

EMBER

Impact Report 2022

Publication date
May 2023



Ember influences global energy policy

→ Changing the European debate on the gas crisis

→ Global progress on coal mine methane

→ Shaping Turkey's power sector transition

→ Making global electricity data free for all

→ Securing new commitments in the UK power sector

We are trusted by the world's media

7920

Media articles

53 billion

Potential reach

£485m

PR value



... and many more

A letter from Baroness Bryony Worthington



Welcome to Ember's 2022 Annual Report.

It's been another whirlwind year for the electricity transition, and Ember has been shaping policy and opening up data around the world.

Ember's long term aim is to accelerate the transition toward a zero-carbon power sector – in 2035 in the OECD and by 2040 in the rest of the world. We bring together a team of experts from around the world who understand the power grid, are passionate about evidence-led policy change, and are committed to tackling the climate crisis.

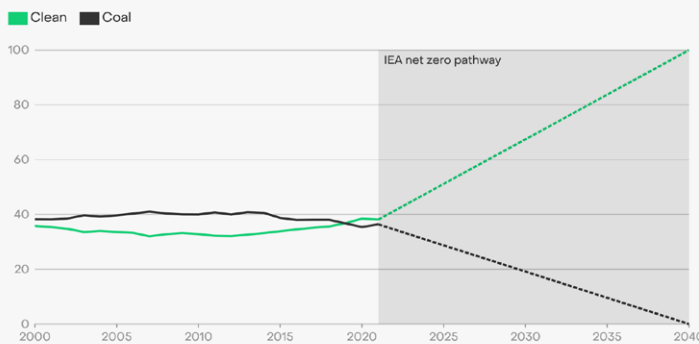
Our unique approach to making an impact on international electricity policy has repeatedly borne dividends – from shaping the global narrative; empowering campaigners; and directly changing policy.

Our impact in 2022 has exceeded our most ambitious expectations, influencing energy policy around the world from Turkey to the UK, and shaping the conversation as our insights regularly appear in top-tier media. We're excited to share some highlights here...



Our Mission + Theory of Change

The transition from coal to clean
Share of global electricity generation (%)



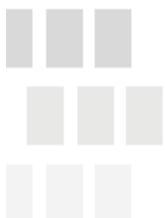
→ Ember is an energy think tank that uses data-driven insights to shift the world from coal to clean electricity.

→ We turn data into action

Data

We gather, curate and analyse data on the global power sector and its impact on the climate.

Gather



Curate



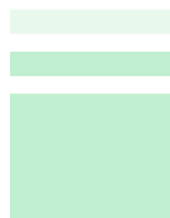
Analyse



Action

We use our data-driven insights to shift the conversation towards high impact policies and empower other advocates to do the same.

Change policy



Shift narratives



Empower campaigns



Growing team. Growing impact.

35

People

Meet the team →

35%

Increase 2022-23

7

Teams

11

Countries

53%

Female +
Non-binary

“

Ember is growing quickly, and I am so excited about the opportunity to help scale its efforts.

“Ember is an organisation that values diversity and forges collaboration across people with different backgrounds and expertise. The small team environment helps build meaningful and supportive relationships, contributing to achieving excellent outcomes in my work on China and Southeast Asia. Ember is growing quickly, and I am so excited about the opportunity to help scale its efforts while retaining the collaborative and supportive team spirit that has powered the organisation”

- Dr. Muyi Yang



Meet the team →

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“I can’t stress enough how great everyone at Ember is and how the people here make it such a great place to be”

Ember staff member
response to Annual survey



“

“The culture is great – proud to call such people my colleagues.”

Ember staff member
response to Annual survey

“

“We’re focused on impact and reflective about what’s working and what new things we can try. People are smart, motivated, and willing to help out...”

Ember staff member
response to Annual survey

Ember's Global Presence:

We provide the only open dataset of monthly global electricity generation data, supporting other campaigners, policymakers and the media – and advocate for more data transparency in regions including Africa and Asia. Ember is now a key force in tracking the global electricity transition and creating the policy that shapes it.

Key research included:

- Africa Electricity Data Transparency provides a reference guide of national sources of electricity data for every UN-member African country (Jan 2022)
- Global Electricity Review shows wind and solar reach a record 10% of global electricity in 2021 (March 2022)
- Per Capita Coal Power Emissions, finds that Australia had the highest coal power emissions per capita among the world's major economies in 2021 (May 2022)
- Global Electricity Mid-Year Insights shows Global electricity demand growth was met entirely by renewable power in the first half of 2022 (Oct 2022)
- Wind and solar overtake coal in Chile: For the first time, wind and solar generated more of Chile's electricity than coal (Oct 2022)



Europe →



Ember focussed on shaping the narrative on the European electricity transition towards a clean power sector by 2035, supporting other campaigners in our role as a centre of expertise on electricity data analysis and communications.

Key research included:

- Fossil gas drives quadrupling of UK electricity prices
- European Electricity Review reveals a paradigm shift as new wind and solar replace gas instead of coal
- Turkey Electricity Review finds coal generation fell for third consecutive year, but Turkey's electricity is still dirty
- Change is in the wind shows Poland's restrictive laws block it from deploying half the onshore wind necessary for Europe's 2030 goals
- The EU's €250 billion gas gamble reveals that high gas prices could cost Europe €250 billion more than the European Commission estimated (May 2022)
- New Generation: Building a clean European electricity system by 2035 explores the least-cost pathways compatible with 1.5C (June 2022)
- Shocked into Action shows that answering multiple threats to security, European countries are accelerating the shift from fossil fuels towards renewables. (June 2022).

Asia →

We continued to use our global expertise to seek out the potential tipping points for rapid global power sector decarbonisation – and then shift the debates at the appropriate geographical level to focus on these interventions.

Key research included:

- Coal power transition in China identifies four entry points for policy interventions to steer the transition of coal power to a supportive role (May 2022)
- India's Race to 175 GW shows 27 states need to step up to meet India's renewables target (April 2022)
- South Korea's lack of wind and solar hinders exporters (April 2022)
- Unleashing solar and wind in ASEAN (July 2022)
- The sunny side of Asia shows solar generation helped avoid at least US\$34 billion in seven Asian countries in the first half of 2022. (Nov 2022)



Changing the European debate on the gas crisis

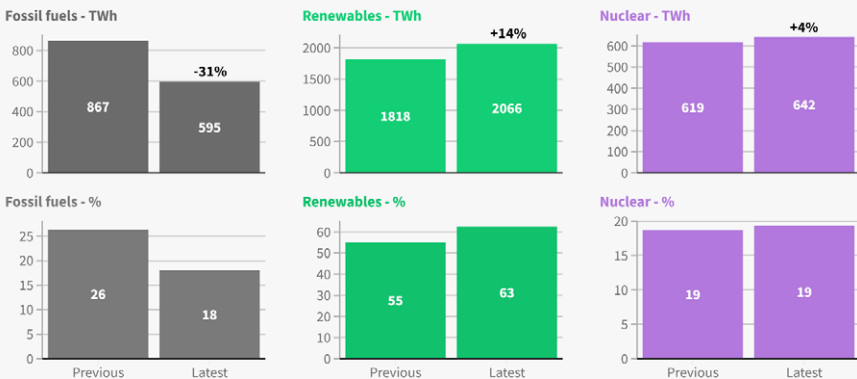
A series of reports and insights from Ember have helped shape opinions and inform policy debates relating to the gas crisis:

- We showed that the projected gas demand for 2030 could cost €250 billion more than the European Commission originally estimated.
- Ember analysis revealed that coal is not making a comeback, as plans in Europe to place a small number of coal plans on temporary standby would have a limited impact on emissions and climate commitments.
- This was followed by analysis showing that the EU’s record growth in wind and solar avoids €11bn in gas costs: A study by E3G and Ember finds that wind and solar produced a quarter of EU electricity since Russia’s invasion of Ukraine.

Governments are replacing fossil fuels with renewables



EU-27 electricity generation in 2030 (TWh and % share)



Source: Analysis by CREA and Ember • Previous = National Energy and Climate Plans (NECPs) from 2019; Latest = national policy announcements as of May 2022; Reference point is generation data for 2021 data from Ember’s European Electricity Review 2022.



In addition to extensive media coverage, Ember analysts discussed findings directly with European Commission representatives, and several NGOs used the findings to influence energy ministries.

[Read more →](#)

Global progress on coal mine methane

Ember has achieved significant success in creating change leading to countries taking action on Coal Mine Methane (CMM).

Despite having a huge impact on our climate, not enough is being done about CMM emissions globally. Ember shone a light on the issue of CMM in our target countries and built the capacity with NGO partners to campaign and lobby on CMM to ensure that governments and companies understand the pathways to reduce these emissions.

Our work influenced the EC proposal on methane emissions reduction in the energy sector and was instrumental in Australia signing up to the Global Methane Pledge.

