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At the crossroads of two global crises

BY CORRADO CLINI

The Ukraine war, energy crisis in Europe, inflation and a looming global recession puzzled the landscape shaped by Cop26's warning of the climate disaster to come. It can be a turning point towards zero emissions or in alternative the continuation of a climatic domino effect.

Climate change has apparently dropped off the international agenda merely a year after COP 26 in Glasgow, was heralded as the turning point towards global climate neutrality.

The recently resigned Prime Minister Liz Tuss banned King Charles III from participating in COP 27 in Egypt. This is a very clear and very heavy message. Yet Britain had played a prominent role in the organization and management of the Glasgow conference. At the COP 26 Opening Ceremony, Boris Johnson said: "Humanity has long since run down the clock on climate change. It's one minute to midnight on that doomsday clock and we need to act now."

It was the rhetorical but effective synthesis of a long and careful preparatory work, involving the international community, the United Nations agencies, the World Meteorological Organization, the Intergovernmental Panel on Climate Change, the International Energy Agency, nearly 500 international banks and financial institutions, more than a thousand companies in the framework of "The Science Based Targets Initiative" (SBTi) and the United Nations Global Compact. Yet today it seems simply that Boris Johnson wanted to score a propaganda hit.

Unfortunately that's not the case. The figures and numbers on climate 2021-2022, and the more recent ones on the summer just ended, recognize – and if possible – amplify the alarm: the emissions and the concentration of CO_2 in the atmosphere, the average temperature of the planet, the climate anomalies and the extreme catastrophic events, explain that we are "running out of time on climate change".

In 2021 there was the record rebound of emissions by 6,4% compared to 2020. The growth of emissions was largely due to the global consumption of coal increased by about 6%. Coal consumption was driven by both post-Covid-19 growth and high natural gas costs.It's worth noting that compared to 2020, demand grew by 20% in India, by about 14% in the European Union and the United States, by 5% in Japan and by 4.6% in China.

The growth of renewable sources, by 6% in 2021, driven by China and EU, partially offset the increasing emissions from coal consumption. But this did not reverse the increasing trend of emissions.

According to the US National Ocean Atmospheric Administration (NOAA), in September 2022, CO_2 concentration in atmosphere, was 415.95 parts per million [ppm], with an increase of almost 2,5 ppm compared to September 2021. The figure confirms the constant growth trend over the last 60 years.

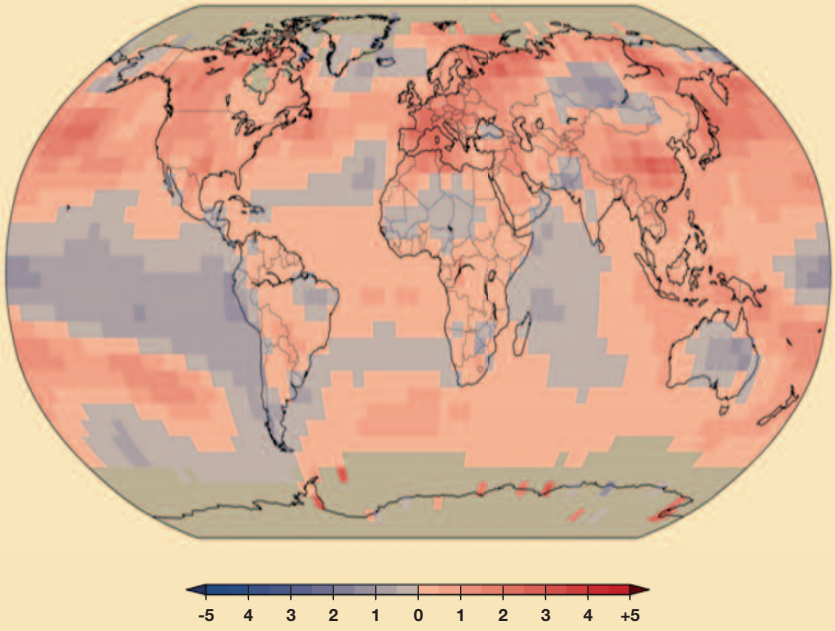
"In the 1960s, the global growth rate of atmospheric carbon dioxide was roughly 0.8± 0.1 ppm per year. Over the next half century, the annual growth rate tripled, reaching 2.4 ppm per year during the 2010s.

The annual rate of increase in atmospheric carbon dioxide over the past 60 years is about 100 times faster than previous natural increases. The amount of carbon dioxide in the atmosphere has increased along with human emissions since the start of the Industrial Revolution in 1750.

CO_2 levels are now comparable to the Pliocene Cli-

CO2 and its global impact

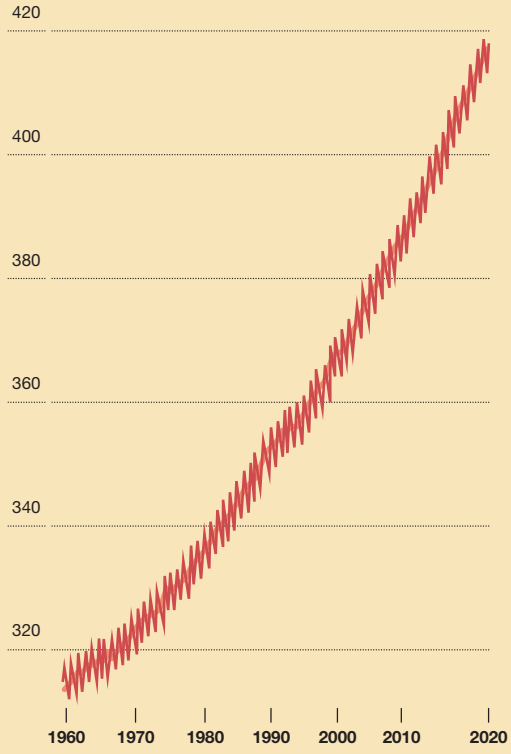
LAND AND OCEAN TEMPERATURE DEPARTURE FROM AVERAGE JUN 2022-AUG 2022
in degrees Celsius (°C)



June-August 2022 global land and ocean surface temperature was 1.6°F (0.89°C) above the 20th century average of 60.1°F (15.6°C)

It tied with 2015 and 2017 as the fifth-warmest in the 143-year temperature record

ATMOSPHERIC CARBON DIOXIDE 1960-2021
in parts per million (ppm)



matic Optimum, between 4.1 and 4.5 million years ago, when the sea level was between 5 and 25 meters higher than it is today, and large forests occupied today's Arctic tundra" (US NOAA).

The average global land and ocean surface temperature was 0.88°C above the 20th century average of 15,0°C. The Arctic is warming more than twice as fast as the rest of the globe, with impacts on permafrost thaw, glacier melt, and sea ice decline. In Greenland the temperature was 8°C above the monthly average in the 1990-2020 with unusually large and late melt spikes, "contributing to the accelerating decline of the Greenland Ice Sheet , which has been losing ice at an average rate of about 268 billion tons (plus or minus 14 billion tons) per year over the past two decades. Today, Greenland is the single largest source of melt water causing global sea level rise. If it were to melt completely, it would add just over 24 feet (over 7 meters) to global sea level."

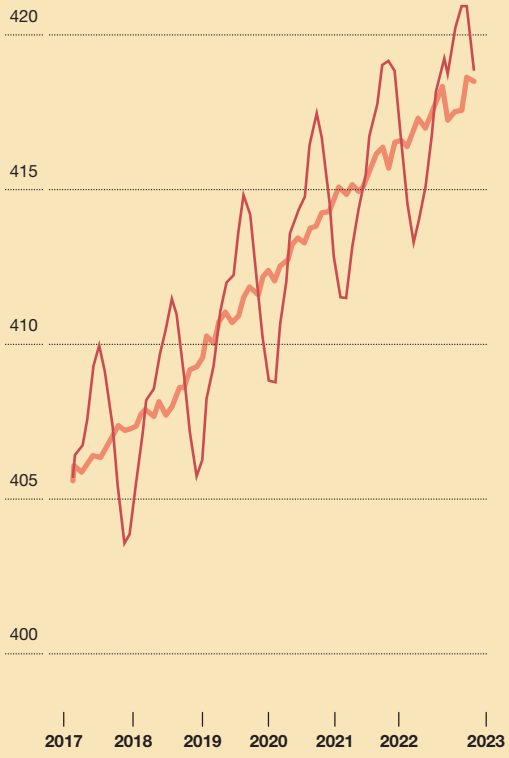
According to "Extended Reconstructed Sea Surface Temperature (ERSST-NOAA)" 2022 summer sea surface temperatures were up to 2,5°C above the 1990-2020 average across much of Pacific, Atlantic and Indian Oceans.

In July 2022 "EU Copernicus Marine Service Information" detected surface sea temperatures in the Mediterranean at 4°C higher than 1985-2005 average.

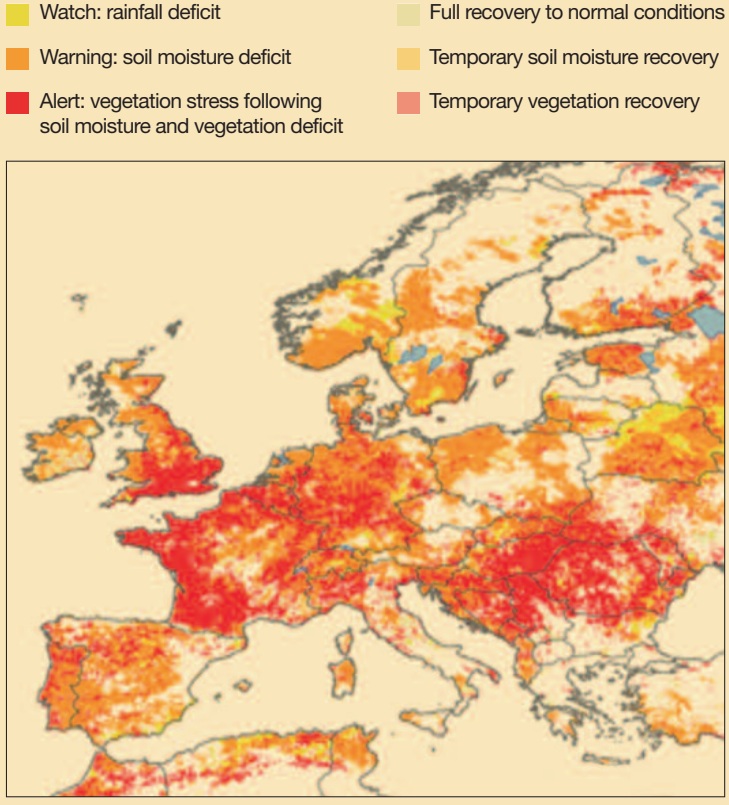
More frequent and intense marine heatwaves have been detected. In summer 2022 it accelerated and extended environmental and economic damage already underway: the risks of depletion for many marine ecosystems and biodiversity have increased, the habitat of many species in the oceans and Mediterranean are disappearing, Atlantic species are "migrating" to the Arctic, invasive species are replacing local species specially in Mediterranean sea, the coral reefs (home to a quarter of all marine species) are heavily affected by heatwaves resulting in coral bleaching.

Not to mention the acidification of the oceans and seas – which absorb atmospheric carbon dioxide –

RECENT MOUNTHLY MEAN CARBON DIOXIDE AT MAUNA LOA OBSERVATORY 2017-2023
in parts per million (ppm)



MAP OF CURRENT DROUGHTS IN EUROPE
1st ten-day period of September 2022



Sources: National Centers for Environmental Information; NOAAGlobalTemp

precipitating the loss of biodiversity, with massive effects on food chains, the reduction of sea productivity and fisheries.

Life in seas and oceans is under a strong global environmental pressure that could have multiple irreversible effects, not yet adequately dealt with. In 2022 land and sea temperature records have been the driving force behind the chain of climatic anomalies and extreme events so far this year: prolonged drought, heatwaves and wildfires in Europe, US, South America, Horn and Northern Africa; intense rainfalls and floods in Pakistan, India, China, South Africa, Brazil, Australia, Italy; accelerated ice melting in Arctic, Greenland, Antarctica.

Approximately $248 billion is the estimated cost of the catastrophic and devastating events to date, as well as of drought's multiple effects and damage on the availability of drinking water for populations, agricultural productivity, electricity production, aquatic ecosystems of rivers and lakes, and even inland navigation. The estimated cost is more than double the average annual value of the 2001-2020 period of $118.4 billion (EM-DAT).

According to NOAA Administrator Rick Spinrad "Simply put, societies and ecosystems need to prepare now for the increasing effects of extreme heat, drought, sea level rise, and other impacts of climate change."

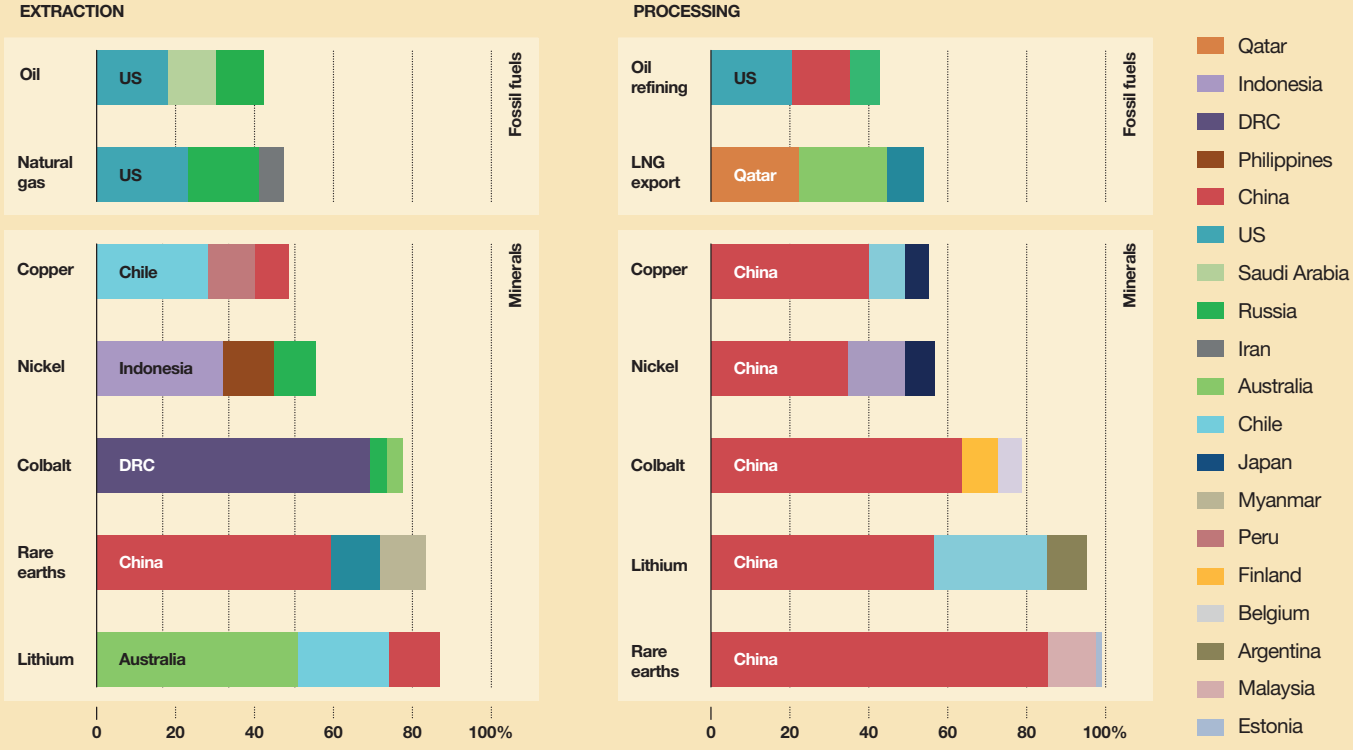
Obviously no one expected that after Glasgow the effects of climate change would stop: due to the long life of CO_2 in the atmosphere "the effects of climate change will continue for decades, even if global and European efforts to reduce greenhouse gas emissions prove successful" (EU Adaptation Strategy).

