

Quarterly Climate Review #2

Executive Summary

November 2024

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ADF QCR #2

Our Call for Action to Global Leaders





ADF CALL FOR ACTIONS

OUR CALL FOR ACTION TO GLOBAL LEADERS





Climate:

Recent Developments





2023 marked new records in global temperatures with a similar outlook for 2024



- 2023 temperature anomaly ranges from +1.3 C° to +1,5C°, depending on sources, partly due to a strong El Nino.
- Every month in 2023 was at least 1.2 °C (2.2 °F) warmer than the corresponding 1850 to 1900 monthly average. Q4 2024 follows the same pattern.
- 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 between 1880 and 2023

Source : Columbia University

Global temperature records continue during the first semester 2024



CarbonBrie

- The year-to-date (January-August 2024) global-average temperature anomaly is **0.70°C** above the 1991-2020 average, which is the highest on record for this period and 0.23°C warmer than the same period in 2023
- The global-average temperature for the past 12 months (September 2023 August 2024) is the highest on record for any 12-month period, at 0.76°C above the 1991-2020 average and **1.64°C** above the 1850–1900 pre-industrial average
- August 2024 was the joint-warmest August globally (together with August 2023), with an average ERA5 surface air temperature of 16.82°C, 0.71°C above the 1991-2020 average for August.
- > On 22 July, the world experienced its highest absolute global daily temperature on record, reaching a scorching **17.15°C**.
- Carbon Brief's projection suggests that 2024 is very likely to be the warmest year on record, with a central estimate of **1.57°C**.







How Carbon Brief's global temperature prediction for 2024 is narrowing



Global ocean's sea surface temperature and sea level continue to steadily increase

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The **sea surface temperature** influence key elements of the climate system, such as **atmospheric circulation**, **rainfall patterns and tropical cyclones**.

- Global mean sea surface temperature (SST) is warming at a rate of 0.13±0.01°C per decade over the period 1982 2023 with an acceleration during the last decade at 0.2°C
- The Northern Hemisphere ocean surface is warming faster than the average.
- The global mean sea surface temperature also shows **large variations around the average**, which is known to be dominated by internal variations from the **El Niño**.
- The increase in energy per square meter (radiative forcing) absorbed by the oceans has followed a similar trend : from 0.58±0.1Wm2 (1960-2023) to 1.05±0.2 Watts per square meter since 2005.
- The Arctic Ocean has been exposed to unprecedented sea ice loss and surface ocean warming of 4.37°C since the 1980s, and in 2016, Antarctic's ice entered a new state of low sea ice, reaching the lowest levels on record in 2023.



K. von Schuckmann et al.: The state of the global ocean



Global mean sea level is rising, with **acceleration in recent decades** due to increasing rates of ice loss from the Greenland and Antarctic ice sheets, as well as continued glacier mass loss and ocean thermal expansion. The rise in sea levels has increased the **adverse effects of coastal floods, storms, and tropical cyclones.**

 Over 1993–2023, the Global Mean Sea Level, has increased by more than 10 cm. The rate of rise for the first 10 years (1993–2002) of the altimetry era is estimated to be 2.1mmyr, whereas the rate of rise for the last 10 years (2013–2023) is estimated to be 4.3mmyr, indicating an acceleration..



K. von Schuckmann et al.: The state of the global ocean

Disasters costs rise by 5-7% per year

- In 2023, 399 extreme events were recorded across the globe, including heatwaves, floods, droughts and wildfires.
- > Following the trend, the first half of 2024 saw multiple major disaster events :
 - Many regions, especially South and Southeast Asia, faced intense heat,
 - Central Europe was hit by widespread flooding,
 - > Severe droughts affected parts of Brazil, Zimbabwe, and Namibia,
 - Multiple tornadoes and severe storms in the US.
- According to Swiss Re, the cost of natural catastrophes covered by insurance reached an estimated USD 108 billion in 2023.
- According to Aon, gobal insured losses from natural disaster events in the first half of 2024 are estimated to reach at least USD 58 billion, which was significantly higher than average since 2000 (USD 39 billion) and median of the same period (USD 36 billion)
- Annual insured losses of more than USD 100 billion have become the norm, with an expected trend of a 5–7% increase per year.