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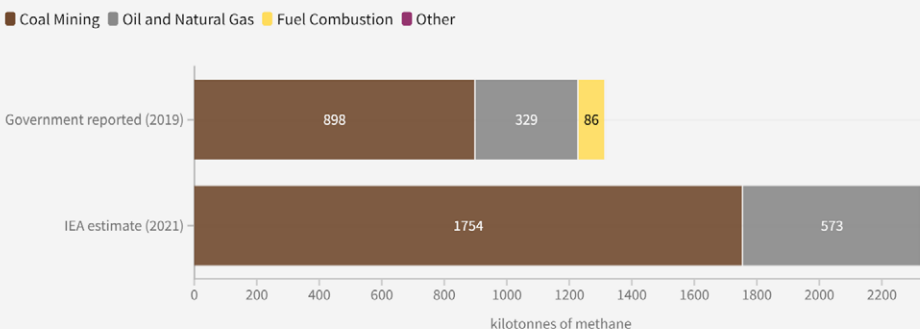
Ember has been a fantastic partner to a diverse Australian movement beginning to seriously grapple with methane emissions from fossil fuels. Over the last year, Ember has been a generous collaborator, supporting the sector to understand the issue and begin to develop policy, communications, finance, and shareholder strategies on fugitive methane emissions.

Ember is very effective in publishing their own reports and gaining influential media coverage in Australia and globally, which a broad range of organisations are beginning to use in their own advocacy. Australian organisations are keen to continue and grow this collaboration with Ember to win strong policy outcomes and reduction in methane emissions.”

Holly Creenaune
The Sunrise Project, Program Director

Coal mining is the largest contributor to Australia's energy sector methane emissions

IEA estimates CMM emissions are two times higher than officially reported.



Australia Greenhouse Emissions Information System, International Energy Agency (2022), Methane Tracker Database, IEA.



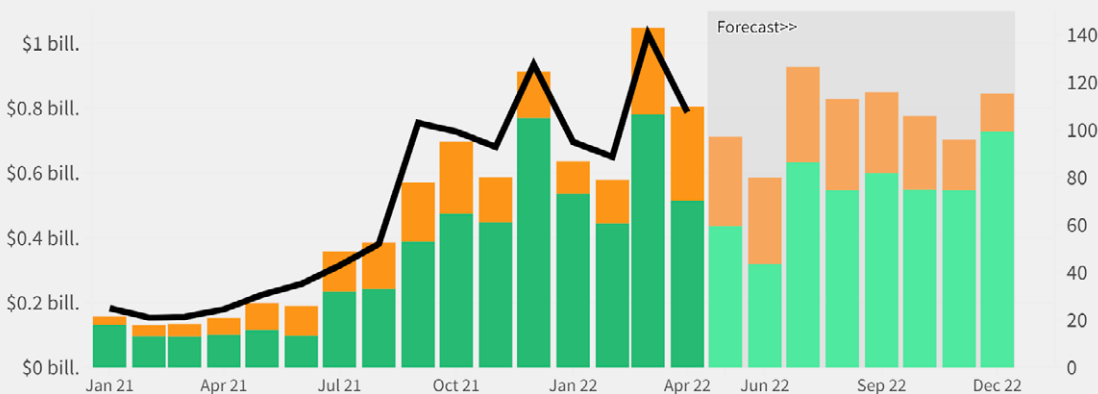
Read more →

Shaping Turkey's power sector transition

In Turkey wind and solar saved 7 billion US dollars in the last 12 months **EMBER**

Gas import savings thanks to wind & solar power generation

■ Spot LNG Price, USD/MWh (right axis)



Sources: EPIAŞ, TEİAŞ, Montel TTF continuous day ahead prices and Ember calculations

