CLIMATE ANALYTICS

Briefing

35 by 35 and clean electrification

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The COP31 Presidency's "35 by 35" pledge aims to raise electricity's share of global final energy consumption to 35% by 2035.

- **Electrification can cut emissions now – even with today's electricity mix. But it only delivers emissions reductions at the pace and scale required when powered by clean electricity.**
- **Electrification rates must grow together with renewables to avoid potential fossil lock-in. This is feasible – expanding electrification does not require new fossil fuels.**
- **The IEA clearly shows the risks if the additional electricity demand needed to meet the 35% target is not cleanly generated: emissions fall, but not fast enough to minimise the magnitude and duration of overshoot.**
- **Meeting the 35 by 35 target without all the additional electricity being clean would add at least 0.1°C to global warming in mid-century compared to a scenario which meets the additional demand with clean power – increasing climate impacts and the risk of passing tipping points.**
- **Across the Global South, clean electrification can improve living standards by giving more households access to services such as refrigeration and clean cooking, because electric technologies use energy more efficiently.**
- **Expanding electrification allows more people to benefit from electrified end-use technologies.**
- **35 by 35 is a global target – it does not mean all regions will reach this at the same time.**
- **The global electrification rate was just above 22% in 2025, mostly due to increased electricity use in industry, residential and services sector, as well as EVs and data centres.**
- **Clean electrification will be an essential lever for limiting overshoot and returning temperatures well below 1.5°C by the end of the century. Any target must be clear that the expansion of electrification must be accompanied and powered by renewables.**

Is 35 by 35 1.5°C-aligned?

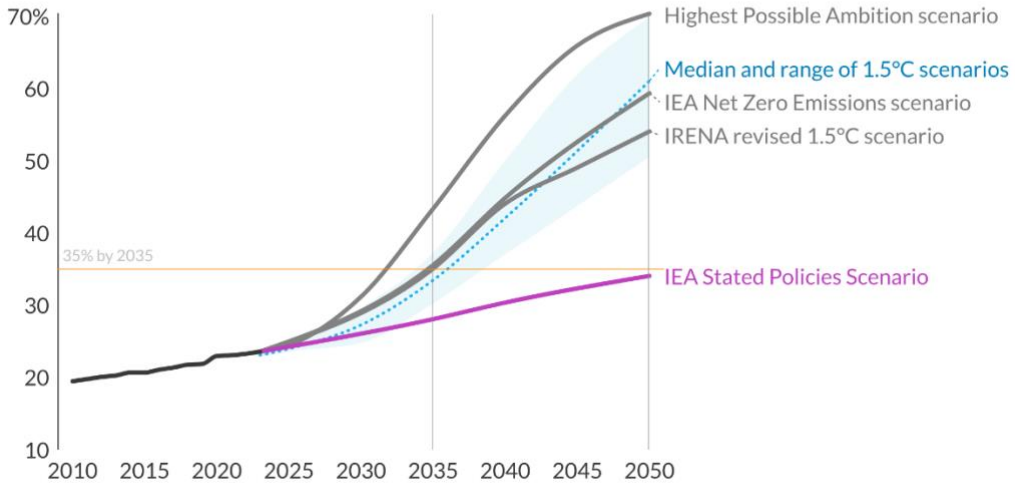
The electrification goal proposed by the COP31 presidency of 35% by 2035 is only fully consistent with pathways that limit the magnitude of overshoot if electrification

is powered by clean electricity.

- The 35 by 2035 target should be seen as a floor, not a ceiling. Higher electrification rates exist in some pathways, which can accelerate a fossil phase-out and reduce reliance on other options such as biomass.[1,2]
- Electrification will also need to increase beyond 2035, towards two-thirds of final energy by 2050. At the same time, the trajectory needed to align with the GST-1 target of tripling renewables falls short compared with what is required to limit overshoot and align with the Paris Agreement, so we need to plan to go further.[3]

Projected global electrification share

Projections to 2050 by analysed scenarios of future share of electricity in total final energy consumption.



Source: Climate Action Tracker (2026). Unpacking electrification for a 1.5°C-aligned world.

What are the risks if electrification is not clean?

The IEA clearly shows the risks if electrification is not clean: emissions will not fall fast enough to limit the magnitude and duration of overshoot. This would represent a missed opportunity to align with highest possible ambition in this critical decade.