Nevertheless, the agreed commitments and the voluntary agreements signed at COP 26 have indicated a positive and concrete path for international cooperation in the transition towards "climate neutrality". It should be emphasized that COP 26 catalyzed new voluntary commitments by the private sector and

World's main mineral producers and consumers

SHARE OF TOP THREE PRODUCING COUNTRIES IN PRODUCTION OF SELECTED MINERALS AND FOSSIL FUELS, 2019

Production of many energy transition minerals today is more geographically concentrated than that of oil or natural gas



many countries, with high political and economic value. Unfortunately, the effects of the voluntary commitments are not yet visible. Indeed, the signs are largely of freezing funds or changes of mind. No surprise then, that the commitment to provide $100 billion per year for developing countries has not been implemented yet. To date, there is no evidence that any country has followed up. This is very critical, especially since developing countries are the most vulnerable to extreme events, and there are still no commitments in the Climate Change Convention for the "loss and damage" caused by climate change, even when mitigation and adaptation efforts have been insufficient to prevent damage.

Last but not least, the US-China agreement was a point of reference and strength towards global cooperation to address climate change. Nevertheless, the war in Ukraine and the tensions over Taiwan which led to the suspension of the US-China dialogue on climate change, plus Europe's uncertainties about energy supplies in the short term, are strengthening "visions" and policies that make the path indicated by the commitments unfeasible in the short term.

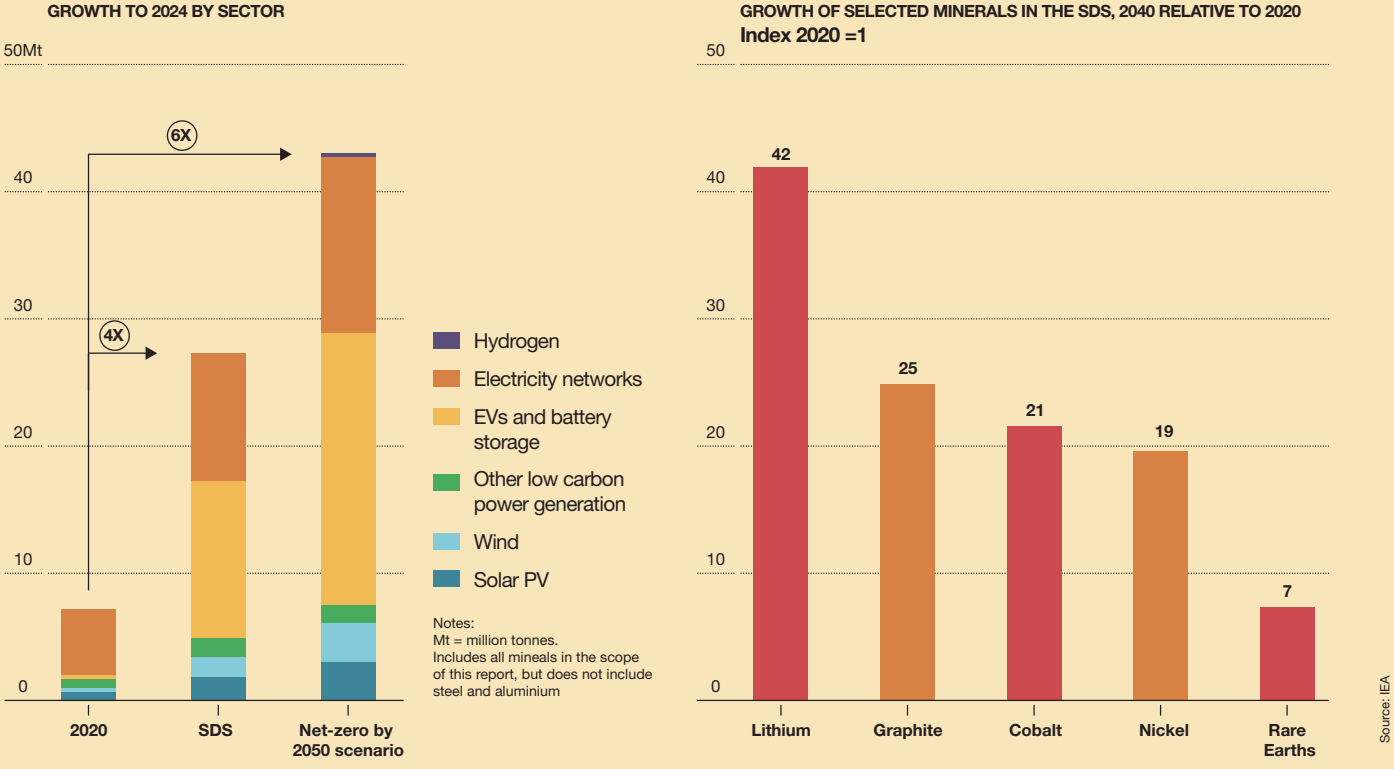
In the "Energy Transition Delusion: A Reality Reset"(September 2022), Mark P. Mills pointed out that "Data, not aspirations, show just how critical hydrocarbons are and, in the wake of the Ukraine invasion, the consequences of failing to realize what reality permits. A different understanding of "transition" is required, one that recognizes that new energy sources should be considered additives, not outright replacements, for oil, natural gas, and coal." Mills' suggestions are apparently driven by a hope of fossil fuel revenge on the wave of war and by the political denials of climate change.

