

Energy & nature investor quarterly

Quarterly highlight: The elusive “Peak Oil” scenario



Michael Lewis
Head of Research
ESG



Steffen Kutscher
Head of
Stewardship –
Standards &
Processes

IN A NUTSHELL

- **Summary:** The past year has seen the coverage of national climate commitments fall,¹ the operations of net zero financial alliances disbanded or reviewed² and many corporate climate commitments still lacking credibility.
- **The Big Picture:** The market is abandoning the idea that global oil demand will peak this decade.³ This partly reflects the inability of renewables to meet the growth in global energy demand.
- **Policy:** U.S. policy is focused on energy expansion, which will help meet higher power needs from AI data centers.⁴ In Europe, a more flexible approach to climate ambition is emerging, including extending the compliance period for automakers to meet CO₂ emission targets.⁵
- **Technology & innovation:** China has become a leader in clean energy technology, accounting for around 75% of global patent applications, up from 5% in 2000.⁶ This underpins China’s recent pledge to cut greenhouse gas emissions by 7-10% from their peak by 2035.⁷
- **Risks & opportunities:** European automakers face declining market share and overcapacity, and recent investments have also been less productive than those in Japan and the U.S. These raise concerns about future profitability and dividend yields, which are already under pressure.
- **Investment implications:** In a scenario where global crude oil demand remains strong over the next decade, this would tend to reduce stranded asset risk, strengthen the case for higher carbon prices and, over time, increase insurance gap risk in the event of extreme weather impacts.

Introducing the energy & nature investor quarterly

The global shift toward a high-tech low carbon and more sustainable global economy is reshaping industries, markets, and society at large, bringing both risks and opportunities for investors. At DWS, we are seeing a growing number of clients seeking strategies to manage these evolving risks and capture the potential transition-related investment opportunities. To help navigate this transformation, we are launching the Energy & Nature Investor Quarterly, a publication designed to cut through the noise and deliver material, actionable insights for institutional investors. Each issue will examine what we view as the most impactful policy developments, regulatory changes, technological advancements, and market innovations driving risks and opportunities. We hope you find value in this new publication and welcome the opportunity to discuss the insights and implications it raises.

¹ New Climate Institute (September 2025). In 2025, 137 out of 198 national governments have set net zero targets. This compares to 148 last year. However, 67% of commitments made in 2025 are now enshrined in law or formal policy, an increase from 52% in 2024.

² Net Zero Insurance Alliance was disbanded in 2024; GFANZ announced a restructuring in its operations in 2024; Net Zero Asset Managers initiative closed its primary activities in January 2025; Net Zero Banking Alliance closed its operations in September 2025;

³ Bloomberg Finance LP (11 September 2025). The myth of peak fossil fuel demand is crumbling

⁴ Reuters (25 September 2025). Most coal-fired power plants will delay retirement to feed AI boom, energy secretary says

⁵ Council of the EU (27 May 2025). CO₂ emissions in cars: Council gives final approval to additional flexibility for carmakers

⁶ EMBER (September 2025). China Energy Transition Review 2025

⁷ Reuters (25 September 2025). China leads nations with new climate plans, defying US climate denial

The brand DWS represents DWS Group GmbH & Co. KGaA and any of its subsidiaries, such as DWS Distributors, Inc., which offers investment products, or DWS Investment Management Americas, Inc. and RREEF America L.L.C., which offer advisory services. There may be references in this document which do not yet reflect the DWS Brand.

Please note certain information in this presentation constitutes forward-looking statements. Due to various risks, uncertainties and assumptions made in our analysis, actual events or results or the actual performance of the markets covered by this presentation report may differ materially from those described. The information herein reflects our current views only, is subject to change, and is not intended to be promissory or relied upon by the reader. There can be no certainty that events will turn out as we have opined herein.

For Professional Clients (MiFID Directive 2014/65/EU Annex II) only. For Qualified Investors (Art. 10 Para. 3 of the Swiss Federal Collective Investment Schemes Act (CISA)). For Qualified Clients (Israeli Regulation of Investment Advice, Investment Marketing and Portfolio Management Law 5755-1995). Outside the U.S. for Institutional investors only. In the United States and Canada, for institutional client and registered representative use only. Not for retail distribution. Further distribution of this material is strictly prohibited. In Australia and New Zealand: For Wholesale Investors only. For Asia For institutional investors only. *For investors in Bermuda: This is not an offering of securities or interests in any product. Such securities may be offered or sold in Bermuda only in compliance with the provisions of the Investment Business Act of 2003 of Bermuda which regulates the sale of securities in Bermuda.

1 / Performance dashboard

The dashboard summarizes key financial indicators relevant to the energy transition. It presents quarterly and annual performance data for commodity indices and climate transition commodities, including carbon prices. It therefore provides an overview as to how transition-linked assets are performing relative to broader commodity trends.