1,476.2



Total annual insured losses 1994-2023







Source: Swiss Re Institute

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Reported economic losses in US\$ billion by decade Inflation)-adjusted



Drought Streme temperature Flood Landslide Storm Wildfire

Climate:

Outlook





Global temperatures are likely to continue at record levels in the five-year period 2024-2028 and stay well above the 1991-2020 reference

- The global mean near-surface temperature for each year between 2024 and 2028 is predicted to be between 1.1°C and 1.9°C higher than the average over the years 1850-1900 (90% chance).
- It is likely (80% chance) that global mean nearsurface temperature will exceed 1.5°C above the 1850-1900 average levels for at least one year between 2024 and 2028. It is about as likely as not (47%) that the five-year mean will exceed this threshold.
- It is likely (86% chance) that at least one year between 2024 and 2028 will be warmer than the warmest year on record (currently 2023). The chance of the five-year mean for 2024- 2028 being higher than the last five years (2019-2023) is also likely (90%).
- Arctic warming over the next five extended winters (November to March), relative to the average of the 1991-2020 period, is predicted to be more than three times as large as the warming in global mean temperature



Source : MWO Global Annual Report Decadal Climate Upadate 2024-2028





Anticipated overshoot of +1.5°C limit calls for investments in climate modeling



- Data from NASA's Clouds and the Earth's Radiant Energy System (CERES) program suggests a notable rise in 2023 Earth's absorbed solar radiation compared to previous years. This rise in absorption remains to be understood, as well as its influence on Earth's climate.
- Global warming will continue to increase in the near term (2021– 2040) mainly due to increased cumulative CO2 emissions in nearly all considered scenarios and modelled pathways.
- In the near term, global warming is more likely than not to reach 1.5°C even under the very low GHG emission scenario (SSP1-1.9) and likely or very likely to exceed 1.5°C under higher emissions scenarios
- Temperature anomalies will cause significant changes in extremes events. For high temperature anomaly, IPCC predicts the intensification of heavy precipitations and the worsening of droughts.
- State-of-the-art climate models still have large uncertainty in projecting future climate change. According to the last IPCC AR6 report, aerosol-cloud-climate interactions remain arguably the largest uncertainty, especially how ice-cloud response to aerosol is poorly understood.
- This calls for continuous in investment in earth system data capture and climate modelisation.

Global surface temperature change relative to 1850-1900



Frequency of climate-related risks under different temperature scenarios



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GHG Emissions:

Recent Developments





GHG Emissions: Recent Developments

Anthropic CO2 emissions up 2% in 2024, with a 8% rise from aviation and shipping



- The global atmospheric CO2 concentration is forecast to average 422,5 parts per million in 2024, up 52% versus 1750 and +2,8% in 2024.
- Global CO2 emissions projected to reach 41,6 GtCO2 in 2024,
 +2% above 2023 level of 40,6 GtCO2:
- Fossil CO2 projection for 2024: 37.4 GtCO2, +0,8% versus 2023, after +1,4% 2023/2022 ow coal 15,5 (+0,2%), oil 12,4 (+0,9%) ow IAS +8%, gas 8,1 (+2,4%), cement 1,5 (-2,8%),
- Most developed countries have manage to decrease their fossil CO2 emissions, but at a relatively low pace compared to Net Zero trajectory:
 - EU: -3,8%, USA -0,6%
- 22 countries representing 23% of global fossil CO2 emissions managed to decrease them during the past decade, while their economy grew.
- China and India development driving steady increases in CO2 emissions, despite at a much lower pace for China.
- Land use change projection for 2024: 4.2 GtCO2, +0,5 GtCO2 vs 2023, exacerbated by drought El Nino conditions in South America. Permanent deforestation still represents 3,7 GtCO2.
- Brazil, Indonesia and Congo represent 60% of global LUC emissions.



Projected change in fossil CO2 emissions by fuel type (mtCO2 -2024/2023)

Country	Total	Coal	Oil	Natural gas	Cement
World	+399 (+0.8%)	+66 (+0.2%)	+143 (+0.9%)	+214 (+2.4%)	-40 (-2.8%)
China	+55 (+0.2%)	+51 (+0.3%)	-8 <mark>(</mark> -0.8%)	68 (+8%)	-56 (-8.1%)
USA	-16 (-0.6%)	-25 (-3.5%)	-10 (-0.7%)	+22 (+1%)	-2 (-5.8%)
India	+149 (+4.6%)	+98 (+4.5%)	+27 (+3.6%)	+16 (+11.8%)	+8 (+4%)
EU27	-89 (-3.8%)	-85 (-15.8%)	5 <mark>(</mark> 0.2%)	-7 (-1.3%)	-2 <mark>(</mark> -3.5%)
RoW	+197 (+1.1%)	+28 (+0.5%)	+38 (+0.5%)	+115 (2.2%)	+13 (+2%)
IAS	+90 (+7.8%)		+90 (+7.8%)		

IAS = International Aviation and Shipping



GHG Emissions: Recent Developments

Methane anthropic emissions: Energy sector emissions still near record high



- 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 greenhouse-gas-intensive scenarios of IPCC AR5 than scenarios integrating mitigation policies.
- Anthropogenic sources are responsible for all or most of the recent rapid rise in global CH4 concentrations, equally from agriculture and fossil fuels sources.





