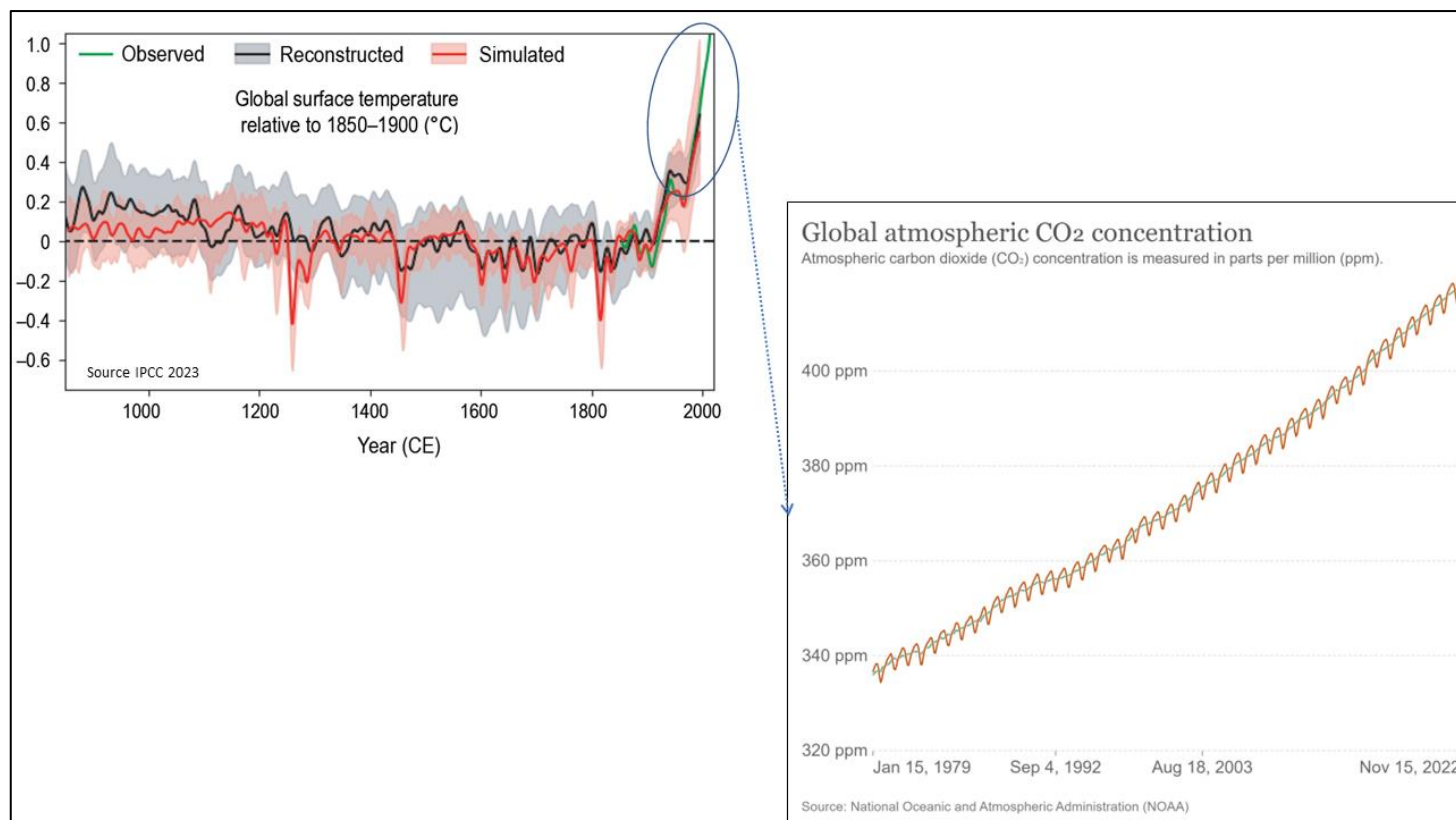


Fossil carbon emissions can be neutralized without a carbon tax or carbon market

Note prepared by [Patrick Portolano](#) for [ACP Energies Association](#)¹

April 15th, 2023

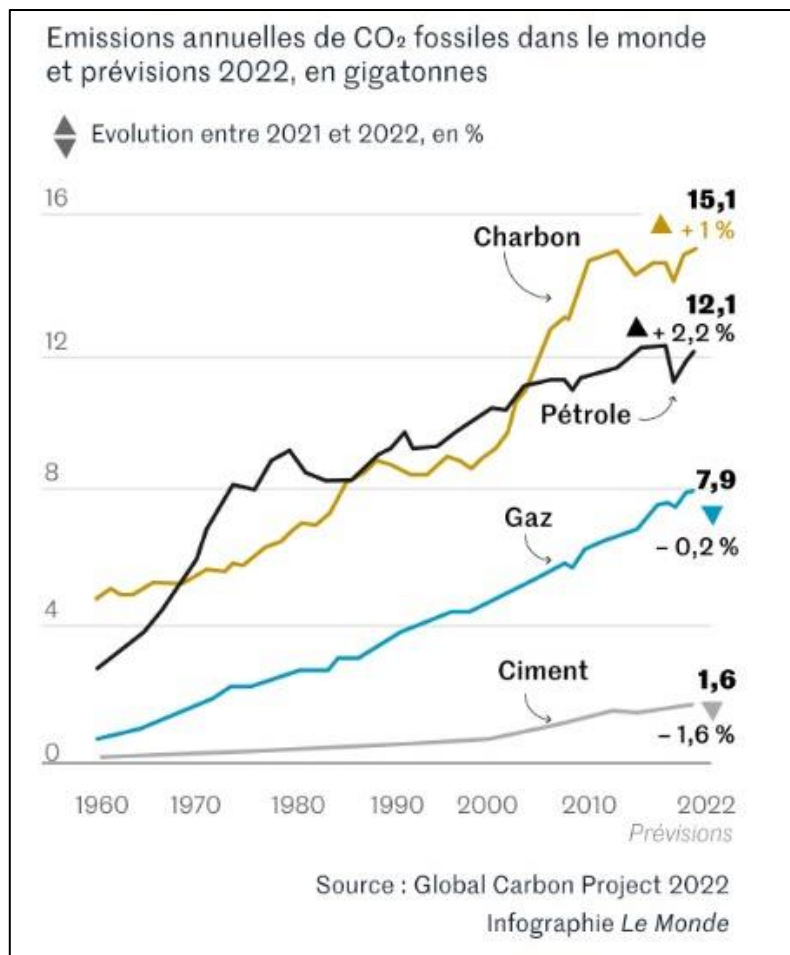


¹ This note is the English translation of a note which was approved on March 23rd, 2023 by the Board of Directors of the ACP Energies Association, an association that includes more than 70 specialists in fossil and renewable energies.

Within the H2-CO2 group, led by Patrick Portolano, founding director of [EOSYS](#), about twenty consultants are conducting reviews of: 1/ the analysis of emissions and solutions developed worldwide to reduce them 2/ the dissemination of issues and leads for their resolution. They present their results via press releases, conferences, and webinars.

The Board of Directors of the ACP Energies Association is composed of Louis Heuzé (President), Jean-Louis Gaillard (Vice-President), Thierry Brunet, Christian Clouet, Malika El Assili, Valery Gambere, Bernard Gros, Philippe de la Jousseinière, Nadia Lalout-Landemaine, Jean-Jacques Limage, Gilbert Mayor de Montricher, Richard Palomba, Jean-Louis Rick et Frederic Van de Putte.

The urgency to stop the worsening of the climate crisis is becoming more and more pressing, the IPCC has just warned²!