1.1 Clean energy and climate indices perform strongly this year

The S&P clean energy index has posted just shy of 50% returns so far this year. Climate index benchmarks have also performed strongly although have lagged their broad-market parent indices as methodology tilts and exclusions have affected performance. Meanwhile there has been a divergence between regional carbon markets with European carbon prices posting gains against a 40% decline in the Chinese carbon price so far this year.⁸ Price weakness has also been a feature across the fossil fuel sector.

Of the key climate transition commodities, cobalt has been the star performer with prices up over 70% so far this year. These gains were largely achieved in the first quarter of the year when the Democratic Republic of Congo (DRC), which accounts for around 70% of global production,⁹ suspended exports to curb oversupply. In contrast, lithium prices were dogged earlier in the year by new capacity in China and high inventory levels. However, price losses were partly reversed over the summer months following production disruptions in certain mine locations in China.

Figure 1: Climate and commodity dashboard

Index or commodity name	1Q 2025	2Q 2025	3Q 2025	4QTD 2025	YTD 2025
MSCI world climate benchmarks					
MSCI world net total return USD Index	-1.8%	11.5%	7.3%	-0.2%	17.2%
MSCI world select screened net USD index	-2.7%	11.8%	7.2%	-0.1%	16.6%
MSCI world select sustainability screened CTB net USD Index	-2.2%	11.3%	7.2%	-0.2%	16.4%
MSCI world low carbon SRI selection net USD Index	-4.9%	13.8%	7.0%	0.2%	16.0%
Other climate benchmarks					
S&P global clean energy transition index (USD) NTR	-0.2%	15.9%	18.4%	7.0%	46.6%
Solactive ISS ESG emerging markets net zero pathway index NTR	2.6%	14.5%	14.1%	0.3%	34.6%
Solactive ISS ESG developed markets net zero pathway index NTR	-2.3%	11.4%	6.9%	0.1%	16.5%
Carbon markets					
EU EUA 1M future (€)	-6.9%	2.3%	11.0%	4.9%	11.0%
China carbon price (CNY)	-11.7%	-12.9%	-22.7%	-9.9%	-46.4%
Industrial metals					
LME 3M copper (US\$)	10.7%	1.6%	4.0%	3.3%	20.9%
LME 3M aluminium (US\$)	-0.7%	2.5%	3.2%	3.6%	8.9%
LME 3M nickel (US\$)	3.8%	-4.4%	0.1%	-0.7%	-1.3%
Strategic metals					
Cobalt LME spot (US\$)	38.3%	-2.1%	5.1%	26.6%	80.2%
Gold (US\$)	19.0%	5.7%	16.8%	10.2%	62.0%
Uranium 308 spot price (US\$)	-9.2%	22.9%	5.2%	-1.8%	15.2%
Lithium carbonate CIF swap	-7.7%	-16.1%	18.5%	-3.6%	-11.5%
Fossil fuels					
Thermal coal (US\$/MT)	-6.7%	3.4%	-11.6%	3.9%	-11.4%
WTI crude oil (US\$/bbl)	0.1%	-9.5%	-0.9%	-8.5%	-17.9%
European natural gas (£/MWh)	-17.0%	-20.2%	-3.9%	3.0%	-34.5%

Source: Bloomberg Finance LP (17 October 2025)

⁸ Bloomberg Finance LP (data as of 16 October 2025)

⁹ Reuters (8 October 2025). Congo to tie cobalt export quotas to three-year company data

2 / The big picture

In this section, we focus on a critical theme relating to the energy transition and examine the possible implications for commodity and asset price valuations. In this issue, we assess the drivers behind a possible revision in the IEA's global crude oil demand outlook and how this may have implications for stranded asset risk, carbon prices and insurance gap risk.

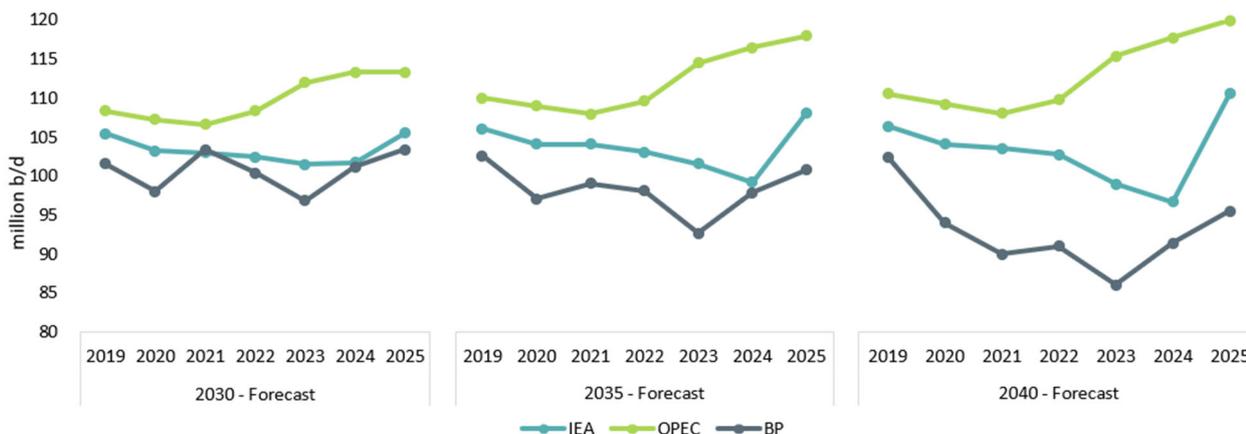
2.1 The elusive peak in fossil fuel demand

