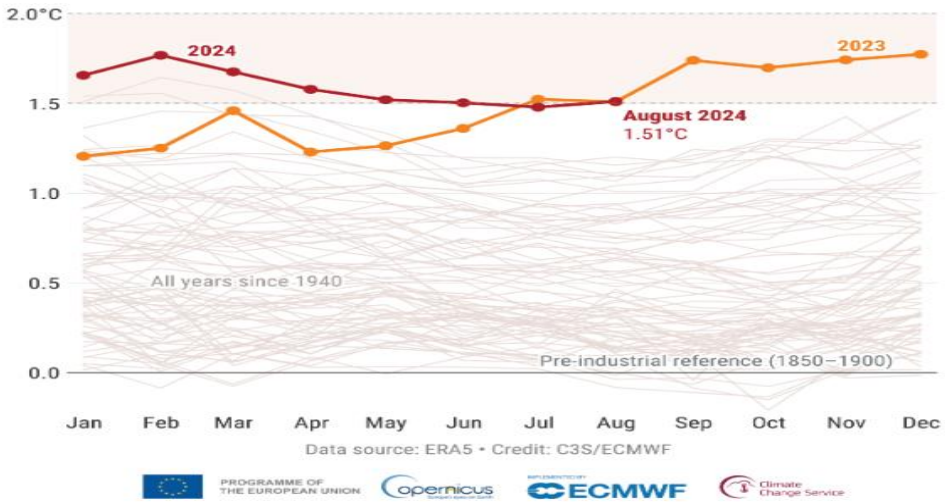
Recent Developments

2023 HAS MARKED RECORDS IN GLOBAL TEMPERATURES

Global warming in 2023 is 1.43 [1.32 to 1.53]°C above the preindustrial levels, partly due to climate variability (strong El Nino). (Source : Copernicus)

Every month in 2023 was at least **1.2 °C** (2.2 °F) **warmer** than the corresponding 1850 to 1900 monthly average. S1 2024 follows the same pattern

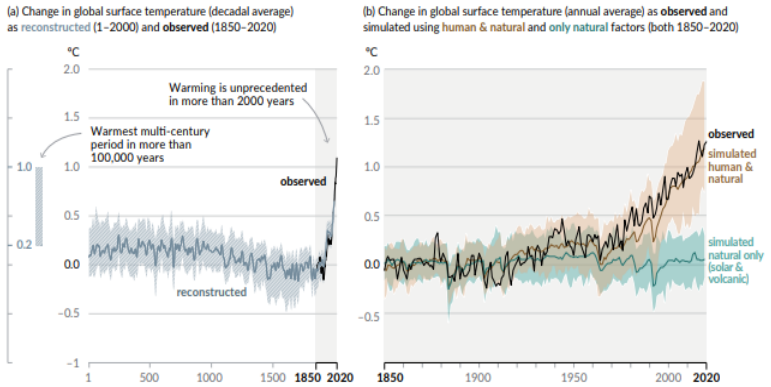
Global surface air temperature anomalies [1850s-2024]



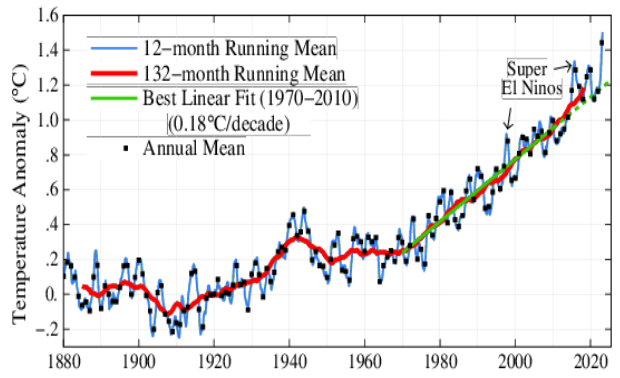
According to IPCC AR6 , human influence has warmed the climate at an unprecedented rate in at least the last 2000 years

Since the 1960s, **each decade has been warmer than the previous one**. 2011-2020 was the warmest decade on record

Changes in global surface temperature relative to 1850-1900



Mean temperature [1880-2023]



Source : Columbia University

2024 WAS A SECOND RECORD-BREAKING YEAR IN A ROW

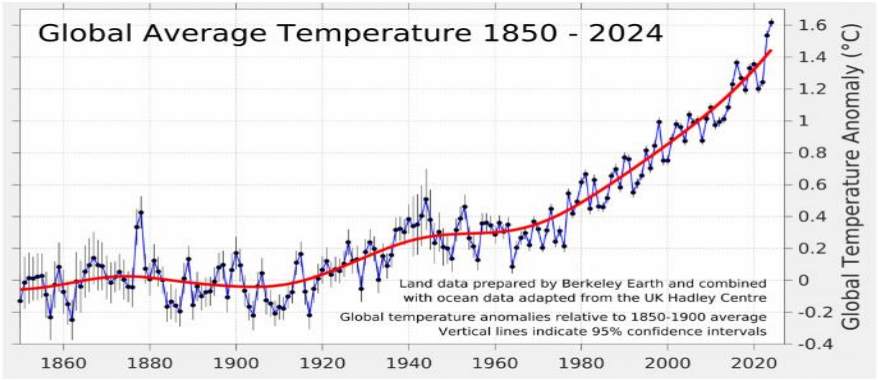
Combined average temperature anomaly for 2023 and 2024 is ~ +1.50°C above pre-industrial levels

The 2024 observed record in global surface temperature increase vs pre-industrial **(1.52°C best estimate**) is well above the best estimate of human-caused warming (1.36°C). However, the 2024 observed warming can still be regarded as a typical year, considering the human induced warming level and the state of internal variability associated with the phase of El Niño and Atlantic variability
El Niño phenomenon seemed to cease in July (El Niño adds 0.1–0.2 °C to global temperatures), paving the way for La Niña to develop between August and September, with its first effects expected in 2025.

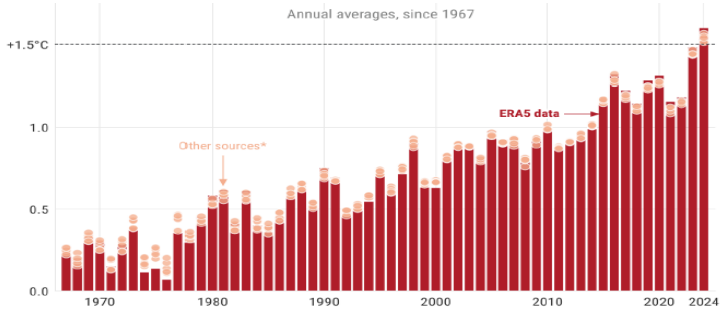
A **global average temperature of 15.10°C**; 0.12°C higher than the previous highest annual value in 2023

2024 was 0.72°C warmer than the 1991–2020 average, and 1.52°C warmer than the pre-industrial level, making it the first calendar year to exceed 1.5°C above that level. Each month from January to June 2024 was warmer than the corresponding month in any previous year. August 2024 equaled the record warmth of August 2023 and from July to December each month was the second warmest after 2023

In 2024, as in 2023, the **tropics and the northern mid-latitudes** contributed the most to the record global temperature anomalies .
Earth is warming at a current rate of more **than 0.2°C per decade.** The last ten years have been the warmest ten years on record



Global surface temperature: increase above pre-industrial [°C ; 1850-2024]



Key temperature statistics [2024]

Region	Anomaly (vs 1991–2020)	Actual temperature	Rank (out of 85 years)
Globe	**+0.72°C** (+1.60°C vs pre-industrial)	15.10°C	**1st highest** 2nd - 2023
Europe	**+1.47°C**	10.69°C	**1st highest** 2nd - 2020
Arctic	**+1.34°C**	-11.37°C	**4th highest** 1st - 2016
Extra-polar ocean	**+0.51°C**	20.87°C	**1st highest** 2nd - 2023

Source: Berkeley, ERA5, Opernicus, Climate Change Service

2023 AND 2024 : SEA TEMPERATURES AND LEVEL ARE DANGEROUSLY RISING

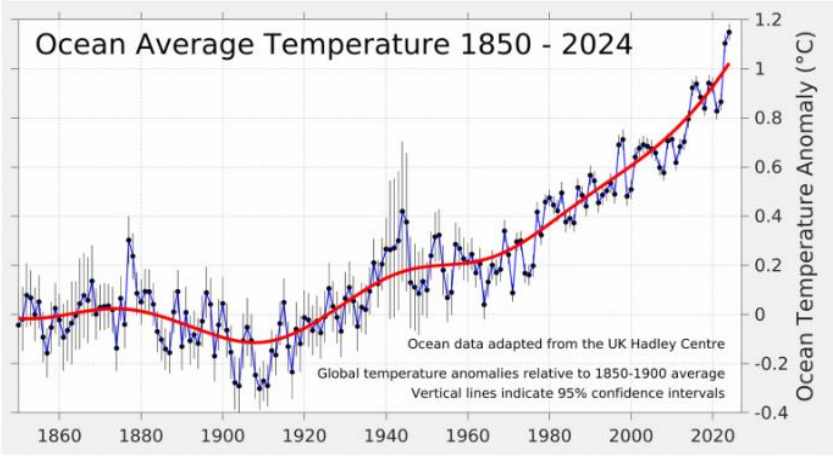
Rising warming anomaly observed in 2023 and 2024:

The annual average sea surface temperature over the extra-polar ocean reached a record high of **20.87°C in 2024**, after the precedent record of 20.81°C. in 2023

According to Berkeley, on the ocean's surface, 2024 was also the warmest observed year reaching an anomaly of **+1.15 °C**, after the previous record of +1.10°C set on 2023 (Baseline : 1850-1900) – Anomaly of +0.6°C on average for 2023 and 2024 but on 1991-2020 baseline according to Copernicus

Global mean sea surface temperature is warming at a rate of 0.13 ± 0.01 °C per decade over the period 1982–2023

The **Arctic continues to warm faster** than the globe overall : In September 2024, the extent of sea ice, which has a profound influence on the Arctic environment, was the sixth-lowest in the 45-year satellite record



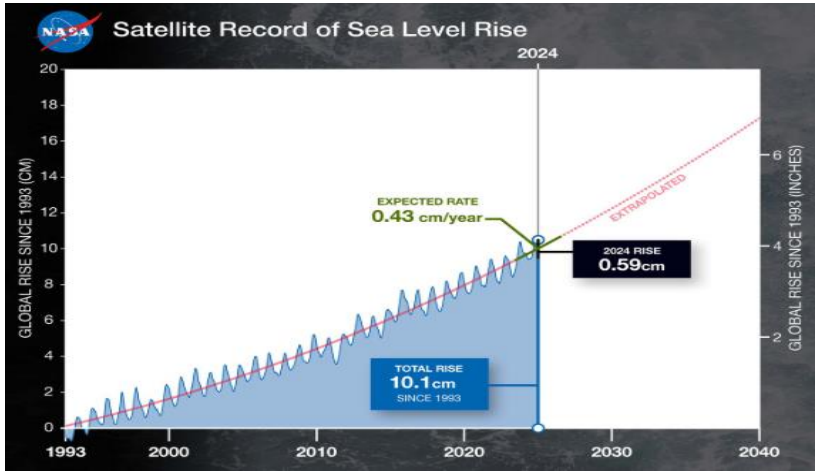
Source: Berkeley

NASA Analysis Shows Unexpected Amount of Sea Level Rise in 2024:

Global sea level rose faster than expected in 2024, mostly because of ocean water expanding as it warms notably. According to a NASA-led analysis, last year's rate of rise was **0.59 centimeters compared to the expected rate of 0.43 centimeters.** The 2023–2024 El Niño event caused a temporary global sea level rise of several centimeters, primarily due to ocean thermal expansion and shifts in wind-driven circulation

Since the start of satellite recording of ocean height in 1993, **the rate of annual sea level rise has more than doubled**. In total, global sea level has gone up by 10 centimeters since 1993.

In recent years, about two-thirds of sea level rise was from the addition of water from land into the ocean by melting ice sheets and glaciers. About a third came from thermal expansion of seawater. But in 2024, those contributions flipped, **with two-thirds of sea level rise coming from thermal expansion**.

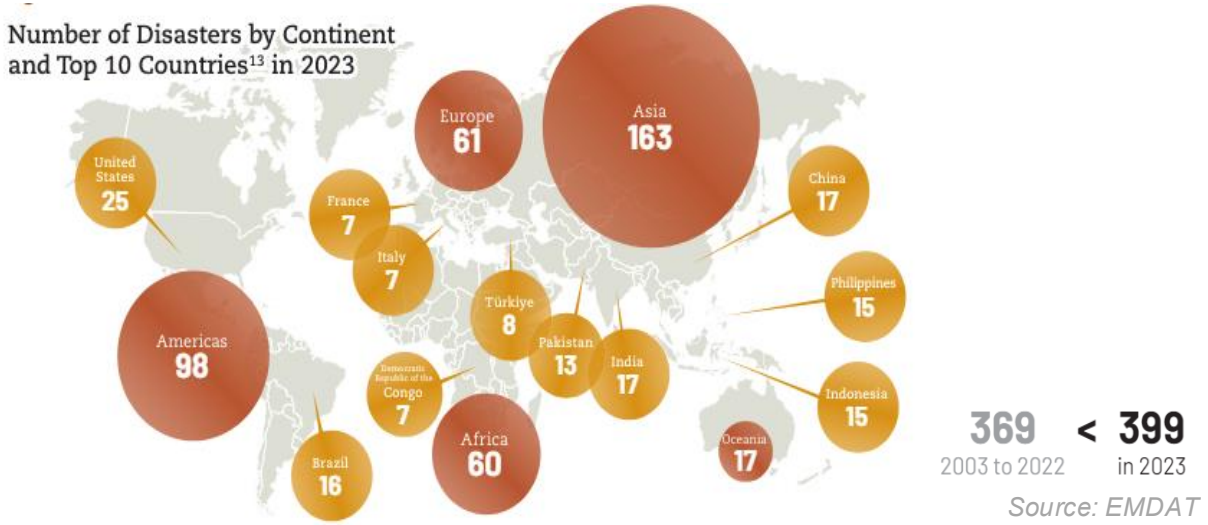


Source: NASA

2023, A RECORD YEAR FOR NATURAL CATASTROPHES EXCEEDING $108 BILLION OF INSURED LOSSES

In 2023, **a large number of extreme events were recorded across the globe**, including heatwaves, floods, droughts and wildfires :

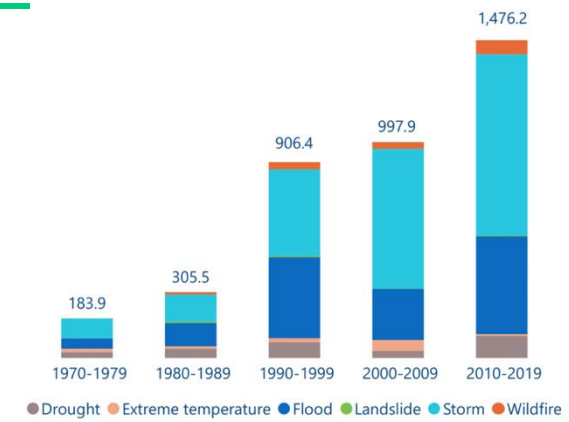
- Strong tropical cyclones (e.g. Cyclone Freddy, the longest-lasting tropical cyclone on record, causing over 1,400 deaths, primarily in Malawi and Mozambique.
- Heavy floods and storms in Libya and Italia
- Heat waves in North America
- Severe droughts affected the US, South America and Europe



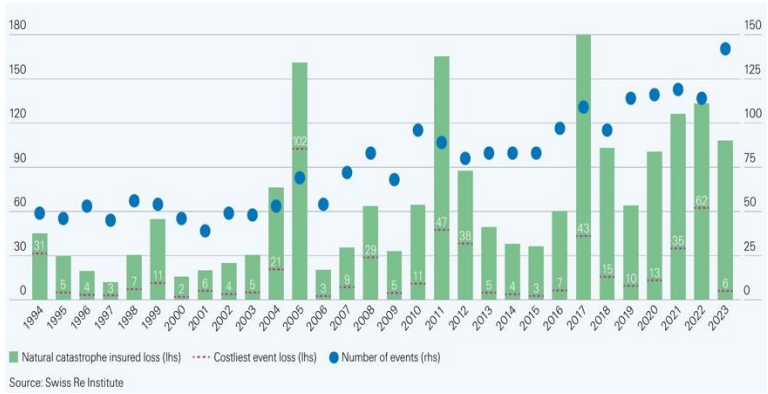
According to Swiss Re, the cost of natural catastrophes covered by insurance reached an estimated **USD 108 billion in 2023**

Annual insured losses of more than USD 100 billion have become the norm and is expected a trend of a **5–7% increase in insured losses**

Reported economic losses
[US$ bn decade ; Inflation adjusted]



Total annual insured losses 1994-2023
[US$ bn-2023 prices ; total number of event/year]



IN 2024, INSURED LOSSES CAUSED BY NATURAL DISASTERS ROSE TO US$ 140BN

Worldwide, natural disasters caused losses of **US$ 320bn in 2024** (2023, adjusted for inflation: US$ 268bn)

A heavy-loss year for the insurance market: **US$ 140bn in insured losses according to Munich Re and US$ 135bn according to Swiss Re** – since 1980, only two years have been more expensive

Insured losses increased by **16%** compared to the previous year

Many extreme events that took place in the beginning of 2024 were influenced by El Niño. However, most of studies found that climate change played a bigger role than El Niño in fueling these events (Source : World Weather Attribution)

Weather catastrophes dominants : powerful hurricanes, severe thunderstorms and floods driving the losses.

Regional events : North America with a higher proportion of losses than usual (Hurricane Helene resulted in the largest overall losses from natural disasters in 2024 at US 56bn) and extreme flooding in Europe

Natural disasters [2024]

	The figures of the year 2024	The figures of the year 2023 (adjusted for inflation)	Average of the last 5 years (2019 – 2023) (adjusted for inflation)	Average of the last 10 years (2014 – 2023) (adjusted for inflation)	Average of the last 30 years (1994 – 2023) (adjusted for inflation)
Overall losses in US$ bn	320	268	261	236	181
Insured losses in US$ bn	140	106	106	94	61
Fatalities (approx.)	11,000	77,600	23,000	17,500	42,000

Examples

Flash floods in the Valencia region:
A World Weather Attribution study found that climate change made an event with this rainfall intensity twice as likely to occur in today's climate, than it would have been in the cooler preindustrial climate without human-caused warming.

Hurricanes Helene and Milton:
Studies have shown that both hurricanes were significantly more severe and brought much more extreme rainfall than in a hypothetical world without climate change (World Weather Attribution)

NATURAL CATASTROPHES CAUSED OVERALL LOSSES OF US$ 320BN WORLDWILDE

Nat cat lost events [2024]

Source: Munich Re, NatCatSERVICE, 2025

Climate: Outlook

2025 ON TRACK TO BE 2nd OR 3rd WARMEST YEAR ON RECORD

Each of the first six months of 2025 have come in **the top-three warmests** on record, despite moderate La Niña conditions in the tropical Pacific at the beginning of 2025, which typically reduce global temperatures.

When combined, the first six months of 2025 were the **second warmest first half** of a year in the historical record. Temperatures averaged at just 0.08 °C below 2024 record reached after the peak of a strong El Niño event.

Globally, the annual average for the **latest 12-month period** (July 2024 to June 2025) was 0.67°C above the 1991-2020 average, and **1.55°C** above the estimated **1850-1900** average used to define the pre-industrial level (Copernicus).

The **global ocean** experienced its **second warmest first semester** in 2025 despite neutral El Niño conditions which are typically not associated with record-high Sea Surface Temperatures.
In the **Mediterranean Sea**, the **first half of 2025** was the **warmest** on record with a mean temperature of 18.50 ± 0.12°C. (Mercator).