Methane emissions from the energy industry remained near record high in 2023.

Emissions from coal and natural gas continued to rise in 2023, with oil fugitive emissions rebounding.



GHG Emissions:

Outlook





GHG Emissions: Outlook

Putting CO2 emissions under control requires ambitious transition plans, investments









GHG Emissions: Outlooks



Methane emissions: Cutting fossil fuel emissions by 75% by 2030 vital to 1,5°C target



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





Methane abatement potential to 2030



Recent Developments and Outlook







Green Tech - Synthesis

The way towards 1.5°C becomes narrower, but still feasible



It is becoming **increasingly difficult to stay on the 1.5°C trajectory**, but the IEA believes it is still feasible if the following issues are addressed. Another condition is that **developing countries accelerate in green technologies development**, which requires much more financial aid from developed countries



Renewable energies

If the development of solar power is in line with the NZE trajectory, the wind power market is struggling more except in China, both for on-shore wind (penalized by the complexity and length of authorization procedures) and for offshore wind (increase in costs of materials, labor and interest rates). And a new risk appears for renewable energy projects: if the necessary network investments are not made at the right pace, this would lead to uncertainty over the prices of electricity.



Stationary storage:

Despite a rather dynamic development of projects, **the bar to jump is so high** that it is imperative to deploy alternative solutions to batteries because Lithium resources are not infinite. Without waiting for new battery technologies, mature solutions exist, in particular by accelerating on switchable renewable energies (geothermal energy, biogas, biomass, etc.) and on the storage of heat and cold (geothermal energy with active recharge, thermal storage wells, etc.).



Biogas and biomethane:

Being both a green fuel for heavy goods vehicles and a mature, switchable and interesting renewable energy for heavy industry, we must strongly accelerate (x3.7), especially since it is also a solution for waste treatment issue and a source of income for the agricultural sector. The EU objective is ambitious but not binding. We should increase support for this sector to develop "*Biomethane Purchase Agreements*".



Electric vehicles

While the market is still expanding, a combination of rising costs, reduced governmental support, infrastructure challenges, and technological uncertainties pose real risks to continued rapid growth. Overcoming these hurdles will require coordinated efforts across industries and governments, focused on continuity in policies, improving affordability, building charging infrastructure, and advancing battery technology.



Low carbon hydrogen:

Europe is clearly lagging behind and risks missing out on this new market whose development is essential to achieve the NZE (storable green energy, solution to decarbonize part of heavy industry, green fuel for heavy vehicles, aviation fuel after recombination with biogenic CO2, etc.).



Critical materials:

To avoid developing new dependencies on a very small number of countries, we must accelerate on 3 levers: the **search for new mining resources**, particularly in developed countries, to **diversify the supply sources**; strongly encourage the recycling of critical materials; **develop alternative technologies** that consume less critical metals.



R&D and Innovation:

According to the IEA, **35% of the emissions reductions expected in 2050 will come from technologies not yet commercialized**. It is therefore appropriate to continue R&D at a high rate in all developed countries, both to achieve the NZE objective, but also to avoid developing new technological dependencies on a small number of countries.



Global primary energy consumption still 80% fossil





The share of carbon-free energies in the global mix has doubled in ten years, but they only represent less than 20% of primary energies consumed.
 On a brighter note, clean energy technology adoption surged at an unprecedented pace over the last two years. Solar PV capacity additions increased by over 80% between 2022 and 2023 !





The world invests almost twice as much in clean energies as it does in fossil fuels. Investment in solar PV now surpasses all other generation technologies combined



Global investment in clean energy and fossil fuels, 2015-2024e



Global annual investment in solar PV and other generation technologies, 2021-2024e

IEA. CC BY 4.0

Note: Other clean power = fossil fuel power with CCUS, hydrogen, ammonia, and large-scale heat pumps. Low-emissions fuels = modern bioenergy, low-emissions H₂ based fuels, and CCUS associated with fossil fuels and also includes direct air capture. 2024e = estimated values for 2024.

