Energy Transitions Commission

FOSSIL FUEL PHASE-DOWN: TRENDS BY FUEL AND POLICIES TO ACCELERATE IMPLEMENTATION

Clean energy deployment is driving a phase-down in fossil fuels

Electricity is the now the fastest growing form of energy, and growth in electricity was fully matched by growth in renewables for the first time in 2025.[1] As progress continues clean energy will not just meet rising energy demand, but displace overall demand for fossil fuels. Under the International Energy Agency's (IEA) Stated Policies Scenario (STEPS), which reflects government policies already adopted or put forward, global demand for coal begins to decline before the end of this decade, oil peaks around 2030, while gas demand reaches a plateau by the mid-2030s[2]. Other analyses, including those from Shell, a leading oil and gas company, project oil demand peaking in the early 2030s[3]. These are not net-zero aspirations. They reflect what is already being driven by the cost competitiveness and deployment momentum of clean energy technologies under current policy settings.

This briefing note provides much needed analytical clarity on which sectors consume fossil fuels today, and assesses plausible demand pathways from a range of scenarios. It then steps through demand for each fuel in turn, before considering implications for supply:

- **Coal** – primarily used in power, with demand already peaking; cheap renewables are driving decline, while the key challenge is managing phase-out of existing coal generation in Asia and substituting its use for industrial heat use, and as a reducing agent in iron and steel.
- **Oil** – primarily used in road transport, with demand likely peaking in the early 2030s; EV adoption is the main driver of decline, but slow turnover of global vehicle stock and petrochemicals keep the transition gradual.
- **Gas** – widely used across power, buildings and industry, with uncertain demand outlook; electrification of heating and industrial processes will determine whether use of gas declines or remains resilient.
- **Supply implications** – across all fuels, increasing supply risks meeting a world of declining demand; the case for new coal, oil and gas expansion is therefore increasingly weak.

Ultimately, clean technologies can potentially displace 75% of existing fossil fuel demand (Exhibit 1) [4]. The ETC's analysis shows that fossil fuel demand reductions of 44–64% by 2040, and 73–85% by 2050 are possible under accelerated but clearly feasible policies[5]. This is because electricity-based technologies, from solar to batteries to heat pumps, have seen

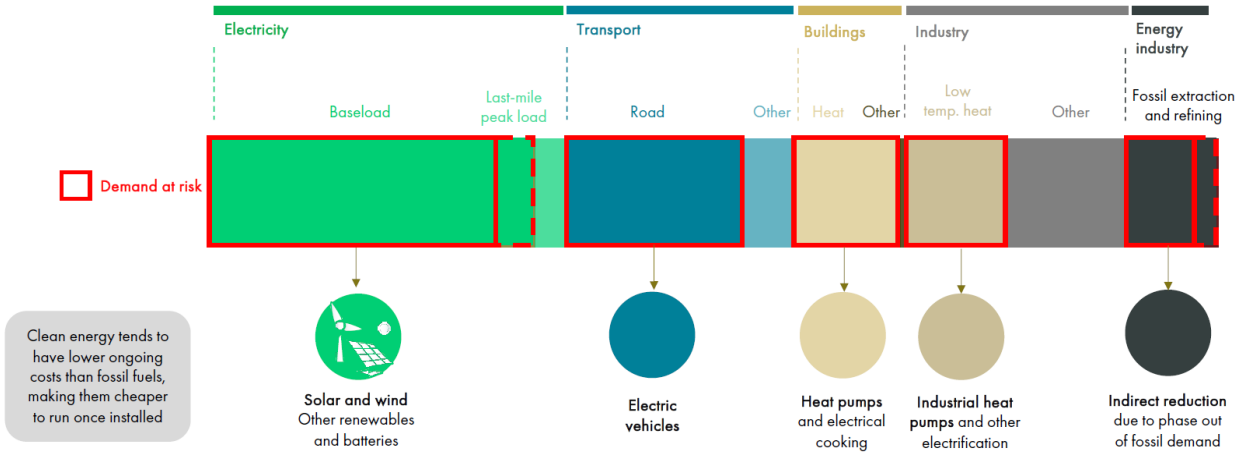
[1] IEA (2026), *Electricity*.
[2] IEA (2025), *World Energy Outlook 2025*.
[3] Shell (2025), *The 2025 Energy Security Scenarios*. Archipelagos scenario.
[4] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt*.
[5] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels*. Based on 2022 usage levels.

sustained cost reductions of 70-90% over the past decade and are on learning curves that fossil fuels cannot match[6].

The current conflict in the Middle East, which has driven Brent crude above $100/barrel and nearly doubled European gas prices[7], underscores the urgency: every unit of fossil fuel demand displaced by clean, often domestically produced, energy reduces exposure to such shocks.

Each fuel faces a different displacement trajectory, driven by changes in demand, technology developments and supply chain constraints. This note highlights where demand trajectories are relatively clear, and where there is greater uncertainty. Even with clear pathways a just transition will require choices on how to manage infrastructure and workforce impacts, and how to ensure supply declines in step with demand to avoid unnecessary shocks – something we turn to in the final section.

Exhibit 1: Fossil Fuel's share of final energy demand by sector (2024)



Source: Ember Energy.