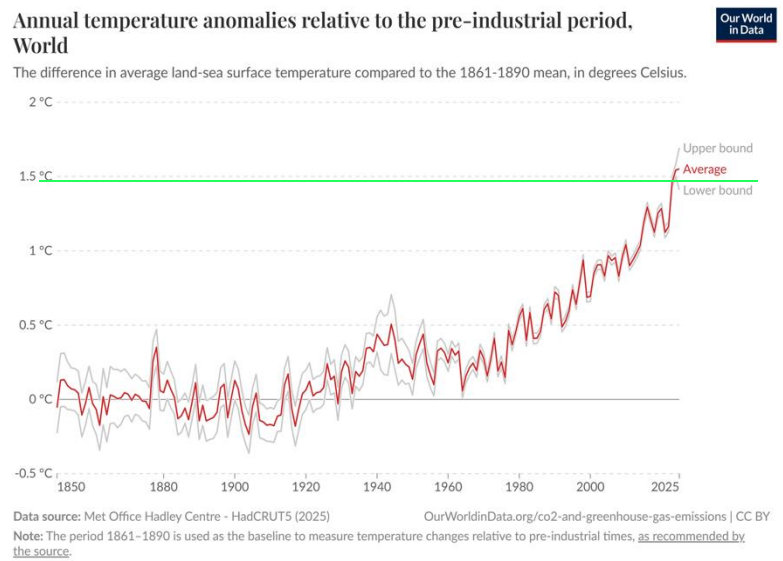
As it passes its midway point, 2025 is on track to be the second or third warmest year on record (Carbon Brie, WMO). The annual global temperature anomaly relative to 1850–1900 is expected to lie somewhere in the range **~1.3 °C to 1.6 °C.** The planet is therefore expected to remain at historic levels of warming after the two hottest years ever in 2023 and 2024. UN sees a **70% chance** that **2025-2029 average warming will top 1.5°C**, the Paris Agreement ceiling (WMO Global Annual to Decadal Climate Update).

La Niña is back from September 2025 but expected to remain weak. Transition to neutral (neither El Niño nor La Niña) is most likely in January-March 2026 (NWS).

Global Temperature And Anomalies For H1 2025

Month	Ranking	Average temperature	Above pre-industrial level	12 Month Period Anomalie	Comments
January	Warmest on record	13.23	1.75	1.61	Very warm despite la Nina
February	Third Warmest	13.36	1.50	1.59	Artic sea ice extent 8% below average
March	Second Warmest	14.06	1.60	1.59	Notable dry and wet anomalies in Europe
April	Second Warmest	14.96	1.51	1.58	Large parts of the Mediterranean very warm
May	Second Warmest	15.79	1.40	1.57	Marine heatwave in the northeastern North Atlantic
June	Third Warmest	16.46	1.30	1.55	Major heatwaves in some regions

Source : Data from Copernicus



NATURAL CATASTROPHES:2025 INSURED LOSSES ON THE WAY TO USD 145 BILLION

Worldwide, **natural disasters** caused **overall losses** of around **US$ 131bn** in the **first half of 2025** (previous year, adjusted for inflation: US$ 155bn), of which **US$ 80bn was insured** (in 2024: US$ 64bn).
Both overall losses and insured losses were significantly higher than the average for the previous ten years and the previous 30 years (adjusted for inflation: overall losses of US$ 101/79bn, insured losses of US$ 41/26bn).
Insured losses in H1 2025 were the **second-highest in the first half of any year** since the records began in 1980. Only in the first half of 2011 were insured losses even higher, attributable to a severe earthquake and destructive tsunami in Japan.
Weather disasters caused **88%** of overall losses and **98%** of insured losses, while earthquakes accounted for 12% and 2% respectively (Munich Re).

The **most severe natural disasters in H1 2025** :
- Devastating wildfires in the Los Angeles area
- Severe convective storms in Europe and the US
- Cyclone in Australia and Indian Ocean

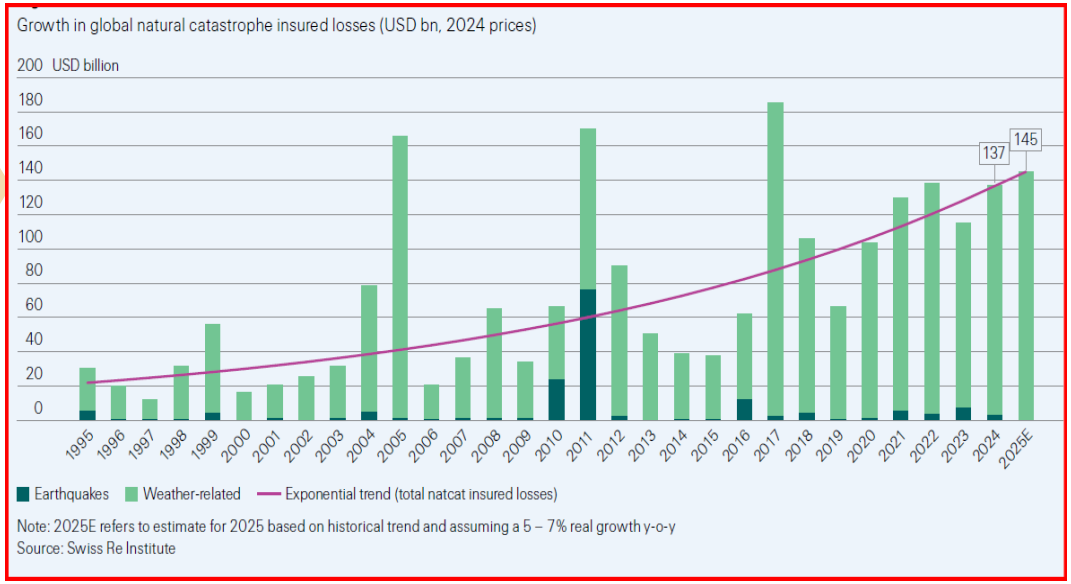
No region of the planet is immune to climate-driven extreme weather

	Figures for the first half-year 2025	Figures for the first half-year 2024 (inflation-adjusted)	5-year average for the first half-years 2020–2024 (inflation-adjusted)	10-year average for the first half-years 2015–2024 (inflation-adjusted)	30-year average for the first half-years 1995–2024 (inflation-adjusted)
Overall losses in US$ bn	131	155	125	101	79
Insured losses in US$ bn	80	64	53	41	26
Fatalities	7,100	4,600	16,500	11,300	22,400

Source: Munich Re

2025 economic total losses are expected to range from $300 to 380 bn.

Following the long-term trend of 5 – 7% annual increase in real terms, insured losses from natural catastrophes will **approach USD 145 billion in 2025.** (Swiss Re).

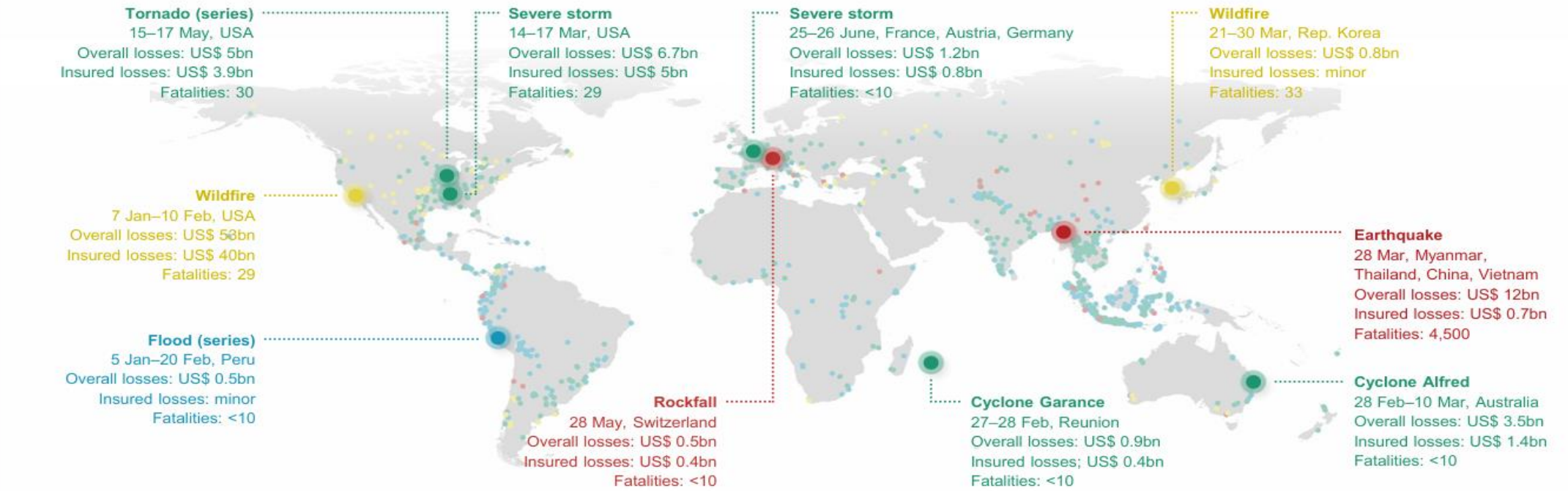


Source: Swiss Re

US events dominate natural disaster losses in the first half of 2025

Selected natural catastrophe loss events worldwide January – June 2025

Munich RE



Source: Munich Re, NatCatSERVICE, 2025

THE COST OF UNCERTAINTY: INVESTING IN MODELS TO AVOID INVESTING IN DISASTER



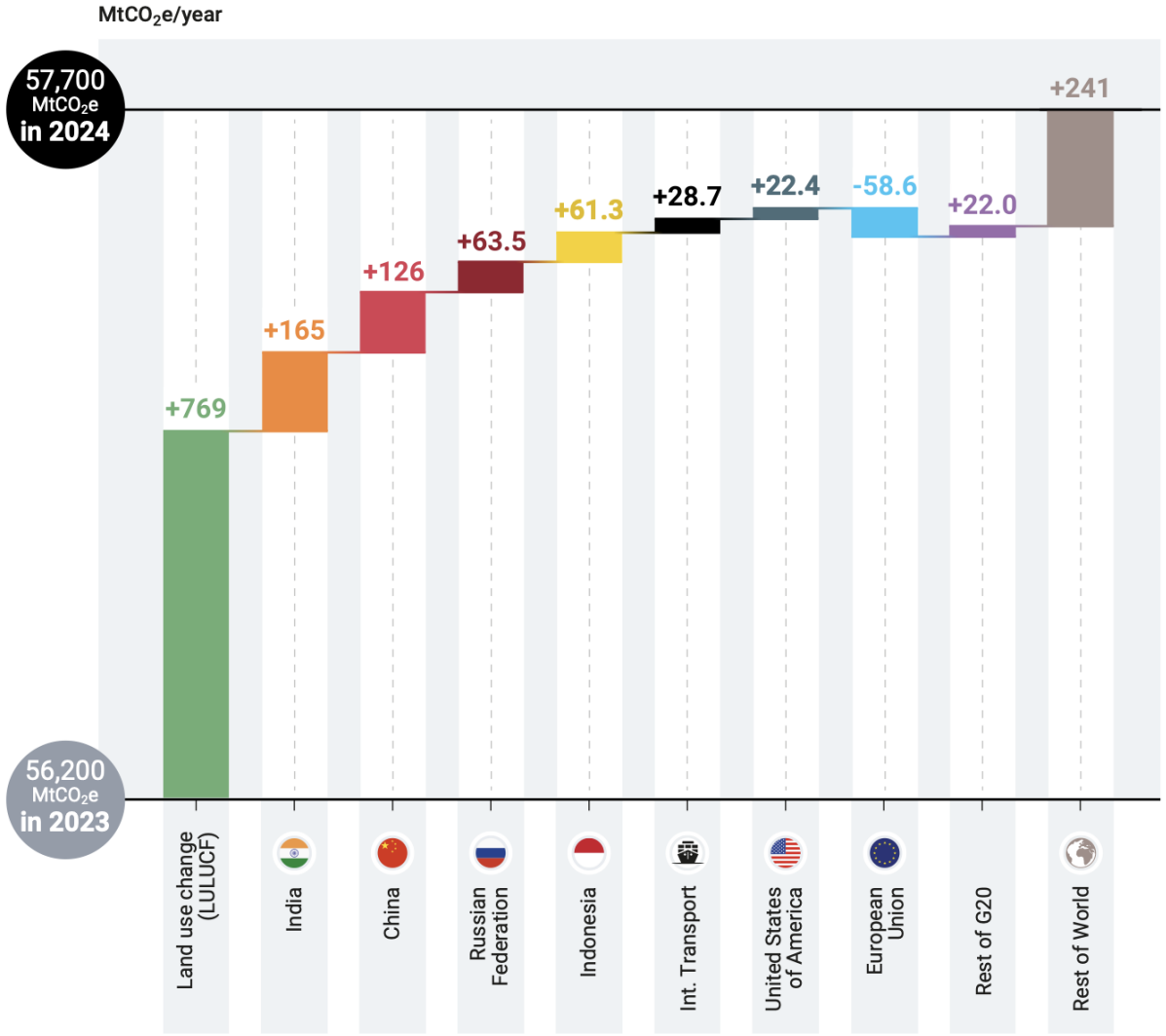

Current State of the Art	Key Limitations	Innovative Solutions
CMIP6 Models (Coupled Model Intercomparison Project Phase 6) **:** An international project that coordinates climate model experiments to provide the scientific database for the IPCC's Assessment Reports.	**Cloud-Aerosol Interactions:** The largest source of uncertainty, directly impacting climate sensitivity estimates. **Natural climate variability:** El Niño, La Niña, the Carbon cycle, Volcanoes and solar cycles	**New-Gen Satellites:** Missions like EarthCARE (data available since early 2025) are designed to provide unprecedented data on clouds and aerosols. **Artificial Intelligence (AI) :** Used for pattern recognition, downscaling, and creating "AI emulators" for computationally costly processes.
Standard Resolution: Typically 50-100 km for most global models, with some components at higher resolution.	**Unresolved Sub-grid Processes:** Inability to resolve small-scale phenomena like turbulence and individual cloud formation.	**km-Scale Models:** "Storm-resolving" models (e.g., nextGEMS, TRACCS) that explicitly simulate convection, reducing the need for parameterization.
Coupled Earth System Models (ESMs): Integrating atmosphere, ocean, sea-ice, and land surface (vegetation, carbon cycle) components.	**High Inter-Model Variability:** Significant differences in projections (e.g., in climate sensitivity) between different models.	**Probabilistic Ensembles (SMILEs)**: "Single Model Initial-condition Large Ensembles" used to separate natural variability from forced climate change.
SSP Scenarios: Projections based on Shared Socioeconomic Pathways (e.g., SSP1-2.6 to SSP5-8.5) running to 2100. These scenarios describing different potential futures for global societal development, used as inputs for climate projections.	**High Socio-Economic Uncertainty:** Difficulty in forecasting key drivers of emissions, such as demographic shifts, human behavior, policy choices, and the pace of technological innovation.	**Transdisciplinary knowledge co-production :** promoting interoperability between data, communication, and governance systems.

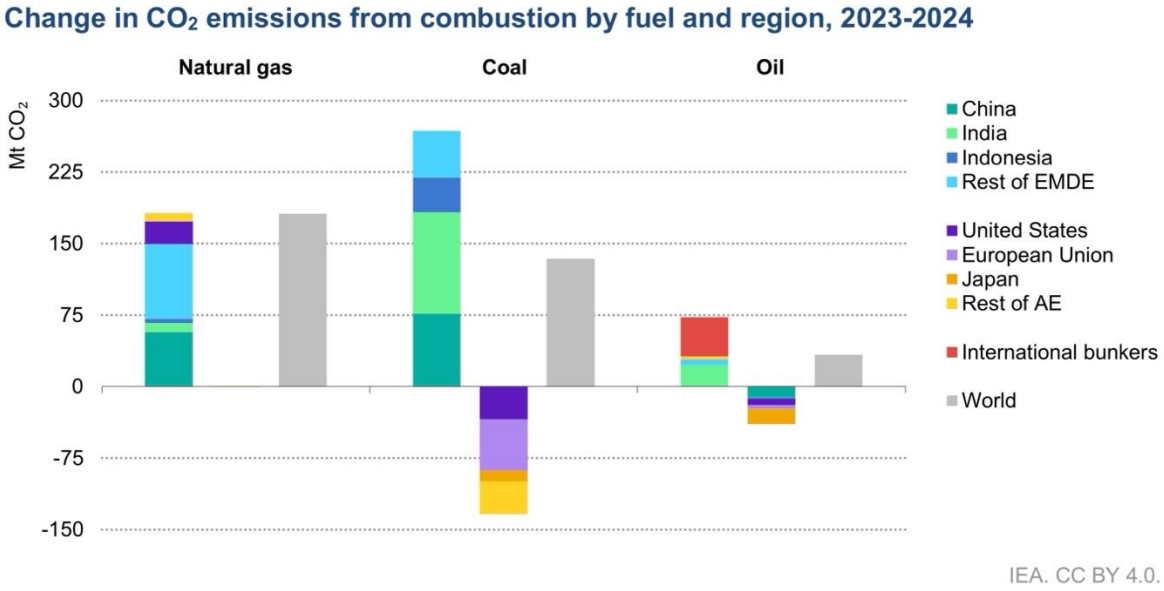
Source : WCRP, ESA, COPERNICUS

GHG Emissions:

Recent Developments

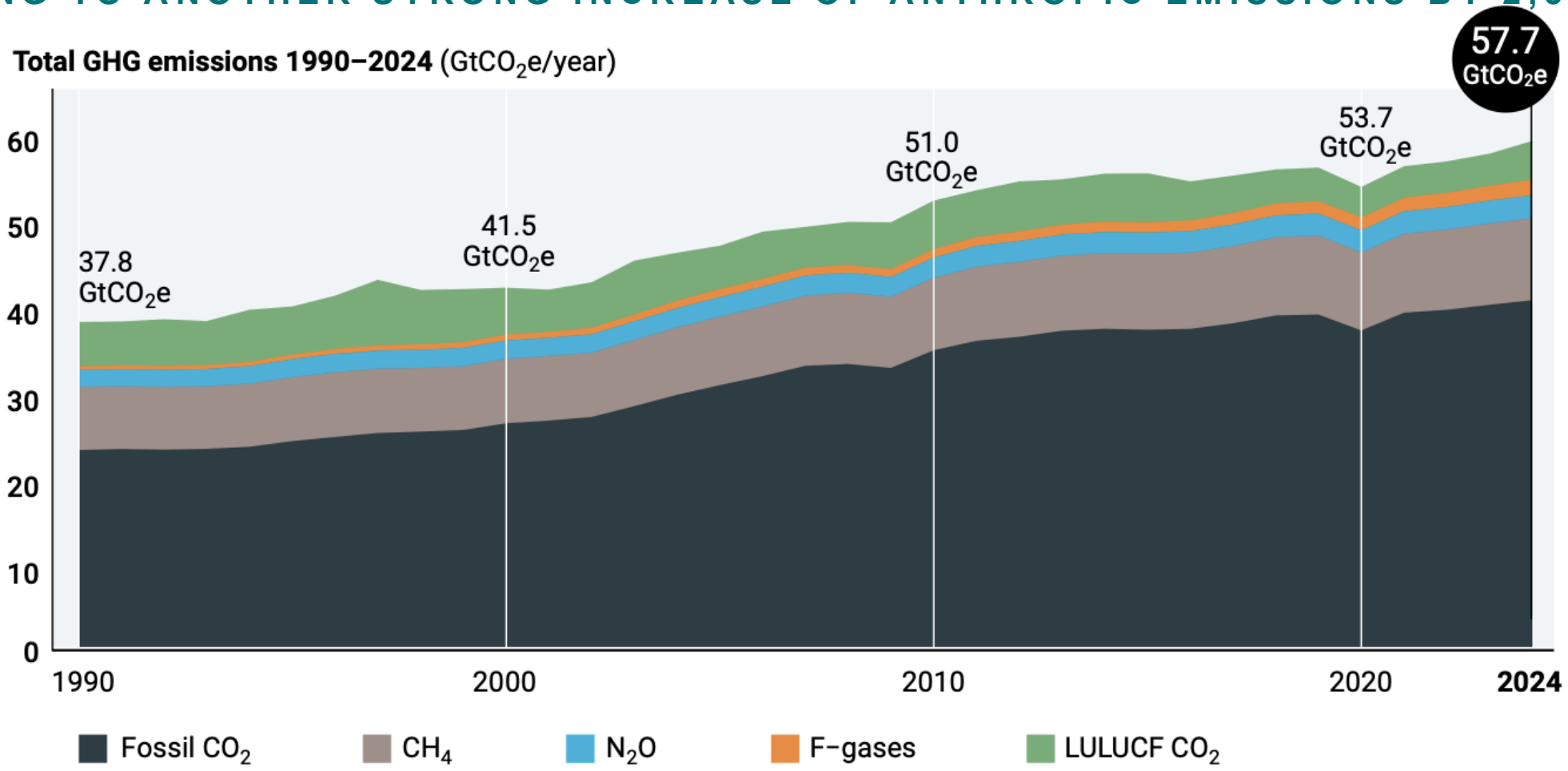
2024 EMISSIONS SAW DIVERGING TRENDS AMONG REGIONS AND SOURCES…





Notes: AE = advanced economies; EMDE = emerging market and developing economies. International bunkers include the demand for fuels for international aviation and international maritime transport.

