



Wind and solar overtake coal in Chile

For the first time, wind and solar generated more of Chile's electricity than coal over a full 12-month period, from August 2021 to September 2022.

Published date: 25 October 2022

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Languages: English, Spanish

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About

The analysis reviews Chile's electricity generation data. All data is based on Ember's [annual](#) and [monthly](#) electricity data. Data for electricity generation is collected from Chile's [Coordinador Eléctrico Nacional](#).

The report was published in partnership with [Chile Sustentable](#) and [ACERA](#), la Asociación Chilena de Energías Renovables y Almacenamiento.

Highlights

27.5%

Share of Chile's electricity generated by **wind and solar** in last 12 months

26.5%

Share of Chile's electricity generated by **coal** in last 12 months

Executive Summary

Wind and solar overtake coal

For the first time, wind and solar generated more of Chile's electricity than coal over a full 12-month period.

01 Wind and solar overtake coal

Solar and wind generated 27.5% of Chile's electricity over the 12 months from October 2021 to September 2022, for the first time overtaking coal power (26.5%).

02 Wind and solar double since 2018

In just three years, Chile's solar and wind electricity generation doubled from 9 TWh (12%) in 2018 to 18 TWh (22%) in 2021.

03 Demand grows, but emissions do not

Since 2016, Chile's rise in electricity demand has been met entirely by wind and solar. Annual emissions dropped by 6% from 2016 to 2021, despite overall electricity demand rising 11% in the same period.

Analysis

Electricity Trends in Chile

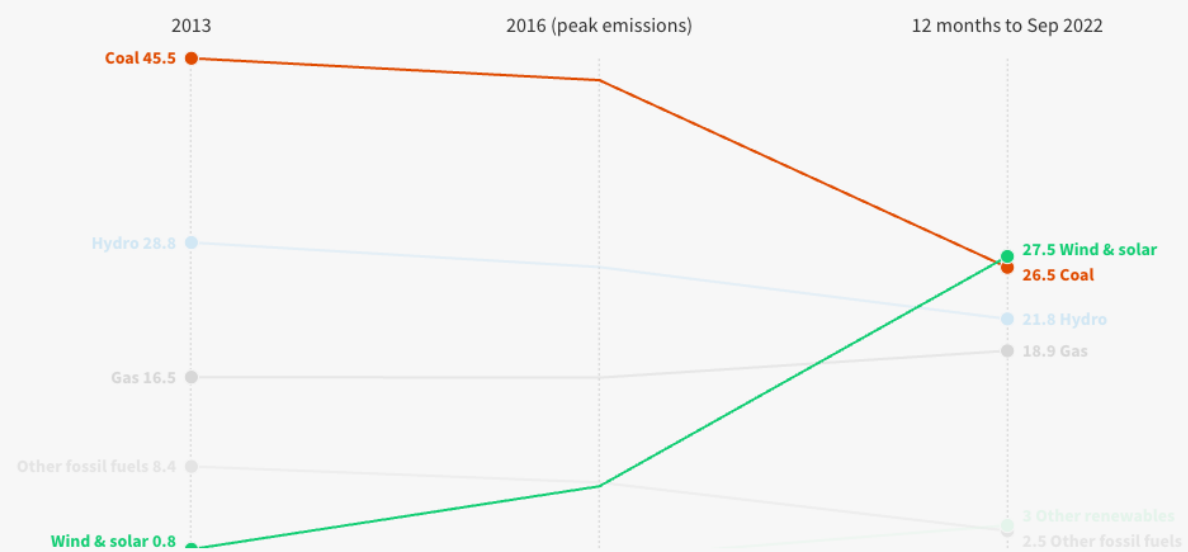
Chile's electricity transition has passed an important milestone, as wind and solar overtake coal for the first time over a full 12-month period. Since 2016, wind and solar have been replacing fossil fuels and bringing down Chile's power sector emissions.

Wind and solar overtake coal

Solar and wind generated 27.5% of Chile's electricity over the 12 months from October 2021 to September 2022. For the first time in history, this brings its contribution just above coal, which dropped to 26.5% after being the biggest generator of electricity for over a decade.

In Chile wind and solar now generate more power than coal for the first time on record

Share of electricity generation (%)



Source: Ember electricity data ember-climate.org/data, Coordinador Eléctrico Nacional

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In the 12 months from October 2021 to September 2022, wind and solar were the largest source of electricity in Chile (27.5%), followed by coal (26.5%), then hydro (21.8%) and gas (18.9%).