Carbon tax schemes, carbon markets and their financialization have so far given absolutely no results with regard to reducing atmospheric greenhouse gas content, so governments are urgently looking for other solutions: Europe has just voted a plan to make hydrocarbon producers responsible for industrial carbon sequestration³, following in the footsteps of the United States, which had set up the first tax incentives under President Trump, greatly amplified under President Biden since last year in his "Inflation Reduction Act".⁴

² "Acting now for the climate: the key to a livable future"

https://www.ipcc.ch/site/assets/uploads/2023/03/IPCC_AR6_SYR_PressRelease_en.pdf

³ "Net Zero Industry Act: Oil & Gas producers finally on the hook for their emissions?"

<https://bellona.org/news/energy-systems/2023-03-net-zero-industry-act-oil-gas-producers-finally-on-the-hook-for-their-emissions> and https://ec.europa.eu/commission/presscorner/detail/en/ip_23_1665

⁴ "Carbon Capture Provisions in the Inflation Reduction Act of 2022"

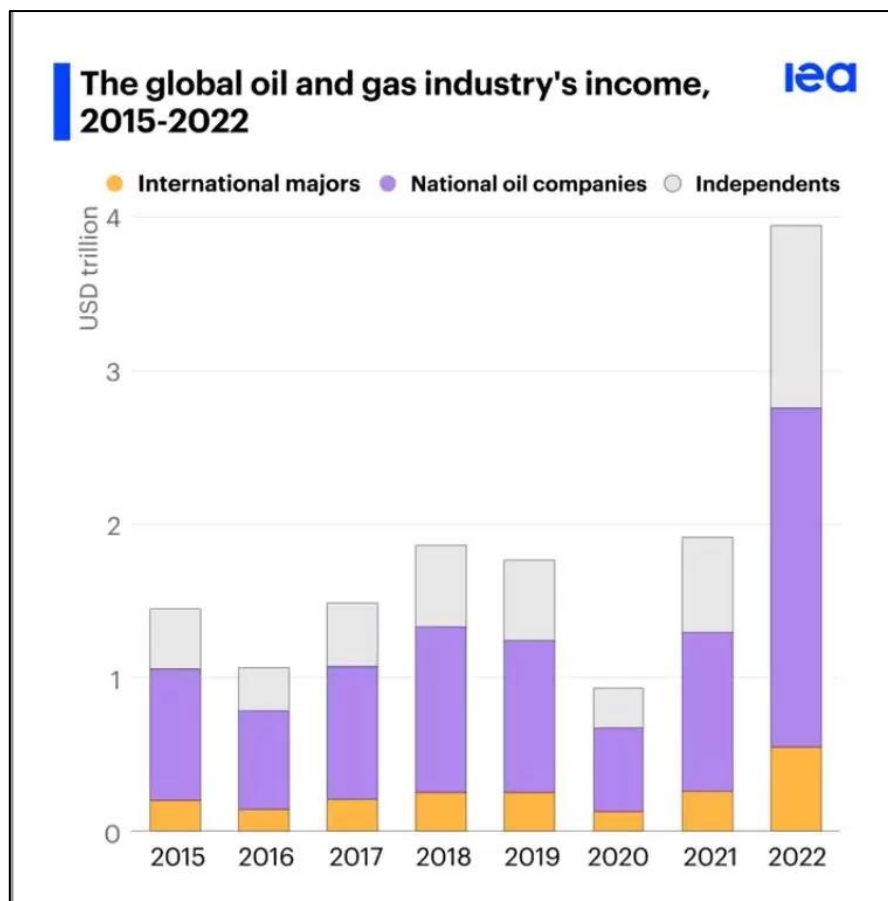
<https://cdn.catf.us/wp-content/uploads/2022/08/19102026/carbon-capture-provisions-ira.pdf>

Even if they go in the right direction, these measures remain fundamentally insufficient in the face of the magnitude of the problem.