…LEADING TO ANOTHER STRONG INCREASE OF ANTHROPIC EMISSIONS BY 2,3% IN 2024

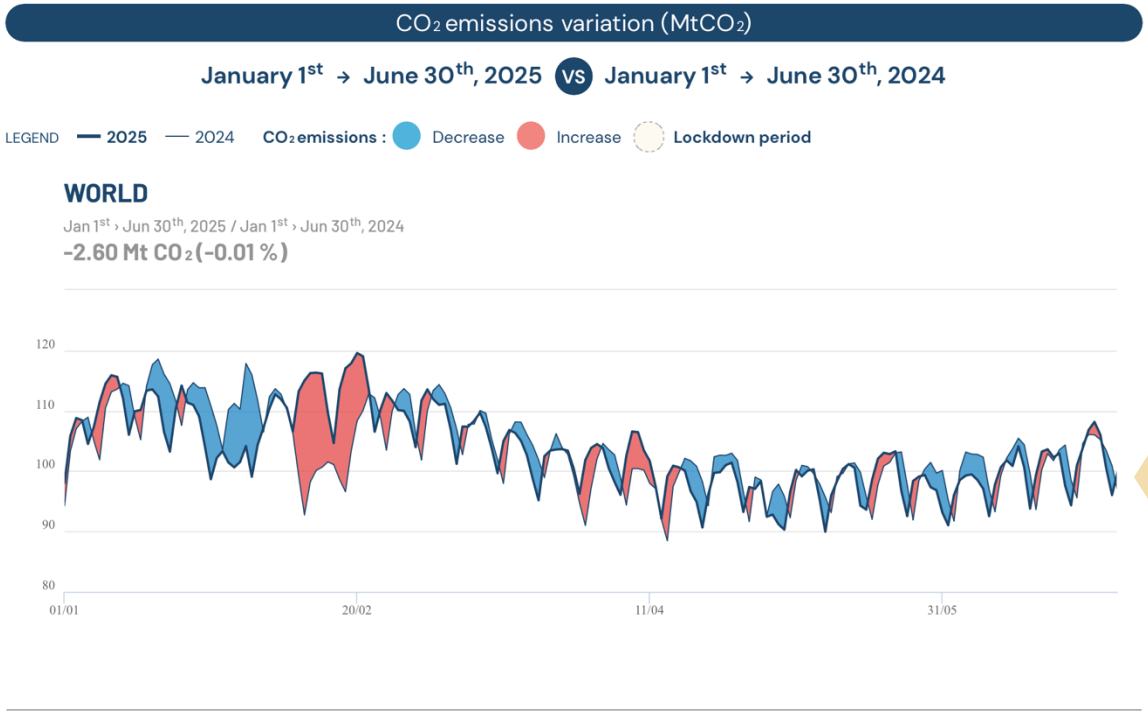


Note: The time series data sets used for the Emissions Gap Report are updated on an annual basis using the latest available statistical information on activities and emissions factors. These updates imply changes compared to prior reporting in the Emissions Gap Report. Accordingly, global GHG emissions in 2023 were adjusted to 56.2 $GtCO_2e$ from the 57.1 $GtCO_2e$ reported in the 2024 edition of the report.

With G20 countries representing 77% of global emissions

2025 H1 GHG EMISSIONS SEEN RISING AGAIN

Climate Trace sees global GHG emissions increasing by 0,4% year-to-July vs 2024, reaching 36,26 Gt CO2-Eq.



Carbon monitor sees global **CO2** emissions as stable during H1 2025

BY COUNTRY: MAJOR CHANGES VS HISTORIC TRENDS IN 2025

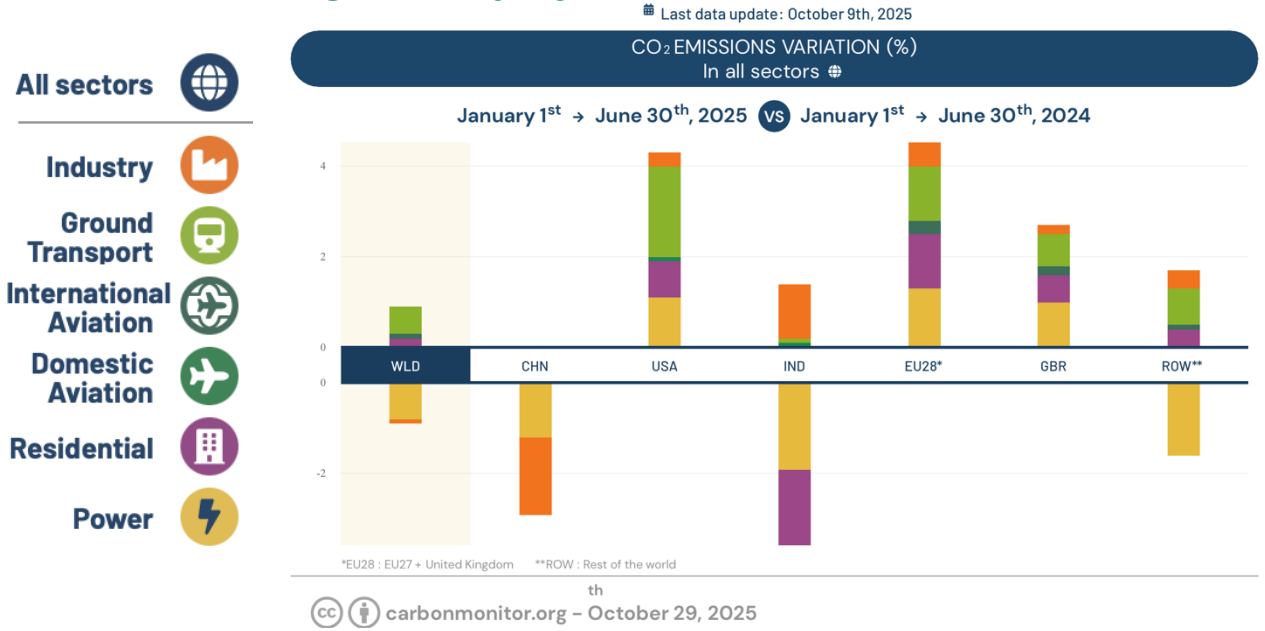
CO2 emission evolutions :

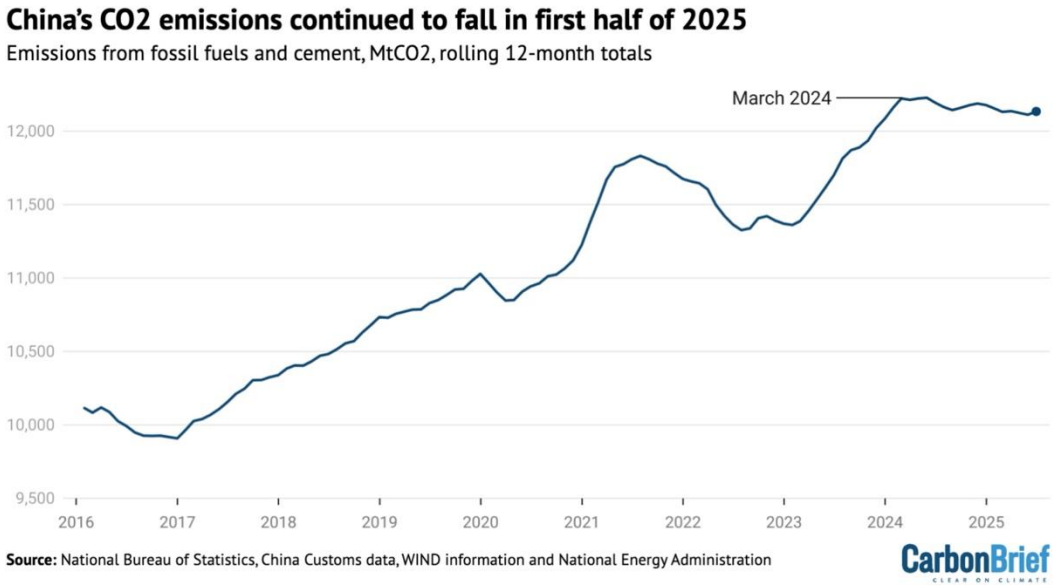
- CN **China** : -2,8% in H1 2025 thanks to the power sector (-3%) with +270 TWh clean power generation, exceeding +170TWh demand growth. Industry emissions reduced by nearly 4%

- US **USA** : +4,24% : Increasing thermal coal use (+21%) to meet electricity demand due to higher gas prices, with ground transport and residential also raising emissions

- EU **UE** : incidental +4,65% linked to ground transport, residential and power, due to a cooler winter in 2025

- IN **India** : incidental -2,16%, temporary using less fossil fuels in residential and power sectors :(Source Carbon monitor)





DATA CENTERS AND IA: NEW CHALLENGES AND OPPORTUNITIES AHEAD

Foreseeable challenges :

- Data centers accounted for around 1.5% of the world's electricity consumption in 2024 or 415 TW. **This consumption is set to more than double** to around 945TWh **by 2030**, with the US and China leading the demand growth.
- In 2030 IEA projects the USA will consume more electricity for this purpose than for the production of aluminium, steel, cement, chemicals and all other energy intensive goods combined, at around 1200TWh.
- A range of solutions are poised to meet this demand, renewable generation, natural gas, nuclear and geothermal. The first small nuclear reactors will come online around 2030.

(Source: IEA)

Likely opportunities :

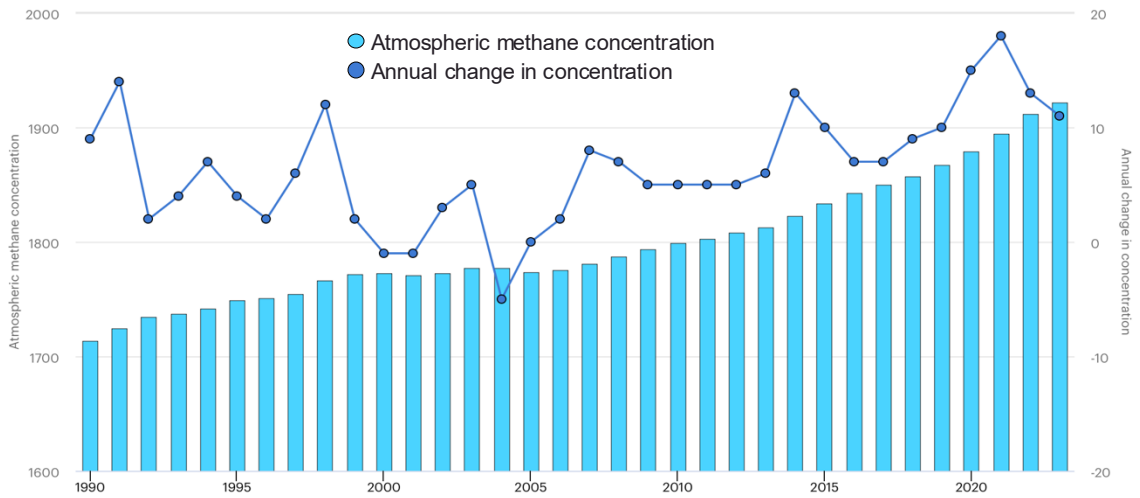
- **Fossil fuels operations**: AI helps detect leaks, predict maintenance needs, support efforts to reduce methane leaks
- **Electricity generation:** AI can improve forecasting and integration of variable RNE generation, reducing curtailment. Grid defaults can be more precisely pinpointed, reducing outage durations by 30-50%. Up to 175TWh of transmission capacity could be unlocked by applying these tools, more than the increase in the data center power load in 2030
- **Widespread adoption of IA** will dramatically digitalise and automate industry and buildings, improving efficiency and saving costs. 300TWh of electricity savings estimated for buildongs only by 2030
- **Scientific discovery and energy innovation** should benefit from AI based acceleration of finding and testing new materials (battery, carbon capture)

METHANE ANTHROPIC EMISSIONS: HIGH STAKES

Methane emissions are responsible for around 30% of the global warming vs Industrial Revolution (UNEP and Climate and Clean Air Coalition 2021).

Atmospheric CH4 concentrations rose faster over the last decade than in the 2000s. Since 2013, the trend in atmospheric methane concentrations is closer to the most GHG-intensive scenarios of IPCC AR5 than scenarios integrating mitigation policies.

Changes in atmospheric methane concentrations [1990-2023]

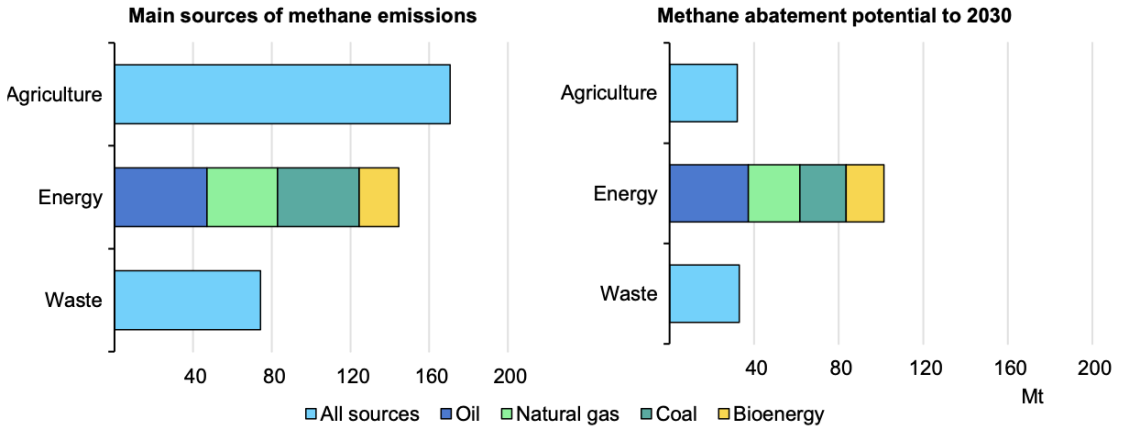


Anthropogenic sources are responsible for all or most of the recent rapid rise in global CH4 concentrations, equally from agriculture and fossil fuels sources.

The energy sector – including oil, natural gas, coal and bioenergy – accounts for more than 35% of methane emissions from human activity and has some of the best opportunities to cut these emissions.

Methane emissions from the energy industry remained near record high in 2024 with oil fugitive emissions rebounding and abandoned mines and wells representing 7%.

Methane emissions from human activity and their abatement potential



Sources: Methane emissions for agriculture and waste are based on data from the Global Methane Budget (2024). Methane abatement for agriculture and is waste is taken from UNEP's Global Methane Assessment (2021).

UNEP IEMA: HYBRID METHANE MONITORING

Cutting methane emissions is the fastest, cost effective way to slow near term warming. The Global Methane Pledge targets a 30% reduction in global methane emissions by 2030. It is now supported **by more than 150 signatories representing 42% of global oil and gas production**.

As methane emissions are widely under-reported, UNEP has launched its **International Emissions Observatory (IEMO).** It aims at raising transparency and mitigating actions such as:

- Better quality reporting of methane emissions by companies
- Better information to Governments, helping to react and to shape regulation, using **satellite data and AI**,
- More reactive fixing of leaks by companies

Through the **Methane Alert and Response System (MARS**) UNEP has sent over 3500 alerts to 33 countries since inception, but 90% lack follow up!...

This work is being expanded to coal and waste mines, as well as agriculture and waste sectors.

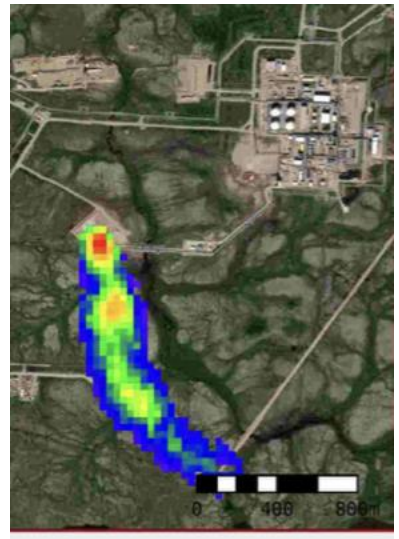
IEA estimates largely exceeds current reportings…

(Sources: UNEP - An Eye on Methane 2025, IEA Methane Tracker 2025)

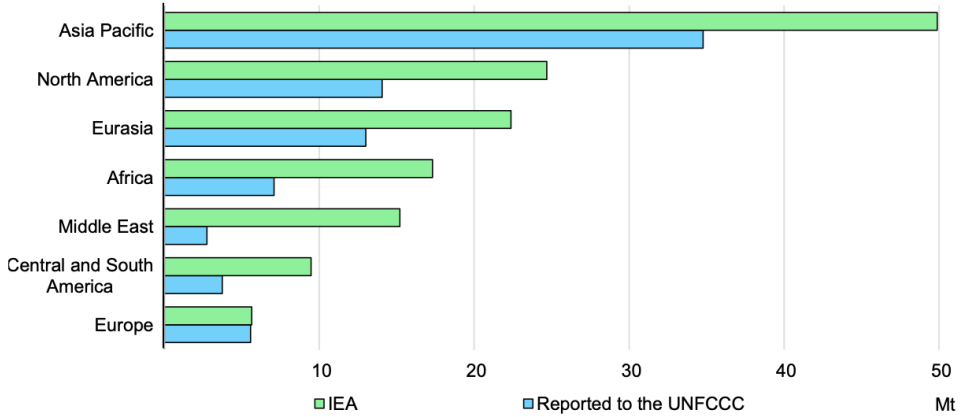
Gold Standard Pathway and Gold Standard Reporting

Gold Standard Pathway status indicates that a company has established a methane reduction target, submitted emissions data for all in-scope assets and developed a detailed implementation plan for how it will meet Level 4 and Level 5 reporting within three years for material operated assets and five years for material non-operated assets.

Gold Standard Reporting status indicates that a company has achieved Level 5 reporting within the required timeline.



Energy-related methane emissions reported to the UNFCCC and IEA estimates



IEA. CC BY 4.0.

Notes: UNFCCC = United Nations Framework Convention on Climate Change. Estimates are based on data for the latest available year.

Sources: IEA analysis based on data from UNFCCC for the latest available year in UNFCCC's GHG Data Interface.