- Electrification is already cutting emissions — even with today's electricity mix, in which fossil fuels still play a large role. This is because of the fundamental efficiency advantages of electrified end-use technologies, which is around 2-4x more efficient in general than fossil fuel alternatives.[4]
- The 35% electrification target would lead to electricity demand growing around 50% by 2035.[4] Unless this growth is met with renewable energy, it could lead to increased fossil fuel electricity generation. This would undermine the pathway to clean power, which is a key pillar of climate action.
- If we electrify in line with the IEA NZE without driving an accelerated renewables rollout, then this could lead to growing gas generation and coal generation plateauing or only gently declining.

- While global emissions would still fall under such a scenario (due to electrification displacing fossil fuels in the end-use sectors), this would add 57-69 $GtCO_2$ emissions from unabated fossil fuels in the power sector between 2024-2035 and 177-248 $GtCO_2e$ between 2036-2050.
- This would result in a total cumulative additional warming of 0.11-0.14°C between 2024 and 2050 compared to meeting the 35% target with clean electricity.
- This would significantly undermine our collective chances of limiting the magnitude and duration of overshoot, leading to peak warming higher than 1.7°C.

Electrification must, and can, grow with renewables

Electrification rates must grow together with renewables to avoid potential fossil lock-in.

- A 35% target that is not underpinned by accelerated renewables rollout can undermine the emissions reductions needed.
- The latest modelling shows that it is possible to cut fossil fuel generation while also expanding electricity demand for electrification – with renewables ready to power the electrified energy system of the future.[4,5]
- In the Highest Possible Ambition scenario (HPA-2025), which limits the magnitude and duration of overshoot and brings warming back well below 1.5 by 2100, we see:
    - 2035 power sector mix: 12% fossil, 5% nuclear, 83% renewables – Electrification rate: 41%
    - 2050 power sector mix: 0% fossil, 1% nuclear, 99% renewables – Electrification rate: 68%

- **The median across the 11 Very Low pathways developed for ScenarioMIP-CMIP7 shows a similar pattern.**
    - 2035 power sector mix: 15% fossil, 7% nuclear, 78% renewables – Electrification rate: 34%
      2050 power sector mix: 1% fossil, 3% nuclear, 96% renewables – Electrification rate: 61%

- **This is further confirmed by the IEA NZE 2025 scenario.**
    - 2035 power sector mix: 13% fossil, 10% nuclear, 76% renewables – Electrification rate: 35%
    - 2050: 1% fossil, 9% nuclear, 89% renewables – Electrification rate: 59%

- These scenarios show that we can expand electricity demand while still phasing out fossil fuels in the power sector. Across these scenarios, over 2024–2035:
    - Coal generation falls 65% / 78% / 75% across the HPA-2025 / median of Very Low scenarios / IEA NZE scenario.
    - Gas generation falls 64% / 53% / 59% across the same set of scenarios.

What does 35 by 35 mean for the Global South?

In the Global South, energy service demand and useful energy for services across all sectors increase with clean electrification.[4]

- Meeting energy service demands with fossil fuels incurs substantial energy losses – up to 80% in some instances– which does not occur with clean technologies.
- Some clean technologies, such as heat pumps, have an efficiency rate of above 100% because they transfer existing energy. On average, electrified technologies and renewables are 2-4 times more efficient than burning fossil fuels or traditional biomass.

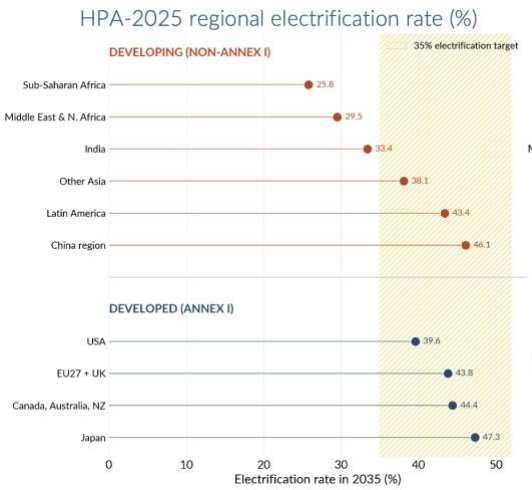
Expanding access to electricity can improve living standards by giving more households access to services such as refrigeration and clean cooking. Expanding electrification allows more people to benefit from electrified end-use technologies.

