Clever
A Collaborative Low Energy Vision for the European Region

A pathway to bridge the climate neutrality, energy security and sustainability gap through energy sufficiency, efficiency, and renewables

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Low energy towards climate neutrality: a new pathway for Europe

CLEVER (a Collaborative Low Energy Vision for the European Region) is an energy transition scenario that proposes an ambitious and realistic decarbonisation pathway for Europe to bridge the climate neutrality, energy security and sustainability gaps through energy sufficiency, efficiency and renewables. The scenario is a bottom-up aggregation of national scenarios and evaluates the potential of energy demand reduction (sufficiency and efficiency), together with a 100% renewable mix, with the aim to reach net greenhouse gas neutrality at the European level by 2050 at the very latest, following the principles of a just transition and European-wide solidarity. CLEVER also addresses environmental issues in terms of resource depletion, air pollution and impact on biodiversity, as well as societal ones related to energy poverty and the acceptability of the transition.

After 4 years of technical dialogue and modelling by the 26 national partners of the CLEVER network, the final scenario report is published today in Brussels.

The current energy crisis, linked to the war in Ukraine, has shown the importance of energy savings to ensure Europe's security of supply. At the same time, the climate emergency requires reducing emissions at an unprecedented rate to stay below 1.5°C and reach climate neutrality.

The finalisation of the Fit for 55 legislative package and its implementation at the national level with the revision of the National Energy and Climate Plans, as well as the mounting debates on the reform of the electricity market, the Green New Industrial Deal and 2040 objectives all highlight the need for a consistent and integrated trajectory towards 2050. The latter should both detail the European direction and its concrete implementation in the Member States, considering national circumstances from social aspects and acceptability to political feasibility.

The CLEVER trajectory seeks to provide a response to these different challenges. This new scenario has been developed bottom-up, under the leadership of the négaWatt association, with 26 partner organisations (think-tanks, research institutes, technical universities, NGOs, etc.) from 21 European countries (18 EU members + UK, Norway and Switzerland), with the aim to aggregate national energy transition pathways into a European vision. Thus, it fully takes into consideration national circumstances and follows the principle of fair effort sharing between Member States.

Sufficiency-Efficiency-Renewables (SER): a decisive framework for climate neutrality in Europe

CLEVER is based on the Sufficiency-Efficiency-Renewables (SER) framework. It focuses on the demand-side by scaling energy needs to what is considered essential to provide a decent level of services to all (sufficiency). Sufficiency is combined with a reduction in energy intensity through technological improvement (efficiency). Finally, the remaining energy demand is supplied with renewable energies through a complex allocation of energy carriers such as electricity, gas or hydrogen to uses, taking all sustainability issues into account, including material consumption.

This approach contrasts with the more traditional ones adopted by most scenarios, which prioritise energy supply decarbonisation, then complement it with efficiency, with sufficiency measures sometimes as a last resort. The

SER framework is based on options which are available now at low cost and with high public acceptance, contrasting with decarbonisation options such as nuclear or CCS which cannot deliver early enough and carry significant risks.

Main CLEVER lessons: a smooth, equitable and ambitious transition is possible

The scenario includes results at the EU, EU30 (EU+ UK, Norway and Switzerland) and national level for the 30 countries covered.

Overall, the CLEVER modelling shows that, **through the SER framework:**

- ▸ **By 2045, Europe can reach climate neutrality, with -90% net (compared to 1990 at EU level) as a core 2040 milestone on the way,** including a -85% gross reduction to minimise risks around carbon sinks; by 2030 CLEVER achieves -65% (higher than the EU's -55% climate law);
- ▸ **By 2050, Europe's energy demand can be reduced by -55% compared to 2019 levels, with sufficiency as a core enabler with -20-30% in FR-DE-UK;** by 2030, the reduction in final energy consumption could reach -18% at EU level, higher than the -11,7% of the Energy Efficiency Directive compared to REF2020 scenario;
- ▸ **By 2050, Europe can be fully independent from all forms of energy imports,** including hydrogen/ Power to X;
- ▸ **By 2050, Europe can be 100% renewable and do without CCS and new nuclear,** on the basis of the existing 2030 42.5% renewable energy target, including REPowerEU deployment targets for wind, solar and biogas (and ¼ lower hydrogen deployment); 80% RES and **100% renewable electricity can be reached by 2040** with electrification being kept at a sustainable level, minimising infrastructure development and pressure on material resources and maximising acceptance;
- ▸ **Equity between and within countries and European solidarity are core enablers, allowing to smoothen the transition.**

These milestones are not only feasible, but they appear necessary for Europe to truly set itself on a safe 1.5°C compatible pathway, while at the same time meeting strong sustainability and fairness objectives. Conversely, Europe's 2030 objectives and policy priorities, focusing more strongly on supply- rather than demand-side, may fall short of reaching these objectives.

CLEVER partners have developed policy recommendations, particularly around 2030 implementation, 2040 targets and the role of sufficiency as well as concrete measures in the various chapters of the CLEVER final report and its executive summary.

The objective is now to bring these results into the EU policy debate and to submit them for discussion with EU energy and climate stakeholders, with the 2024 European elections in mind. National presentations are also envisaged by the partners network.

Contacts

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