GHG Emissions:

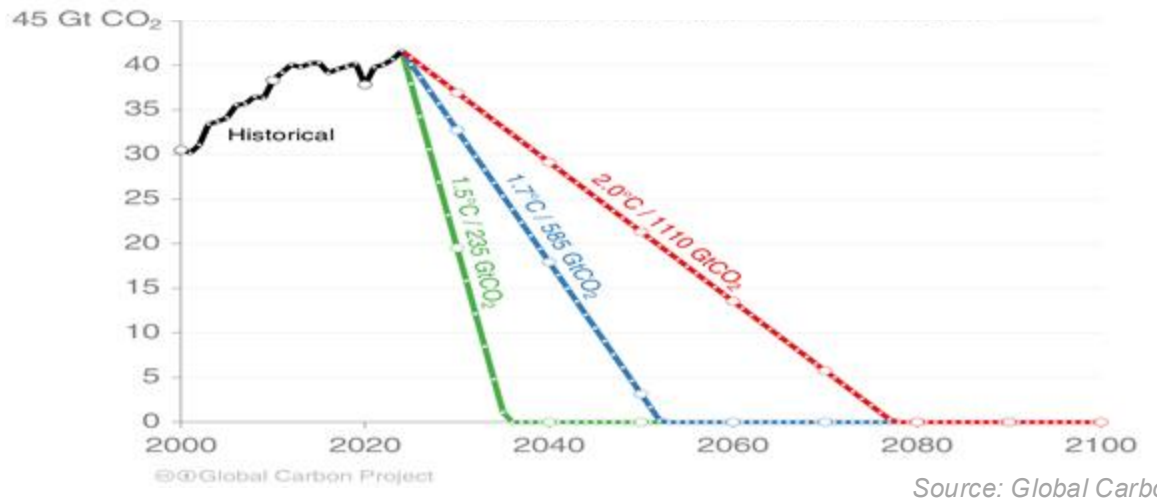
Outlook

PUTTING CO2 EMISSIONS UNDER CONTROL REQUIRES AMBITIOUS TRANSITION PLANS, INVESTMENTS

The remaining CO2 carbon budget to limit global warming to 1.5°C , 1.7°C and 2°C (with 50% probability) is **235 GtCO2**, **585 GtCO2**, and **1110 GtCO2** resp. (equivalent to 6, 14 and 27 years from 2025)

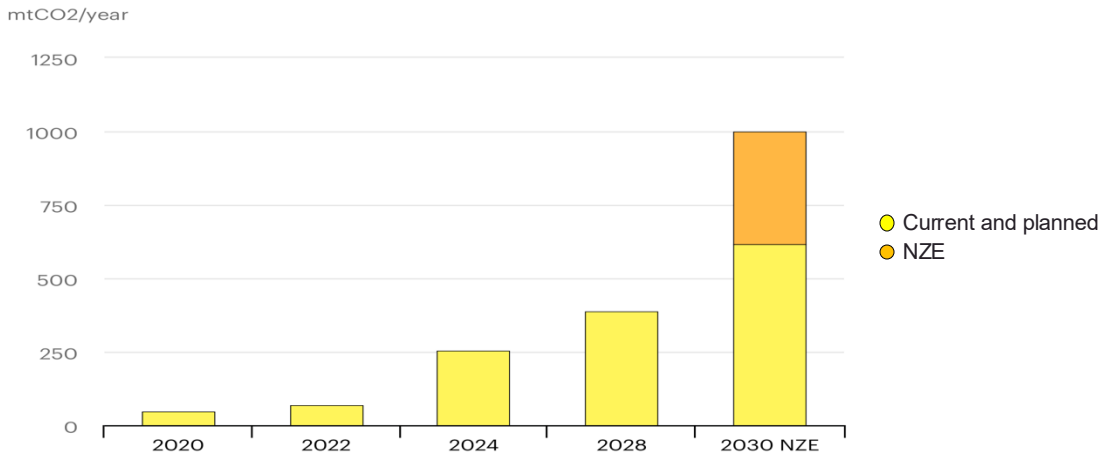
According to IEA, planned CDR (Carbon Dioxyde Removal) infrastructure is insufficient against the Net Zero scenario

Global CO2 pathways using PICC AR6 Remaining Carbon Budgets



Source: Global Carbon Project

Annual CO2 storage capacity, current and planned vs Net Zero Scenario [2020-2030]



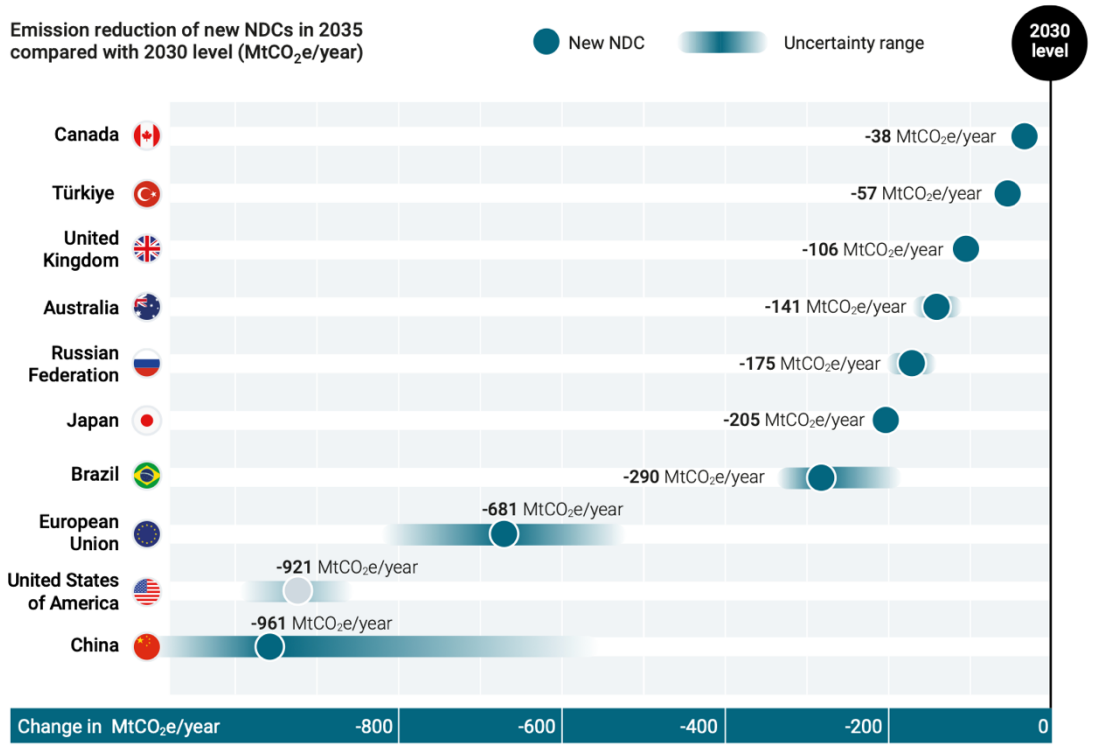
Source : IEA (2024), CCUS Projects Database

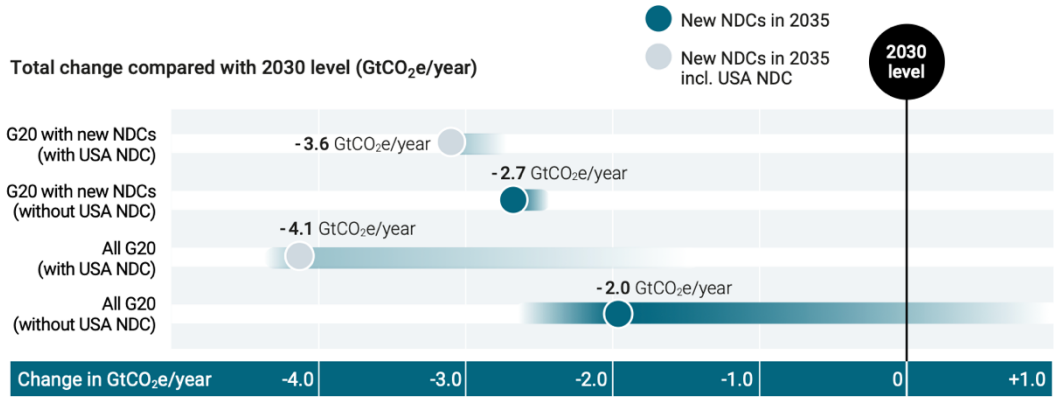
Source: IEA (2024), CCUS Projects Database

2025 UPDATED NDCs: 64 PARTIES REPRESENTING ONLY 63% OF GLOBAL EMISSIONS HAVE ANNOUNCED 2035 TARGETS, WITH 2030 OUTLOOK LARGELY UNCHANGED

UNEP just published its 2025 Emissions Gap Report on November 4th, disclosing a number of significant shortfalls:

- « 73% of the new NDCs include renewable energy targets, but it is unclear whether these will be sufficient to achieve the goal of tripling renewable energy by 2030, with market trends currently suggesting a 2.7-times increase
- NDCs commitments also fall short of the goal to double the rate of energy efficiency improvements by 2030
- The NDC response to the fossil fuel-related outcomes of the global stocktake remains low. Just 62 per cent of new NDCs set a target to reduce fossil fuel use in the electricity mix, while 29 per cent set a coal phase-down target. To date, no NDCs have set targets to reduce oil and gas production or phase out inefficient fossil fuel subsidies.
- Seven G20 members have submitted new NDCs with mitigation targets for 2035 (Australia, Brazil, Canada, Japan, the Russian Federation, the United Kingdom and the United States of America), while three members have announced such targets (China, the European Union and Türkiye). None of the G20 members have strengthened their 2030 targets.
- In 2035, the G20 aggregate emissions under current policies are projected to drop by 2 GtCO2e compared with 2030 levels. The largest contributor to the reduction is China (1 GtCO2e), followed by the European Union (0.6 GtCO2e) and the United States of America (0.2 GtCO2e). »
- Source: UNEP Emissions Gap Report 2025





G20 HAS A KEY RESPONSIBILITY TO TURN AROUND THE OUTLOOK

Countries	Source	Target year	Covers all sectors and gases	Transparent information on carbon removal	Com-prehensive published plan	Review process	Annual reporting
High-income G20 members							
Australia	in law	2050	✓	✗	[inconclusive]	✓	✓
Canada	in law	2050	✓	✓	✓	✓	✓
European Union	in law	2050	✓	✓	✓	✓	✓
France	in law	2050	✓	[not evaluated]	✓	[not evaluated	✓
Germany	in law	2045	✓	✓	✓	✓	✓
Italy	in policy document	2050	✓	[not evaluated]	✓	[not evaluated]	✓
Japan	in law	2050	✓	✗	✓	✓	✓
Republic of Korea	in law	2050	✓	✓	✓	✓	✓
Saudi Arabia	government announcement	2060	?	✗	✗	?	✗
United Kingdom	in law	2050	✓	✓	✓	✓	✓
United States of America	not in force	N/A	N/A	N/A	N/A	N/A	N/A
Upper- and lower-middle-income G20 members							
Argentina	in policy document	2050	✓	✗	[inconclusive]	?	✗
Brazil	in policy document	2050	✓	[not evaluated]	✓	[not evaluated]	✗
China	in policy document	2060	?	✗	✓	✓	✗
India	in policy document	2070	?	✗	[inconclusive]	?	✗
Indonesia	in policy document	2060 in policy; pledged to achieve by 2050	✓	✗	[inconclusive]	?	✗
Mexico	government announcement	2050	?	[not evaluated]	✓	[not evaluated]	✗
Russian Federation	in law	2060	✓	✗	✓	✓	✗
South Africa	in policy document	2050	✓	✗	[inconclusive]	?	✓
Türkiye	in law	2053	✓	✗	✓	?	✗
Other G20 members							
African Union	no union-wide net-zero target; not party to the Paris Agreement	N/A	N/A	N/A	N/A	N/A	N/A

✓ Fulfilled ✓ Partially fulfilled ✗ Not fulfilled ? No information

Source: UNEP Emissions Gap Report 2025

METHANE EMISSIONS: CUTTING FOSSIL FUEL EMISSIONS BY 75% BY 2030 IS VITAL TO 1,5°C TARGET

Methane mitigation offers rapid climate benefits and economic, health and agricultural co-benefits that are highly complementary to CO2 mitigation

Cutting methane emissions from fossil fuels by 75% by 2030 is critical to limit global warming to 1.5 °C in 2100.

IEA estimates that around **70% of methane emissions from the fossil fuel sector could be avoided with existing technologies, often at a low cost.**

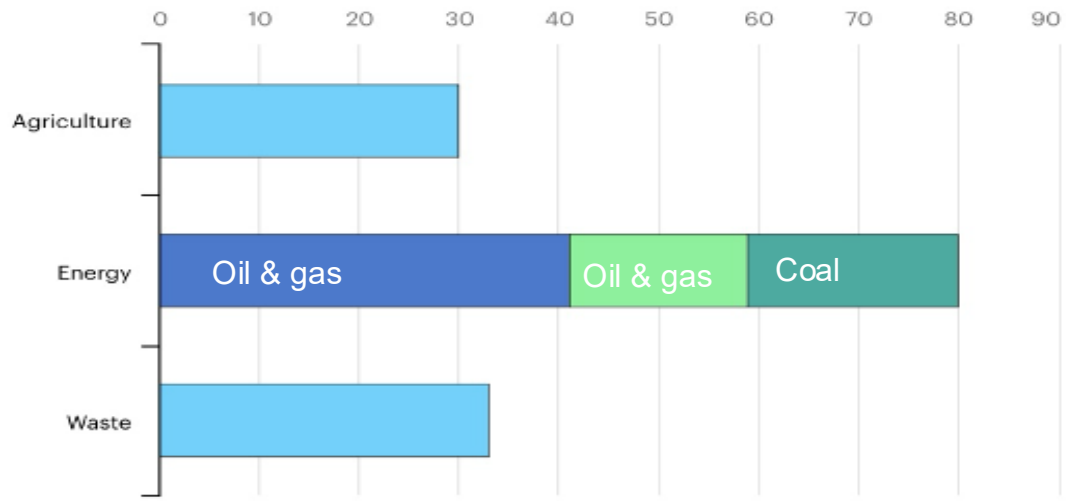
Methane pledges* cover around 80% of global oil and gas production, but implementation remains weak: Several large emitters have yet to commit to methane cuts and about half of the industry has yet to set near-zero methane targets. Most of the oil and gas industry appears to be following the lead of governments.

Nearly 100 countries have engaged on national methane action plans, and additional methane policies should be included in 2025 updated NDC.

Global Methane Pledge, the Oil and Gas Decarbonization Charter, the Oil and Gas Methane Partnership 2.0 and other methane initiatives

Source IEA 2025 Methane Tracker

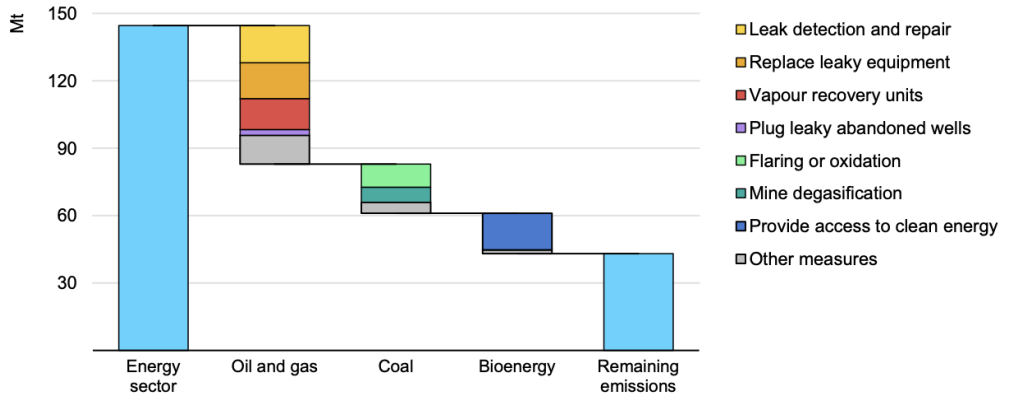
Methane abatement potential to 2030 [Mt]



Source: IEA

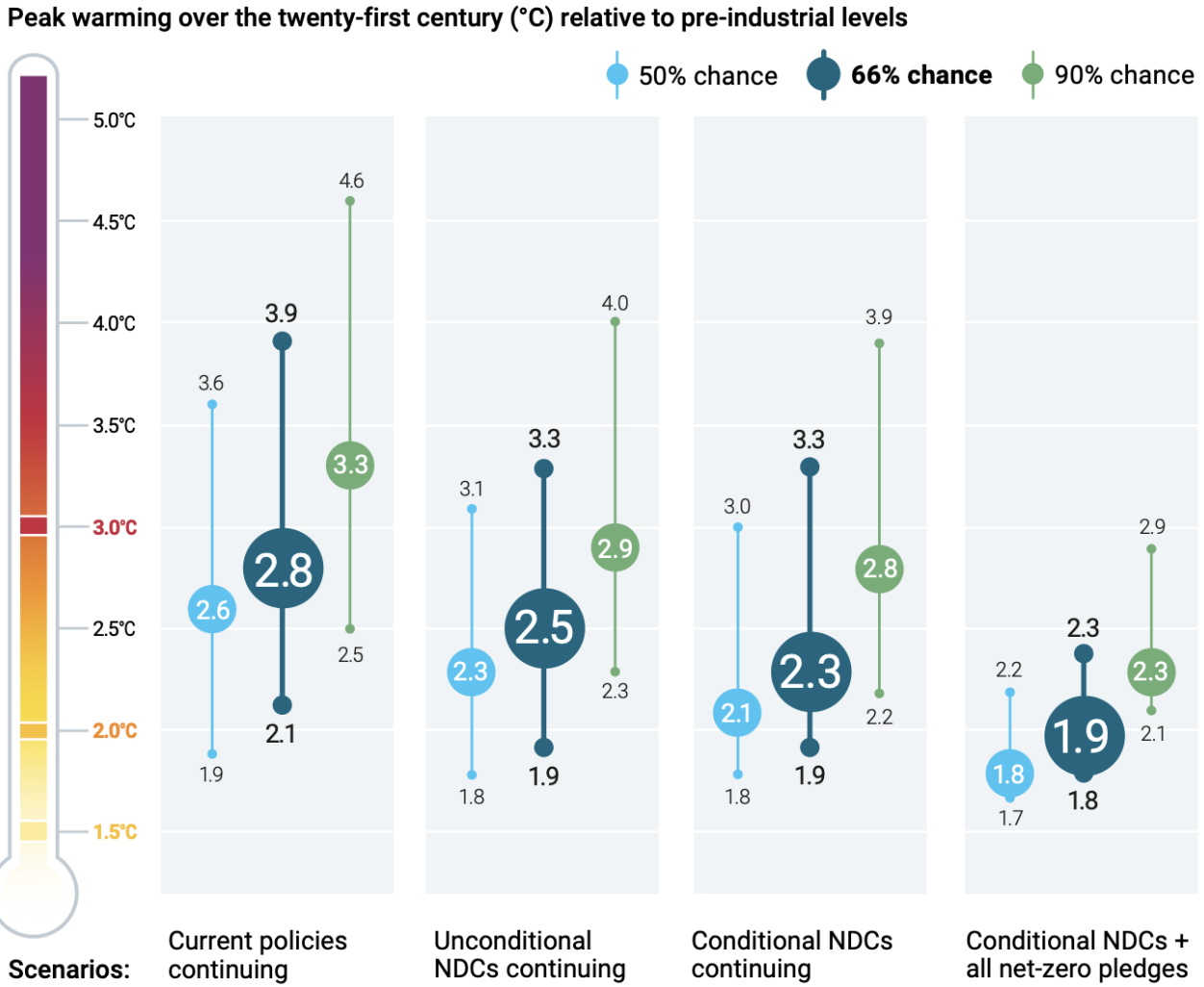
Main sources of methane emissions [Mt]

Opportunities to reduce methane emissions in the energy sector, 2024



Note: "Other measures" includes efficiency improvements, installing plungers, blowdown capture, installing methane-reducing catalysts, reduced-emission completions and capturing methane emissions from waste streams.

THE MOST LIKELY SCENARIO NOW INCLUDES A PEAK WARMING UP TO +2,3-2,5°C

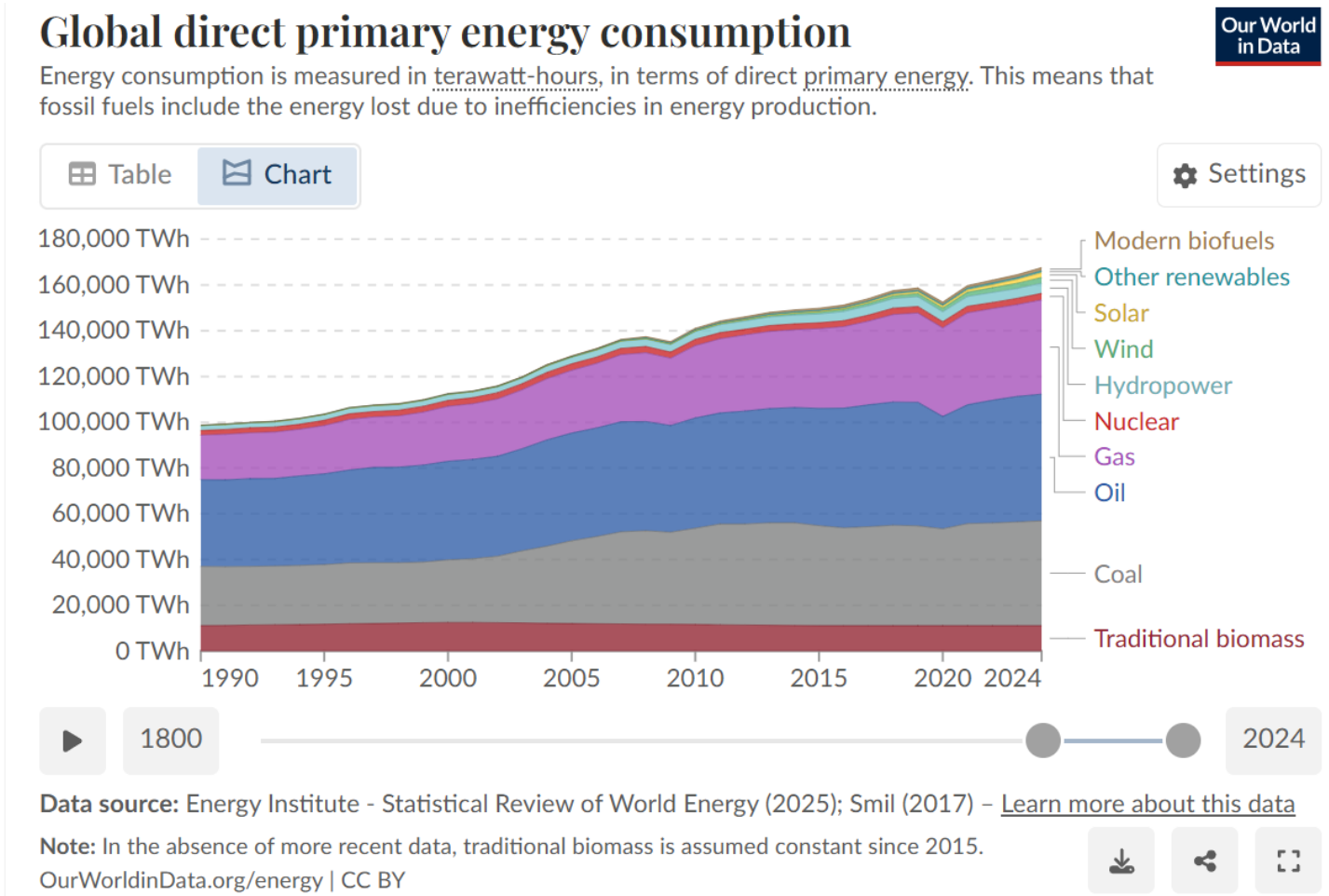


With USA exit from Paris agreement increasing the risk by an additional +0,1°C

Source: UNEP Emissions Gap Report 2024

Green Techs: Recent Developments

GLOBAL PRIMARY ENERGY CONSUMPTION STILL 85% FOSSIL – THE RENEWABLE CAPACITY ADDITIONS DOUBLED DURING THE LAST 3 YEARS, COVERING THE INCREASE OF ENERGY CONSUMPTIONS