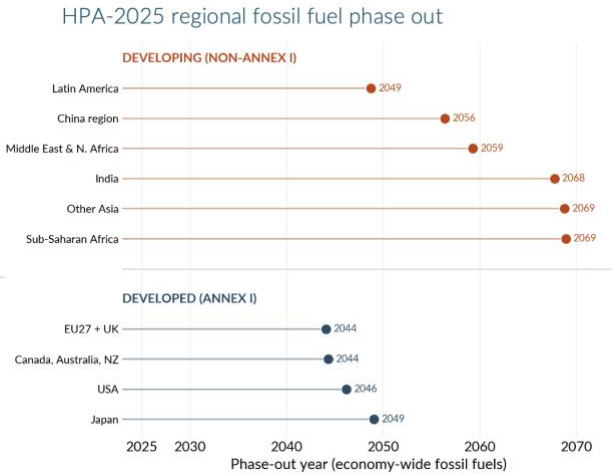
- Meeting global energy access for households under SDG 7 adds very little electricity demand. In a scenario which meets this goal by 2040, this requires only around 160 TWh in 2035, or 0.6% of today's global electricity demand.
- The efficiency gains of electrification mean that final energy demand can fall, while actual energy services delivered to the population grow. For example, in the IEA's energy ACCESS scenario, universal access to clean cooking is achieved around 2040, and the number of households cooking with electricity grows 50% over 2025-2035. But final energy demand falls ~50% over this time, due to the much higher efficiency of electric cooking compared to traditional biomass.
- Criticisms of electrification that are based on primary or final energy demand declining do not account for the efficiency advantage of electrified technologies.

35 by 35 is a global target. Not all regions will reach it at the same time.

- In one recent high electrification scenario, the HPA-2025, the electrification rate in sub-Saharan Africa rises from 10% in 2023 to 25% in 2035.[1] This helps provide access to modern, electrified energy services, but is below the global average. Meanwhile, major advanced economies such as EU 27 would reach above 40% in 2035 – above the global average.
- In this analysis, both Türkiye and Australia are able to move substantially above the global average in their journey towards a highly electrified world. Both reach economy-wide electrification rates of 54% by 2035, driven particularly by buildings (which reach 60-90% electrification by 2035), industry (50-60% electrified by 2035) and transport (20-30% of final energy electrified).
- The EU 27 would similarly move faster than the global average, reaching 43% of final energy from electricity by 2035 in the same analysis.

Regional electrification rate and fossil fuel phase out



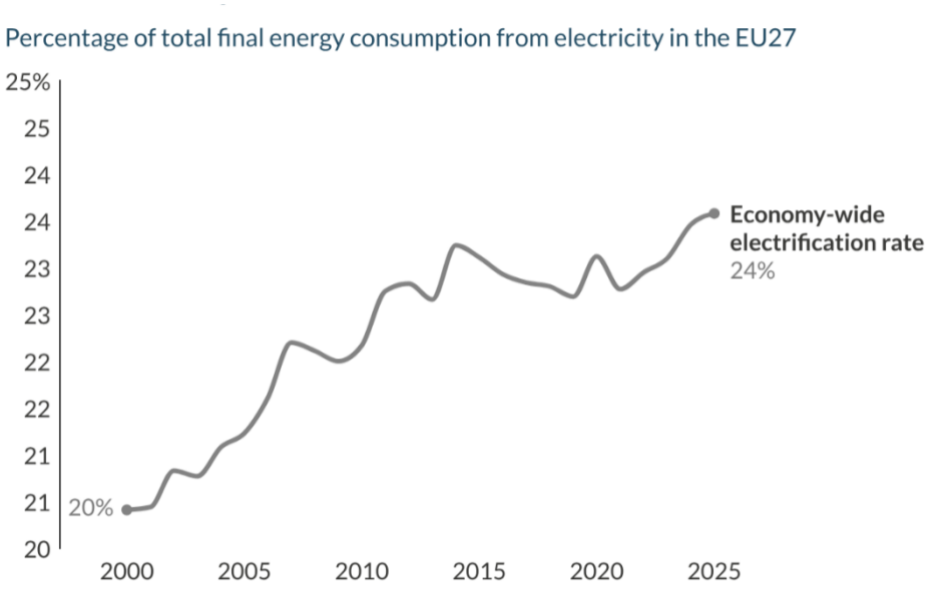


Where does electrification stand?

