Istituto Affari Internazionali

ISSN 2532-6570

IAI COMMENTARIES 23 | 52 - OCTOBER 2023

Diversification, Efficiency, Research, Sustainable Sourcing: How to Reconcile Energy Security and Decarbonisation in the EU

by Emanuele Esposito

Since February 2022, following the escalation of the Russo-Ukrainian war, the European Union has been facing the challenge of achieving energy security without thwarting the efforts to fight climate change and to advance the energy transition. In other words, the EU needs a strategy that can grant energy supply to its citizens while reaching the goals of the European Green Deal. To build such a strategy, it could follow four pathways: diversification of energy supplies (both in terms of geographical origin and energy sources); improvement of energy efficiency; reinforcement of research and development programmes; and sustainable sourcing of critical minerals.

Diversifying energy supplies and sources

With regard to energy supplies, with the project REPowerEU,[1] the EU has already reached important results as concerns overcoming dependence on Russian gas. To this end, the EU invested in liquefied natural gas (LNG) imports and strengthened relationships with third countries regarding pipeline supply; as a result, imports of Russian gas shrank from 41 per cent in August 2021 to 8 per cent in September 2022. Furthermore, to guarantee the supply of gas for all member states, the EU implemented a temporary market correction mechanism, which helped strengthen the cohesion of member states. Finally, the EU decided to increase gas reserves with the goal of reaching at least an 80 per cent filling level of storage infrastructures by winter 2023. The target was met in July 2022, and all expectations were exceeded when a 96 per cent filling level was reached in November of the same year.[2]

[1] European Commission website: *REPowerEU: Affordable, Secure and Sustainable Energy for Europe*, https://commission.europa.eu/node/5661_en.

[2] Council of the European Union, *Infographic - How Much Gas Have the EU Countries Stored?*,

Emanuele Esposito is a Global Security Policies student at Roma Tre University.
This is a winning article (2nd place) submitted to the 2023 edition of the IAI Prize contest.

ISSN 2532-6570

In terms of diversifying energy sources, instead, the EU still has a lot of work to do. Following the escalation of the Russo-Ukrainian war, due to the ensuing energy crisis, member states were tempted to turn their attention back to fossil fuels. Such a solution, however, threatened to jeopardise the achievement of Green Deal objectives. Increasing renewable energy generation would provide a sustainable long-term option. To do this, the EU should boost funding for photovoltaic and wind power installations, without neglecting adequate land use planning, as an excessive exploitation of land could lead to hydrogeological instability. However, since renewable energy sources are unlikely to cover the entire EU demand, at least in the short to medium term, a complementary investment in natural gas and related infrastructure will still be needed. As a matter of fact, investing in natural gas is what EU member states, including Italy, are doing.[3]

Increasing energy efficiency

A strategy to strengthen energy efficiency is fundamental to a transition that is coupled with energy security. The EU took a first step in this direction during summer 2022, when it urged member states to voluntarily reduce gas consumption by 15 per cent.[4] Nevertheless, behavioural change in citizens' energy consumption is not the only possible way to improve energy efficiency. Another direction is the improvement of technologies to reduce consumption in conversion processes and inside electric power plants. In fact, the percentage ratio between final energy consumption and total energy consumption was barely at 66 per cent in the EU in 2020; true, some member states, including Italy, were performing better (73 per cent),[5] but still with substantial room for improvement.

Strengthening research and development

Improving energy efficiency goes hand in hand with the need to strengthen research and development programmes. Indeed, the latter can help improve efficiency in energy intensive-sectors such as heat and electricity generation, transportation, and manufacturing and construction, which caused about 61.5 per cent of global greenhouse gas emissions in 2019.[6]

Regarding consumption linked to buildings, research and development programmes could be focused on the

last updated on 3 August 2023, https://europa.eu/!GKpHPh.

[3] Fraunhofer Institute for Solar Energy Systems, "Net Installed Electricity Generation Capacity in Italy in 2022", in *Energy Charts*, last updated on 26 September 2023, https://energy-charts.info/charts/installed_power/chart.htm?l=en&c=IT&chartColumnSorting=default.

[4] Council of the European Union, *Member States Commit to Reducing Gas Demand by 15% Next Winter*, 26 July 2022, https://europa.eu/!mC8KCt.

[5] Antonio Caputo and Giulia Iorio, "Rapporto tra i consumi finali di energia e i consumi totali di energia", in Italian Institute for Environmental Protection and Research (ISPRA), *Ambiente in Italia: uno sguardo d'insieme. Annuario dei dati ambientali 2022*, Rome, ISPRA, 2023, p. 51, https://indicatoriambientali.isprambiente.it/sys_ind/1186.

