

COAL, CAPITAL, AND CLIMATE: THEORIZING CHINA'S GREEN TRANSITION UNDER STATE CAPITALISM

Stella Dull | Barnard College, Political Science Department

Alyssa Battistoni | Barnard College, Political Science Department

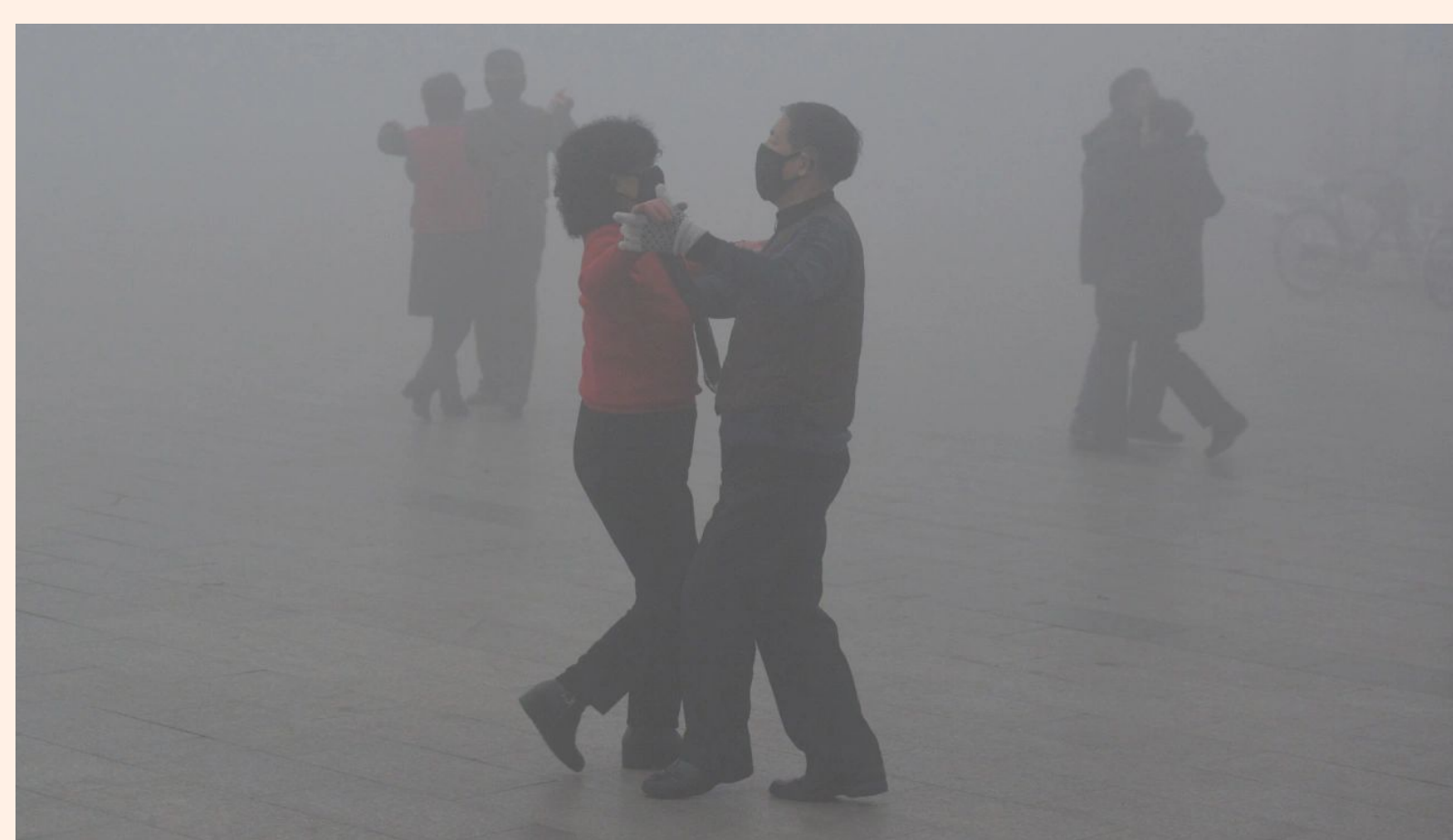


Figure 1. People wearing masks dance at a square during a polluted day in Fuyang, Anhui province, on Jan. 3. Source: *NBC News*, photo by Aly Song.¹

INTRODUCTION

- Coal is the dirtiest fuel on earth, releasing more CO₂ per kWh than any other source of energy.²
- In order to power its rapid industrialization, China consumes the most coal in the world, accounting for 58% of global coal use in 2023.³
- China's annual emissions make up over one third of global CO₂ emissions, 60% of which comes directly from coal consumption.⁴
- China has invested more in renewable energy than any other country, leading in solar, wind, and electric vehicle deployment.⁵
- President Xi Jinping has committed to aggressive climate action, pledging to peak CO₂ emissions by 2030 and be carbon neutral by 2060.⁶
- China's dual role—as both the environmental polluter and renewable investor—prompts a core question long debated by political theorists:

Is carbon neutrality compatible with China's rapid pace of economic development?

METHODS

- Key Chinese environmental policies were identified and analyzed through a **policy review** of recent legislation.
- A **historical review** of contemporary Chinese politics (1949–present) and environmental history was conducted to contextualize present-day energy and climate decisions.
- **Case study analysis** of China's post-pandemic environmental actions was used, applying two contrasting political theories:

Jonas Nahm's "green growth model," which asserts that achieving economic growth and meeting climate objectives is possible—and potentially even more successful—in capitalist, export-led growth models.⁷

Andreas Malm's theory of "fossil capital," which argues that the structural entanglement of coal with industrial capitalism embeds carbon emissions into growth itself, rendering decarbonization unlikely without a departure from capitalism's core imperatives.⁸

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THEORY DISCUSSION

Findings Consistent with Nahm's Green Growth Model:

- China has made impressive progress toward expanding clean energy by implementing emission trading systems and strict industrial regulations to discourage the use of fossil fuels, while fostering the growth of new clean energy industries.
- China's green transition added ