U.S.-China Climate Non-Cooperation on Attaining the 1.5-Degree Goal

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The daunting challenges posed by global warming are real. Several hundred years ago, pre-industrial carbon dioxide (CO2) concentrations in the atmosphere were around 280 parts per million (ppm). [42] However, due to anthropogenic activities, CO2 is accumulating to more than 420 ppm today. [43] The accumulation of CO2 influences the climate, changes the chemistry of the oceans and causes them to rise, and leads to water shortages and droughts, among other extreme events.

The alarm bells of the climate crisis have been ringing for years. There is an increasing consensus among climate scientists that it is indispensable to hold the increase in the global average temperature within 1.5 degrees Celsius above pre-industrial levels. But as the world's largest greenhouse gas emitters, the United States and China have not cooperated to commit themselves to sufficiently meeting this climate goal.

China's climate policy is consistent with a global warming of 3 degrees Celsius, and the U.S. nationally determined contribution is consistent with a 2 degrees Celsius temperature target. [44] Yet at the 27th Conference of the Parties to the UN Framework Convention on Climate Change, both countries pointed fingers at each other for not acting fast enough.

Bilateral Non-Cooperation

From the political-economy lens, this article argues that, owing to technological, domestic political, and systemic factors, great power cooperation to attain the 1.5 degrees Celsius target is dead.[45]

Firstly, while necessary, existing clean technologies are not a panacea and have not been sufficient to tackle global climate problems. There is an increasing consensus among policymakers, entrepreneurs, climate scientists, and social activists that existing clean technologies are incapable of preventing climate problems from adversely affecting humanity as a whole and limiting global warming to 1.5 degrees Celsius. For instance, clean tech investors like Bill Gates pessimistically note that the ‘miracles’ of solar and wind technologies will not save us from climate

change — technological breakthroughs are needed.[46] Naomi Klein in her book also argues that current technologies are not mature enough and cost-effective, which have failed to help change course.[47]

Here I consider two widely applicable renewables to flesh out the most significant limits of clean technologies:

- Solar Energy Technology: In the foreseeable future, neither the U.S. nor China could cover all available land areas or commercial/residential building roof areas with solar facilities to supply electricity with zero emissions. Additionally, photovoltaic systems, which convert solar energy to direct electricity, are already in use, but they operate at low efficiency and are only economical in sun-rich off-grid areas. Some leading solar energy companies in both the U.S. and China have been conducting research and development on solar flywheel storage for several years, yet this technology is still premature. Although flywheel storage has higher values for specific power, specific energy, power and energy density, efficiency, and self-discharge rate, it has low values for lifespan, scale, maintenance, and capital costs, according to scientific studies.[48]

- Wind Energy Technology: wind power has become economically viable for areas experiencing adequate average wind speeds. Wind turbines have been installed on the land in some locations in both the U.S. and China. Scaling up, however, will require more than the expected improvements in wind turbine technology. As an irregular power source with wind unpredictability, wind power's storage and electricity production have been and will continue to be challenges for engineers to deal with. European countries have the world's most wind power penetration. But the highest rate (Denmark) is only slightly more than 50 percent. Wind electric generation as a share of total power generation accounts for only 8 percent and 6 percent in the U.S. and China, respectively. It is far from the goal of limiting global heating to 1.5 degrees Celsius, and to hit that goal, wind power needs to grow 20 percent per annum by 2030.[49]

Policymakers in the United States and China understand this challenge. But, as rational players, they have little incentive to substantially reduce emissions and stabilize the level of carbon dioxide in the atmosphere.

Additionally, domestic political factors also impede bilateral cooperation.[50] In the U.S., domestic industry lobby always steps on pressure on policy outcomes. Powerful companies that stand to be adversely affected by mitigation policies — particularly large energy corporations in the oil, gas, and coal industries — have continued to exercise substantial clout and effectively work against any binding commitment to reduce GHG emissions substantially.

Beijing also faces domestic political obstacles. Sustaining the Kuznetsian economic development is the primary goal for China, whose rapid growth has relied heavily on burning fossil fuels. Since the late 1990s, coal consumption in China has increased approximately threefold.[51] Path dependence casts a long shadow and has expansionary effects over time on the country's climate policies.[52] Despite investing enormously in renewable development, it refuses to reduce the use of fossil fuels and takes insufficient actions to achieve the 1.5-degree Celsius goal.