Note: 2024e = estimated values for 2024. Other = electricity generation from all other technologies including coal, oil, natural gas, wind, hydro and nuclear.



Biogases development led by Europe and not in line with the NZE scenario



Biogas and Biomethane

- Biogas is a mature technology. It is a viable energy source for clean cooking, and for heavy vehicles. It can be used as a dispatchable source of low-carbon electricity generation, which will be increasingly important with the deployment of volatile renewables such as wind and solar.
- Combined global biogas and biomethane production reached more than 1.7 EJ in 2023 – a 17% increase from 2017.
- Almost half of the production is based in Europe, with Germany alone representing almost 20% of global consumption. Another 21% is produced in China, followed by the United States (12%) and India (9%).

- This current global production expansion is not in line with the IEA Net Zero by 2050 Scenario, which requires the production of biogases to grow 3.7-fold by 2030.
- Growth will primarily come from Europe and North America, owing partially to established infrastructure and experience, and driven by previous policies that make rapid deployment in a five-year term possible. Many other regions with strong biogas potential, such as Latin America and Southeast Asia, could make significant contributions to global growth if their countries introduce new policies to support the biogas sector.









Outlook on renewable energies: IEA forecasts a x2,7 capacity by 2030, slightly under the tripling goal...

- Considering existing policies and market conditions, IEA forecasts in their "Main Case" 5 500 gigawatts (GW) of new renewable capacity becoming operational by 2030. This implies that global renewable capacity additions will continue to increase every year, reaching more than 700 GW in 2028 and almost 940 GW annually by 2030 – 70% more than the record level achieved last year.
- Global renewable capacity is expected to grow by 2.7 times by 2030, surpassing countries' current ambitions by nearly 25% and falling short of the COP28 tripling goal.
- Governments can close the gap to reach over 11 000 GW by 2030 by an array of measures to tackle main challenges and accelerate (Accelerated case on the figure).



RENEWABLE ELECTRICITY CAPACITY ADDITIONS BY

IEA. CC BY 4.0.



Green Tech - Outlooks

... but much higher electricity-storage capacities are necessary



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



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





Green mobility on track for the NZE scenario even if some warning signals are emerging, but heat pumps sales are declining



Electric Vehicles

China

North America

Rest of world

- Sales of light EVs have increased significantly in most countries in 2023. Development is expected to continue in 2024, although some warning signals are emerging especially in Europe.
- The share of EV on total sales is reaching 20%. But in terms of stock, EV represent only 3% of the global light vehicle fleet.
- While the market is still expanding, a combination of rising costs, reduced governmental support, infrastructure challenges, and technological uncertainties pose real risks to continued rapid growth.
- In terms of GHG emissions, we have to keep in mind that benefits of EV market share increase will depend on the electricity mix of the concerned countries (in China, 80% of electricity is produced from coal !).



Europe

Japan and Korea

---Share of total sales (right a



- Sales are down everywhere, except in China. Overall, a drop of 3% globally.
- Costs remain the main barrier for adoption.

Heat pump sales and avoided emissions



Critical minerals: Lithium remains the highest risk for our 2030 milestones



Critical minerals extraction and processing capacity has increased significantly over the last decade in response to rising clean energy and other demands. Between 2010 and 2022, lithium mining output rose by a factor of five, and nickel and cobalt by a factor of two.

- Growth has been particularly strong in recent years, with lithium mining output expanding by about 80% between 2020 and 2022, and output of nickel increasing by about 35% and cobalt by about 40% over the same period (IEA, 2023f).
- Despite this growth in supply, markets have been tight as a result of rapid demand growth, especially for batteries. Lithium prices have shown the largest volatility, with international price markers increasing more than five-fold between the first half of 2020 and 2022.
- Limited progress has been made in terms of diversification of supply sources in recent years; the situation has even worsened in some cases, and the vast majority of critical metals remain controlled by China, Indonesia, Chile and the DRC.
- Anticipated supply based on announced extraction projects would meet approximately 90% of demand level in 2030 in the NZE scenario for copper, 80% for nickel, 65% for lithium, and 85% for cobalt (see figure).

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



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



IEA. CC BY 4.0.



Investment in other low carbon technologies required with effects after 2030





luclea

The war effect in Ukraine has relaunched nuclear policy in many countries (France, UK, US, etc.). Even if 5 new reactors were commissioned in 2023 (Belarus, China, Korea, Slovakia, USA), the effects of the relaunch of nuclear policies will not be felt for 15 years (i.e. 2030). Today, nuclear power only represents 4% of primary energy consumption worldwide.