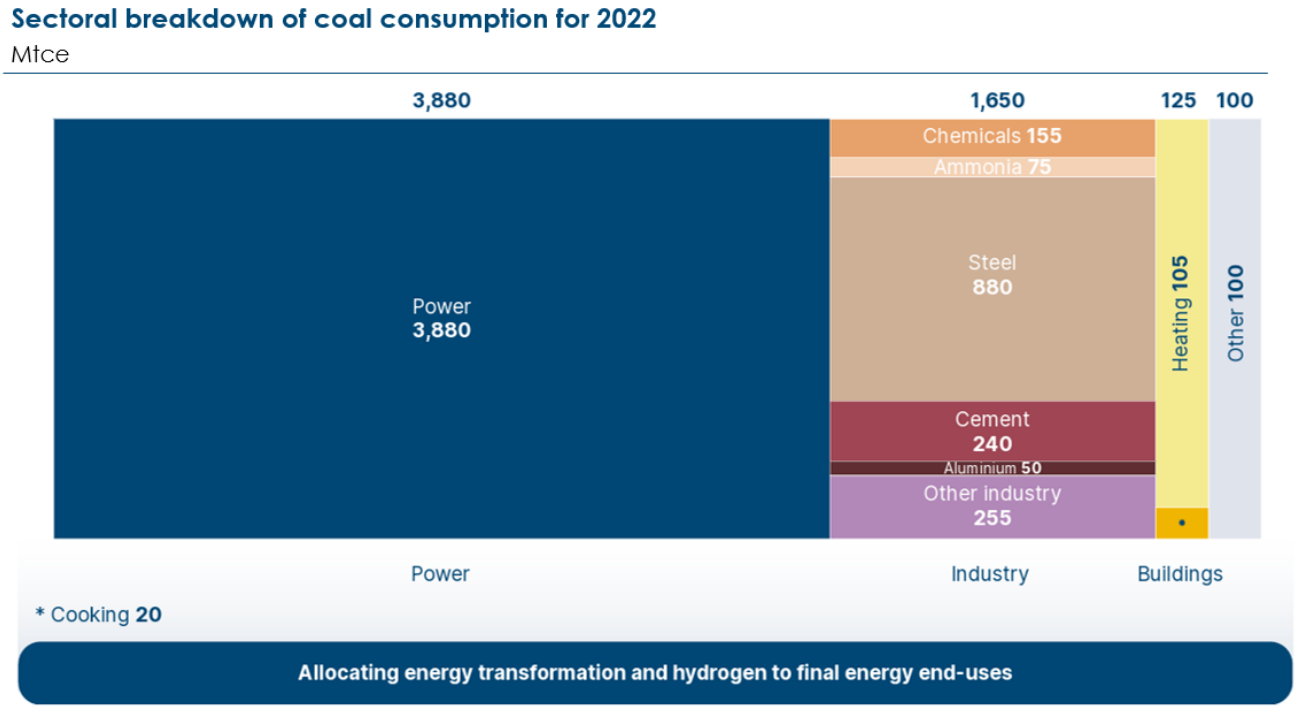
[6] Turner, A. (2026), *LSE Lecture III: Keeping global warming well below 2C: six priorities.* Available at: https://www.youtube.com/watch?v=ZFTFBrvAMX8.
[7] FT (2026), *Wall Street warns Iran war will trigger prolonged energy crisis.*

Coal: The first fossil fuel in structural decline

Coal is primarily used for power generation

Around two thirds of global coal demand is for power generation. Heavy industry accounts for most of the remainder, dominated by steelmaking and cement, with a small share in chemicals, other industry and buildings (Exhibit 2).

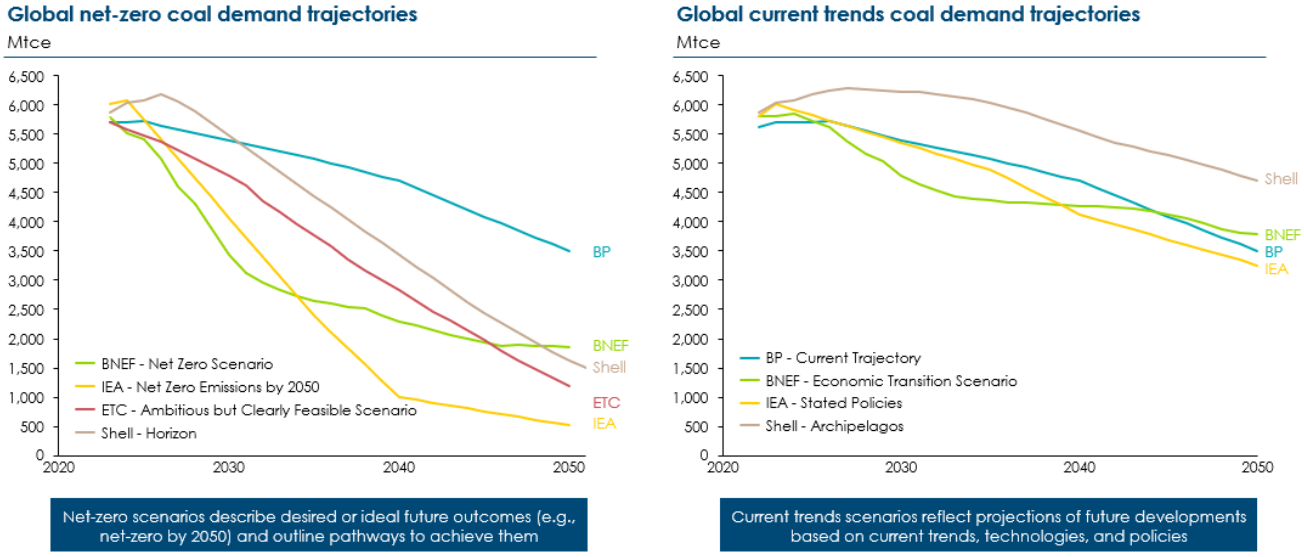
Exhibit 2: Coal consumption by sector



Coal is the fossil fuel closest to permanent decline. In IEA STEPS Scenario, global coal demand starts falling before the end of this decade (Exhibit 3). In the ETC's scenarios – normative scenarios which consider how policy can accelerate the clean energy transition - coal demand falls 15-30% by 2030 and 80-85% by 2050[8] due to renewables displacing its role in power, and clean fuels displacing its role in heavy industry. Coal supply from mines already operating or under development exceeds demand in all credible scenarios, and greatly so by 2040. There is therefore no case in aggregate for developing new coal mining capacity or expanding existing mines[9].