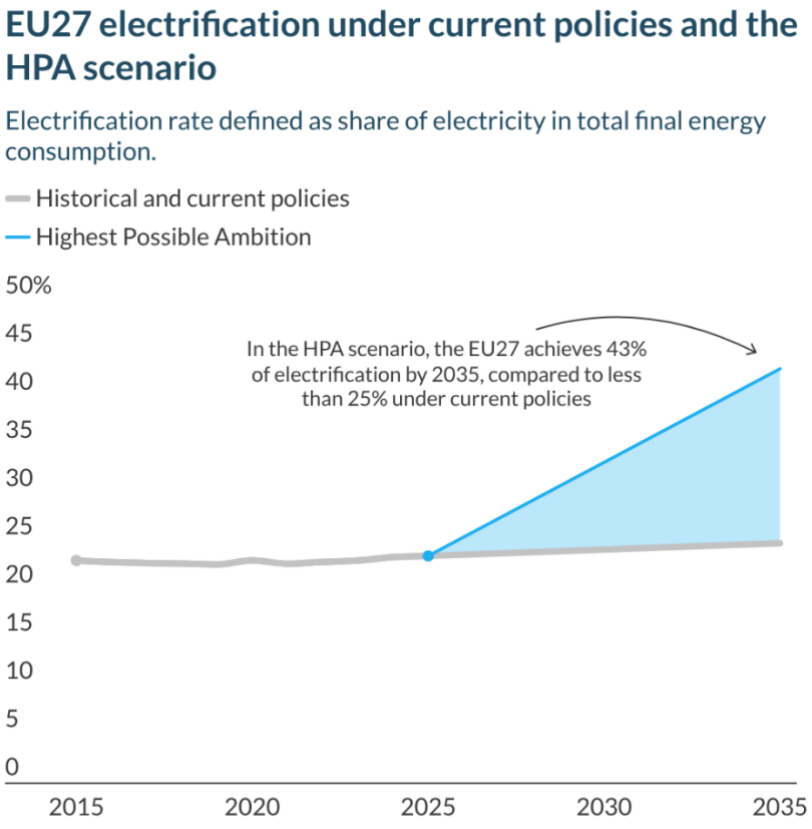
The global electrification rate was just above 22% in 2025, mostly due to increased electricity use in industry, homes and services, alongside growing demand from electric vehicles and data centres.

- The global electrification rate has increased by only 4.3% since 2010 – an average increase of 0.3% per year.[6]
- Achieving the proposed 35% electrification target by 2035 therefore requires a major step-change in government policymaking achieving a growth rate of approximately 1.4% annually, essentially more than quadrupling the current rate of progress to deliver the 2035 target.[3]
- For EU 27, the electrification rate stands roughly at 23.5%.[7]

EU 27 economy-wide electrification rate (% of Total Final Energy Consumption)



EU 27 economy-wide electrification: historic, current trajectory and required under the HPA-2025 scenario



Source: Climate Action Tracker (2026). Unpacking electrification for a 1.5°C-aligned world.

Why must electrification be clean?

Clean electrification will be an essential lever for limiting overshoot and returning temperatures well below 1.5°C by the end of the century. Any target must be clear that the expansion of electrification must be accompanied and powered by renewables.

- Expansion of electrification and a continuation of the switch from fossil-fuelled electricity generation to renewables are central to reducing fossil fuel demand.

- Renewable generation must expand alongside growing electricity demand while fossil generation and direct fossil fuel use must decline.
    - Renewable electrification can meet growing electricity demand without the need for new coal and fossil gas and can drive demand for coal and fossil gas down.
    - Direct electrification and renewables can deliver the same services with less primary energy than a fossil fuel energy system.
    - Energy efficiency is an essential part of the combination of actions needed to decarbonise the energy system.
    - Delivering this transition requires complementary action on grids, storage and flexibility, and a just transition.
    - Some countries will need to be electrifying faster and others slower than the global average for this to be successful in limiting warming close to 1.5°C and bringing warming below it by 2100.
    - In the HPA-2025 scenario, coal is effectively phased out in the 2040s, gas in the 2050s, and oil in the 2060s. Total global electrification must increase from around 24% in 2023 to 39% in 2035 and 70% by 2070.

For Europe, clean electrification is not only a climate obligation but also an economic security imperative.

- Fossil fuels supplied 69% of Europe's energy demand in 2024. 57% of this is imported.[8,9]
- This makes the EU highly dependent and vulnerable to global fuel shocks. Before the Russian invasion of Ukraine, the EU typically spent EUR 57-62 bn annually on fossil fuel energy subsidies. After the invasion these subsidies spiked in 2022 to EUR 136 bn, increasing the price of electricity and cost of living for Europeans.[10]
- With a new conflict starting in 2026, the US-Israel war on Iran has resulted in the EU paying EUR 27 bn more for fossil fuel imports, for the same volume of fuel it imports in just three months. A month later, that added cost rose to EUR 35 bn.[11]
- In total the EU spends EUR 396 bn annually on fossil fuel imports. In contrast, it only spends EUR 330 bn annually on renewables.[12]
- Solar power has saved the European Union EUR 20 bn in gas imports since the start of the war in the Middle East.[13]

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