The increase in wind and solar generation meant that fossil fuels generated less than half of Chile's electricity in the last 12 months; which is the first time this has happened since 2007. Prior to that, Chile's electricity system was dominated by hydro and gas, before coal became the predominant fuel that was used to cover new electricity demand.

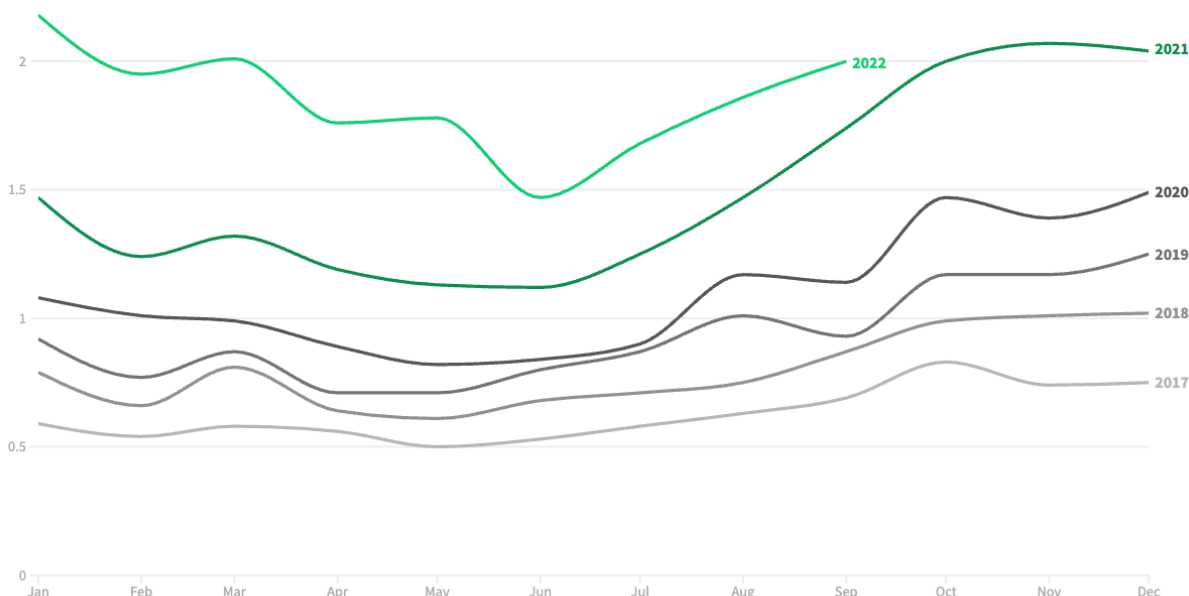
Wind and solar double since 2018

In just three years, Chile's annual solar and wind electricity generation doubled from 9 TWh (12%) in 2018 to 18 TWh (22%) in 2021.

Only six years ago, in 2016, just 6.6% of electricity was generated by wind and solar, while coal was responsible for a vast 43.6% of Chile's electricity.

Chile's wind and solar growth has accelerated in recent years

Monthly electricity generation, shown by year (terawatt hours)



Source: Ember electricity data ember-climate.org/data, Coordinador Eléctrico Nacional



The recent rise in wind and solar generation is set to continue for the foreseeable future. Just last year, Chile added 2.3 gigawatts of new wind and solar capacity with more projects coming online in 2022 and beyond.

Demand grows, but emissions do not

2016 represents a real turning point in fuel use for electricity generation in Chile.

In the decades prior, coal was predominantly used to meet demand growth. As electricity demand grew by 83% (+33 TWh) from 2000 to 2016, coal generation grew by 258% (+23 TWh). During that period, related annual emissions rose by 165%, the equivalent of 23 million tonnes of CO₂.