[8] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels*. In this work we present two scenarios: Accelerated but Clearly Feasible (ACF) and Possible but Stretching (PBS).
[9] Ibid.

Exhibit 3: Coal demand trajectories show a decline in both Net Zero and current trends pathways



Notes: 2022 values for all scenarios fixed using the IEA's 2022 data. Only BNEF data is on year-on-year basis, e.g. Other data points are decade to decade and interpolated. BNEF ETS coal converted to Mtce from 6,000kcal/kg.
Source: ETC (2023), Fossil Fuels in Transition; BNEF (2025), New Energy Outlook 2025; IEA (2025), World Energy Outlook; Shell (2026), *Energy Security Scenarios*; BP (2025), *Energy Outlook*

The pace of coal's decline is overwhelmingly determined by what happens in the power sector, with industrial use a lesser but important priority.

- **Power** (*2/3 coal demand*): Renewables, led by solar, are now cheaper than building new coal plants in most markets and are being deployed at extraordinary scale[10]. The displacement is already visible at global scale. Planned new coal capacity globally has fallen 65% over the last decade[11]. In the first half of 2025, renewables overtook coal generation for the first time on record, with solar alone covering 83% of the rise in global electricity demand[12]. 2025 is on track to be the first year without notable fossil fuel generation growth outside of a recession or pandemic[13]. In 2025, China saw coal-fired generation fall for the first time in a decade despite 5% power demand growth, with the increase primarily met by clean energy[14].
- **Industry** (*1/3 coal demand*): Industrial coal use, primarily in steelmaking and cement, is forecast to decline only slowly, at less than 1% per year through 2030, particularly driven by growing infra-structure and urbanization needs in developing economies[15]. Steelmaking alone accounts for around 14% of global coal consumption, making it the largest industrial user of coal.[16]

[10] Turner, A. (2026), *LSE Lecture III: Keeping global warming well below 2C: six priorities*. Available at: https://www.youtube.com/watch?v=ZFTFBrvAMX8.
[11] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt*.
[12] Ember (2025), *Global Electricity Mid-Year Insights 2025*.
[13] Ember (2025), *Q3 Global Power Report*.
[14] Wood Mackenzie (2026), *China's coal-fired power generation declines for the first time since 2015*.
[15] IEA (2025), *Coal Global Energy Review 2025*.
[16] Efficiency Intelligence (2025), *Steel and Coal*.

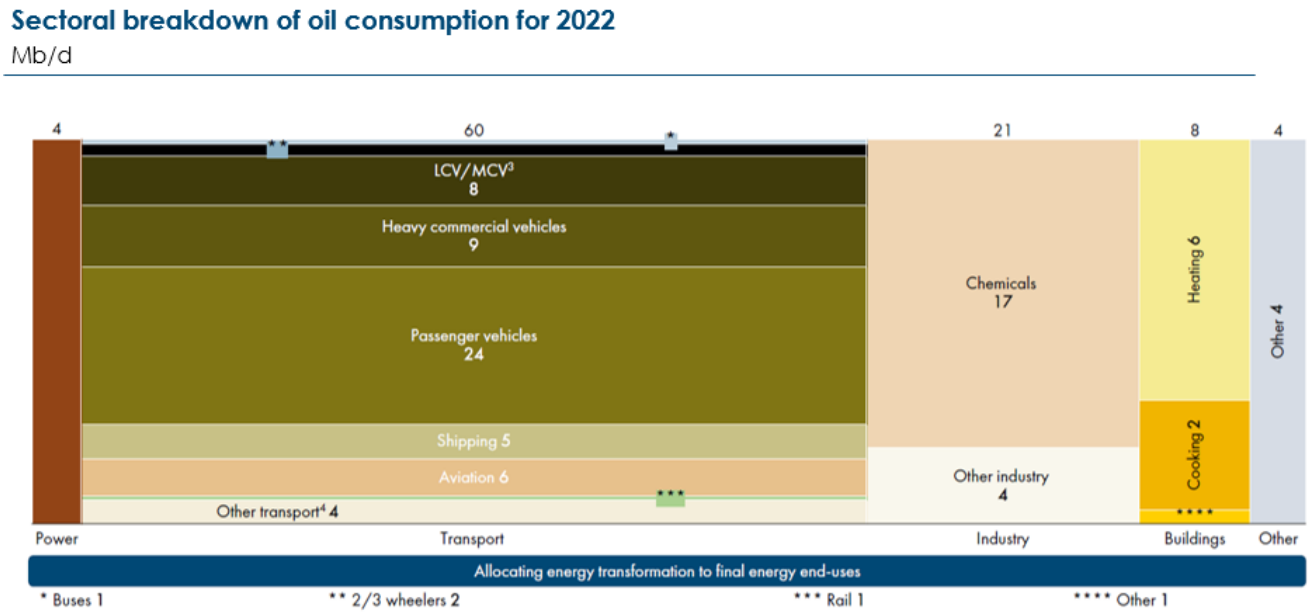
- In steel, decarbonisation could imply further reductions in coal demand as the sector shifts over time toward hydrogen-based iron making or electrowinning[17].
- Cement decarbonisation, where coal is used as the fuel source, would see coal demand reducing if replaced by electricity or other low carbon fuels – though a leading option for cement decarbonisation is carbon capture and storage (CCS) which captures emissions from calcination, and could see continued coal use in a lower carbon way.
- Further reducing coal dependency can be achieved by increasing material efficiency, as for example increasing scrap usage in steelmaking or supplementary cementitious materials (SCMs) in cement.