2024
in terawatt-hours

Modern biofuels	1,367 TWh
Other renewables	792 TWh
Solar	2,112 TWh
Wind	2,511 TWh
Hydropower	4,453 TWh
Nuclear	2,817 TWh
Gas	41,278 TWh
Oil	55,292 TWh
Coal	45,851 TWh
Traditional biomass	11,111 TWh
Total	167,584 TWh

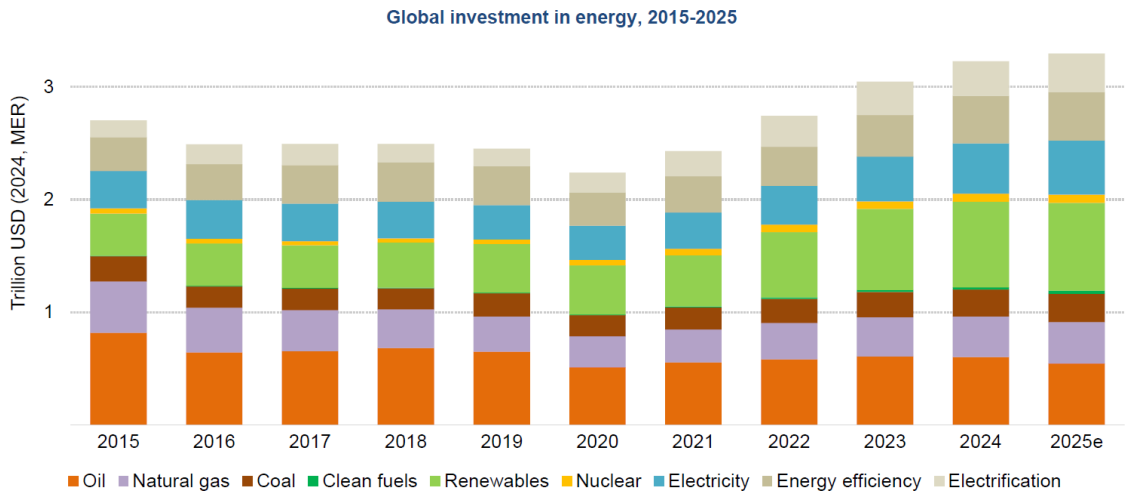
The share of carbon-free energies in the global mix **has doubled in ten years**, but they only represent **15% of primary energies consumed**

On a brighter note, clean energy technology adoption surged at an **unprecedented pace over the last three years**. Total renewable capacity additions increased by a **factor of 2 between 2022 and 2024!**

Source: OUR WORLD IN DATA

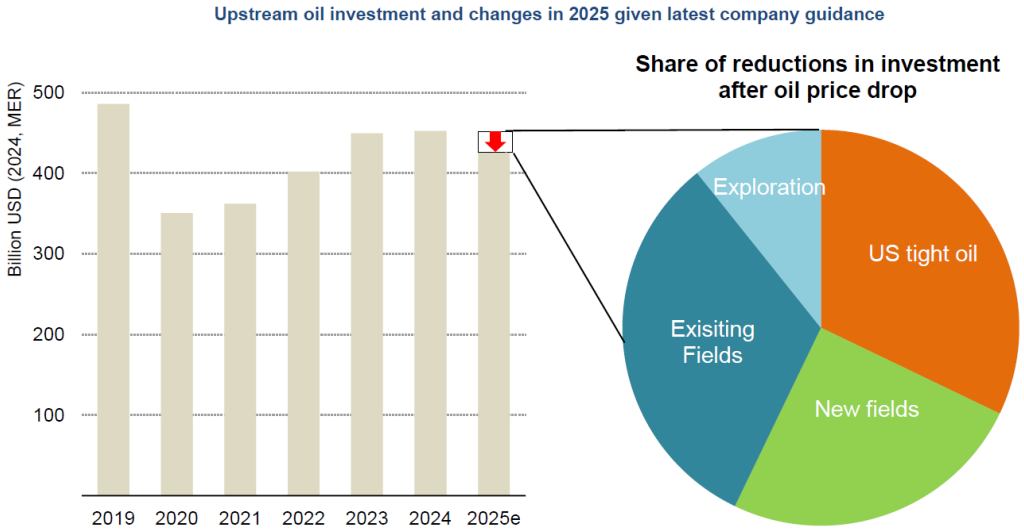
THE WORLD INVESTS TWICE AS MUCH IN CLEAN ENERGIES AS IT DOES INFOSSIL FUELS, AND OIL INVESTMENT IS SET TO FALL FOR THE FIRST TIME SINCE 2020.

Global energy investments in 2025 are set to reach USD 3.3 trillion. **Clean energy hits a new high of USD 2.2 trillion** with record additions of renewables, strong EV sales and rapid deployment of batteries. Fossil fuel investments see the first decline since 2020.



Source: IEA

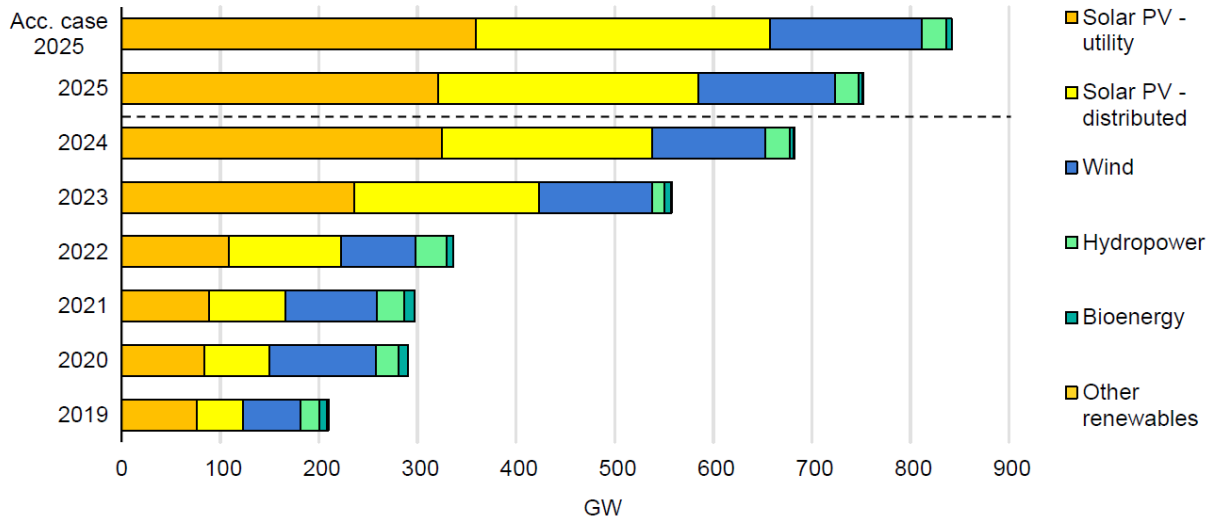
Upstream oil investment is set to fall for the first time since 2020. Investments in natural gas – especially in LNG – are robust, but **spending on oil has been revised down** in light of the new economic outlook and cost pressures, and global investment in refineries is hitting a new 10-year low



Source: IEA

2025 WILL BE ANOTHER RECORD YEAR FOR RENEWABLE POWER

Renewable electricity capacity additions by technology, 2019-2025



In 2024, global renewable electricity capacity additions grew 22% to reach nearly 685 GW – a new all-time high.

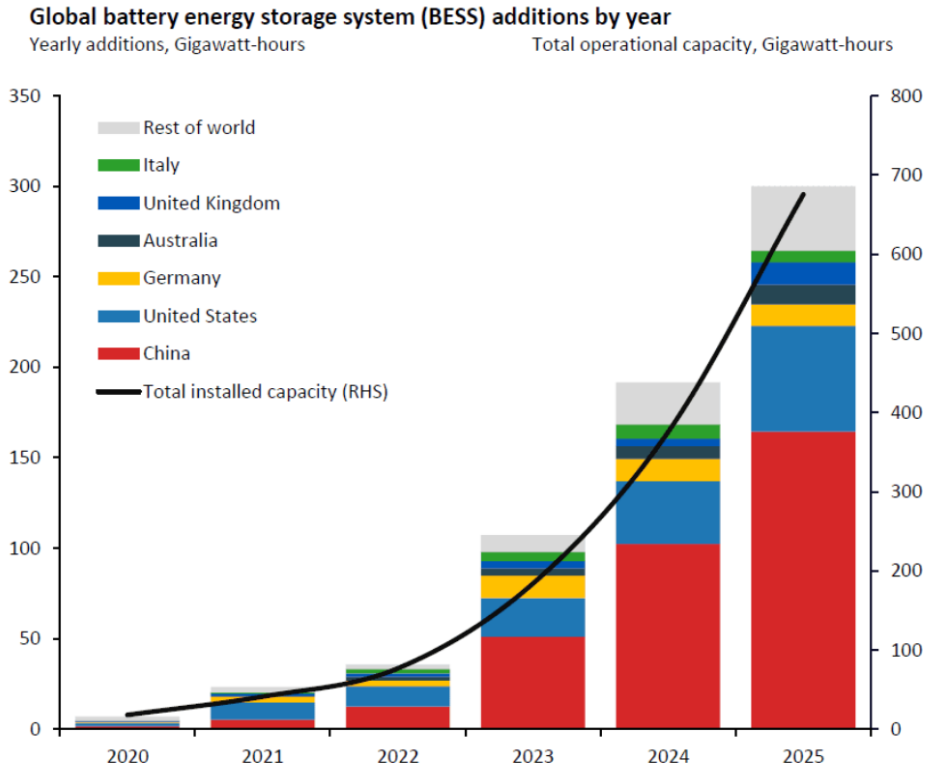
Despite increasing policy uncertainty and ongoing regulatory challenges, **2025 is expected to be another record year**, with capacity additions reaching over 750 GW in the main case and 840 GW in the accelerated case.

Solar PV continues to make up the majority of growth, with annual additions expanding further in 2025, though at a slower rate. It is expected to account for nearly 80% of the total global renewable electricity capacity increase, maintaining its dominant share from 2024. While utility-scale solar PV additions remain stable in 2025, expansion is expected for distributed solar PV applications.

Wind additions remained stable last year but are anticipated to increase to 139-155 GW in 2025, accounting for 18% of overall forecast growth. Onshore wind is expected to break another record, with 124 GW becoming operational in 2025 as uptake in China, the United States, the European Union and India increases. Offshore wind capacity is forecast to expand 15 GW, a 60% year-on-year increase driven by China's acceleration.

GLOBAL INSTALLED ENERGY STORAGE ON A STEEP RISE WITH 2024 SEEING A RECORD GROWTH

The increasing share of intermittent renewables, combined with low flexibility in supply and load, creates price volatility in the liberalized power markets, fostering grid scale battery storage development.



Source : Rystad Energy, May 2025

The example of Europe, where the lack of interconnectivity leads to strong volatility of electricity prices

A significant increase in the number of hours with negative prices since 2018 can be seen.

Source : FFE oct 2024

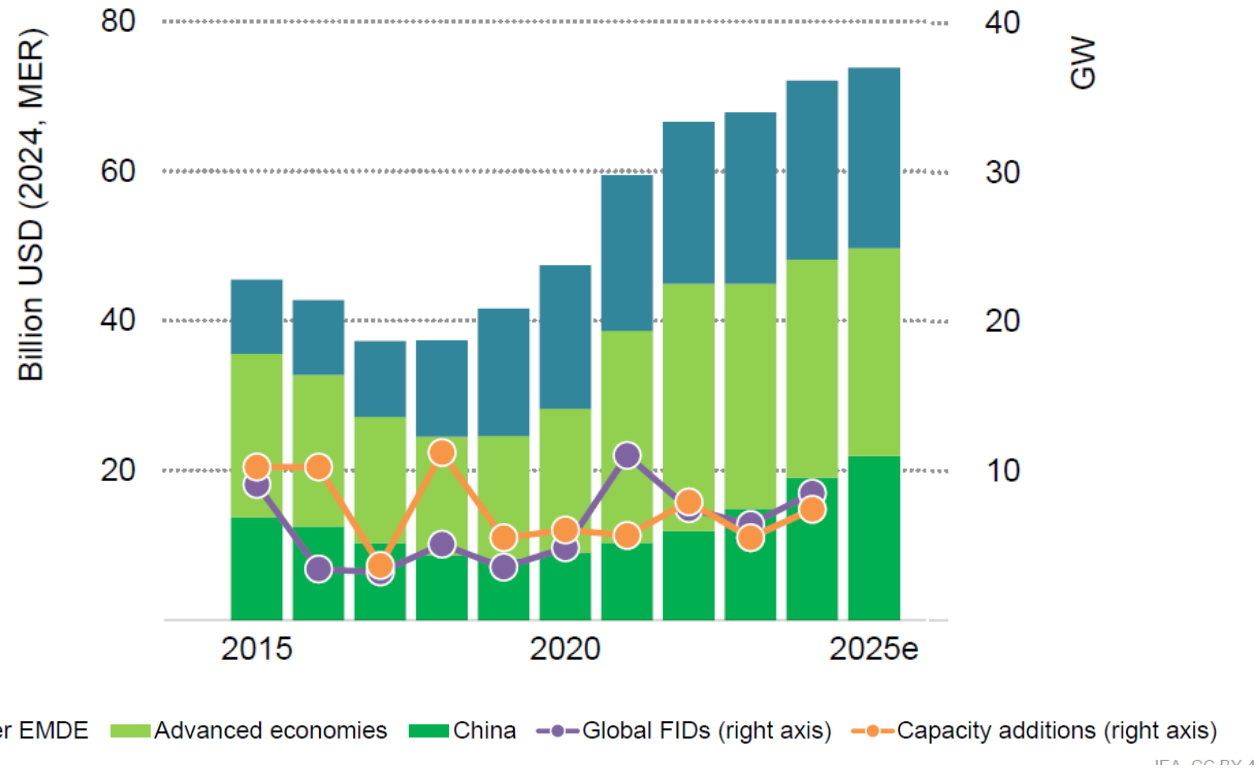
NUCLEAR: NEW GROWTH DRIVEN BY CHINA

Growing SMR demand from the tech industry may be a tailwind for nuclear in the coming years, but currently new growth is mainly attributable to Chinese investment in large-scale reactors

In 2024, ***over 7 GW of nuclear power capacity was brought online***, ***33% more*** than in 2023.

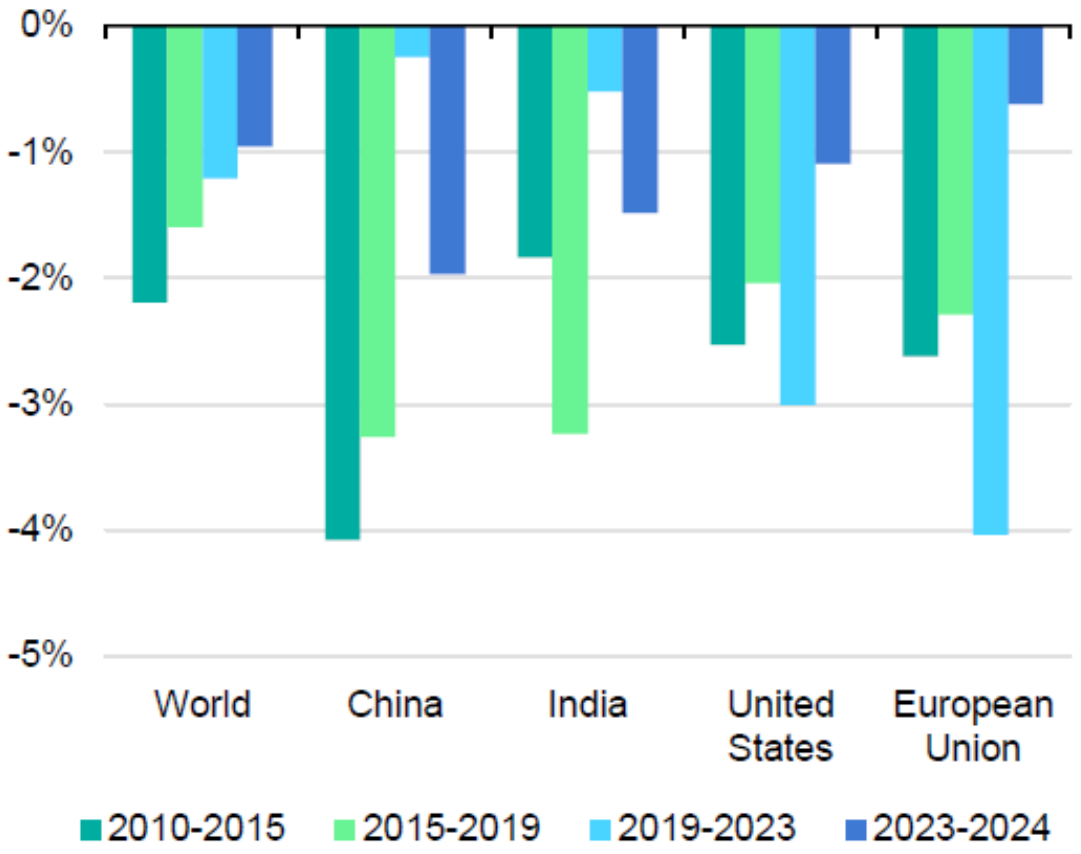
Electricity generation from nuclear in 2024 rose by 100 TWh..

Annual investment, FIDs and capacity additions for nuclear 2015-2025



ENERGY INTENSITY IMPROVEMENTS CONTINUED TO SLOW IN 2024

Average annual rate of energy intensity improvement [selected regions ; 2010-2024]



After improving at an average rate of around 2% annually between 2010 and 2019, energy intensity improvements slowed to 1.2% per year between 2019 and 2023 and **only 1% in 2024**

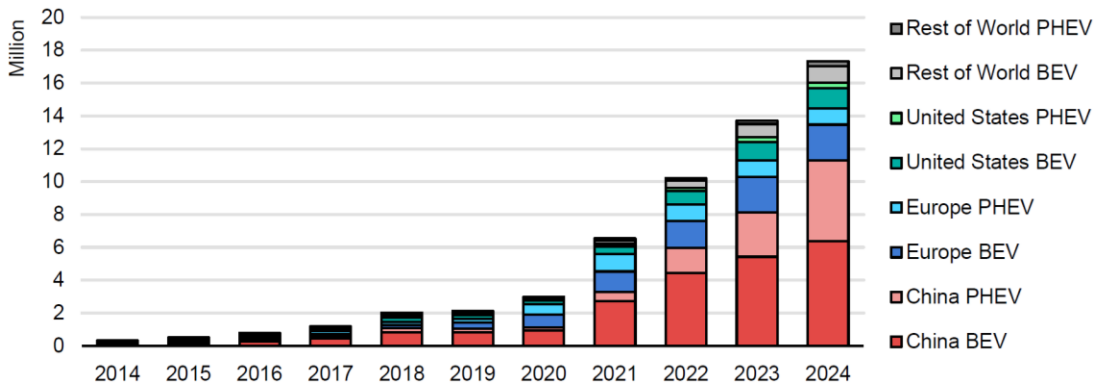
Key reasons for this recent slowdown include:

- investment and manufacturing-intensive post-Covid growth in major emerging and developing economies such as China and India;
- Higher energy demand due to extreme temperatures;
- and a trend of poor growth in hydropower output that was only partially reversed in 2024, leading to more consumption of less efficient fuels in some regions

GREEN MOBILITY STILL ON TRACK FOR THE NZE SCENARIO BUT SOME STRONG WARNING SIGNALS ARE EMERGING, AND HEAT PUMPS SALES ARE DECLINING

Electric Vehicles

Global electric car sales [2014-2024]



Source: IAE

Electric car sales exceeded 17 million globally in 2024, reaching a sales share of more than 20%.