What are institutions, NGOs and climate funds waiting for to start acting quickly and effectively and impose a simple and clear resolution at the next COP that addresses the source of the problem?

The President of COP 28, His Excellency Sultan Al Jaber, Chairman of ADNOC, Abu Dhabi's national oil company, and Minister of Industry, who seeks to make his country a leader in carbon management and the development of low-carbon green and nuclear technologies, should therefore support such a resolution. He declared early March at CeraWeek⁵ in Houston that:

"The oil and gas sector needs to up its game, do more and do it faster. It needs to rapidly decarbonize its own operations. And it has a vital role to play in decarbonizing its customers. This industry must take responsibility! The next COP must be a COP of action, a COP of impact: failure is not an option! The world must move from treaties to implementation. Solutions are needed inside and outside formal negotiations."



⁵ "Oil chief leading COP28 climate summit urges energy industry to 'up its game' to reduce emissions"
<https://www.cnbc.com/2023/03/07/oil-chief-leading-cop28-summit-urges-energy-industry-to-up-its-game.html>

The gross operating margin ("net income" including US\$ 1000 billion in subsidies) of the global hydrocarbon industry has just jumped to more than US\$ 4500 billion in 2022, after having "stagnated" for 7 years around US\$ 1500 billion on average, according to the International Energy Agency⁶. This indicates that it is economically feasible - and has been for many years - to ensure that a quantity of carbon equivalent to all the fossil carbon that this industry contributes to inject into the atmosphere each year be geologically sequestered⁷, without the need to implement a specific carbon tax or to rely on carbon-specific markets that would set a carbon price.

Indeed, it would cost the hydrocarbon industry and the states that tax it "only" US\$ 1000 billion per year if they were given strong incentives to circularize - while decreasing - the 20 gigatonnes (Gt) of fossil CO₂ that they currently contribute to annual global emissions⁸.

This circularization would be done by capturing and geologically sequestering an equivalent amount of CO₂ by industrial processes or by enhancing natural or artificial processes of geological fixation of diffuse atmospheric carbon through biological and geochemical pathways⁹. These operations are known as CCS ("Carbon Capture and Storage/Sequestration") or CDR ("Carbon Dioxide Removal")¹⁰. They could be provisioned for and simply factored into the hydrocarbon production costs. The required cost increase would be absorbed without difficulty by the hydrocarbon producer-consumer chains. This would be done without major changes, except for an adjustment of the level of profits and mining rents that would still be comfortably earned by the upstream actors in the chain and other intermediate actors, including the governments of consumer countries.

If incentives to apply this principle, elsewhere described under the name of "[Geological Net Zero](#)" (GNZ) or "Geological Carbon Neutrality" (GCN) were given to them, the hydrocarbon industries would very quickly reorganize themselves to remain profitable; the fields not sufficiently profitable would be closed or transformed into CCS sites and only the least carbon-

⁶ "The global oil & gas industry's income jumped to almost US \$4 trillion in 2022" <https://twitter.com/fbirol/status/1624330977211305987> and "Fossil Fuels Consumption Subsidies 2022" <https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022>

⁷ Geological carbon sequestration: return of biospheric or atmospheric gaseous carbon to the geosphere. Many industrial techniques or enhanced natural means make it possible to achieve this, in particular:

- Enhanced formation of carbonate minerals from atmospheric CO₂ on the surface of continents, in oceans or aquifers,
- Geological sequestration of CO₂ in hydrocarbon fields, coal deposits or aquifers,
- Enhanced absorption by living organisms buried at their death in areas of subsidence, etc.

⁸ Reports from the IEA and the oil industry specify the average cost of CCS at US\$50/t/CO₂ for fossil hydrocarbons, ranging from US\$20/t CO₂ to over US\$200 US\$/t CO₂. See for example <https://www.iea.org/data-and-statistics/charts/levelised-cost-of-co2-capture-by-sector-and-initial-co2-concentration-2019>

⁹ CO₂ in the biosphere is of biogenic or fossil origin. Biogenic CO₂ includes in particular the results of anthropogenic emissions resulting from agricultural activities among others.