Oil demand is peaking, but stock turnover slows the timeline

Road transport drives the majority of oil demand

Road transport dominates oil demand, accounting for roughly 60% of total consumption, with passenger vehicles alone making up almost a quarter. Petrochemicals are the second largest demand sector at around 18%, and are the main source of remaining demand growth. Aviation and shipping together account for around 11%. The remainder sits in buildings, power generation, and other industrial uses (Exhibit 4).

Exhibit 4: Oil consumption by sector



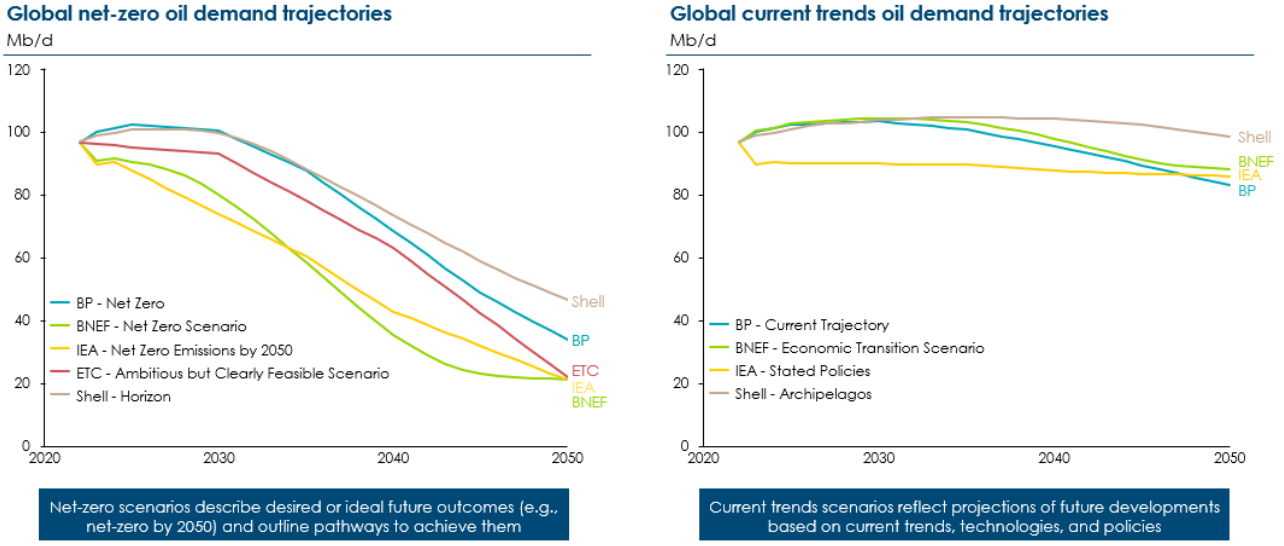
Oil demand in the IEA STEPS levels off around 2030 at ~102 mb/d, then begins a slow decline, returning to 2024 levels by 2035[18], though the plausible range of decline in the scenario range is wider than for coal. In the IEA's net-zero pathway, oil demand falls steeply from the mid-2020s; in the ETC's scenarios, the decline is more gradual to 2030 before accelerating sharply through 2040 and 2050, with total reductions of 77-95% by mid-century[19]. All scenarios

[17] MPP (2022), *Making Net-Zero Steel Possible Global.*
[18] IEA (2025), *World Energy Outlook 2025.*
[19] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels.*

agree on the direction, and the divergence between them is largely about how fast transport electrification proceeds (Exhibit 5).

Because road transport accounts for around 40% of oil demand, the pace of oil's decline is primarily determined by the speed of vehicle electrification.

Exhibit 5: Oil demand trajectories show decline or plateau, depending on assumptions



Notes: 2022 values for all scenarios fixed using the IEA's 2022 data. Only BNEF data is on year-on-year basis, e.g. IEA goes from decade to decade. Shell Archipelagos 2025 data point removed to prevent data skew. Sources: ETC (2023), *Fossil Fuels in Transition*; BP (2024), *Energy Outlook*; BNEF (2025), *New Energy Outlook*; IEA (2025), *World Energy Outlook*; Shell (2026), *Energy Security Scenarios*; BP (2025), *Energy Outlook*

- **Road transport** *(~40% of oil demand)*. Electrification of road transport is the primary driver of oil displacement. A passenger EV fleet of over 300 million, roughly one-fifth of the global car fleet and in line with IEA scenarios, could displace more than 5 mb/d of oil by 2030[20]. China, which accounted for more than two thirds of global oil demand growth over the past decade, is expected to see demand peak before 2030, driven by surging EV sales, rapid improvements in battery energy density that are making electric heavy-duty trucks increasingly viable, growth in LNG-powered trucks, and the expansion of high-speed rail[21]. However, oil displacement from road transport is inherently slower than coal displacement in power because of stock turnover, for example, the average vehicle lifespan is roughly 15 years. Even in the ETC's most ambitious scenario, over 75% of passenger cars on the road in 2030 will still be ICE vehicles, and ~90% of heavy trucks[22]. This challenge is compounded in emerging economies, where second-hand markets rely heavily on imports of ICE vehicles over 10 years old from higher-income countries.
- **Petrochemicals** *(~18% of oil demand)*. Petrochemicals are the largest remaining driver of oil demand growth and by 2026 are set to become the dominant source of growth globally[23]. Non-fossil feedstocks are being developed but may take time to

[20] IEA (2025), *Global EV Outlook*.
[21] IEA (2025), *Oil 2025*.
[22] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels*
[23] IEA (2025), Oil 2025

scale and become cost-effective. Even if petrochemical demand grows, the sector is not large enough to offset the decline from road transport[24].