For many years, OPEC has painted a robust picture towards the outlook for global oil demand. Far from predicting a peak, the club of oil producing nations has not only forecast global oil demand rising over the next five years and beyond but also their estimates for global oil demand in the decades ahead have, over the past two years, been upgraded, [Figure 2](#).

This stands in stark contrast to the IEA¹⁰, which two years ago predicted that global crude oil demand and natural gas demand would peak on or before 2030. However, last month, reports¹¹ were appearing that when the IEA publishes its official global oil demand outlook next month that it will abandon its forecast that global crude oil demand would peak on or before 2030 and will announce a substantial upgrade in its global oil demand forecast for 2035 and 2040.

This appears a prudent approach since last year global crude oil, natural gas and coal demand all hit a new record high.¹² From a regional perspective, fossil fuel demand growth has to a large degree been concentrated in non-OECD countries such as China, India and Indonesia. In fact, these three countries have over the past decade been responsible for 57% and 40% of global crude oil and natural gas consumption growth respectively. The only segment of the fossil fuel demand universe which has peaked is coal consumption in OECD countries, where demand has declined by 39% since 2015.

Figure 2: Medium- and long-term global oil demand projections by the IEA, OPEC, and BP



Source: DWS Research Institute (October 2025). IEA WEO report, IEA WEO 2025 draft report for current policies scenario, OPEC-World Oil Outlook, BP energy outlook

2.3 The relentless rise in global energy demand

This strength in fossil fuel demand reflects the relentless rise in global energy demand, driven in large part by population growth, industrialization and rising living standards in emerging markets and the inability of renewables such as solar and wind to meet this demand. As highlighted in a recent DWS report,¹³ of the increase in global energy consumption since 2015 less than 50% was met by renewables. Consequently, a large part of the increase in global energy demand is going to be met by fossil fuels, implying global greenhouse gas emissions will most likely remain elevated for the remainder of this decade.

¹⁰ IEA (October 2023). World Energy Outlook 2023

¹¹ Bloomberg Finance LP (11 September 2025). The myth of peak fossil fuel demand is crumbling

¹² Energy Institute (2025). Statistical review of world energy

¹³ DWS Research institute (September 2025). The great energy race: challenge and transformation

AI and the accompanying data centers are introducing another layer of complexity to decarbonizing the global economy. Over the medium-term, AI has the potential to support the climate agenda in areas such as grid optimization, energy efficiency and fostering innovation. However, currently the use of large machine learning models requires immense computational power, often running on energy-intensive data centers that rely largely on electricity grids still dominated by fossil fuels.

According to industry estimates,¹⁴ data centers are likely to account for around a tenth of global power demand growth out to 2035. However, it is estimated that in the U.S, rising data center demand may account for 40% of overall U.S. power demand growth over the next decade. This may help to explain the decision by the U.S. Department of Energy last month to use emergency powers to extend the operational life of coal-fired power plants to meet higher AI power requirements.

2.4 Challenges of the clean energy transition

According to the Net Zero Stocktake,¹⁵ nearly three in five of Forbes Global 2000 companies¹⁶ have either not established net zero targets or lack actionable plans to support them.¹⁷ Conversely, around 860 companies have credible pathways to achieve net zero. From a sector perspective, industrials, consumer goods and materials lead the pack in terms of setting science-based targets.¹⁸

Not surprisingly, assessing the speed of the clean energy transition across the power, buildings, industrial and transportation sectors reveals a clear conclusion: Significantly more progress is needed. As outlined in a recent DWS report,¹⁹ the rate of increase of zero-carbon sources in electricity generation needs to accelerate five-fold compared to the last five years if there is to be any chance of hitting the 2030 target consistent with a 1.5°C pathway. In terms of the energy intensity and carbon intensity of building operations, these need to accelerate by as much as three-fold and in the areas of green hydrogen production and the share of sustainable fuels in the aviation and shipping sectors, the pace of adoption needs to be scaled up even faster.