[6] Mengpin Ge, Johannes Friedrich and Leandro Vigna, "4 Charts Explain Greenhouse Gas Emissions by Countries and Sectors", in *WRI Insights*, 6 February 2020 (updated in June 2022), https://www.wri.org/node/66088.

possibility of reducing costs for the construction of green buildings and the renovation of energy-intensive buildings. In parallel, projects could be developed to counter the urban heat island effect, which is a phenomenon that makes urban areas record higher temperatures than their surrounding areas due to the presence of buildings and paved roads which absorb the heat. This not only increases heat-related illnesses, but also pushes people to use air conditioners, in turn increasing energy consumption and thus contributing to extreme heat phenomena.[7]

Another sector which would benefit from research and development programmes is the transport sector, the one in which the least progress has been made due to excessive reliance on oil-based technologies. As a matter of fact, road transport, which mostly relies on petrol and diesel, is the most polluting sector in transport, causing 12.6 per cent of global CO_2 emissions in 2019.[8] The EU should push its citizens to overcome reliance on cars as the main means of transport, promoting research programmes which are oriented toward the improvement of technologies related to electric vehicles and programmes that aim at improving public transport and "soft mobility" in urban areas.

Finally, regarding energy consumption by industries, research programmes should focus on waste heat recovery projects, which can make it possible to recover heat that is wasted by industries during the production process. For example, looking at Italy, the estimate of the waste heat available is approximately 26 TWh/year, so recovering this heat would make it possible to increase efficiency in industrial activities. However, waste heat recovery technologies are still too expensive, thus research programmes could focus on developing new technologies to reduce these costs.[9] Another option to reduce the environmental impact of industries would be to revise the Emissions Trading System (ETS) by lowering the number of emission allowances which are granted to industries by it.

Sourcing critical minerals in a sustainable way

A major challenge for the EU regards the supply of critical minerals such as cobalt and rare earths, which are necessary to transition to renewable energy sources. The fact that the EU imports 100 per cent of its supply of heavy rare earths from China causes a strong dependence.[10] Therefore, Brussels should aim at establishing

[7] Climate Central, "Hot Zones: Urban Heat Islands", in *Climate Central Research Briefs*, 14 July 2021, https://www.climatecentral.org/climate-matters/urban-heat-islands.

[8] Mengpin Ge, Johannes Friedrich and Leandro Vigna, "4 Charts Explain", cit.

[9] Miriam Benedetti, Lorena Giordano and Alessandra Gugliandolo, "Soluzioni per il recupero del calore a bassa temperatura nell'industria", in *Energia ambiente e innovazione*, No. 3/2020 (September-December 2020), p. 127-131, DOI 10.12910/EAI2020-084, https://www.eai.enea.it/archivio/efficienza-energetica-avanti-tutta/soluzioni-per-il-recupero-del-calore-a-bassa-temperatura-nell-industria.html.

[10] Website of the European Commission DG for Internal Market: *Critical Raw Materials*, https://single-market-economy.ec.europa.eu/node/279_en.

IAI COMMENTARIES 23 | 52 - OCTOBER 2023 ISSN 2532-6570

collaborations with countries which own large deposits of critical minerals, such as the Democratic Republic of Congo, home to large cobalt deposits. At the same time, the social aspects and contentious issues related to sourcing critical minerals – especially the labour standards, safety and rights of involved workers – must not be overlooked. The EU should work on promoting trade relations based on a market that provides guarantees for workers' rights and environmental sustainability. Furthermore, trade relations should encourage countries that are home to mineral deposits to implement their own renewable energy policies. The climate crisis is a global issue; strengthening EU energy security and achieving Green Deal goals without addressing exploitation of, and in, developing countries would not bring advantages to either side, in the end.

A joint and holistic approach

Achieving energy security without affecting decarbonisation efforts is a great challenge for the European Union, which can also be considered as a test for its cohesion. EU institutions and member states must work together at all levels around the four pathways of diversification of energy supplies, improvement of energy efficiency, reinforcement of R&D programmes and sustainable sourcing of critical minerals. This joint and holistic effort will be quintessential to the success of the EU's energy transition, reconciling energy security and decarbonisation.

26 September 2023

ISSN 2532-6570

ISSN 2532-6570

IAI COMMENTARIES 23 | 52 - OCTOBER 2023

Istituto Affari Internazionali (IAI)
The Istituto Affari Internazionali (IAI) is a private, independent non-profit think tank, founded in 1965 on the initiative of Altiero Spinelli. IAI seeks to promote awareness of international politics and to contribute to the advancement of European integration and multilateral cooperation. Its focus embraces topics of strategic relevance such as European integration, security and defence, international economics and global governance, energy, climate and Italian foreign policy; as well as the dynamics of cooperation and conflict in key geographical regions such as the Mediterranean and Middle East, Asia, Eurasia, Africa and the Americas. IAI publishes an English-language quarterly (*The International Spectator*), an online webzine (*AffarInternazionali*), two book series (*Global Politics and Security* and *IAI Research Studies*) and some papers' series related to IAI research projects (*Documenti IAI*, *IAI Papers*, etc.).

Via dei Montecatini, 17
I-00186 Rome, Italy
Tel. +39 066976831
iai@iai.it
www.iai.it

Latest IAI COMMENTARIES

Editor: Leo Goretti (l.goretti@iai.it)