- **Aviation and shipping** *(~11% of oil demand)*. Pathways to decarbonisation exist through sustainable aviation fuels, green ammonia, and methanol, but these fuels remain two to four times more expensive than fossil alternatives, and current policies are insufficient to close the gap at the pace required[25]. Fuel efficiency improvements are expected in both sectors, for example 1.5%-2% per year for aircraft[26]. However, demand for air travel alone could grow 150% by 2050, meaning efficiency gains are far outweighed by increases in demand. Stock turnover is also slower than in road transport, with aircraft and vessels typically operating for 25-30 years, so it would take longer for these efficiency gains to flow into the sectors. Some agreements have made progress, though they face increasing headwinds. The International Maritime Organisation approved a draft net-zero framework for global shipping in April 2025. However, the framework was weakened during negotiations and an agreement on implementation measures was deferred to 2026. In aviation, the EU mandates increasing shares of sustainable aviation fuel, reaching 6% by 2030 and 70% by 2050[104]. Though some European airlines have recently called for targets to be delayed in light of higher fuel costs from the Iran conflict[105].

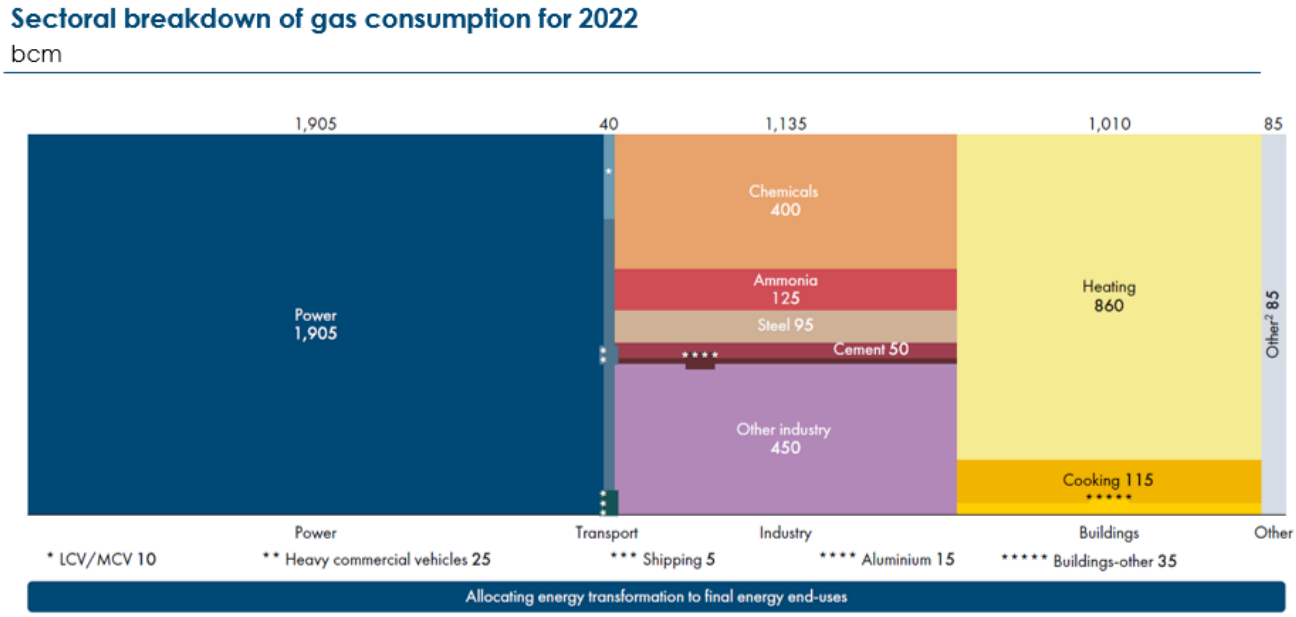
Gas demand growth is slowing

Gas demand is spread across power, buildings, and industry with no single dominant use

Gas demand is spread more evenly across the economy than coal or oil. Power generation accounts for just under half, industry around a quarter, and buildings (predominantly heating) around a quarter, with a small share in transport, as shown in Exhibit 6.

[24] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt*.
[25] Turner, A. (2026), *LSE Lecture III: Keeping global warming well below 2C: six priorities*. Available at: https://www.youtube.com/watch?v=ZFTFBrvAMX8.
[26] Turner, A. (2026), *LSE Lecture I: Abundant clean energy for all*. Available at: youtube.com/watch?v=ohAvw0XKtmE&list=PLK4eIntcUEy3kR3B4Ws8PcKndb1g5a68Y&index=56.