The need to speed up the clean energy transition faces several barriers. These include the availability of commodities such as copper, lithium, nickel, cobalt, and rare earths, which are essential for clean energy technologies such as wind turbines, electric vehicles, and power grids. Given the likely increase in demand for clean energy technologies, we believe that the demand for these minerals is likely to rise significantly and with it the potential of supply side bottlenecks.

An added risk is that the market for critical minerals has become even more concentrated, particularly in the areas of smelting and processing. We find that the average market share of the three leading refining countries for key energy minerals has risen from around 82 percent in 2020 to 86 percent in 2024, with around 90 percent of supply growth coming from the largest single supplier in each case – Indonesia for nickel, and China for cobalt, graphite, and rare earths.²⁰

2.5 Physical climate risks

A slow energy transition, and elevated global GHG emissions, are likely to imply the increasing frequency of extreme weather events. Global losses as a result of extreme weather events have already reached a staggering USD 1.4 trillion in 2024, a nearly tenfold increase from the total in 2000.²¹ In response, more and more insurers may withdraw or restrict their activities in the private insurance market for floods, storms or wildfires. In certain areas, such as California and Florida,²² this has already occurred with certain home insurance products being pulled citing wildfire or hurricane risk. The increasing frequency and intensity of extreme weather events would also imply the need for investment in climate adaptation measures, since this branch of climate finance accounts for just 5% of total climate finance.²³ We will explore this as well as potential barriers to the clean energy transition in future research.

¹⁴ BP (September 2025) BP energy outlook 2025

¹⁵ New Climate Institute, Oxford Net Zero, Energy & Climate Intelligence Unit Data-Driven EnviroLab (September 2025). Net Zero Stocktake 2025

¹⁶ The Forbes Global 2000 are rankings of corporate size according to sales, profits, assets and market value

¹⁷ New Climate Institute, Oxford Net Zero, Energy & Climate Intelligence Unit and Data-Driven Enviroab (September 2025).

¹⁸ Science Based Targets (August 2025). SBTi trend tracker

¹⁹ DWS Research institute (September 2025). The great energy race: challenge and transformation

²⁰ IEA (May 2025). Critical minerals outlook

²¹ BNEF (8 October 2025). Adaptation and resilience: The new investment imperative

²² PBS News (14 January 2025). What the California wildfire destruction means for homeowners and insurance

²³ Climate Policy Initiative (June 2025). Global landscape of climate finance 2025

3 / Policy watch

3.1 The pivotal role of climate policy

Government policy plays an important role in driving or derailing decarbonization for example in supporting or opposing mechanisms such as carbon pricing, renewable energy mandates, building efficiency standards, as well as climate-friendly subsidies and tax incentives. In this section, we examine the course of climate policy across the major regions.

3.2 U.S. policy focuses on energy expansion not decarbonization

This year has witnessed a marked reversal in U.S. climate, energy and trade policy. This includes suspending offshore wind leasing and restricting the permitting of onshore wind and solar PV projects on federal land. Emergency federal powers are also creating a more benign environment for coal-fired power plants which will help meet the increasing power needs of AI data centers. As a result of the ongoing policy shifts in the U.S., the IEA has revised its forecast in the country’s renewable power capacity growth which between now and 2030 is expected to be almost 50% lower compared with the forecast published in 2024,²⁴ Figure 3.

3.3 Europe proposes new 2040 climate target and greater flexibility

This summer the European Commission announced a new GHG emission reduction target for 2040. However, the use of offsets to achieve a 90% GHG emission reduction target has revealed Europe may be introducing more flexibility towards its Green Agenda. This flexibility also includes exempting certain entities from the Cross Border Adjustment Mechanism and extending the compliance period for auto makers to comply with new emission standards. Meanwhile, efforts to streamline renewable energy permits have contributed to IEA estimates for EU renewable growth between 2025 to 2030 to be revised up slightly.

3.4 China’s clean energy boom presents hazards

Last month, the Chinese government pledge to cut its GHG emissions by 7-10% below its peak level.²⁵ This is likely to be achieved, in part, by the government’s ongoing efforts to increase the share of renewables in electricity production. China has already hit its 2030 solar and wind capacity targets six years ahead of schedule and now the government targets wind and solar capacity to increase sixfold by 2035, compared to 2020 levels. China is moving away from a subsidy-driven model toward a more competitive and mature renewable energy market. However, intense price competition and overcapacity in the solar industry have led to a doubling in the combined losses of six of China’s largest solar panel and cell manufacturers in the first half of 2025, compared to the same period a year earlier.²⁶ This is prompting the government to express concern of overcapacity in strategic sectors and consequently increasing the possibility of corrective action being taken against certain companies.

