COP 28: Challenge of coping with climate crisis

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The 28th Conference of Parties (COP 28) of the United Nations Framework Convention on Climate Change (UNFCCC) is being held in Dubai, United Arab Emirates, from November 30 to December 12, 2023, with the participation of over 160 world leaders (Figure 1). The tone of the COP 28 is set by the observation that, clearly, the nationally determined contributions related to CO_2 emission reduction are not on track to curb the temperature rise as per the Paris Agreement. In order to hold the increase in global mean temperature to well below 2°C above the pre-industrial level and to pursue efforts to limit the warming to 1.5°C, there is a need for ratcheting up ambition for near-term climate action.

THE CURRENT CLIMATE CRISIS

Significant changes in temperature and precipitation as well as intensity, frequency, and seasonality of extreme weather and climate events are already underway, leading to manifold, and often adverse, impacts. Several tipping points in the Earth system are likely to be crossed. Changes in the cryosphere, such as the collapse of Greenland and West Antarctic ice sheets and North Atlantic circulation and the melting of mountain glaciers and thawing of permafrost, lead to sea-level rise. The impacts of climate change on the ecosystem are crucial for biodiversity, including events like coral reef die off. Therefore, adaptation, involving adjustments of social, economic, and ecologic systems to climate change, is urgently needed to enhance climate resilience. The following aspects of the climate-related crisis are discussed at COP 28.

(1) Record-breaking temperatures

July 2023 has been recorded as the hottest month in history, globally, with the global mean air surface temperature reaching 16.9°C. The situation has been labeled as global boiling. In the disaster-prone Xinjiang Province, China, the maximum temperature has reached 52.2°C, while extraordinary heat has been observed in numerous regions worldwide, resulting in the breaking of all-time temperature records at certain stations. From January to November 17, 2023, the global temperature anomaly above pre-industrial average exceeds 2°C. It is highly probable that the entire year of 2023 will be recognized as the warmest year on record.

(2) Global food and water crisis

Climate change exacerbates the current global food and water crisis, with nearly 258 million people experiencing severe food insecurity in 2022[1] and 2 billion people lacking access to safely managed drinking water services in 2020.[2] Moreover, climate change, along with non-climatic factors such as rising tensions, conflicts, and warfare, increase the severity of these problems. Hence, it is imperative to strengthen efforts toward achieving Sustainable Development Goals (SDGs) #2 (zero hunger) and #6 (clean water and sanitation).

(3) Surging economic losses

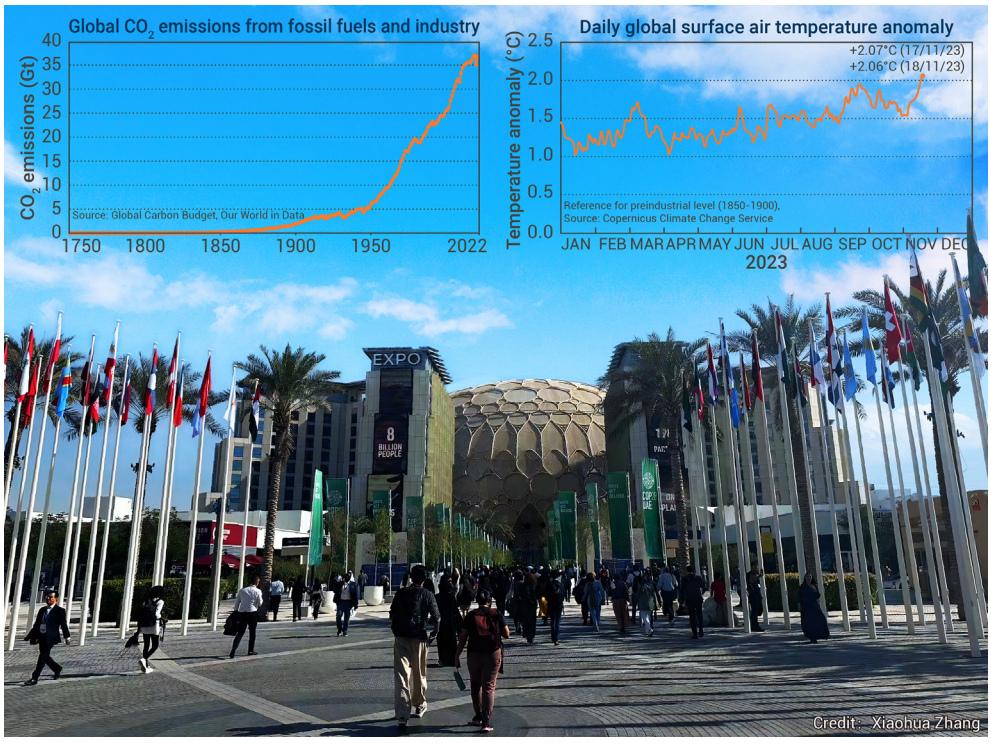

Figure 1. The world heads to COP28 climate conference The top plots show the increasing global CO_2 emissions and the rising global surface air temperature.