Furthermore, great power rivalry also prohibits bilateral cooperation. For example, a focus on national security has led the U.S. government to tighten its export control policy for fear that high-tech products might reach military end users. Since 2018, the United States has waged a trade war against China,[53] and tariffs on Chinese clean tech products remain during the Biden administration. Washington has also passed legislation known as the Foreign Investment Risk Review Modernisation Act to expand the oversight

procedures of the existing Committee on Foreign Investment in the United States.[54]

China, too, has imposed various strict regulations that obstruct cleantech cooperation with the United States. For example, in October 2020, the country introduced the Export Control Law of the People's Republic of China, providing it with justifications to restrict foreign commercial transactions based on national security.[55] In December 2020, China issued the Measures on National Security Review of Foreign Investment, strengthening government oversight and the ability to restrict or deny foreign investment.[56] Some advanced clean technologies are on the list of technologies prohibited or restricted for export or investment.

Consequently, the non-cooperative strategy is the dominant strategy for both the United States and China.

Prospects and Implications

In the foreseeable future, it remains unlikely that the United States and China will take climate actions to achieve the 1.5-degree Celsius goal for three reasons.

First, from a more dynamic perspective, technologies may evolve over time. But the 'incremental' success we have witnessed is far from enough to drive policymakers to cooperate. It may take a long time — perhaps decades — to achieve 'transformative' technologies.

Second, domestic political barriers are likely to persist. Some interest groups in the United States may not firmly oppose stringent climate actions. But many will impede substantial policies that threaten their survival or harm their balance sheets. With President Xi Jinping securing his third term as China's paramount leader,[57] it is expected that Chinese climate policies will be consistent: Beijing will continue to prioritize economic growth and depend heavily on traditional energy-intensive industries.

Third, great power competition will likely intensify. Although the United States and China may cooperate in certain fields — for instance, when Tesla operates plants in China or when U.S. firms purchase Chinese solar panels — neither will sacrifice their national interests to substantially reduce emissions to limit global warming to 1.5 degrees Celsius in the foreseeable future.

In the United States, former president Donald Trump has already announced a White House bid for 2024.[58] If he becomes president again, Washington will probably quit multilateral climate agreements and escalate conflicts with China. In response to such U.S. policies, Chinese policymakers, predominated by realpolitik, are unlikely to compromise.[59]

The fact that the United States and China are the world's largest economies and emitters make it galling to the international community when they refuse to take on serious commitments to substantially reduce emissions and control global warming.

Years of failure to cooperate is a tragedy for the entire humankind. They blocked the world from getting on a carbon emissions reduction pathway capable of preventing severe climate change. Until breakthroughs in clean technologies, the insulation of climate cooperation from domestic politics, and the de-escalation of great power strategic competition, cooperation in substantial emissions reduction — and with it, the 1.5-degree Celsius goal — is not feasible.

Conclusion

The U.S. and China are responsible for nearly 40 percent of global GHG emissions, and they will likely contribute to alarming increases in CO2 in the future. Unfortunately, both countries have blamed each other for not doing fast and enough in GHG emissions reduction. Some contend that realizing the catastrophic consequences of climate change might drive both countries to cooperate in effective climate

actions to curb emissions and global temperature. Yet, recognizing potential climate risks and associated economic costs does not necessarily mean the U.S. or China commits themselves to sufficient GHG mitigation to attain the 1.5-degree goal.

As shown in this article, over the last decade, technological, domestic political, and systemic factors in both the U.S. and China have driven policymakers to choose non-cooperation as their dominant strategy. As a result, neither has committed to sufficiently reducing emissions that curb global warming to 1.5 degrees Celsius. In the foreseeable future, such a situation is unlikely to change, which will negatively affect international politics and humankind's fate.

Many of the conclusions are derived from political-economy theories and qualitative analysis. Future research could focus on statistical analysis to prove the causal relations between the independent and dependent variables identified in this article. Another avenue of research can be developing formal models to analyze the non-cooperative climate game (non-cooperation) between the United States and China.

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