Figure 3: Change in renewable capacity expansion forecasts between 2024 and 2025 in selected countries or regions, 2025-2030



Source: DWS Research Institute (October 2025). IEA Renewable 2025, Note: ASEAN = Association of Southeast Asian Nations. MENA = Middle East and North Africa; SSA = Sub-Saharan Africa

²⁴ IEA (7 September 2025). Renewables 2025, Analysis and forecast to 2030

²⁵ Reuters (25 September 2025). China leads nations with new climate plans, defying US climate denial

²⁶ FT (4 September 2025). China steps in to tame animal spirits as solar sector racks up billions in losses

4 / Technology & innovation tracker

The world has entered a high-tech, low carbon, AI-driven era and technology and innovation have become critical components to secure a country’s long-term competitiveness. In this section, we explore how countries and regions are embracing the tech revolution.

4.1 R&D investment around the world

R&D investment levels between countries and regions are wildly different. Of the major economies, South Korea, the U.S. and Japan are at or close to the top of R&D investment table at 5.8%, 3.6% and 3.4% as a share of GDP respectively. China and the EU have lower ratios at 2.6% and 2.2% respectively.²⁷

4.2 From ‘Made in China’ to ‘Designed in China’

Patents are another innovation metric. Here, China has become a leader in clean energy tech, accounting for 75% of global patent applications in this field by 2022, up from 5 percent in 2000 and dominating in terms of solar (90%), wind (90%), and energy storage (85%) patents.²⁸ Additionally, in 2023, Chinese companies invested ten times more in power sector R&D than those in the U.S.²⁹

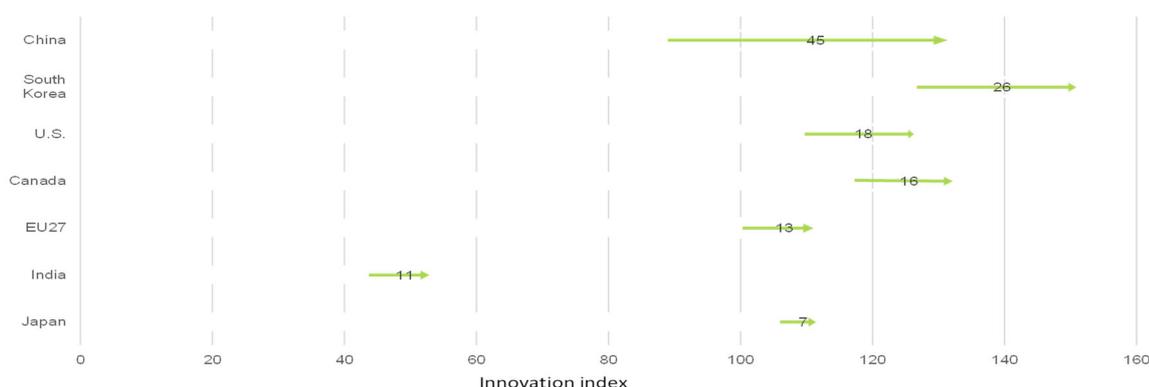
4.3 The dominance of U.S. unicorns

Innovation success can also be tracked by the number of unicorns, or start-ups that went on to be valued at over US\$1 billion. As of 2024, the number of unicorns had grown to around 1,450 with the United States leading with 656 unicorns, followed by China (157), the EU-27 (106).³⁰ In Europe, efforts to start and scale startups has gained traction with the European Innovation Council and InvestEU programmes. In Germany, this also includes the WIN initiative,³¹ which aims to double government investment in innovative firms to €25bn. However, Europe needs to build its VC ecosystem further since between 2008 and 2021, 30% of unicorns founded in Europe, relocated their headquarters abroad, and largely to the U.S.³²

4.4 Europe plays catch up

The summary innovation index provides an assessment of innovation trends across the major economies. It reveals that since 2018, the global leaders such as China, South Korea, and the U.S are surging ahead with more modest gains occurring in the EU and Japan, [Figure 4](#). While Europe is weak in digital innovation, it can claim some success in terms of clean tech innovation. This presents an opportunity as well as challenge since according to the IEA, more than one-third of the required CO2 emission reductions globally in 2050 rely on technologies currently at the demonstration or prototype phase.³³ As a result, a significant leap in innovation funding is required.