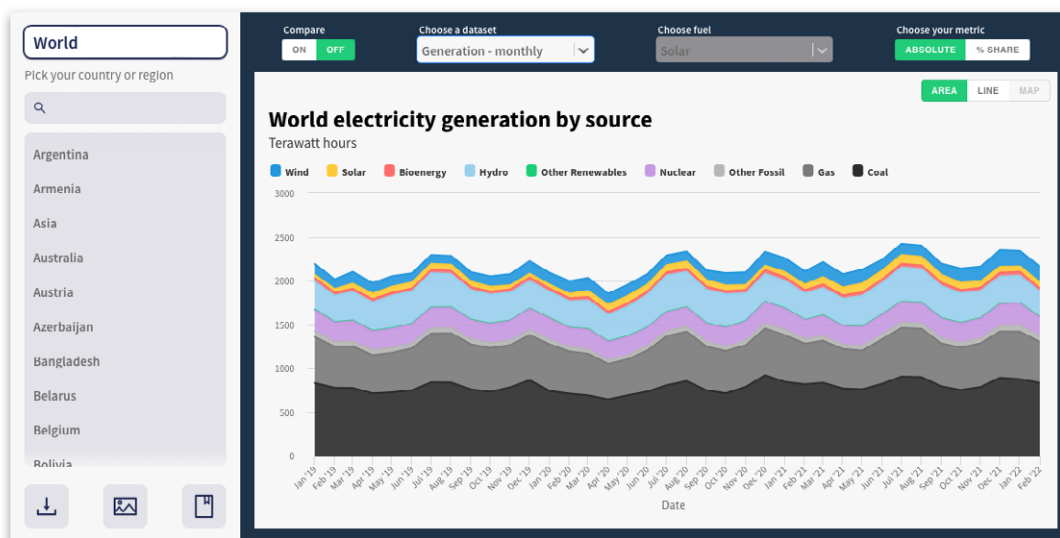
[Read more →](#)

Ember showed that wind and solar have saved Turkey billions of dollars on fossil fuel imports, but they could do more with the right policy: Accelerating wind and solar power in an effort to lower electricity bills will require a significant expansion in auctions and reserved capacities for wind and solar, and removal of the obstacles against the free market disrupting new investments.

As well as significant media attention, several government officials endorsed the Ember story.

Making global electricity data free for all

Open and reliable electricity data is key to tracking and shaping the electricity transition and Ember now hosts the “go-to” website for up-to-date, open source, global electricity generation and capacity data.



Our Global Data Explorer is the first example of an open country-level up-to-date electricity and emissions explorer.

Read more →

- It is a continually updated dashboard for easy download of monthly generation and capacity data for any country in the world, alongside added data viz such as race charts for regional comparisons.
- It provides downloads for chart data, and exports of images, allowing users to easily share our data with others.

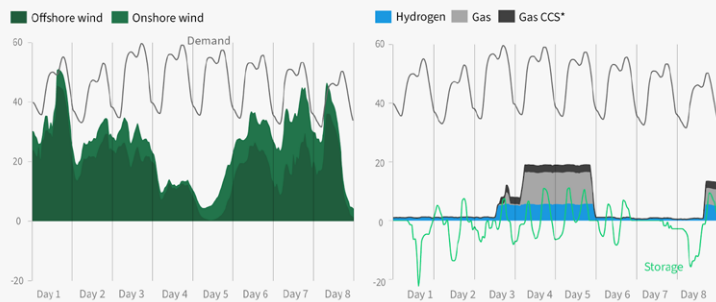
Securing new commitments in the UK power sector

With a short turnaround (just 2 months), Ember developed a new model of the UK power sector. Our research ensured a 2030 target was credible – and the team at Ember provided balanced, evidence-based answers to Labour (opposition party) queries.

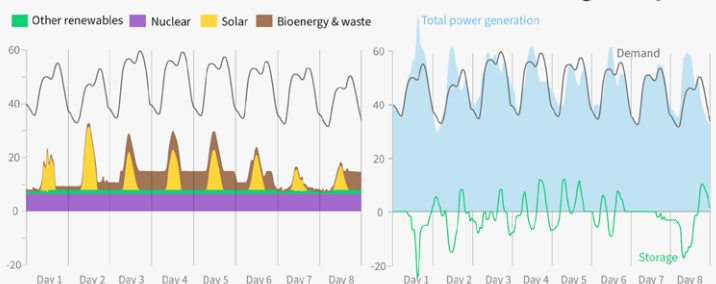
A clean energy sprint to 2030 will not only cut energy bills, as Ember’s analysis shows, but will also have an international impact in accelerating the global power sector transition.

When the wind drops, peak generators and storage fill the supply gap...

Electricity generation by fuel type, and electricity demand in 2030 (gigawatts)



... while other clean sources remain constant to ensure the lights stay on



Source: Ember
See report for full modelling assumptions, input data and source code *Carbon capture and storage



“

“Ember has established itself as a place for reliable, in depth analysis of energy and climate issues. Their work on creating a zero-carbon power system was rigorous, thorough and insightful. It had an invaluable impact on Labour’s thinking and our plans for a clean power system by 2030.”

Ed Miliband MP
Shadow Secretary of State
for Climate Change, UK

Read more →



With thanks to our funders →



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