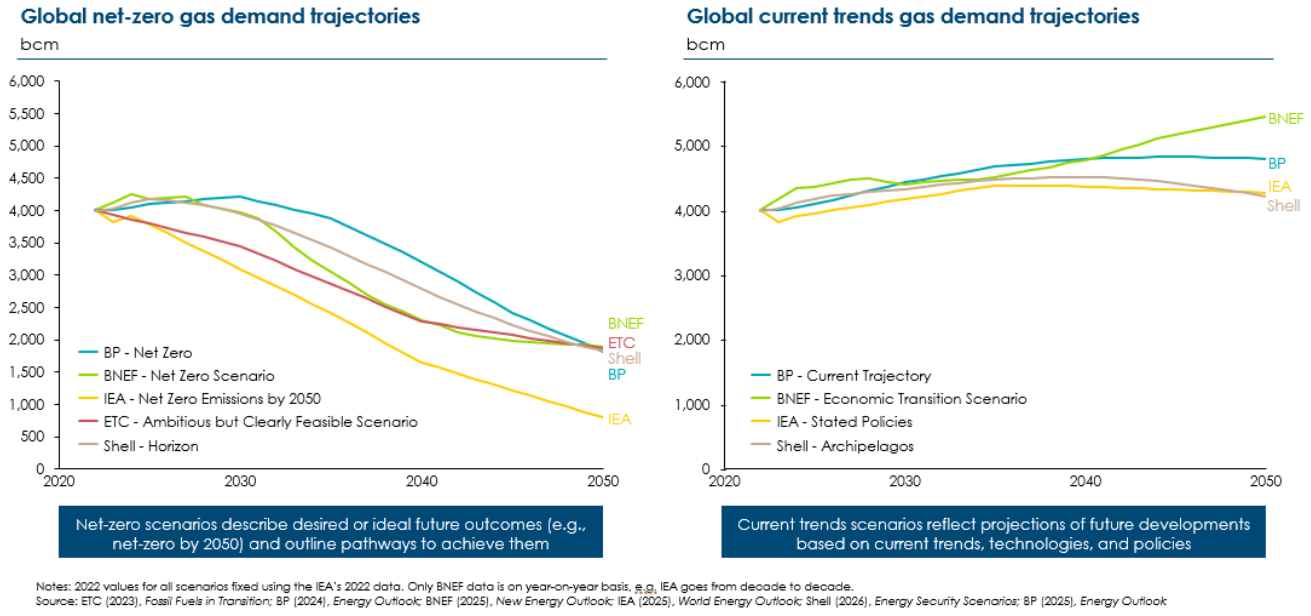
Exhibit 6: Gas consumption by sector



Gas faces greater uncertainty than coal or oil with a divergence in current trend projections, as shown in Exhibit 7. The BNEF Economic Transition Scenario and BP's Current Trajectory both show gas demand rising or flat through 2050, driven by growing use in buildings and industry that more than offset a slight decline in power. The IEA STEPS shows a plateau by the mid-2030s and net-zero scenarios from BP, BNEF and Shell show a decline in gas demand of around 30–50% by 2050, with the oil majors generally projecting a more gradual reduction than IEA pathways[27]. The IEA Net Zero Emissions scenario shows a much steeper decline of around 55–70% by 2050.[28] Recent market volatility, including the Middle East conflict pushing European gas prices higher, reinforces the uncertainty around these projections, although Europe represents only around 10–15% of global gas demand[29].

[27] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt.*
[28] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels.*
[29] Enerdata (2024) *Global Energy & CO_2 Data Yearbook*; IEA (2025) *Global Energy Review*

Exhibit 7: Gas demand trajectories increase in current trends, but decline under Net Zero assumptions



Notes: 2022 values for all scenarios fixed using the IEA's 2022 data. Only BNEF data is on year-on-year basis, e.g. IEA goes from decade to decade.
Source: ETC (2023), *Fossil Fuels in Transition*; BP (2024), *Energy Outlook*; BNEF (2025), *New Energy Outlook*; IEA (2025), *World Energy Outlook*; Shell (2026), *Energy Security Scenarios*; BP (2025), *Energy Outlook*

Gas for power is increasingly uncompetitive, except in some regions with low cost domestic production. The critical variable is whether buildings and industry electrify. If heat pumps take off in heating both buildings and processes up to 200°C in industry, gas demand falls. If they do not, gas holds steady or grows. This makes gas the fuel where policy choices matter most.

- **Power** *(just under half of gas demand)*. Gas for power is increasingly uncompetitive. Despite being the world's two largest electricity markets, only 3% of electricity in China and India comes from gas, and together they account for only ~10–15% of global gas demand in the power sector[30]. The rest of developing economies, who will be the main driver of electricity demand growth from now to 2050, are going directly from coal to renewables rather than building new gas infrastructure[31]. In countries reliant on imported LNG, such as Europe, Japan and South Korea, solar paired with batteries already undercuts gas-fired generation on cost[31]. Even in the US, which accounts for roughly a quarter of global gas demand in the power sector and where domestic gas is cheap, new gas combined-cycle plants now cost roughly three times more to build than in 2022 and take longer to deploy than solar and battery alternatives[31]. Gas for power is likely to grow only in regions with cheap domestic production, such as the US, Russia and Middle East[32].
- **Buildings** *(around a quarter of gas demand)*. Heat pumps are the primary displacement technology. In the United States, heat pump sales outpaced gas boiler sales by 30% in 2024, the largest gap ever recorded[33]. Buildings consume roughly

[30] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt*
[31] Ibid.
[32] IEA (2023), Gas Market Report; U.S. Energy Information Administration EIA (2024).
[33] IEA (2025), *Global Energy Review 2025*.

14,000 TWh of fossil fuels directly, of which gas accounts for around 60%, predominantly for space and water heating[34]. Rapid scale-up of heat pumps this decade is essential to electrify heating, with major reductions in gas use materialising after 2030[35]. But under current trends, without stronger policy, buildings gas demand is projected to rise by 14% to 2050 as population and floor space grow[36].