Figure 4: Change in innovation index between 2018 and 2025



Source: European Commission (2025) European innovation scoreboard

²⁷ World Bank Group database

²⁸ IRENA’s patent database

²⁹ EMBER (September 2025). How China’s transition is reshaping the global energy landscape

³⁰ World population review database

³¹ KfW (September 2024). WIN Initiative. Growth and Innovation Capital for Germany

³² European Commission (September 2024). The future of European competitiveness

³³ IEA (September 2023). Net zero roadmap, 2023 update

5 / Risks & opportunities

In this section, we show how the global auto sector is facing range of risks and opportunities when it comes to the energy transition. In terms of global sector emissions, the big three are the power, industrial and transportation sectors. And when it comes to crude oil demand, road transportation accounts for around 47% of global oil demand.³⁴ Consequently, the pace of electric vehicles (EV) adoption has the potential to significantly reduce crude oil demand over time.

5.1 The challenges in the global auto sector

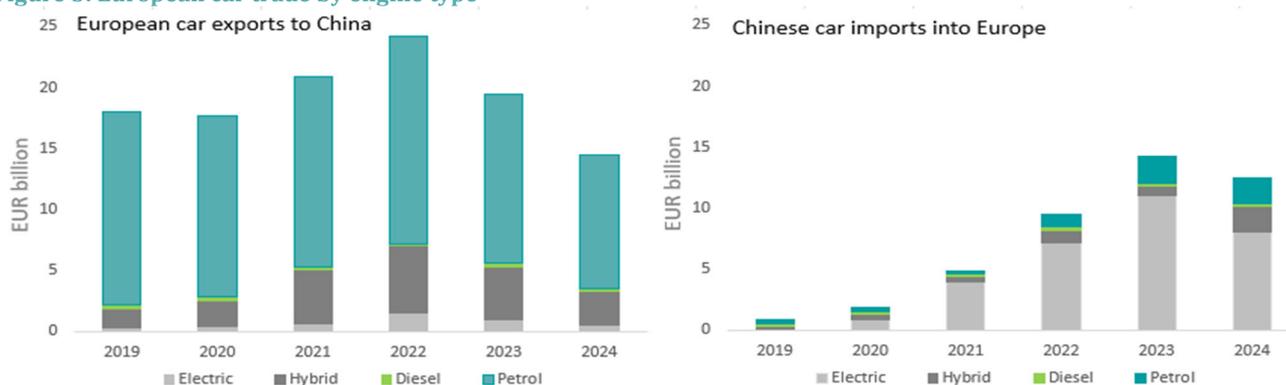
In certain countries, there is increasing pressure on the automotive industry to reduce emissions, with 31 national governments committing to transition to 100% zero-emission cars and vans by at least 2040.³⁵ In many jurisdictions, emission standards are also being tightened, particularly for internal combustion engines.

Historically, the European automotive sector thrived with technological leadership and strong brand equity, hosting five of the world's ten largest automotive companies.³⁶ However, it now faces significant financial challenges due to intense competition from Chinese manufacturers. This is illustrated by the shift in car trade flows between Europe and China, [Figure 5](#). Since 2022 European car exports to China, which are predominantly petrol engines, have almost halved in value terms. In contrast, Chinese car imports into Europe, which are predominately EVs, have more than doubled in value terms since 2021.

Europe's auto sector is also exposed by its reliance on Asia in the battery supply chain, challenges with EV charging infrastructure and high manufacturing costs. These are having financial repercussions on the sector with Volkswagen expecting to incur a loss of EUR 5.1 billion in the current financial year while Porsche AG adjusts its product strategy to focus more on combustion engines and delay EV introductions in response to market instability.³⁷ In the U.S. auto makers are facing a different kind of problem following the Trump Administration's decision to end tax incentives for EV purchases.³⁸ These regulatory changes are causing some automakers to alter their EV strategy. This includes GM's US\$1.6 billion charge for the third quarter in response to EV capacity adjustments.³⁹ In contrast, the electrification of road transportation in China continues with EVs representing 50% of all car sales at the end of last year compared to 21% in EU-27 and 10% in the U.S.⁴⁰

In our next whitepaper series relating to the energy transition,⁴¹ we will be exploring the barriers to the energy transition across key sectors of the global economy including the global auto sector.

Figure 5: European car trade by engine type



Source: Eurostat, DWS Investment GmbH (October 2025)

³⁴ Enerdata (August 2024). Beyond the barrel: kicking oil's dominance

³⁵ Accelerating to net zero coalition

³⁶ US News (August 2025). The 10 most valuable car companies in the world

³⁷ Volkswagen (19 September 2025). Volkswagen AG adjusts 2025 forecast in light of the effects of changes in product planning

³⁸ CNBC (29 July 2025). Trump EPA seeks to repeal finding that carbon dioxide emissions threaten public health

³⁹ Reuters (14 October 2025). GM to take \$1.6 billion charge as tax credit blow muddies EV plans

⁴⁰ IEA (2025). Global EV Outlook 2025

⁴¹ The first in our whitepaper series was DWS Research Institute (September 2025). The great energy race: challenge and transformation