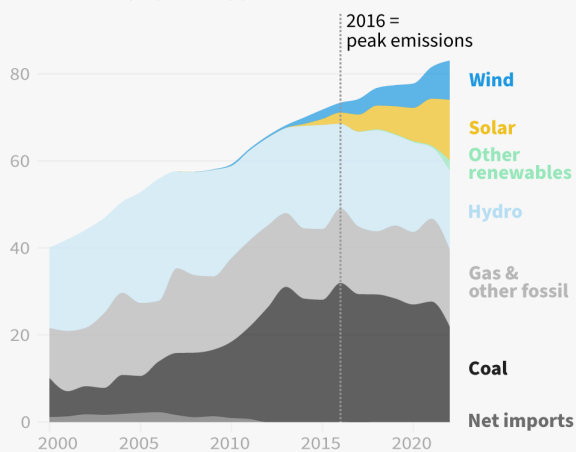
Since 2016, the rise in electricity demand has been met entirely by wind and solar. In fact, while demand rose by 8 TWh, from 2016 to 2021, wind and solar generation increased by 13 TWh, allowing emissions to peak in 2016.

Chile’s annual power sector emissions dropped by 6% from 2016 to 2021, despite overall electricity demand rising 11% in the same period. This trend is expected to continue this year with emissions falling as much as 17% in 2022, despite estimates that demand will rise 5% year-on-year.

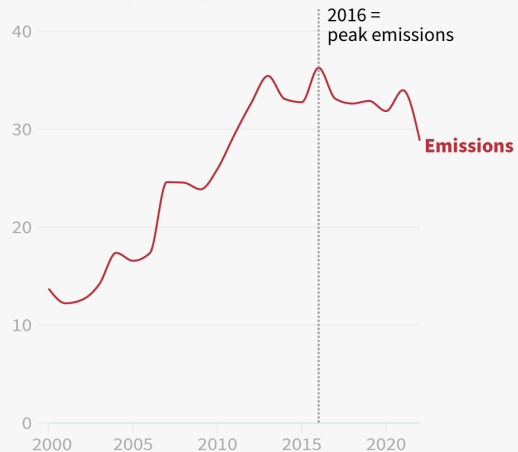
Wind and solar expansion allowed Chile to halt the rise in emissions from electricity generation, despite continued demand growth

Electricity generation and related emissions; 2022 figures represent the 12 months to September 2022

Generation, by fuel type (TWh)



Emissions (MtCO2)



Source: Ember electricity data: ember-climate.org/data/; Coordinador Eléctrico Nacional

Conclusion

Chile shows the world how to transition from coal to clean

Chile's rapid transition from coal power to wind and solar while growing its electricity demand provides inspiration for other emerging economies

Decoupling emissions and economic growth is the goal for emerging economies that want to continue to develop while also tackling the climate crisis. While many countries still rely on coal to meet expanding electricity demand, Chile has proven that wind and solar can do the job. In 2016, Chile peaked its use of fossil fuels in the power sector, and since then it has rapidly reduced its dependence on coal, despite electricity demand growing throughout that period.

Wind and solar are not only meeting Chile's growing demand; they are also starting to replace coal power, as momentum builds for Chile's coal phase-out. In mid-2019, the Chilean Government announced a plan to phase out coal generation by 2040. Ahead of COP26 in 2021, Chile co-led the launch of the [No New Coal Power Compact](#). Just last month, [Enel](#) became the first company in Chile to close all of its coal-powered plants, well ahead of its original plan for a 2040 closure.

Civil society groups have been campaigning for greater ambition, calling for the closure of Chile's coal plants by 2025 and their replacement with renewable capacity. The success so far in rapidly deploying wind and solar power means that Chile is well-positioned to do so. [Chile is targeting](#) 80% renewable electricity by 2030 and 100% zero emissions power grid by 2050.

However, as an OECD country, Chile should be targeting a coal phase-out by 2030 and then a zero-emissions grid by 2035, according to the International Energy Agency's [Net Zero by 2050 Roadmap](#).

Chile has made a running start to its electricity transition; it's now time to step up the pace.

Supporting Materials

Methodology

Data sources

All data is based on Ember's [annual](#) and [monthly](#) electricity data. Data for electricity generation is collected from [Coordinador Eléctrico Nacional](#). The full methodology can be found [here](#).

Latest data points for September 2022 represent the aggregated monthly electricity generation and share over the last 12 months to September 2022 (October 2021 - September 2022).

Estimates for end of year figures are calculated by Ember based on recent trends in electricity generation as well as monthly generation values for 2022 so far.

Acknowledgements

Collaborators

Thank you to Chile Sustentable and la Asociación Chilena de Energías Renovables y Almacenamiento for their contributions.

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Photo

IMF Photo/Tamara Merino

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