

The three-dimensional relationship between energy and the SDGs

According to the United Nations Resolution 71/313 adopted by the General Assembly in 2017¹, the seventeen Sustainable Development Goals (hereinafter referred to as "the SDGs") set out the targets to be achieved to reach a world balanced between "economic, social and environmental progress" (three-dimensionality). When the transition to clean energy is discussed in the public debate, it is therefore reasonable to think that its coherence lies only in the SDGs dedicated to the "environmental progress" dimension. However, an analysis of the current energy crisis —marked by dependence on non-renewable energies— allows us to understand its extension to the economic and social fields.

¹ United Nations General Assembly (2017). *Resolution adopted by the General Assembly on 6 July 2017 - 71/313. Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development*. Retrieved from: https://ggim.un.org/documents/a_res_71_313.pdf

² Expansión (2022). *Precios de los derivados del petróleo: España*. Retrieved from: <https://datosmacro.expansion.com/energia/precios-gasolina-diesel-calefaccion/espana>

³ Although published in October, the relative and absolute data contained in this article is for the period between February 28 and August 17, 2022, unless otherwise indicated.

Since the escalation of the then already existing Russo-Ukrainian armed conflict on February 24th, 2022, the price of 95-octane gasoline has risen by 12.5%, while the price of diesel has done so by 22%^{2 3}. Two main reasons explain this increase in fuel prices.

On the one hand, the euro has slumped by 12% against the dollar since this event, having both become currencies of equal value⁴. Oil, which is transformed into gasoline or diesel when refined, is priced in dollars, and if the dollar has appreciated by 12% against the euro, this means that oil is now 12% more expensive for those who pay it in euros (a barrel of Brent Crude⁵ has gone from €81.5 to the current €91.2⁶). Consequently,

⁴ Expansión (2022). *Cotizaciones Euro / Dólar*. Retrieved from: https://www.expansion.com/mercados/cotizaciones/valores/eurodolar_DVEUDU.html

⁵ Brent Crude is the name given to the oil from the region of the same appellation in the North Sea of Northwest Europe, which serves as a reference in Europe for its suitability for refining it into gasoline and diesel.

⁶ Expansión (2022). *Precio petróleo Brent*. Retrieved from: <https://datosmacro.expansion.com/materias-primas/brent>



the increase in the price of gasoline by 12.5 points is practically entirely explained by this 12% depreciation of the euro (only the remaining 0.5% is missing), while there is still 10% increment in the value of diesel to be clarified —after subtracting from the 22% the 12% corresponding to the aforementioned EUR/USD exchange rate—. In order to understand these 0.5% and 10%, we will study the second cause of the increase in fuel prices, but before doing it, it is worth reflecting on why the said depreciation of the euro against the dollar has occurred. A currency depreciates if its relative international demand against another currency decreases; in other words, and applied to the present case, the euro depreciates if its global demand decreases with respect to that of the dollar. And so, this is exactly what has happened: i) it is bought; ii) it is invested; and iii) it is hoarded in euros to a lesser extent. In the first place, eurozone exports have fallen below imports since January⁷ —breaking a decade-long historical trade surplus—: less is being bought in euros. In the second place, the Federal Reserve has been raising interest rates in the United States (hereinafter referred to as "the

US") until the 3% figure was reached on September 22nd, while the European Central Bank has tried to keep them below 1.5%⁸ and, accordingly, international investments tend to go to the US market —since it obtains higher returns there—: less is invested in euros. In the third place, many European countries today find themselves with large amounts of accumulated government debt that is difficult to repay, as was illustrated in the last article by this author⁹, such that the euro is losing its strength as a reserve currency —in the face of devaluations— in favor of the dollar: less is being hoarded in euros.

On the other hand, the second reason why fuels (the remaining 0.5% for gasoline and the remaining 10% for diesel) have become more expensive is due to the refining process —to transform crude oil into fuel—. Specifically, the prices charged by the refineries for refining have skyrocketed over the last half year¹⁰. Since the outbreak of the forenamed escalation of the Russo-Ukrainian conflict, the US and the European Union (hereinafter referred to as "the EU") have tried to reduce their purchases of

⁷ Trading Economics (2022). *Zona euro - Balanza comercial*. Retrieved from: <https://es.tradingeconomics.com/euro-area/balance-of-trade>

⁸ Expansión (2022). *Tipos de Interés de los Bancos Centrales*. Retrieved from: <https://datosmacro.expansion.com/tipo-interes>

⁹ Morros Bo, M. (2022). *Inflación, recesión y derechos*

humanos. Asociación para las Naciones Unidas en España. Retrieved from: <https://anue.org/es/2022/08/18/el-impacto-de-la-inflacion-en-los-derechos-humanos/>

¹⁰ Energy Stock Channel (2022). *Crack spread*. Retrieved from: <https://www.energystockchannel.com/3-2-1-crack-spread/>



Russian refined oil (see the EU's *REPowerEU* plan¹¹); however, Russia is one of the countries with the largest installed refining capacity¹², the corollary being that Western refineries have come to receive a high additional demand (which until then had been received by Russian refineries). Moreover, along with this reduction in Russian supply, the very costs of refining diesel fuel specifically have increased: the refining of crude oil to obtain diesel fuel is carried out using natural gas, and its price in Europe has been at a record high since mid-June¹³. To summarize, an increase in demand supported by western refineries, added to the explosion in the cost of refining diesel following the rise in the price of natural gas, explains 0.5% and 10% of the increase in the price of gasoline and diesel, respectively; the remaining 12% for both —to reach 12.5% and 22%— is based, let us remember, on the depreciation of the euro against the dollar.

Knowing the causes of the rise in fuel prices, an abstraction should be made to recover the SDGs. As announced in the introduction, it is clear that the use of non-renewable energies —such as oil—

affects the environmental SDGs —numbers 7 (guarantee access to clean energy), 8 (decouple economic growth from environmental degradation), 11 (achieve sustainable cities and communities), 12 (ensure sustainable consumption and production patterns), 13 (take urgent action to combat climate change), 14 (conserve marine life) and 15 (promote sustainable use of terrestrial ecosystems)—, as it contributes to air pollution¹⁴. Nevertheless, limiting ourselves to talking about non-renewable energies from an environmental point of view would be a partial interpretation of the issue. If we take up the essence of the previous three paragraphs, we will see that the energy crisis has emphasized how these energies can penetrate the economic and social fields: a price increase of 12.5% or 22% in half a year for a material (gasoline or diesel) needed to provide energy to such a globally extended good as the motor vehicle means a significant reduction in the purchasing power of its consumers. Therefore, this widespread impoverishment has repercussions in spheres other than the environment, since it hinders the achievement of

¹¹ European Commission (2019). *REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition*. Retrieved from: https://ec.europa.eu/commission/presscorner/detail/es/ip_22_3131

¹² Enerdata (2021). *Producción de productos refinados del petróleo*. Retrieved from: <https://datos.enerdata.net/productos-petroliferos/produccion-refinada-nivel-mundial.html>

¹³ Trading Economics (2022). *EU Natural Gas*. Retrieved from: <https://tradingeconomics.com/commodity/eu-natural-gas#:~:text=Dutch%20TTF%20Gas%20is%20a,system%20operator%20in%20the%20Netherlands>

¹⁴ World Health Organization (2022). *Air Pollution*. Retrieved from: https://www.who.int/health-topics/air-pollution#tab=tab_1

SDGs 1 (end poverty), 3 (ensure healthy lives and promote well-being —from the point of view not only of the impact of pollution on cardiovascular and respiratory health¹⁵, but also of the relationship between impoverishment and mental health¹⁶—) and 10 (reduce inequality).

Criticism of the statements made in the last lines can be noted: notwithstanding the fact that the price of fuels may be exorbitant today, it could be alleged that it is solely a momentary circumstance (it could go down in the short-term) and that, as a result, the above-mentioned consequences on the economy and society would be merely temporary, being the only definitive ones those connected

with the environment. Although this reasoning could be denied by stressing the structural nature of the euro's depreciation against the dollar and of the Western blockade of Russia (which are the causes of the high price, as we have already seen), what is really important at this point is to show that dependence on non-renewable energies subjects their consumers to uncontrollable and highly volatile price-determining factors; in other words, gasoline and diesel —obtained from oil—, in addition to polluting, have a price that is determined by the monetary policy and the energy policy prioritized by the political power at any given moment, and the subordination to these policies is perpetual as long as fossil fuels



Source: United Nations Environment Programme.

¹⁵ World Health Organization (2021). *Ambient (outdoor) air pollution*. Retrieved from: [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

¹⁶ Robichaud, J.B., Guay L., Colin C., Pothier M. (2012). *L-2.2: Pobreza y Salud Mental: una combinación perdedora o de los factores de riesgo a los determinantes de la salud mental*. CODAJIC.

Retrieved from: <http://www.codajic.org/sites/default/files/sites/www.codajic.org/files/Pobreza%20y%20salud%20mental%20-%20Una%20combinaci%C3%B3n%20perdedora%20o%20de%20los%20factores%20de%20riesgo%20a%20los%20determinantes%20de%20la%20salud%20mental.pdf>



continue to be used. Furthermore, were we to make a digression, we would see that in this article we have only talked about the price of fuels, but never about the price of oil *stricto sensu*—beyond its conversion from dollars to euros—. Addressing it now, crude oil itself is a new factor that adds uncertainty to the equation: its current international price—in dollars—is lower than that recorded before the escalation of the Russo-Ukrainian conflict¹⁷, but it is expected to increase again given the possibility that the EU will stop buying 3 million barrels of Russian oil per day¹⁸ (restriction of supply if these cannot be repositioned), and that the refineries that are on maintenance shutdown¹⁹—and which are the main consumer of crude oil to refine it—will start operating again in the coming months (expansion of demand).