6 / Investor implications

Summary of key findings

1. **Global crude oil demand to remain strong:** Next month, the IEA is set to officially upgrade its long-term crude oil demand forecasts. This implies a scenario closer to OPEC, and global GHG emissions remaining stronger for longer.
2. **Slow progress in corporate net zero planning:** Nearly three in five of Forbes Global 2000 companies have either not established net zero targets or lack actionable plans to support them.⁴² Alongside the slow pace of the energy transition, these might suggest governments may increasingly focus on carbon pricing to promote decarbonization.
3. **The spread of carbon trading schemes:** The introduction of Europe's Cross Border Adjustment Mechanism in January next year has already been a contributory factor of carbon trading schemes being launched, for example in India, Turkey, Malaysia and Vietnam. More countries are likely to follow.
4. **Supply-side bottleneck risk in key commodities:** Commodities such as copper, lithium, nickel, cobalt, and rare earths may face supply side constraints given the time from mine discovery to production can average around 18 years⁴³ and these minerals are essential in the development of wind turbines, electric vehicles, and power grids.
5. **Divergent climate policies are emerging around the world:** U.S. climate policy is focused on energy expansion not decarbonization, while Europe tries to lift the burden of climate legislation on certain sectors of the economy. China's climate ambition remains intact, and for the first time, the government has set a target to cut absolute GHG emissions.
6. **China is racing up the technology and innovation league tables:** Since 2018, the world's innovation leaders such as China, South Korea, and the U.S are surging ahead. The greatest innovation leap has occurred in China, who accounted for 75% of global clean energy patent applications in 2022, up from 5 percent in 2000.⁴⁴
7. **Fault lines in the European auto sector:** The sector faces significant financial pressures due to intense competition from Chinese manufacturers. In addition, European automakers are also exposed due to their reliance on the Asian battery supply chain as well as challenges with EV charging infrastructure and high manufacturing costs at home.

Investor actions

1. **A reduction in stranded asset risk:** A scenario where global oil demand remains at current levels reduces stranded asset risk of fossil fuels within an investor's portfolio. This reflects cash flows of oil producing companies are likely to be more secure and consequently this reduces the possibility of write-downs or asset impairments
2. **Assessing physical climate risk and adaptation opportunities:** Higher GHG emissions for longer would imply the increasing frequency of extreme weather events. This should necessitate increased engagement with investee companies to assess and disclose physical climate risks in their operations and supply chains as well as infer increasing adaptation investment opportunities such as green infrastructure.
3. **Position for higher carbon prices:** To drive decarbonization, carbon prices need to rise to between US\$50–100/tCO₂ by 2030.⁴⁵ Currently, 28% of global emissions are taxed at an average price of just US\$19/tonne.⁴⁶
4. **Unlock opportunities and diversity across the clean energy supply chain:** Investors should consider diversified exposure to enablers such as critical minerals, which are essential for technologies such as solar, wind, battery storage. Proactive risk management is needed to address supply constraints and geopolitical dependencies.
5. **Climate policies come with hazards:** Anti-climate friendly legislation in the U.S. poses challenges for global investors as does China's clean tech boom. Investors should consider conducting in-depth analysis of regulatory environments and prioritize regions and countries with stable, long-term policy commitments.
6. **Understanding the financial risks for European automakers:** European automakers face increasing challenges such as declining market share and overcapacity, which could lead to factory closures and brand consolidations. European automakers' recent investments have also been less productive than those in Japan and the U.S., raising concerns about future profitability and dividend yields, which are already under pressure.

In our next deep dive whitepaper we examine the barriers and solutions to accelerate the energy transition.

⁴² New Climate Institute, Oxford Net Zero, Energy & Climate Intelligence Unit (September 2025). Net Zero Stocktake 2025

⁴³ S&P Global (April 2025). From 6 years to 18 years: The increasing trend of mine lead times

⁴⁴ EMBER (September 2025). China Energy Transition Review 2025

⁴⁵ Carbon pricing leadership coalition (May 2017). Report of the high level commission on carbon prices

⁴⁶ World Bank (May 2025). State and trends of carbon pricing 2025

7 / DWS sustainability research library

Below we provide links to recent DWS research papers relating to themes and asset classes relevant to the energy transition.