Except in China, most regions have witnessed **steady growth in electrolyzer deployment** in 2023. Demand uncertainty and lack of regulatory clarity, coupled with inflation, fall in fossil fuel prices, and slow implementation of support mechanisms have hindered faster adoption.

Globally, the pipeline of projects shows that more than **400 GW of electrolysis production capacity should run by 2030**. This could potentially meet the milestones of the APS IEA scenario if all planned projects go ahead, but cost inflation and supply chain bottlenecks could hamper progress.



LARGEST GREEN HYDROGEN PROJECT IN CHINA (150 MW) INSTALLED IN CHINESE CHEMICAL FACTORY OF NINGXIA BAOFENG GROUP

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...





As of September 2022, the total capacity of CCS projects in development was 244 million tons per annum (Mtpa) of CO2, an increase of 44% over the past 12 months. This growth arises from the private sector's investments in a context of public policies strengthening the business case for CCS investment.

The US continues to lead the way globally. If all announced CO2 capture capacity were realized and the current growth trend continues, global capacity could reach NZE levels by 2030. Reducing project lead times, particularly related to the development of CO2 storage, will be critical to achieve those levels.



PIPELINE OF COMMERCIAL CCUS FACILITIES SINCE 2010 BY CAPTURE CAPACITY (MTPA)

Innovative &

technologies

break-through

Public Policies:

Recent Developments & Outlook





	Total GHG emissions in 2023	Change in total GHG emissions, 2022–2023	Per capita GHG emissions in 2023	Historical CO ₂ emissions, 1850–2022
	MtCO₂e (% of total)	%	tCO ₂ e/capita	GtCO ₂ (% of total)
China	16,000 (30)	+5.2	11	300 (12)
United States of America	5,970 (11)	-1.4	18	527 (20)
India	4,140 (8)	+6.1	2.9	83 (3)
European Union (27 countries)	3,230 (6)	-7.5	7.3	301 (12)
Russian Federation	2,660 (5)	+2	19	180 (7)
Brazil	1,300 (2)	+0.1	6.0	119 (5)
African Union (55 countries)	3,190 (6)	+0.7	2.2	174 (7)
Least developed countries (47 countries)	1,730 (3)	+1.2	1.5	115 (4)
G20 (excl. African Union)	40,900 (77)	+1.8	8.3	1,990 (77)

Table ES.1 Total, per capita and historical emissions of selected countries and regions

Note: Emissions are calculated on a territorial basis. LULUCF CO₂ emissions are excluded from current and per capita GHG emissions but are included in historical CO₂ emissions based on the bookkeeping approach. Some countries in the African Union are also least developed countries.

Source: UNEP Emissions Gap Report 2024



Implied emissions trajectories of the G20 members towards net zero show reasons for concern

As at 1 June 2024, 101 parties representing 107 countries and covering approximately 82 per cent of global GHG emissions had adopted net-zero pledges either in law (28 parties), in a policy document such as an NDC or a long-term strategy (56 parties), or in an announcement by a high-level government official (17 parties). All G20 members except Mexico and the African Union (collectively) have set net-zero targets. Overall, however, limited progress has been made since last year's assessment on the key indicators of confidence in net-zero implementation, including legal status, the existence and quality of implementation plans and the alignment of near-term emissions trajectories with net-zero targets.

Peaking GHG emissions is a prerequisite to achieving net zero. Seven G20 members have not yet peaked emissions, defined as having reached maximum emissions at least five years before the year for which the latest inventory data is available (China, India, Indonesia, Mexico, Saudi Arabia, Republic of Korea, and Türkiye). For these countries, efforts to peak emissions earlier and at a lower level with rapid reductions thereafter will facilitate achievement of their net-zero targets. For most of the ten G20 members where emissions have already peaked (Argentina, Australia, Brazil, Canada, European Union, Japan, Russian Federation, South Africa, United Kingdom of Great Britain and Northern Ireland, United States of America), their rate of decarbonization would need to accelerate - in some cases dramatically - after 2030 to achieve their net-zero goals, unless they accelerate action now and overachieve their 2030 NDC targets. For these Figure ES.2 The landscape of current NDC targets and implementation gaps for the G20 members collectively and individually by 2030, relative to 2019 emissions



11-20 GtCO2e gap in 2030 between conditional NDC scenario and carbon budget to meet Paris agreement

The United Nations Environment Programme (UNEP) reveals in its analysis dated October 24, 2024, that nations must collectively commit to reducing annual greenhouse gas emissions by 42% by 2030 and by 57% by 2035 in the next series of Nationally Determined Contributions (NDCs) – and support these commitments with swift action – otherwise, the Paris Agreement's 1.5°C target will be out of reach within a few years, according to a new UNEP report. The delay in action means that emissions will need to be reduced by 7.5% each year until 2035 to meet the 1.5°C goal.