In conclusion, dependence on non-renewable energies negatively and three-dimensionally affects the fulfillment of the SDGs, as the impact of their use on the environment and the impact of their price (both crude oil and fuels)—when high due to the direction of the large number of

unknowns to which it is subject—on the economy and society are unavoidable. In the face of this, we can affirm that the remedy lies in energies that substantially reduce the damage to the three dimensions in comparison with that produced by oil, gasoline and diesel: renewable energies. Indeed, they do not contribute to atmospheric pollution and are not necessarily subject to the euro/dollar exchange rate, nor to the demand received by refineries, nor to the price of natural gas, nor to the Russian energy supply, nor to refinery maintenance periods. Thus, if accomplishing the SDGs three-dimensionally was one good, and achieving the green transition was another, we would say in economics that they are complementary goods: one good depends on the other and the latter, in turn, depends on the former.

It is beyond the scope of this article to dissect a plan to move in this direction, especially when the general lines of which have already been highlighted by the United Nations Secretary-General²⁰; the final conclusion of the article has already been described. There are, however, two

¹⁷ Expansión (2022). *Precio petróleo Brent*. Retrieved from: <https://datosmacro.expansion.com/materias-primas/brent>

¹⁸ Cahill, B. (2022). *European Union Imposes Partial Ban on Russian Oil*. *Center for Strategic and International Studies*. Retrieved from: <https://www.csis.org/analysis/european-union-imposes-partial-ban-russian-oil>

¹⁹ U.S. Energy Information Administration (2022). *Short-Term Energy Outlook*. Retrieved from: https://www.eia.gov/outlooks/steo/pdf/steo_full.pdf

²⁰ United Nations (2022). *Five ways to jump-start the renewable energy transition now*. Retrieved from: <https://www.un.org/es/climatechange/raising-ambition/renewable-energy-transition>



closing remarks. Firstly, it should be noted that when non-renewable energies were concerned, reference was made only to oil and the fuels obtained from it. As a result, what is advocated here is limited to calling for a transition to the detriment of these energies in particular. This does not mean that a reduction in dependence on all non-renewable energies is not desirable, but only that each energy has a different casuistry that would merit individualized articles; for example, aiming to reduce dependence on natural gas, which today is also exorbitant from the standpoint of price but due to factors other than those seen for crude oil, gasoline and diesel²¹, it is not enough to replace it with clean energies, but requires the provision of an alternative source of energy to supplement the power supply in the uncontrollable moment when renewable energies are not producing electricity—since they depend on external factors such as the sun or wind—, as it could well be—despite the risks of accident—a less polluting²² nuclear energy. Secondly, a transition on this scale has short-term

deindustrialization side effects; by way of illustration, the EU, as the first step towards this transition, has been imposing for years that all vehicles sold by automobile companies in Europe must have average emissions of 95 grams of CO₂ per kilometer²³, which means that if a brand sells many gasoline or diesel cars in Europe, and their average emissions exceed 95 g CO₂/km, it has no alternative but to retail more electric or hybrid vehicles, for which it may not be prepared: companies have to restructure their plants (downsize or close them) to adjust to the new market reality. In consequence, the completion of the SDGs in the long-term (respect for the environment and certainty in the existence of more affordable prices) may affect them in the short-term, since deindustrialization implies layoffs and, therefore, impairment in the aforementioned economic and social SDGs. However, let us stress as a final message that the transition is, after all, the way forward: in any case, we have verified that this adverse impact is already present today; *ergo* moving towards green

²¹ Sandri, Piergiorgio M. (2022). *El precio del gas seguirá alto hasta 2025 y triplicará los niveles precovid*. *La Vanguardia*. Retrieved from: <https://www.lavanguardia.com/economia/20220706/8388918/precio-gas-seguira-alto-2025-triplicara-niveles-precovid.html>

²² Joint Research Centre (2021). *Technical assessment of nuclear energy with respect to the 'do no significant harm' criteria of Regulation (EU) 2020/852 ('Taxonomy Regulation')*. Retrieved from: https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/2103

[29-jrc-report-nuclear-energy-assessment_en.pdf](#)

²³ European Union (2019). *Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO₂ emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011*. *Official Journal of the European Union*. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02019R0631-20211202&from=EN>



would only entail extending it for a period of time to ultimately reach three-dimensional compliance.

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