- **Industry** *(around a quarter of gas demand).* Electrified heat, particularly heat pumps for low- and medium-temperature applications (i.e. below 400°C), can displace a significant share of industrial gas use. Low- and medium-temperature processes account for roughly half of industrial heat demand and are concentrated in less energy-intensive sectors (food and beverages, textiles, etc.), while high-temperature heat dominates in heavy industry *(*steel, cement, aluminium, etc.)[37,38]. However, deployment remains limited due to policy gaps. Addressing this requires rebalancing electricity and gas prices, implementing carbon pricing or equivalent regulation, and introducing targeted support for industrial electrification such as capital subsidies and demand-side incentives.[39] For high-temperature applications, hydrogen becomes a key alternative. At hydrogen costs of ~$2/kg, carbon prices of ~$100/tCO_2 are sufficient for hydrogen to compete with fossil gas in high-temperature applications[40]. But, without carbon pricing or equivalent regulation, industrial gas demand is projected to rise by 16% to 2050[41].

Three priorities for reducing fossil fuel dependency

The technologies to displace coal, oil and gas already exist, and in many cases are cost-competitive. The key challenge is not technological availability but the pace of deployment. Three priorities stand out to accelerate demand-side substitution across sectors: scaling clean electricity and electrification, setting clear transition signals, and correcting price signals and strengthening sector-specific regulation.

1. Set clear transition signals

Firm dates for ending unabated coal power; phasing out new fossil fuel boiler installations, as the EU has done with its 2040 deadline[42]; maintaining and strengthening EV sales targets and ICE phase-out dates, such as the EU's 2035 ban or the mandate in Rwanda on only electric motorcycles being registered in Kigali from 2025; restrict the export of older, inefficient ICE vehicles from higher-income to lower-income countries, such as Ethiopia's ban from January

[34] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt.*
[35] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels.*
[36] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt,*
[37] Honeywell (2025), *Industrial heating.*
[38] IEA (2024), *Energy Efficiency 2024.*
[39] ETC (2021), *Making Clean Electrification Possible.*
[40] ETC (2025), *Carbon in an electrified future.*
[41] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt.*
[42] We Mean Business Coalition, ETC, Ember, E3G (2025), *Power Up: How Clean Energy Is Putting Fossil Fuel Demand in Doubt.*

2024[43],[44] or scrappage schemes, as China's truck scrappage scheme which helped doubled electric truck sales in 2024[45], are among the clearest ways to accelerate capital turnover and avoid lock-in of high-carbon assets. Extending these signals beyond advanced economies will be particularly important in fast-growing emerging markets, where much of future energy demand growth will occur.

2. Scale clean electricity and electrification

The challenge in the power sector is concentrated in China and Developing Asia which account for almost 80% of global coal demand[46]. In these countries, growing power demand presents a dual challenge that rapid renewables deployment must simultaneously meet new demand and displace existing coal. At COP28 130 countries committed to tripling global renewables capacity by 2030[47], which could displace ~1,000 Mtce of coal in power generation[48] - between 10-15% of current demand by then, with further reductions thereafter.

As solar and wind are intermittent, displacing firm coal and gas generation depends not only on generation capacity but also on the grid infrastructure, storage and flexibility needed to integrate it reliably. Delivering this requires removing deployment barriers in coal-dependent emerging economies. Renewables projects in these economies often face high costs of capital and lengthy permitting timelines,[49] whilst early retirement of coal assets require dedicating financing mechanisms and concessional lending from multilateral development banks[50]. These markets should focus on shifting remaining coal from baseload to peaking and flexibility roles, as China is already doing with 600 GW of flexibility retrofits[51]. OECD countries should priorities shutting down their oldest and most polluting plants. The 180-member Powering Past Coal Alliance, which includes 84% of OECD and EU governments, provides a framework: unabated coal power should end in OECD countries by 2030 and globally by 2040[52].

For clean electrification, businesses models and infrastructure must be put in place to scale. In transport, the equivalent priority is charging infrastructure and grid reinforcement to support electric vehicles, particularly for heavy-duty transport – both of which are crucial sectors for oil demand. In buildings and industry, scaling heat pumps and electrified heat will also require stronger enabling policy frameworks.

3. Correct price signals and strengthen sector-specific regulation – particularly in hard to electrify sectors

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[43] ETC (2025), *Energy productivity: Increasing efficiency in an expanded, electrified energy system*.
[44] Turner, A. (2026), *LSE Lecture III: Keeping global warming well below 2C: six priorities*. Available at: https://www.youtube.com/watch?v=ZFTFBrvAMX8.
[45] IEA (2025), *Global EV Outlook*.
[46] IEA (2025), *Coal Global Energy Review 2025*.
[47] COP 28 UAE (2023), *Global Renewables and Energy Efficiency Pledge*.
[48] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels*.
[49] IEA (2023), *Scaling Up Private Finance for Clean Energy in Emerging and Developing Economies*.
[50] ETC (2025), *Energy productivity: Increasing efficiency in an expanded, electrified energy system*.
[51] Wood Mackenzie (2026), *China's coal-fired power generation declines for the first time since 2015*
[52] Powering Past Coal Alliance (2026), *Our Members*.

Carbon pricing applied across heavy industry, aviation and shipping is a key lever to make lower-carbon routes more competitive. The EU's Carbon Border Adjustment Mechanism provides a model for ensuring that domestic carbon pricing does not simply shift production to unpriced jurisdictions[53]. In buildings, gas and electricity prices should be rebalanced to reflect the true efficiency advantage of electrification[54]. Complementary measures such as recycling mandates, extended producer responsibility schemes and fuel blending mandates will also be important in sectors where demand reduction or fuel switching is harder to achieve[55].

New fossil fuel supply is not the answer, and supply discipline must accompany demand action

Across all three fuels, demand is set to peak or already peaking, and new supply investments risk coming online into a shrinking market.