"Even if the world exceeds 1.5°C – and the chances of this happening increase every day – we must continue to aspire to a net-zero, sustainable, and prosperous world. Every fraction of a degree avoided counts in terms of lives saved, economies protected, damages prevented, biodiversity conserved, and the ability to bring any temperature increase back below critical thresholds quickly."

The report also examines what would be necessary to set the world on a path to limit global warming to less than 2°C.

It recommends that the upcoming COP29 discussions in Baku, Azerbaijan, be used to intensify actions now for stronger NDCs, to be presented at the beginning of 2025 and reviewed by COP30 in Brazil.

Source: UNEP Emissions Gap Report 2024







Likelood of warming exceeding Paris agreement objectives increasing as time goes by

Likelihood of warming exceeding a specific temperature limit (%)							
	1.5°C	2°C	3°C				
Scenarios							
Current policies	100%	97%	37%				
continuing	(85-100%)	(28-100%)	(1-80%)				
Unconditional	100%	94%	22%				
NDCs continuing	(86-100%)	(28-100%)	(1-75%)				
Conditional NDCs	100%	79%	10%				
continuing	(77-100%)	(19-100%)	(0-69%)				
Conditional NDCs	77%	20%	0%				
+ all net-zero pledges	(64-97%)	(64-97%)	(0-6%)				

Source: Where the second source and the second seco

Finance :

Recent developments and Outlook





Finance - Recent developments and Outlook



The 2.6° transition scenario requires investing \$7 trillion per year until 2050, close to what is required for the net zero scenario (\$8,6 trillion).EV investment is a priority.

Figure 16: Global energy investment and spending across 2024-2050, Economic Transition Scenario and Net Zero Scenario



Source: BloombergNEF. Note: ICE is internal combustion engine. The numbers above the bars indicate cumulative investment and spending figures from 2024 to 2050.



Investment in fossil fuels still too high, clean energies should be prioritized by developing nations.



Annual energy investment by selected country and region, 2019 and 2024e



Finance - Recent developments and Outlook

In 2022, developed nations mobilised \$115.9 billion in climate finance to developing countries, mostly for mitigation



Figure 4. Climate finance provided and mobilised in 2016-2022 per climate theme (USD billion)

Figure 6. Sectoral distribution of climate finance provided and mobilised in 2016-2022



Note: The sum of individual theme components may not add up to totals due to rounding.

Source: Based on Biennial Reports to the UNFCCC, OECD DAC and Export Credit Group statistics, complementary reporting to the OECI

Note: "All other sectors" mainly includes activities targeting multisector, general environment protection, government and civil society, social infrastructure and services, and disaster preparedness

Source: Based on Biennial Reports to the UNFCCC, OECD DAC and Export Credit Group statistics, complementary reporting to the OECD.

Most mitigation finance focused on activities in the energy and transport sectors. Between 2016 and 2022, these two sectors accounted for more than half (62%) of the total mitigation finance provided. In contrast, adaptation finance was more evenly distributed across a larger number of sectors



Private financing a major driver, requiring safer conditions from governments to be develope



Changes in finance providers over time and by category

IEA. CC BY 4.0

Note: "Commercial finance" includes equity investments made by private enterprises and households, alongside debt from financial institutions. It also includes some finance from state-owned banks, sovereign wealth funds and pension funds, although this includes a degree of state-directed lending, especially in emerging economies with strong industrial policies. "Public finance" includes public equity stakes in private corporations and state-owned enterprises, state subsidies and tax incentives and finance from export credit agencies as well as central banks. "DFI" refers to Development Finance Institutions that have a development mandate. Source: IEA analysis based on data from S&P Capital IQ, IJGlobal, Rystad, World Bank, OECD, CRS, China Aid data.







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ADF: an NGO of executives who act to enhance business mobilization for the Climate



Act for the **Climate** by enhancing business mobilization



- > 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.



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.



- 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.



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INDEPENDANT NGO ACTING FOR THE CLIMATE





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