

TERMS OF REFERENCE FOR RESEARCH

Clean flexibility report: Replacing fossil gas with clean flexibility to build a fairer, secure energy future

Deadline for submissions: 22.06.2025.

Terms of Reference

Beyond Fossil Fuels (BFF) is an alliance of passionate civil society groups committed to transforming the European energy sector. We strive for a just transition to a fossil-free, fully renewables-based energy system that protects people, nature, and our planet. As an independent campaign, we are driven by a fierce dedication to ending our reliance on coal by 2030 and fossil gas by 2035 with a focus on the power sector. This campaign is supported by a secretariat, consisting of 30 people, spread across Europe.

Context

There is a need to rapidly decarbonise European power systems. This requires the rapid scaling of clean flexibility solutions, alongside the continued build-out of renewable energy projects and grid infrastructure. However, at present, many European governments and utilities are expanding their plans to support new and existing gas plants. This is largely due to a prevailing view that gas is necessary to run an energy system securely and flexibly, alongside intermittent renewable energy sources.

Purpose of the research

In order to underpin the work of Beyond Fossil Fuels and our campaign partners, we are looking to commission a technical report which sets out key arguments, evidence and case studies that can build knowledge and confidence that clean flexibility can, and should, replace the role of gas.

This research will help create a strong, positive narrative about clean flexibility, which campaigners can use to help build political support and enable policy solutions.

Subject of the research

- Overview of clean flexibility, based on a literature review, clearly explaining the different forms of intermittency and corresponding clean flexibility

solutions; as well as the technology trends projecting their development and market growth.

- Provide a synthesis of existing modelling and analysis from European countries that demonstrates the feasibility of running energy systems without fossil fuels, or only used occasionally for back up.
- Bring together statistics and case studies to demonstrate the benefits associated with using clean flexibility over fossil flexibility – with a focus on highlighting the benefits for local communities.

Deliverables:

- 1) Report - envisioned around 60 pages, with graphs and charts, with basic layout design
- 2) Webinar - following the finalisation of the report, the author will host a webinar for members of the Beyond Fossil Fuels coalition.

The report should cover the following areas:

1. **Explanation of different forms of intermittency:** This should address the different situations where flexibility is needed.
 - a. Short-term intraday
 - b. Medium-term (1-2 days)
 - c. Long-term:
 - i. Where possible, include illustrations of what this would look like in key locations in central and eastern Europe
2. **Technology overview and forecast:** Explain the different clean flexibility technologies, what they can contribute and how fast they are developing – including demand side response, batteries, interconnectors and long duration energy storage.
 - a. This should provide an overview of the different solutions and technologies included in each of these (i.e. industry vs domestic demand response, different forms of long-duration storage). It should also include an accessible, jargon-free high level summary of each technology at the beginning.
 - b. It should provide an overview of the market growth and trajectories for falling costs associated with these technologies – identifying statistics which point to their rapid market growth
 - c. Where possible, this should include key locations/ countries where these technologies could be deployed to ensure local benefits (i.e. countries with high solar penetration but need more batteries to reap the benefits, like Cyprus and Hungary).

- d. It should provide a short overview of any additional 'enablers' which are also needed to underpin rapid growth (i.e smart electrification in order to enable widespread demand response).
3. **Proving the pathway forward:** Provide a synthesis of modelling and examples from different European countries that demonstrates the feasibility of running energy systems without fossil fuels, or only used occasionally for back-up. We note that there are shortcomings in a lot of energy models in underestimating the potential take-off of clean flexibility, as they tend to draw upon and extrapolate on trends from the past. Nonetheless, we are aware of examples that are available from academic sources, TSOs, official bodies (i.e. NESO in the UK), as well as reports from think tanks and industry bodies.
 - a. Identify and provide an overview of modelling from a range of countries, ideally including northern, southern, central, eastern and western European countries.
 - b. Include examples of countries whose TSOs run the electricity system securely for days, weeks and months with little to no fossil fuels (this can also draw on examples from outside of Europe).
 - c. Highlight how clean flexibility can help handle peak demand, low generation (a.k.a. Dunkelflaute) and power outages similar to what happened recently in the Iberian peninsula – drawing upon examples (i.e. households that used EV batteries).
4. **Showcasing the benefits:** Pull together statistics and examples to demonstrate the benefits associated with using clean flexibility over fossil flexibility. This should include case studies of community benefits associated with flexibility solutions – for example, social housing projects using batteries/ demand flexibility to lower costs for residents.
 - a. Provide around 6 case studies from a range of countries, ideally at a national and local level, demonstrating the feasibility and benefits - including how local actors can contribute .
 - b. Cost savings via reduced curtailment of renewables (identify current costs associated with curtailment and how increased clean flexibility reduces these). Consider regional differences and how this might vary in different parts of Europe. Demonstrate that in markets (zones) with high amounts of non-gas flexibility (batteries, DSR, hydro, interconnections) spot market prices are lower than those where gas is predominantly setting the price.
 - c. Lower exposure to fossil fuel price volatility
 - d. Reduced energy bills for households and businesses via flexibility services – drawing on existing case studies
 - e. Increased energy security and reduced use of Russian gas
5. **Recommendations:** Based on the literature review, identify 10-15 key recommendations which will help get to clean flexibility at scale. This

should consider different levels of decision-making, including local municipalities, national regulators, TSOs and others.

Geographical scope:

EU, UK and Turkey – ensuring a sufficient focus on CEE countries

We can draw on non-European examples where they are particularly impactful and transferable.

Timeline

- Proposals will be accepted until 22th June.
- We will inform successful candidates around the beginning of July
- It is envisaged that the report will take 2-3 months to complete, with a desired delivery date in October.

Modalities

Please submit proposals, including a quote, to Juliet Phillips (juliet.phillips@bff.earth) with the address of Beyond Fossil Fuels e.V., Gartenstraße 110 10115 Berlin, Germany