- For coal, existing and under-development mines already exceed projected demand in all credible scenarios[56].
- For oil, the combination of EV growth and efficiency improvements means that the rationale for new long-lead-time exploration and development is weakening year by year.
- For gas the picture is more uncertain, though the long term role for significant gas use in the power sector is increasingly challenged, leading to questions about where demand for new supply will result from.

Overall this implies that while there will be a need for continued investment in existing oil and gas fields to maintain production, and for some very limited new investment in short-lifetime new oil and gas fields, the overall level of investments in fossil fuels must now shift onto a path of rapid decline. Though the parameters of decline are clear, countries disagree about how the provision of declining supply should be fit.

Demand-side policy must lead. But supply-side discipline is also needed. Investment in excessive supply can, via lower induced prices (with probable diminished profits to investors), stimulate additional fossil fuel demand, making it harder to achieve the reductions that climate objectives require[57].

Matching managed reductions in supply to declining demand is essential to avoid this dynamic – Box 1 explores a UK example. In our 2023 ETC report we proposed policies that can support this:

- Governments should commit to no new exploration to discover new oil and gas basins.
- Financial institutions should stop financing new coal mine development and restrict financing to fossil fuel companies without credible net-zero strategies.

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[53] Turner (2026), *LSE Lecture III: Keeping global warming well below 2C: six priorities*. Available at: https://www.youtube.com/watch?v=ZFTFBrvAMX8.
[54] IEA (2024), *Energy Efficiency 2024*.
[55] ETC (2025), *Carbon in an Electrified Future*.
[56] ETC (2023), *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels.*
[57] ETC (2023). *Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels.*

- Fossil fuel companies should align production to transparent pathways based on credible transition scenarios[58], and focus on reducing the emissions intensity of what they produce (incl. reducing methane).

Box 1 Managing national-level decline: lessons from the UK Continental Shelf[59]

The UK Continental Shelf (UKCS) offers a practical example of how a producing country can manage the fossil fuel phase-down. UKCS oil and gas production has fallen 69% since its 1999 peak, from 4.5 million barrels of oil equivalent per day to 1.4 million in 2023. All long-term scenarios are scenarios of further decline.

Several lessons from the UKCS experience are relevant to the TAFF conference's work on planned phase-down:

The clean energy scale-up, not continued fossil extraction, is the primary driver of long-term energy security. If the UK meets its clean energy targets, energy import dependence could fall from ~40% to 20-30% of consumption by 2050, even as UKCS production continues to decline. The difference between a "maximum" oil and gas production scenario and a "no new fields" scenario in 2030 changes domestically produced energy by only four percentage points[58]. This underscores that renewable deployment and demand-side electrification matter far more for energy security than the pace of domestic fossil extraction.

Without demand-side action, declining production creates import dependence. The UK CCC's Balanced Net Zero pathway requires low-carbon district heating for 1.5 million homes and heat pumps for 2.8 million homes by 2030, but only ~40,000 heat pumps were installed in 2023[58]. Without a clear strategy to cut gas consumption through electrification, the UK risks greater dependence on emissions-intensive LNG imports as domestic production declines.

The transition can support job growth if managed strategically. The UKCS energy system currently supports ~210,000 direct and indirect jobs. If the UK meets its offshore wind and CCS targets, total energy system jobs could increase to ~250,000 by 2030, with over 80% requiring skills similar to those in the oil and gas sector[58]. However, in a scenario where oil and gas decline accelerates and clean energy targets are missed, jobs could fall to ~190,000.

Interconnected infrastructure requires coordinated phase-down planning. The UKCS is a highly interconnected basin, and the shutdown of one asset can impact others through physical, technical, commercial, and financial dependencies. A comprehensive network map and proactive asset-level planning are needed to manage these risks and minimise costs to taxpayers, who face estimated decommissioning liabilities of ~GBP 21.8 billion[58].

There are limited but real opportunities to repurpose infrastructure. CO_2 storage in depleted oil and gas fields is the most promising repurposing opportunity, with an initial assessment identifying 21 out of 798 fields as highly suitable, representing ~30% of total

[58] Ibid.
[59] Systemiq (2025), *Delivering a rapid, orderly and just energy transition for the UK Continental Shelf*.

field CO_2 storage capacity. However, only a subset will be repurposed in practice, and most infrastructure will need to be decommissioned[58].

The UKCS experience demonstrates that the fossil fuel phase-down is manageable if governments plan proactively, prioritise the clean energy scale-up, invest in demand-side electrification, and coordinate the orderly wind-down of legacy assets. These lessons apply well beyond the UK: any producing country facing declining reserves can draw on this approach, though countries with greater economic dependence on fossil revenues or less developed renewable potential will face additional challenges.

The transition is an implementation challenge, not a technology challenge

The technologies to displace coal, gas, and oil exist, are mostly cost-competitive, and are scaling. The peaking of all three fossil fuels under current policy settings confirms that the market is already moving. The question is no longer whether the transition will happen, but how fast, and whether policy accelerates it or allows unnecessary delay.

For each fuel, the policy priorities are specific and actionable: phase-out dates for coal and fossil boilers; EV targets and charging infrastructure for oil; grid investment, storage, and demand-side flexibility for gas. Across all fuels subsidy reform, supply-side discipline and, in some cases, some level of carbon pricing are needed to prevent excess investment from slowing the transition.

The demand side is where the greatest implementation opportunity lies. It is where clean energy technologies are most advanced, where the cost advantages are clearest, and where the co-benefits for energy security and economic resilience are most immediate. Leading with demand-side action, while managing supply in an orderly way, is the fastest route to a successful transition away from fossil fuels.