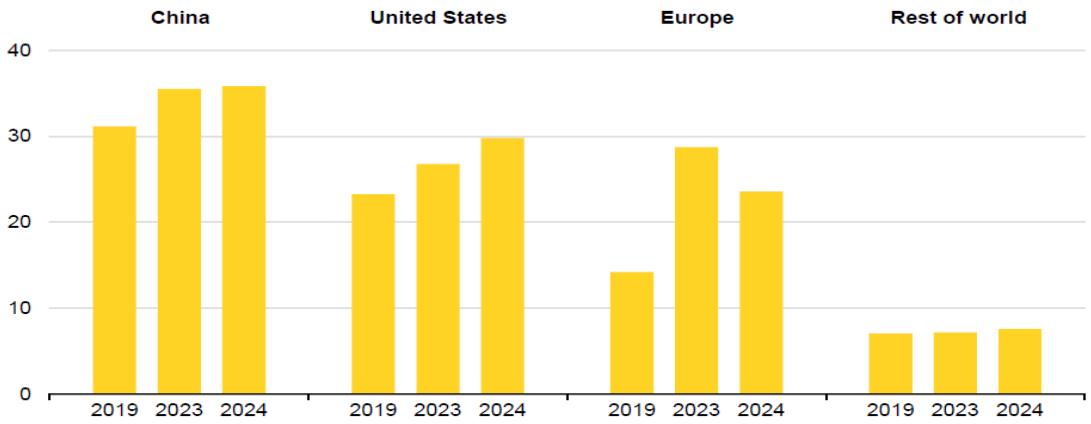
China maintained its lead, with electric cars accounting for almost half of all car sales in 2024, while emerging market and developing economies outside China witnessed a significant 80% annual increase in EV sales.

EV sales in US grew in 2024 by over 10%, thanks to the release of new EV models and availability of EV tax credits, which provided financial aid to consumers.

Electric car sales stagnated in the European Union, in large part due to Germany, where purchase subsidies were removed at the end of 2023. In contrast, EV sales in the United Kingdom surged, driven by the Zero-Emission Vehicle (ZEV) mandate.

Heat pumps

Heat pumps sales for selected regions [GW ; 2019-2024]



Source: IAE analysis based on the European Heat Pump Association (EHPA); the Air-Conditionning, Heating and Refrigeration Institute (AHRI); the Japan Refrigeration and Air Conditioning industry (JRAIA) andChinaIOL

Global heat pump sales fell by 1% in 2024, recovering most of the decline recorded in the first half of the year

Some markets, notably Japan and the United States, showed a strong recovery in demand in the second half of the year, but it was not enough to offset the sharp annual decline in Europe and stagnation in China

Cost remains the major problem

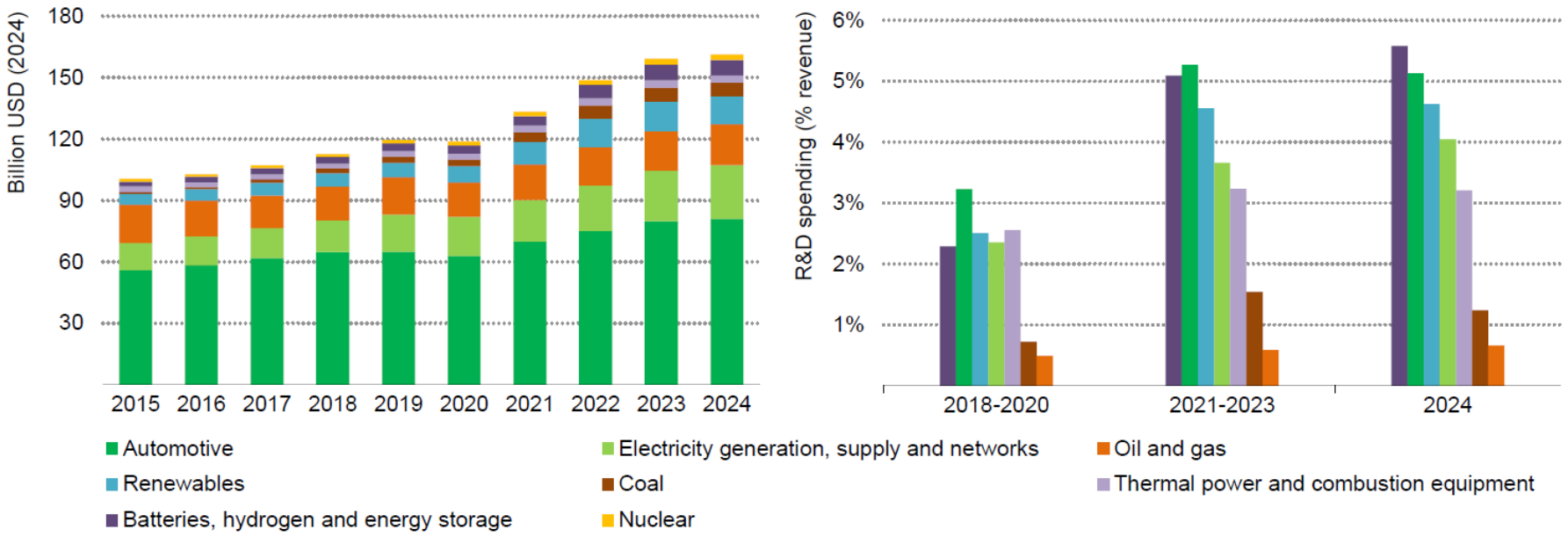
**BEV Battery electric vehicle*

**PHEV : Hybrid/Plugging Battery electric vehicle*

INVESTMENT IN EMERGING LOW CARBON TECHNOLOGIES: CORPORATE ENERGY R&D SPENDING CONTINUED TO INCREASE IN 2024

Innovative & break-through technologies	According to the IEA, **35% of the emissions reductions expected in 2050 will come from technologies not yet commercialized**: new technologies of batteries, solid oxide electrolyzers, SAF, natural hydrogen extraction, advanced CCUS technologies, direct reduction of iron, small modular nuclear reactors…

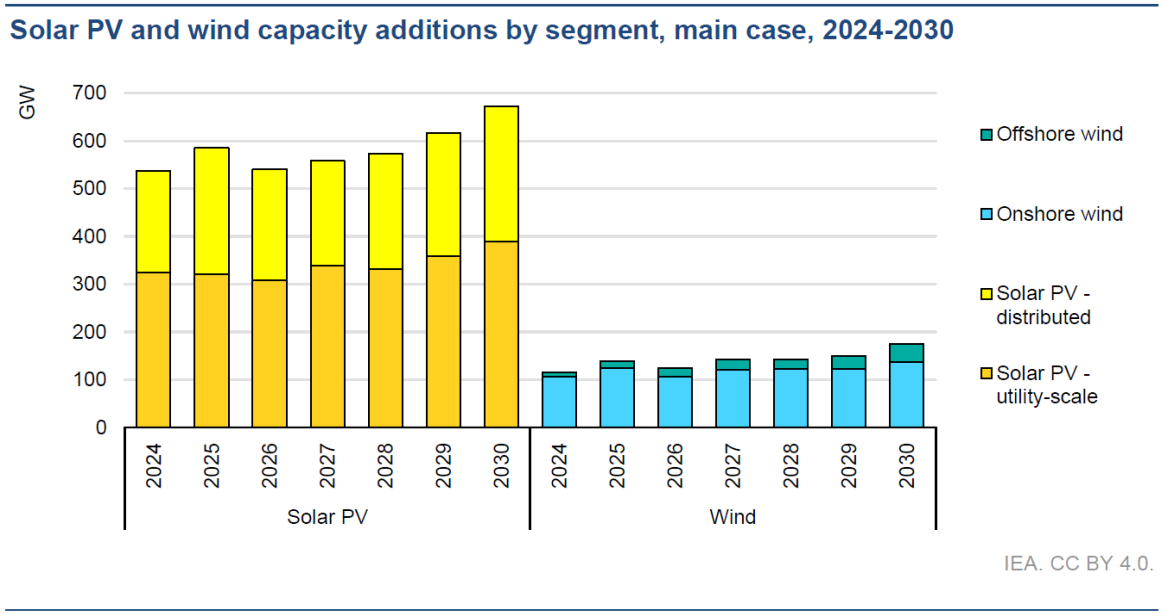
Energy R&D spending by listed companies (left), and corporate R&D as a share of revenues (right), by sector of activity, 2015-2024



Companies operating in clean energy sectors have spent the highest proportion of their revenues on R&D in recent years.

Green Techs: Outlook

RENEWABLE CAPACITY OUTLOOK: IT WILL CONTINUE TO GROW STRONGLY UNTIL 2030, BUT THE ANNUAL DEPLOYMENT TRAJECTORY WILL NOT BE SMOOTH AND A GAP TO THE GLOBAL TRIPLING ANNOUNCED AT COP 28 REMAINS



Despite the downward revision, the renewable electricity additions for 2025-2030 total 4 600 GW – equal to the combined installed power capacity of China, the European Union and Japan !

But the global tripling target compared to 2022 level will not be reached (IEA forecast is x 2.6).

The 2025 IEA's year's forecast is a **downward revision from 2024** (growth is 5% lower).

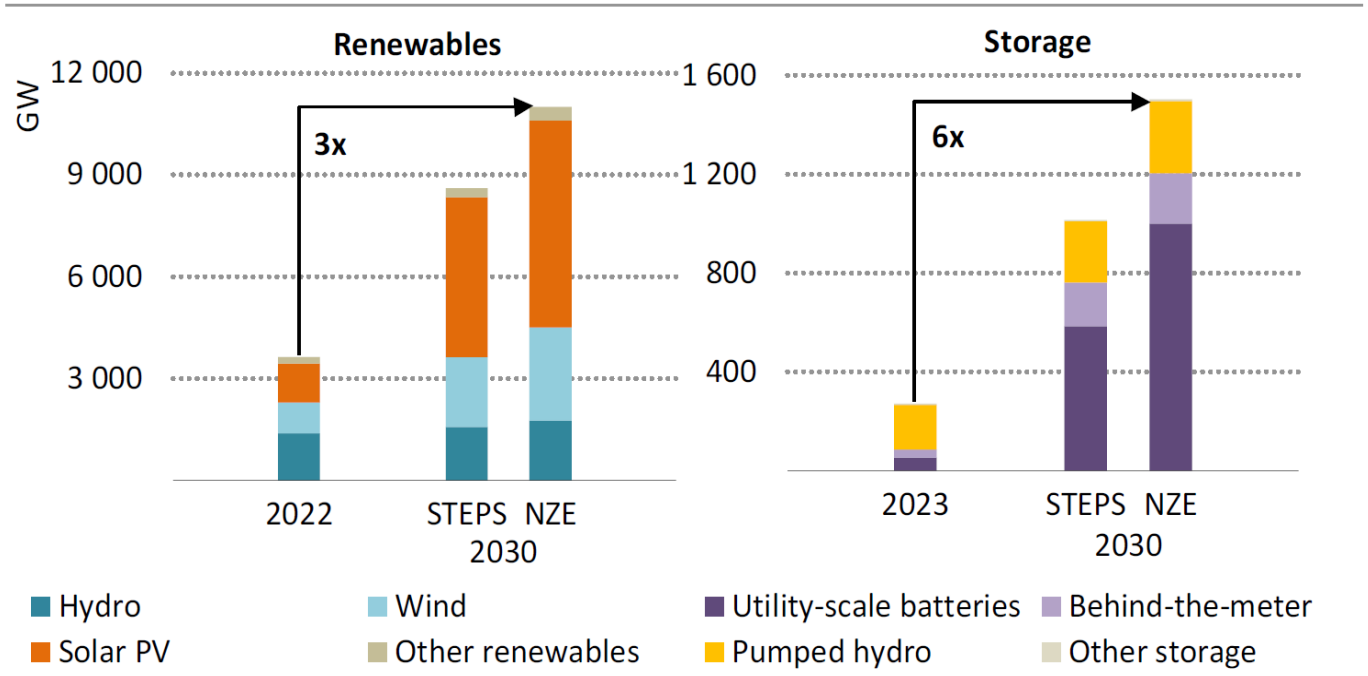
Yet, in **the main case** IEA scenario, global annual renewable capacity additions rise **from 683 GW in 2024 to almost 890 GW in 2030. Solar PV and wind account for 96%** of all renewable capacity additions through 2030 because they are the most affordable options to add new capacity in almost every country in the world.

Following record expansion in 2025, annual increases for both solar PV and wind are expected to decline, primarily due to **slowdowns in China** (uncertainty regarding auctions design and contract-for-difference arrangements at the provincial level) and **the United States** (evolving policy timelines lead).

Despite rising demand for greater grid flexibility, **dispatchable renewables** (hydro and geothermal mainly) **are projected to make up only 4%** of new renewable capacity additions

MUCH HIGHER ELECTRICITY-STORAGE CAPACITIES ARE NECESSARY TO AVOID PRICE VOLATILITY

The x3 target for renewables decided at COP28 would need x6 for grid-scale storages



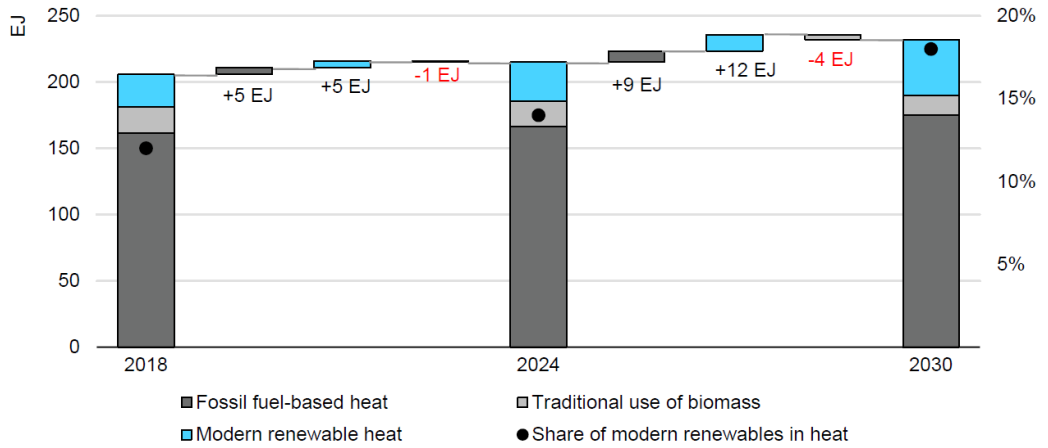
Source: IEA

Note: Energy storage capacity, led by battery storage increases sixfold by 2030 in the NZE scenario and supports the tripling of renewables capacity goal

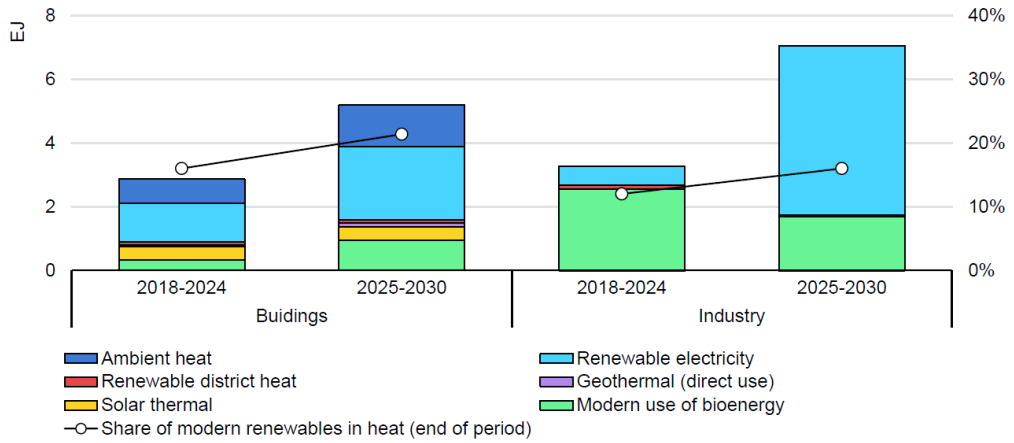
RENEWABLE HEAT: CONTINUED EFFORTS ARE NEEDED TO ACCELERATE THE TRANSITION TO CLEANER HEATING SOLUTIONS

Renewable Heat

Changes in the use of modern renewables, traditional biomass and fossil fuels in global heat demand, and the share of modern renewables in heat, 2018, 2024 and 2030



Global increases in renewable heat use, 2018-2030

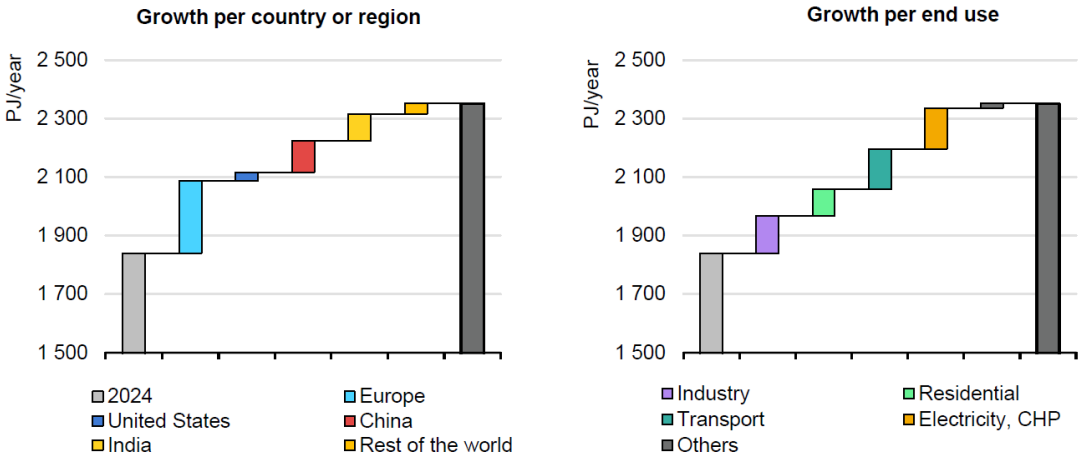


- Between 2025 and 2030, global annual heat demand is projected to rise 8% (+17 EJ), and **heat production from modern renewable energy sources is expected to expand significantly, by nearly 42%** (+12 EJ).
- Despite this strong growth, modern renewables will still meet **only around 18% of total heat demand by 2030,** up from 14% in 2024. This highlights the **need for continued efforts** to accelerate the transition to cleaner heating solutions
- By 2030, **industry is expected to become the dominant heat consumer**, with renewable heat use climbing 49%. China and India will make up nearly 60% of this growth. In China, heat demand met with renewables is set to double, supported by strong government policies. These policies are expected to almost quadruple the use of renewable electricity for heating, so that electricity accounts for more than half of China's total renewable heat consumption in 2030.

BIOGAS & BIOMETHANE: POLICY ATTENTION HAS INCREASED SIGNIFICANTLY AND IEA HAS REVISED ITS FORECAST UPWARDS, AT +22% BETWEEN 2024 AND 2030

Biomethane
Biogas

Global biogas growth by country and end use, 2024-2030



Policy attention to biogas and biomethane has increased significantly in the past five years as more countries recognize their potential role in the transition to sustainable energy systems. Several key factors are driving this surge:

- The growing importance of energy security following the energy crisis triggered by Russia's invasion of Ukraine and recent geopolitical developments.
- The need to accelerate decarbonization in hard-to-abate sectors, together with growing emphasis on methane emissions reductions.
- Countries are paying more attention to the circular economy concept,
- recognizing that biogas production can help revalorise organic waste and
- residues.
- Finally, as rural areas are losing population in many regions, biogas and biomethane development can contribute to rural economic growth.