Data suggest a different perspective. In 2022 according to the International Energy Agency (IEA) coal consumption will grow by 1%, while renewable energies will grow by more than 8%. Global clean energy investment (including nuclear) will increase by more than 10% in 2022 to reach a total of $1.4 trillion. As the costs of renewable energy technologies continue to decline globally, competition with fossil fuels as well as the energy independence of the single countries will increase.

The INET Oxford working paper "Empirically grounded technology forecasts and the energy transi-

MINERAL DEMAND FOR CLEAN ENERGY TECHNOLOGIES BY SCENARIO

Mineral demand for clean energy technologies would rise by at least four times by 2014 to meet climate goals, with particularly high growth for EV-related minerals



tion" published last September estimates that "a rapid green energy transition will likely result in overall net savings of many trillions of dollars. The World Energy Outlook 2022 shows that the global energy crisis can be a historic turning point towards a cleaner and more secure future."

Secure and resilient supply chains of minerals for clean energy technologies is key to the green transition. In the next 20 years the demand for copper and rare earths is expected to increase by 40%, by 60-70% for nickel and cobalt and by 90% for lithium. Extracting and processing minerals are mainly concentrated in three countries (China, Democratic Republic of Congo and Australia). Therefore the access to key renewable technology raw materials requires effective and stable international technological and commercial cooperation. In short, the cleaner and more secure future predicted by WEO 2022 is in the hands of international cooperation.

Cop 27 therefore is at the crossroads of two crises: climatic anomalies and extreme events that jeopardize the security and stability of many regions of the planet, and the energy crisis which can be a turning point towards zero emissions or in alternative the spark of a no return climatic domino effect.

The conflicts and the "decoupling" that are bringing the planet into the territory of a new cold war, the war in Ukraine and the energy crisis in Europe, are making us lose sight of simple facts. First, climate security and energy security are two sides of the same coin. It is not effective to tackle climate change without reducing the carbon intensity of economies.

Second, climate change is a global issue, that requires global and shared responses. Data leaves no room for the illusion that some country can be exempt or benefit from climate change. In this context the developed countries must implement their 2009 commitment to support developing countries.

Cop 27 can start from these facts and make a great contribution to the resumption of international dialogue and cooperation.

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