The estimated average annual economic losses due to the increase in CO_2 emissions and global warming have been increasing to approximately US $120 billion globally. In China alone, the climate crisis costs about US $43 billion annually.

(4) Disconnection between the climate crisis and ecosystem and biodiversity losses

At the 2022 United Nations (UN) Biodiversity Conference in Montréal, there were a lot of deliberations concerning the climate crisis and ecosystem losses that should be regarded jointly. It is essential to integrate state-of-the-art common solutions that empower both climate resilience and sustainable ecosystem services.

(5) Issue of leaving no one behind

Special attention should be given to those who have contributed less (low carbon footprint) to the anthropogenic climate change but suffer the most (large adverse impacts). However, it remains unclear how the COP 28 will tackle this mandate, for instance, via the implementation of the Loss and Damage Fund. Any framework aimed at assisting those adversely affected by climate change needs to be inclusive of developing countries.[3]

(6) Difficulty in keeping pledges regarding climate action

In general, governments have not kept to their pledges and promises regarding climate action. An important lesson from the COP 27 was that it is necessary to devise a framework to showcase progress to the parties, highlight successful innovations, identify areas for improvement, and determine future actions. It is necessary to find the best ways to hold each party accountable for their climate pledges and promises. The parties need to move swiftly from pledges and commitments to tangible actions.[3]

CHALLENGES OF COP 28

(1) Increasing production of renewable energy

To phase out fossil fuels, the parties are planning to change their energy mix by significantly increasing production of renewable energy, and therein particularly solar and wind energy, to meet the Paris Agreement goals.[4]

(2) Protecting the global food and water system

The parties are planning to render the global food and water system more sustainable and more resilient.[1,4]

(3) Financing an innocuous and low-carbon future

At the COP 26, the USAID set a target of mobilizing US $150 billion in climate finance by 2030.[5] It is estimated that the world would require around US $5 trillion[5] annually by 2030 for funding climate-related activities (about 7-fold above recent levels) to be on track to net-zero emissions, while emerging markets and developing economies would require US $2.4 trillion every year to address climate change (https://www.cop28.com/en/news/2023/12/commits-US$30-billion-in-catalytic−capital-to-launch-landmark).

(4) Connecting the climate change crisis and biodiversity losses

The parties have developed a Biodiversity Convention Framework to enhance the implementation of the Paris Agreement and the SDGs of the UN Agenda.[3]

(5) Adapting to reduce loss and damage

The parties have developed an inclusive framework for the Loss and Damage Fund to reduce exposure and vulnerability, thereby enhancing risk management, as well as effective climate change adaptation.[3]

(6) Holding member states accountable

The first-ever UN Global Stocktake on parties' progress on the Paris Agreement has held UN member states accountable for their promises.[3] Governments and related stakeholders can be urged to fulfill their Paris Agreement pledges and promises.

MEASURES OF COPING WITH CLIMATE CRISIS

Here are some measures discussed at the COP 28 regarding the mitigation of and adaptation to climate change.

(1) Reduction of fossil fuel consumption

Multiple parties are working collaboratively to develop a framework for effective reduction of fossil fuel consumption.[3,4]

(2) Renewable energy and low-carbon future

The parties are strategically planning to increase the utilization of renewable energy, specifically solar and wind energy.[3,4] In order to achieve carbon neutrality, it would be necessary to reduce emissions of not only CO_2 but also other greenhouse gases, particularly CH_4.

(3) Geoengineering

The feasibility of deliberate and massive intervention in the Earth's climate system is examined as a potential means to mitigate the ongoing climate change, for example through carbon dioxide removal (CDR) from the atmosphere.[3,4]

(4) Enhancing adaptation

The parties are implementing effective adaptation to climate change.[3] Nature-based solutions, in particular, hold considerable promises.

VISIONS

USA and China leaders recently met to address, among many other issues, the climate crisis through the transition from fossil fuels to renewable energy sources. This development has the potential to inspire parties to strive toward carbon neutrality (achieving net-zero emissions) by fostering innovation in state-of-the-art technology. The COP 28 aims to review the progress achieved in climate change adaptation, learn from successful and unsuccessful practices, and enhance risk management. Adaptation, including reduction of exposure and vulnerability, constitutes an essential aspect of the climate action, serving as the cornerstone of SDG #13, and is interconnected with multiple other SDGs outlined in the UN Agenda 2030.

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DECLARATION OF INTERESTS

The authors declare no competing interests.