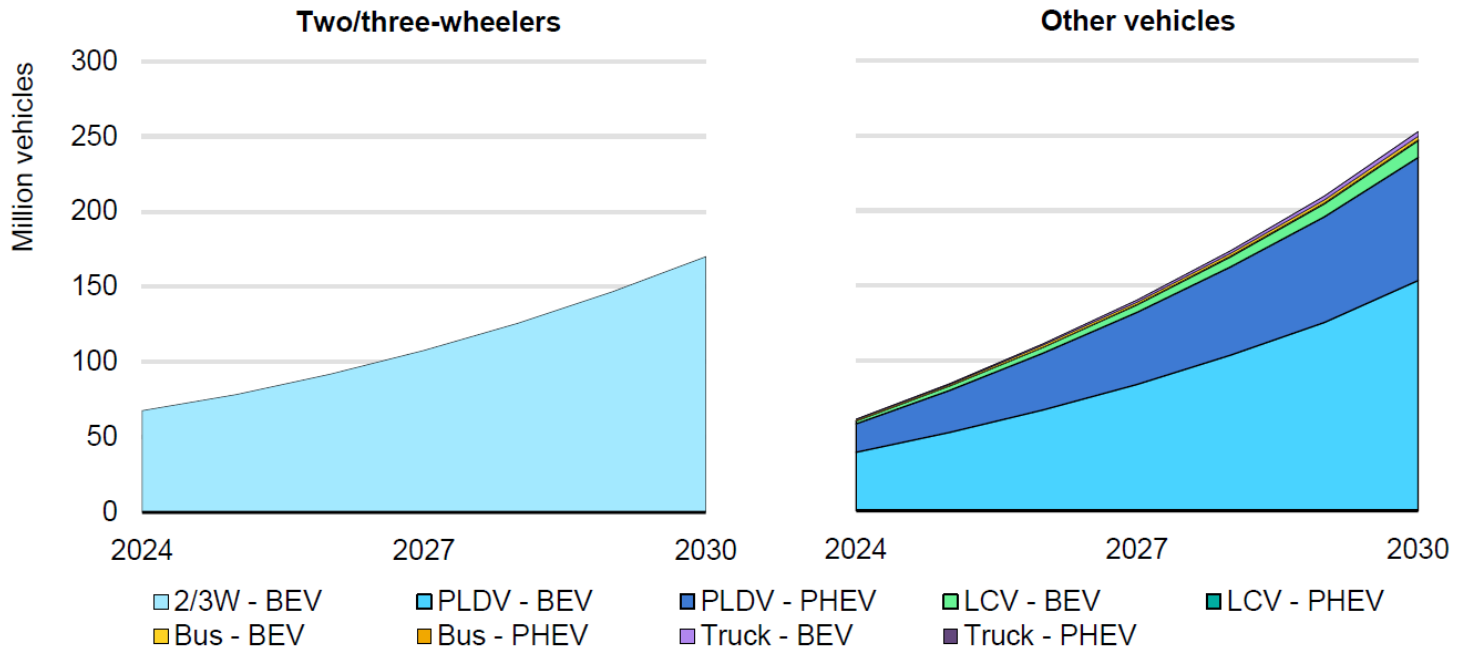
The 2021-2024 period was marked by growing international recognition of biogases, reflected in the **adoption of national strategies and the setting of ambitious 2030 targets in several countries and regions**, including the European Union, India and China.

Global combined biogas and biomethane production is expected to **expand 22% from 2025 to 2030.** Net growth will come from biomethane owing to its versatility and the opportunity to use natural gas grids and equipment, which could make it possible to displace fossil fuels for hard-to-electrify uses with minimum infrastructure investment.

GREEN MOBILITY: THE GLOBAL ELECTRIC VEHICLE FLEET GROWS FOURFOLD TO 2030 UNDER STATED POLICIES SCENARIO, BUT UNCERTAINTIES APPEAR FROM POLITICAL CHANGES

Electric Vehicles

Electric vehicle stock by mode in the Stated Policies Scenario, 2024-2030



Notes: 2/3W = two/three-wheeler; PLDV = passenger light-duty vehicle; LCV = light commercial vehicle; BEV = battery electric vehicle; PHEV = plug-in hybrid electric vehicle. There are no plug-in hybrid electric two/three-wheelers.

- By 2030, the fleet of EVs across all modes except 2/3Ws reaches 250 million in the STEPS – four times as many EVs as there were at the end of 2024.
- More than 90% are electric cars, which is similar to the share in 2024.
- In this scenario, the stock of EVs (excluding 2/3Ws) increases at an average rate of about 25% per year, which is about half the annual growth observed from 2018-2024.
- Nevertheless, the recent changes in trade policies and tariffs as well as demand-side policies may affect the sales of EVs in several markets over the coming years. The impact of tariffs on the sales share of electric cars in the United States may be relatively small compared to the impact of potential changes in demand-side policies (such as fuel economy standards and tax incentives), some of which are already considered as part of the STEPS outlook.

CRITICAL MINERALS: LITHIUM REMAINS THE HIGHEST RISK FOR OUR 2030 MILESTONES

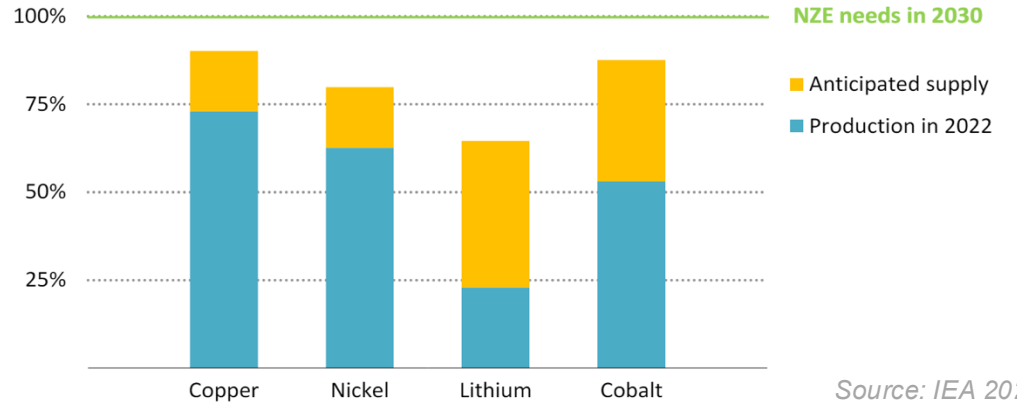
Despite the collapse in lithium, cobalt, and nickel prices due to oversupply, the **International Energy Agency (IEA) is sounding the alarm**. In its report on critical transition metals, published in May 2025, it warns its members of **future shortages of lithium and copper.**

IEA is also concerned about the **growing concentration** of metal production in a handful of countries, or even just one, most often in China. **Diversification is the solution** for ensuring energy security, but the critical metals world has **moved in the opposite direction**: according to IEA, the average market share of the top three countries for refining transition metals increased from around 82% in 2020 to 86% in 2024. The same is true for crude ore extraction, although the phenomenon is somewhat less pronounced. The top three producers accounted for an average of 73% of supply in 2020 and 77% in 2024.

In the present context of high geopolitical tensions, **critical minerals have become a key issue in ensuring global energy and economic security**. Too much concentration increases the risk of a supply shock, which can result in a price increase of 40 to 50% for consumers or a loss of competitiveness for manufacturers (*source : IEA*). The risk is all the greater given that 55% of strategic metals traded worldwide are subject to export restrictions.

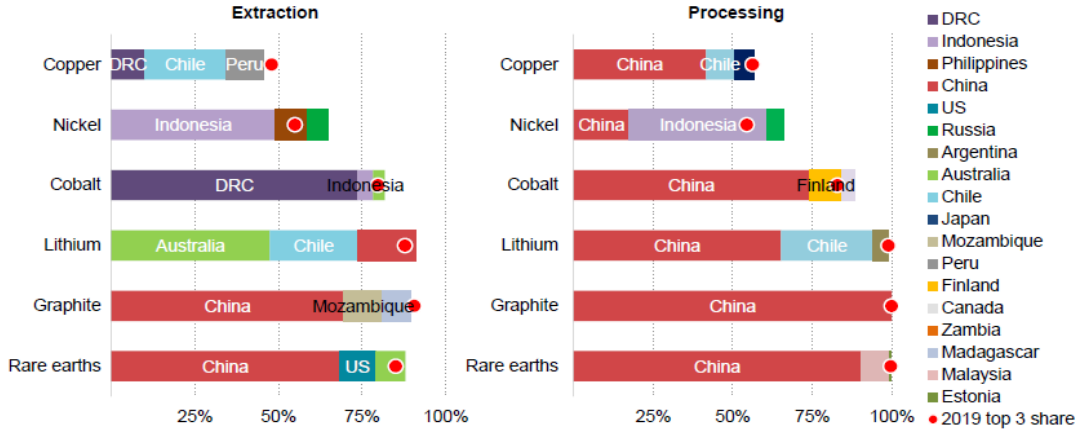
In addition to geographic diversification and recycling, **technological innovation** is another way to reduce tensions over critical metals. But despite policy efforts in the United States and Europe, **progress toward more diversified supply chains is expected to be slow** according to IEA.

Anticipated supply from the current pipeline of announced projects for key critical minerals would provide at least 65% of 2030's NZE Scenario requirements. Additional investments required.



Source: IEA 2022

Share of top 3 producing countries in total production for selected resources and mineral (2022)

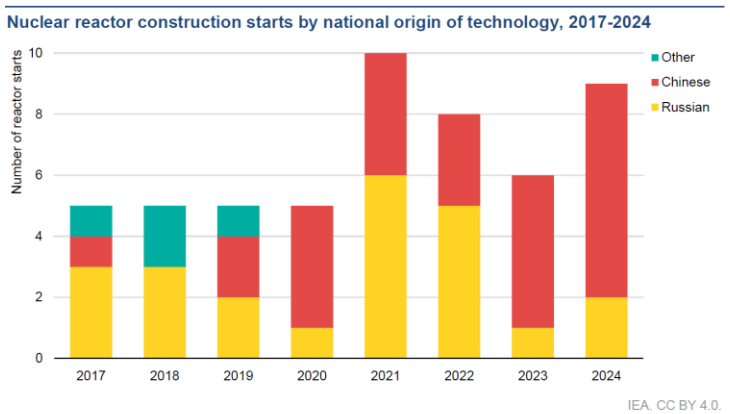


Source: IEA 2022

SOME LOW CARBON INVESTMENTS ARE NECESSARY SINCE NOW WITH EFFECTS AFTER 2030: NEW NUCLEAR PROJECTS, HYDROGEN AND CCUS

Nuclear

- Construction starts for nuclear power plants grew by 50% in 2024, ***exclusively using Chinese and Russian designs***.



Note: Capacity is reported in gross terms.
Source: IEA analysis based on IAEA PRIS database (Accessed 6 February 2025).

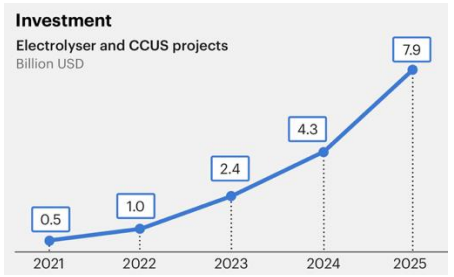
- **There is a growing demand for Small Modular Reactor (SMR)** from the tech industry, but the technology is still in development

Low – carbon Hydrogen

Low-emissions hydrogen use **increased by nearly 10%** in 2024 but remains at **less than 1% of total demand** due to cost challenges and insufficient policy support. Policy initiatives in the EU, Japan and Korea can **accelerate ramp-up**, but their impact will only be seen through implementation.

Many low-carbon hydrogen projects have been cancelled or delayed in 2024-2025, but there remains a pipeline of approved projects that requires around **USD 8 billion of investment in 2025, almost double the level seen in 2024.**

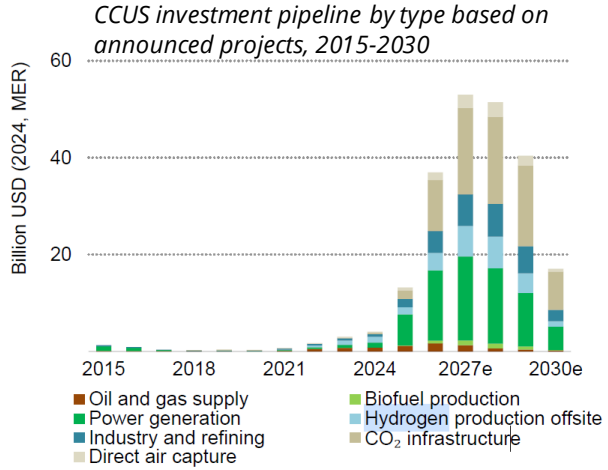
Despite the recalibration of industry plans, low-emissions hydrogen production is **expected to grow strongly by 2030** according to IEA, and should reach 4% of total hydrogen production.



CCUS

Carbon capture, utilization and storage (CCUS) is seen by many experts as especially important ***for hard-to-abate industries*** that cannot be easily replaced by electrification (iron and steel, cement, refining…). However, CCUS is still very much in its infancy, capturing just 0.1 percent of CO_2 emissions per year.

But there is a ***strong pipeline of new CCUS projects***; successfully developing them would mean CCUS investment rising ***more than tenfold over the next 3 years***



Public Policies:

Recent Developments & Outlook

CHINA REMAINS PRUDENT ON CLIMATE TARGETS ; POLITICAL NEGOTIATIONS DELAY THE EU'S SUBMISSION, SENDING MIXED SIGNALS

1. Q3 2025 marked a fragmented period for global climate policy, 10 years after the Paris Agreement. While **36 countries submitted new NDCs by the September 30 deadline**—representing only ~25% of global emissions- the quarter culminated with **China's historic yet underwhelming announcement of its first absolute emissions reduction target covering all greenhouse gases.**
2. The **European Union missed its NDC deadline**, submitting only a statement of intent indicating a 66.25-72.5% reduction range for 2035.
3. Meanwhile, the **United States enacted the most comprehensive climate policy rollback ever documented**, dismantling most Inflation Reduction Act provisions. State and regional actors - particularly California, other US states, and subnational jurisdictions – are compensating for federal retreats.

China

On September 24, 2025, President Xi Jinping unveiled China's NDC at the UN General Assembly:

- **7-10% reduction in economy-wide net GHG emissions** from peak levels by 2035 (first absolute reduction target)
- **Non-fossil fuels:** 30% of primary energy consumption by 2035
- **Renewable capacity:** Wind and solar to exceed 3,600 GW by 2035 (6x 2020 levels)
- **New Energy Vehicles**: Mainstream in new car sales
- **ETS expansion:** National emissions trading scheme to cover all major high-emitting industries

While historic for being China's first post-peak reduction target covering all GHGs, the 7-10% reduction falls short of the 30% reduction experts deem necessary for 1.5°C alignment.

European Union

On September 18, 2025, the European Council approved statement of intent (not a full NDC):

- 66.25-72.5% emissions reduction by 2035 vs. 1990 levels
- Climate Action Tracker called for at least 77% reduction for 1.5°C alignment
- Ongoing negotiations on 2040 climate target (90% reduction proposal)
- EU reaffirmed it remains on track for a 55% reduction by 2030

Despite the statement of intent signed by all member states, climate experts expressed widespread disappointment at lack of a concrete submission.

United States of America

On July 4, 2025, the One Big Beautiful Bill Act was signed. It represented a comprehensive climate policy rollback:

- **IRA dismantlement:** Rolled back most tax credits for clean electricity, fuels, vehicles, and industry
- **EV credits eliminated:** For vehicles purchased after September 30, 2025
- **Commercial and residential EV credits:** Phased out after 2025
- **45X credits modified:** Wind component eligibility eliminated after December 31, 2027
- **Methane Emissions Reduction Program:** Eliminated (including $1.5 billion for monitoring/reducing emissions)

US emissions projected 600-800 MtCO2e higher in 2030 than Biden's projections.

NEW NDCS OFFICIALLY SUBMITTED IN Q3 2025

Cambodia

Cambodia (August 2025) set ambitious targets: 16% unconditional + 55% conditional GHG reduction by 2035 versus business-as-usual, with 72% renewable energy in installed capacity (80% with support). This marked Cambodia's first unconditional target specification—implementation costs: $32.2 billion ($22.6B mitigation, $9.3B adaptation).

Australia

Sets a 62-70% emissions reduction target by 2035 below 2005 levels, implemented as an emissions budget over 2031-35, covering all sectors and greenhouse gases. Plans include achieving 82% renewable electricity by 2030, expanding electric vehicle adoption to 30% of new vehicle sales, phasing down unabated coal power, and implementing nature-based solutions for carbon sequestration. Total estimated investment of USD 565.7 billion required through 2035.

Russian Federation

65-67% emissions reduction by 2035 compared to 1990 levels, aiming for net-zero by 2060. The commitment includes maximum absorptive capacity of forests and other ecosystems, conditional on sustainable socio-economic development and non-discriminatory access to technologies. Key measures include expanding renewable energy to 82% by 2030, developing nuclear and hydropower, transitioning to electric vehicles, reducing oil and gas sector emissions, and preserving forests which absorb approximately 1.2 billion ttons of CO2-eq annuall.

Nigeria

Commits to 32.2% absolute emissions reduction by 2035 from 2018 baseline (184.9 Mt CO2e reduction), with 20% unconditional and 80% conditional on international support. Major emissions reductions come from forestry/LULUCF sector (68.1%), followed by energy including transport (26.3%). Requires USD 337 billion in total investment, targeting net-zero by 2060. Key actions include reducing deforestation by 60%, adopting clean energy and electric vehicles, implementing climate-smart agriculture, and scaling up waste management.

Bangladesh

Despite contributing <0.5% of global emissions, Bangladesh commits to reducing 2035 emissions by 20.31% total (6.39% unconditional, 13.92% conditional) from BAU, requiring USD 116B. Key actions: 25% renewable energy, 95% replacement of liquid-fuel peaking plants, 30% EV penetration, 30% rice under water-saving practices, 330,000 ha reforestation, and 65 adaptation interventions across water, agriculture, disasters, and ecosystems, emphasizing gender equality and just transition.

Pakistan

Pledges 50% reduction of 2035 projected emissions—17% unconditional through domestic resources and 33% conditional on grants-based international climate finance totaling USD 565.7 billion. Despite contributing only 1% of global emissions and 2.3 tonnes CO2e per capita, Pakistan ranks as the most climate-affected country, experiencing devastating floods, droughts, and glacier melt. Priority actions include transitioning to 62-69% renewable and clean energy capacity by 2035, 30% electric vehicle adoption, climate-smart agriculture, massive afforestation, and comprehensive adaptation measures for water, health, and disaster resilience.

CARBON PRICING AND LOW-CARBON DEPLOYMENTS

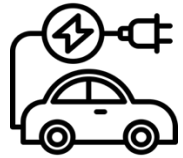
Carbon Pricing

Global Expansion (World Bank State and Trends 2025):

- Carbon pricing now covers ~28% of global GHG emissions (up from earlier coverage)
- 43 carbon taxes and 37 emissions trading systems in operation globally (up from 5 total instruments in 2005)
- Mobilized over $100 billion for public budgets in 2024
- Average carbon price nearly doubled in past decade: from ~$10/ton (2015) to ~$19/ton (2025)
- Jurisdictions representing two-thirds of global GDP have direct carbon pricing
- Over 50% of power sector emissions now covered by carbon price

Renewable Energy

- 3.7 TW capacity gap to meet COP28 tripling goal; only 22 countries updated 2030 targets
- China dominates with 75% of global wind/solar construction; added record 212 GW solar in H1 2025
- Wind + solar reached 26% of China's electricity in April 2025—highest monthly share ever
- China's 3,600 GW wind/solar target by 2035 (6x 2020 levels) in new NDC
- Grid integration challenges emerging: solar curtailment rose to 5.7% in H1 2025 (up from 3.2%)



Electric Vehicle

- China achieves ~50% EV penetration in new car sales (2024); highest globally
- 10 million charging stations in China as of May 2025 (growing 56% year-over-year)
- China's NEV credit requirement: 38% in 2025, proposed 48% (2026) and 58% (2027)
- US federal support eliminated Sept 30, 2025; creates $320B economic risk and 1.7M job losses
- State-level action continues: 24 US states (57% of economy) pledged to maintain climate targets

Vérifier que les colonnes ENR et VE ne font pas double emploi avec la partie Green tech

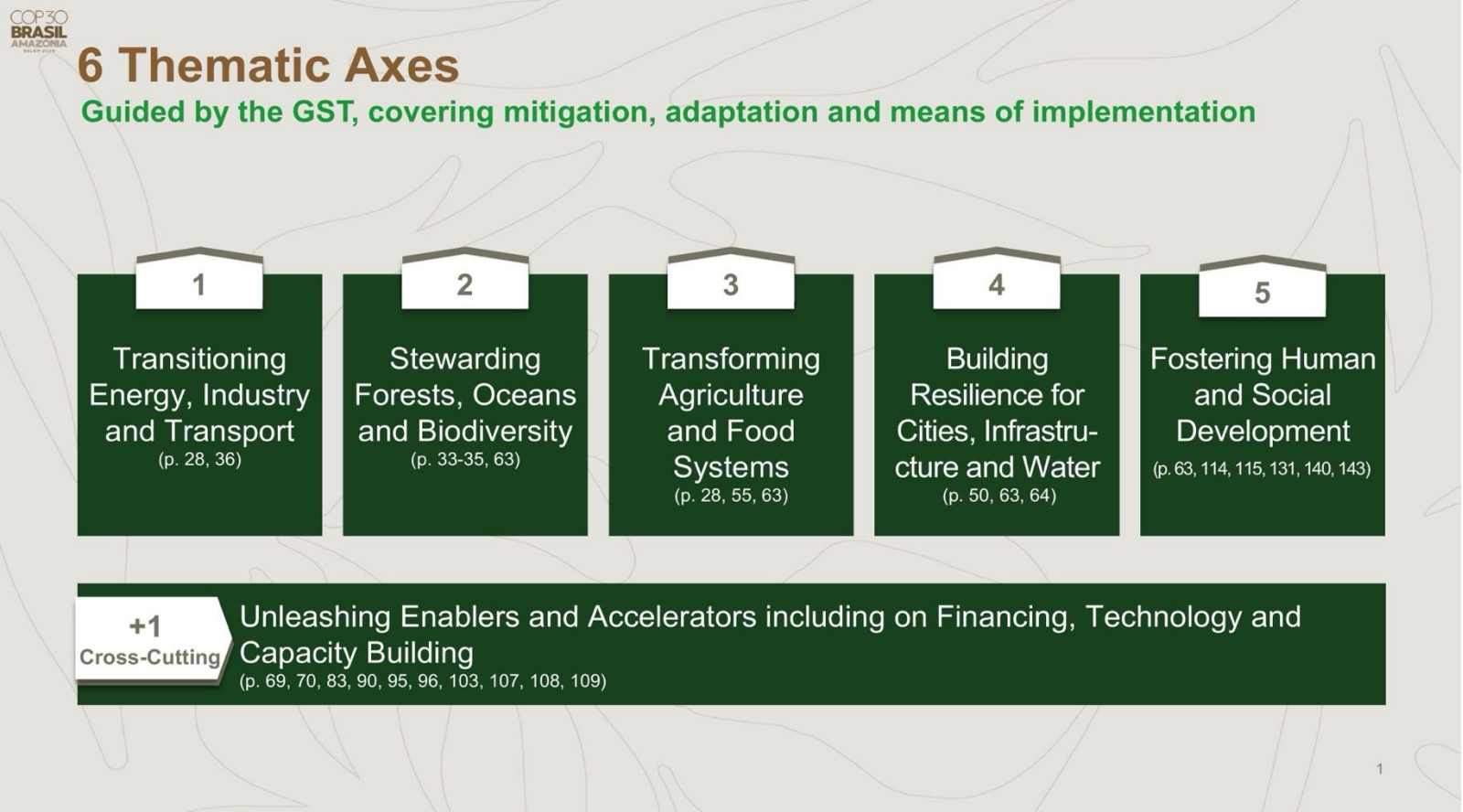
COP30 PREPARATION

COP30 in Belem, Brazil (November 10-21, 2025) positions itself as the "implementation COP," tasked with closing the ambition gap as current NDCs place the world on a 2.5°C warming trajectory.