¹⁰ "A global, independent scientific assessment of Carbon Dioxide Removal" <https://www.stateofcdr.org/>. See the figure 1.1 that explains the nuances between CDR and CCS.

intensive fields would remain in operation. The result would be a gradual and automatic decline in the production of fossil fuels, which would be offset by a concomitant increase in low or zero carbon emitting energies. This could be done in a coordinated way by the governments, which would put in place appropriate incentive measures.¹¹

This same principle must apply to other industries extracting and emitting fossil carbon according to specific modalities, including those of coal (currently 15.1 Gt CO₂/year) and cement (currently 1.6 Gt CO₂/year) in particular.

The current carbon tax and market systems could then be clarified and simplified. They could be redesigned to send clear signals that would lead them to favor actions that prioritize the carbon absorption capacities of soils and plants and the return of ocean alkalinity to its previous levels. It is likely that with such more limited and clearly defined objectives, carbon taxes would not reach the high levels currently seen in Europe which ultimately fuel inflationary trends and inequalities.

It is urgent that the supranational GNZ resolution be taken, requiring governments to ensure the circularity of fossil carbon through incentives to the hydrocarbon sector; if such a measure had been taken as early as COP26, the most climate-toxic oil and gas fields would be ceasing their emissions today, geological carbon sequestration operations would have been increased tenfold and several gigatonnes of fossil CO₂ emissions would be on the way to being physically offset.

To take the case of Abu Dhabi, if His Excellency Sultan Al Jaber decided to implement the GNZ resolution, the objective would no longer be - as announced at the end of 2022 - for his country to reach a CO₂ sequestration level of 5 million tonnes per year by 2030, but for his national company ADNOC, the country's other oil operators and their customers to sequester more than 100 times more that amount and as soon as possible; it would cost US\$ 32 billion per year to be paid by all the links participating in the supply of products derived from hydrocarbons extracted from the Emirate. This is to be compared with:

- A current level of oil and gas revenues in the country of more than US\$ 100 billion per year.¹²

¹¹ "Proposal for a simple and effective international agreement on fossil carbon" : **"For each amount of fossil carbon extracted, the same amount of carbon must be geologically sequestered in the same year"**
https://www.researchgate.net/publication/355574987_Geological_Net_Zero_A_proposal_for_a_simple_and_globally_effective_international_agreement_on_fossil_carbon

¹² Estimates made from 2021 data from "BP" Statistical Review 2022" considering that 1 tonne of oil equivalent releases 3 tonnes of CO₂, or a CCS cost of US\$ 20/barrel if starting from a base of US\$50/t CO₂.
<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf>

In 2022, in Abu Dhabi, hydrocarbon production was 216 million tonnes of oil equivalent (165 Mt oil and 57 Mt gas). It is estimated that this released into the biosphere an amount of fossil carbon equivalent to 648 million tonnes of CO₂. The marginal cost of production was US\$7/barrel, the oil price allowing the Emirate to equilibrate

- Even higher taxes collected by the administrations of consumer countries¹³ on fossil fuels purchased from the Emirate.

This example would encourage other countries to follow suit and implement the US\$ 1000 billion per year budget required today to geologically sequester quantities equivalent to fossil carbon emissions at their current levels.

So, what are we waiting for?

its external balance of payments US\$17/barrel and the oil price allowing it to achieve its budgetary balance 61 US\$/barrel. <https://knoema.fr/infographics/vyronoe/cost-of-oil-production-by-country>

¹³ *In France, in 2022, the cost of fuel supply for motorists was around US\$300/barrel and about half of it was taxes levied by the French administration:*
<https://www.energiesetmobilites.fr/actualites/decomposition-des-prix-des-carburants>

All these references were accessed on March 21, 2023.