CIO Office

- Critical minerals at the center of geopolitical tensions (June 2025)
<https://www.dws.com/en-gb/insights/cio-view/macro/critical-minerals-at-the-center-of-geopolitical-tensions/>

DWS Research Institute

- The great energy race: challenge and transformation (September 2025)
<https://www.dws.com/en-gb/insights/global-research-institute/the-great-energy-race-challenge-and-transformation/>
- A strategic appraisal of climate index investing (June 2025)
<https://www.dws.com/en-gb/insights/global-research-institute/a-strategic-appraisal-of-climate-index-investing/>

European Transformation

- European Transformation research hub
<https://www.dws.com/en-gb/insights/global-research-institute/european-transformation-research-hub/>
- Igniting European transformation (May 2025)
<https://www.dws.com/en-gb/insights/global-research-institute/igniting-european-transformation/>

Infrastructure

- Infrastructure strategic outlook H2 2025: Half-year market update (July 2025)
<https://www.dws.com/en-gb/insights/research/infrastructure/infrastructure-strategic-outlook-h2-2025/>
- Infrastructure update: Transforming Europe's competitiveness (April 2025)
<https://www.dws.com/en-GB/AssetDownload/Index?assetguid=a042f37c-f208-4f21-9bc6-6efb558ea32d>

Real Estate

- Global Real estate strategic outlook: Mid-year 2025
<https://www.dws.com/en-gb/insights/research/real-estate-research/global-real-estate-strategic-outlook-mid-year-2025/>

Liquid Real Assets

- Real assets and energy transition (April 2024)
<https://www.dws.com/en-gb/insights/alternatives-research/liquid-real-assets/real-assets-and-the-energy-transition/>

Important information – EMEA, APAC & LATAM

DWS is the brand name of DWS Group GmbH & Co. KGaA and its subsidiaries under which they do business. The DWS legal entities offering products or services are specified in the relevant documentation. DWS, through DWS Group GmbH & Co. KGaA, its affiliated companies and its officers and employees (collectively "DWS") are communicating this document in good faith and on the following basis.

This document is for information/discussion purposes only and does not constitute an offer, recommendation or solicitation to conclude a transaction and should not be treated as investment advice.

This document is intended to be a marketing communication, not a financial analysis. Accordingly, it may not comply with legal obligations requiring the impartiality of financial analysis or prohibiting trading prior to the publication of a financial analysis.

This document contains forward looking statements. Forward looking statements include, but are not limited to assumptions, estimates, projections, opinions, models and hypothetical performance analysis. No representation or warranty is made by DWS as to the reasonableness or completeness of such forward looking statements. Past performance is no guarantee of future results.

The information contained in this document is obtained from sources believed to be reliable. DWS does not guarantee the accuracy, completeness or fairness of such information. All third party data is copyrighted by and proprietary to the provider. DWS has no obligation to update, modify or amend this document or to otherwise notify the recipient in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate.

Investments are subject to various risks. Detailed information on risks is contained in the relevant offering documents.

No liability for any error or omission is accepted by DWS. Opinions and estimates may be changed without notice and involve a number of assumptions which may not prove valid.

DWS does not give taxation or legal advice.

This document may not be reproduced or circulated without DWS's written authority.

This document is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction, including the United States, where such distribution, publication, availability or use would be contrary to law or regulation or which would subject DWS to any registration or licensing requirement within such jurisdiction not currently met within such jurisdiction. Persons into whose possession this document may come are required to inform themselves of, and to observe, such restrictions.

For institutional / professional investors in Taiwan:

This document is distributed to professional investors only and not others. Investing involves risk. The value of an investment and the income from it will fluctuate and investors may not get back the principal invested. Past performance is not indicative of future performance. This is a marketing communication. It is for informational purposes only. This document does not constitute investment advice or a recommendation to buy, sell or hold any security and shall not be deemed an offer to sell or a solicitation of an offer to buy any security. The views and opinions expressed herein, which are subject to change without notice, are those of the issuer or its affiliated companies at the time of publication. Certain data used are derived from various sources believed to be reliable, but the accuracy or completeness of the data is not guaranteed and no liability is assumed for any direct or consequential losses arising from their use. The duplication, publication, extraction or transmission of the contents, irrespective of the form, is not permitted.

© 2025 DWS Investment GmbH

Issued in the UK by DWS Investments UK Limited which is authorised and regulated in the UK by the Financial Conduct Authority.

© 2025 DWS Investments UK Limited

In Hong Kong, this document is issued by DWS Investments Hong Kong Limited. The content of this document has not been reviewed by the Securities and Futures Commission.

© 2025 DWS Investments Hong Kong Limited

In Singapore, this document is issued by DWS Investments Singapore Limited. The content of this document has not been reviewed by the Monetary Authority of Singapore.

© 2025 DWS Investments Singapore Limited

In Australia, this document is issued by DWS Investments Australia Limited (ABN: 52 074 599 401) (AFSL 499640). The content of this document has not been reviewed by the Australian Securities and Investments Commission.

© 2025 DWS Investments Australia Limited

as of 10/20/25; RBA 0031_103679_7.0 (10/2025)

Contributors

Abhishek-r Mittal

CROCI Investment Strategy & Valuation Group

Janamejay Kumar

CROCI Investment Strategy & Valuation Group

Jay Joshi

DWS Research Institute