Thematic Days Announced (August 5, 2025): Brazil's COP30 Presidency unveiled official Thematic Days calendar for November 10-21, spanning 30+ interconnected themes aligned with six Action Agenda axes and cross-cutting issues.

Two-day presidency-led consultation held in Bonn, Germany (June 18-19, 2025):

- Aims to mobilize $1.3 trillion annually by 2035 for developing countries
- Follows COP29's New Collective Quantified Goal (NCQG) of $300 billion per year by 2035 from developed countries Summary report expected to be presented at COP30 Brazil's Tropical Forest.



Finance :

Recent developments and Outlook

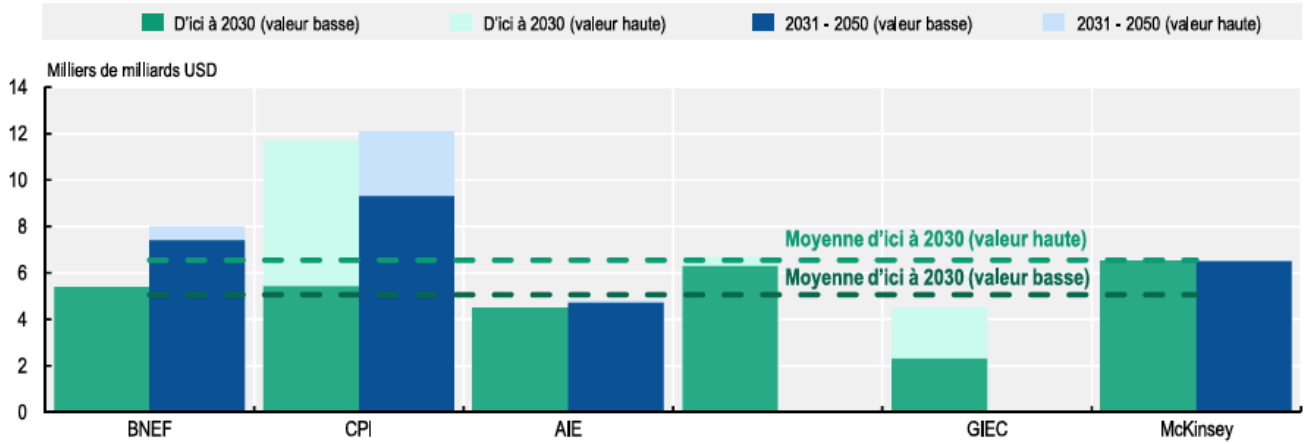
Future climate finance needs will reach at least $5.1 trillion in 2030, compared to $1.6 trillion in 2023.

Tableau 4.1. Estimations des investissements privés et publics dans la transition climatique à l'échelle mondiale

Source	Investissements dans la transition climatique (en milliers de milliards USD)	Année de référence
BNEF	1.8	2023
CPI	1.5-1.6	2023
AIE	2.0	2024
McKinsey	2.0	2021

Graphique 4.2. Estimations des besoins de financement annuels futurs liés à la transition climatique

Les estimations des besoins de financement climatique à l'échelle mondiale varient entre 4 500 et 12 100 milliards USD par an, l'estimation basse s'établissant en moyenne à 5 100 milliards à l'horizon 2030.



In 2024, Multilateral Development Banks have exceeded their 2025 climate finance targets set in 2019. From 2023 to 2024, climate finance in low- and middle income countries has grown by 14%, while global climate finance across all MDB operations has increased by 10%.

CLIMATE FINANCE COMMITMENTS BY MDB

African Development Bank
For low- and middle-income economies **$ 5 517 million**
For high-income economies **$ 10 million**

Asian Development Bank
For low- and middle-income economies **$ 12 275 million**
For high-income economies **$ 5 million**

Asian Infrastructure Investment Bank
For low- and middle-income economies **$ 5 191 million**
For high-income economies **$ 416 million**

Council of Europe Development Bank
For low- and middle-income economies **$ 19 million**
For high-income economies **$ 985 million**

European Bank for Reconstruction and Development
For low- and middle-income economies **$ 8 099 million**
For high-income economies **$ 2 908 million**

European Investment Bank
For low- and middle-income economies **$ 4 450 million**
For high-income economies **$ 43 026 million**

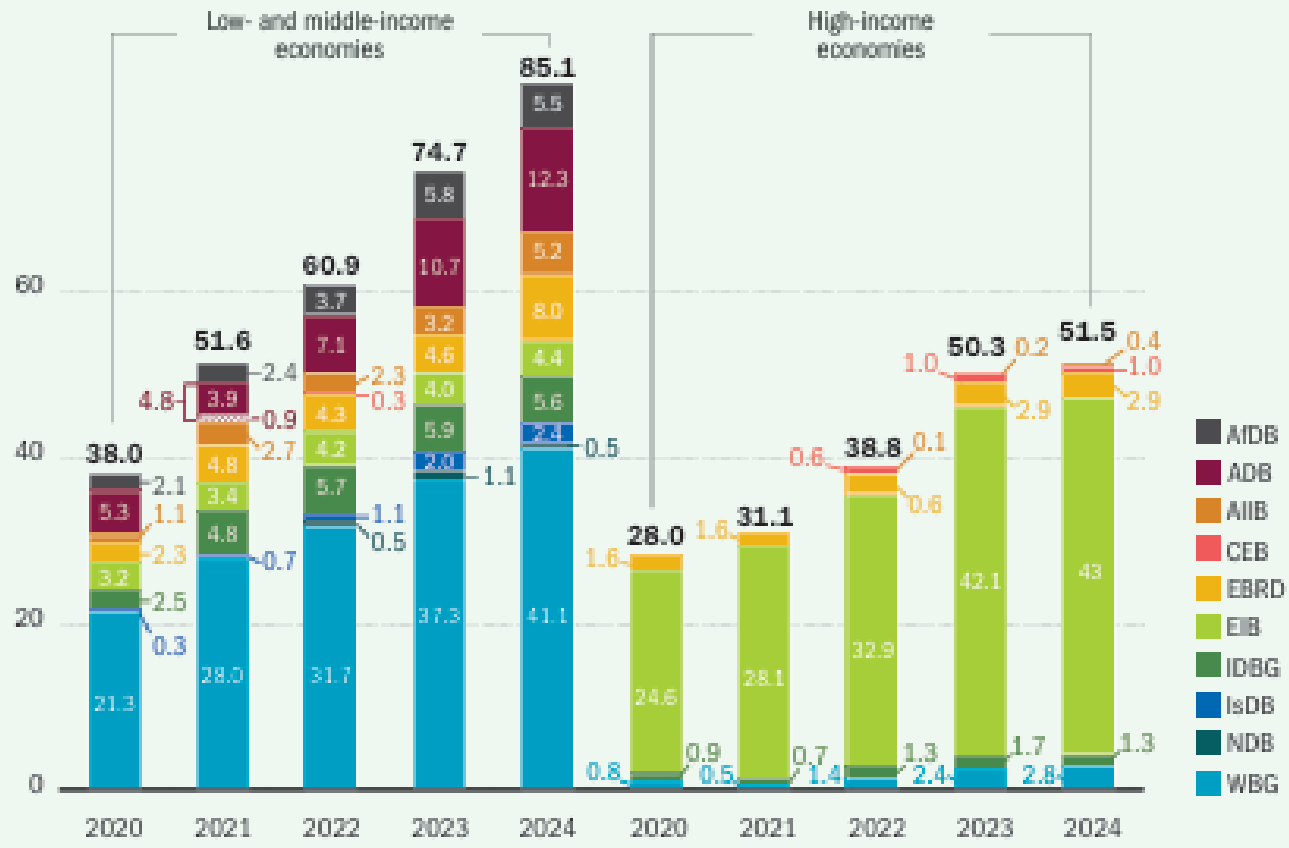
Inter-American Development Bank Group
For low- and middle-income economies **$ 5 589 million**
For high-income economies **$ 1 274 million**

Islamic Development Bank
For low- and middle-income economies **$ 2 360 million**
For high-income economies **$ 27 million**

New Development Bank
For low- and middle-income economies **$ 496 million**
For high-income economies **$ -**

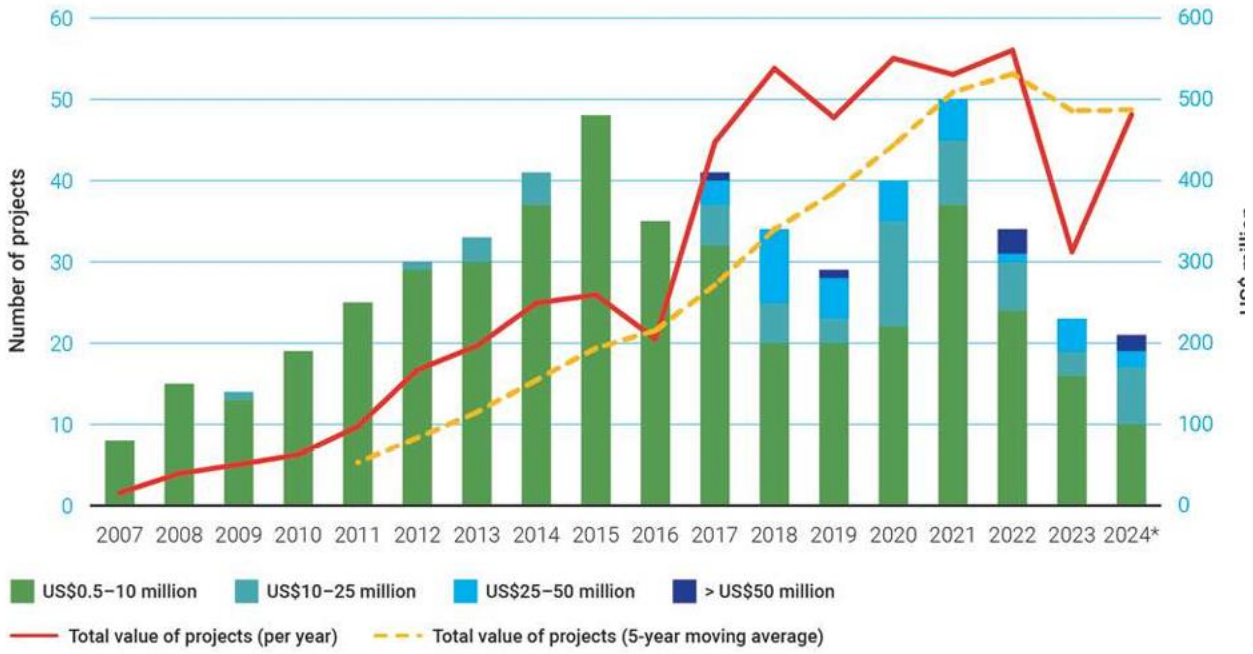
World Bank Group
For low- and middle-income economies **$ 41 124 million**
For high-income economies **$ 2 838 million**

MDB CLIMATE FINANCE (IN $ BILLION)



87% of nations have an adaptation plan, but funding is insufficient compared to the needs, ranging from $215 to $387 billion per year.

Figure ES.2 Progress in adaptation projects supported by the financial mechanisms serving the UNFCCC and the Paris Agreement



*Until 31 August 2024

Figure ES.3 Comparison of adaptation financing needs, modelled costs and international public adaptation finance flows in developing countries

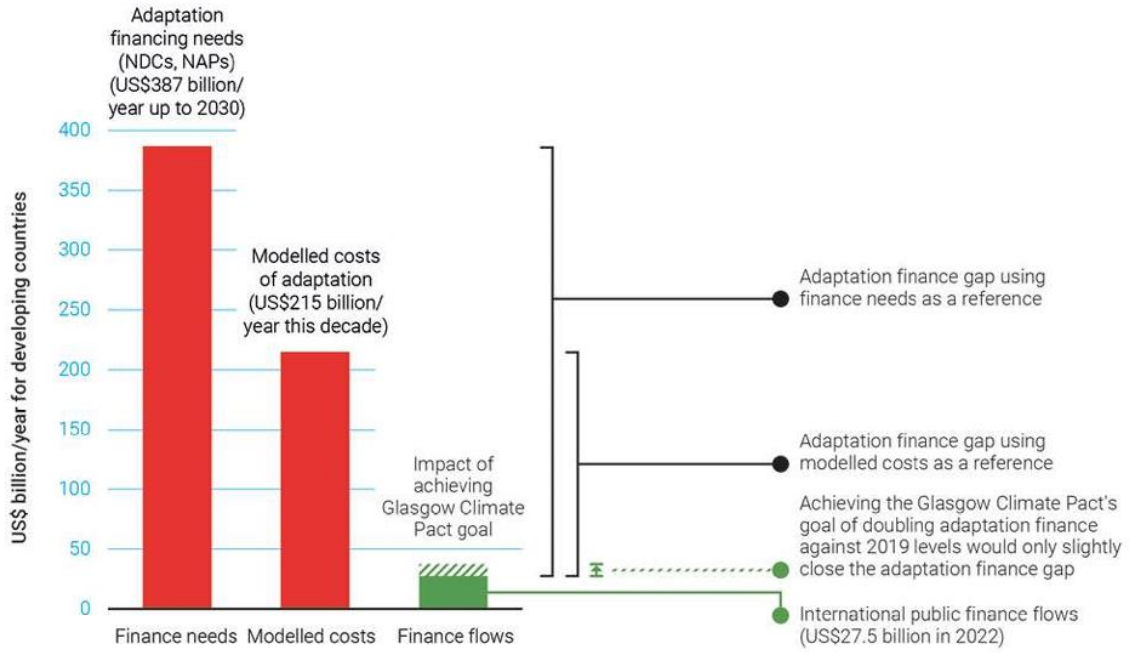


Figure ES.4 Adaptation types and ease of financing to better elucidate the opportunities for private sector engagement

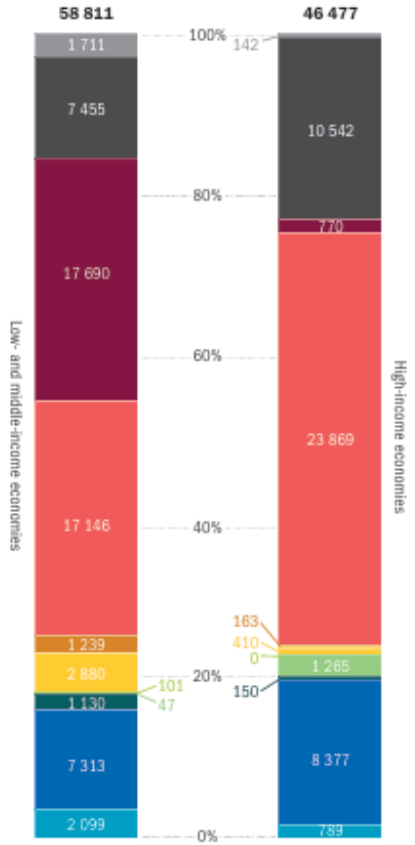
UN environment programme **Adaptation Gap Report 2024: Come hell and high water**

In 2024, in low and middle-income countries, adaptation financing by MDBs rose remained much lower than needs and mitigation financing resources

CLIMATE FINANCE COMMITMENTS BY ACTIVITY (IN $ MILLION)

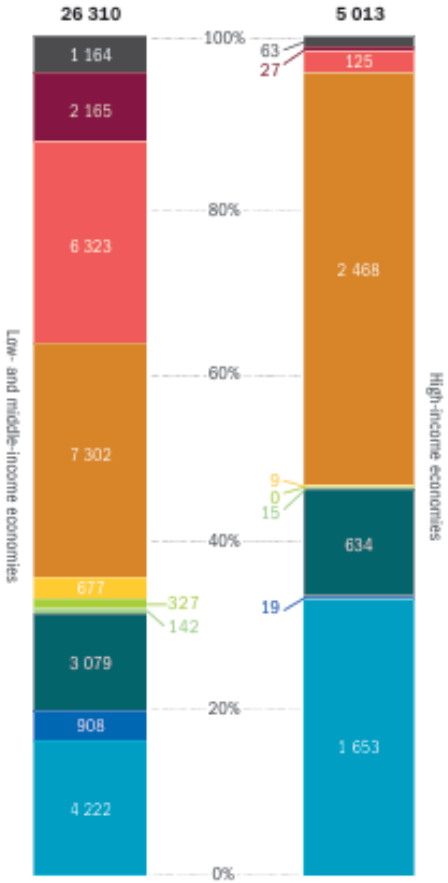
MITIGATION FINANCE

- Agriculture, forestry, land use and fisheries **$ 1 853 million**
- Buildings, public installations and end-use energy efficiency **$ 17 997 million**
- Cross-sectoral activities **$ 18 459 million**
- Energy **$ 41 014 million**
- Information and communications technology (ICT) and digital technologies **$ 1 403 million**
- Manufacturing **$ 3 290 million**
- Mining and metal production for climate action **$ 102 million**
- Research, Development and Innovation **$ 1 311 million**
- Solid waste management **$ 1 280 million**
- Transport **$ 15 690 million**
- Water supply and wastewater **$ 2 888 million**



ADAPTATION FINANCE

- Coastal and riverine infrastructure **$ 1 227 million**
- Crop and food production **$ 2 192 million**
- Cross-cutting sectors **$ 6 447 million**
- Energy, transport and other built environment and infrastructure **$ 9 770 million**
- Financial services **$ 686 million**
- Industry, manufacturing and trade **$ 327 million**
- Information and communications technology **$ 157 million**
- Institutional capacity support or technical assistance **$ 3 713 million**
- Other agricultural and ecological resources **$ 927 million**
- Water and wastewater systems **$ 5 875 million**



Note: Totals may not sum precisely, due to rounding.

Who we are

LES ATELIERS
DU FUTUR

ATELIERS DU FUTUR, AN NGO OF EXECUTIVES WHO ACT TO ENHANCE BUSINESS MOBILIZATION TOWARDS NET ZERO

Our purpose

In response to the interconnected challenges of climate change and biodiversity loss, our **mission** is to **act for the Climate**

Who we are ?

A multidisciplinary group of business executives and senior managers
All volunteers, we are **experts in modeling** (trained in climatology), engineers focused on **energy** and **green technologies**, or **finance specialists**
Our experience facilitates their mastery of business climate strategies

Our strategy

A focus on the **Climate**
An international vocation, as key governance for the normative framework of businesses and citizens is at global and regional levels
An orientation towards corporations, as they alone meet the key conditions to successfully decarbonize our activities: Ability to do, know-how, and, to some extent, willingness to do

Our actions

Raising awareness - policy makers and governing bodies (public or private)
Challenging corporate strategies and public policies with a constructive, optimistic yet ambitious mindset.
Training future generations through Universities/Schools

LES ATELIERS DU FUTUR

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FOR THE CLIMATE

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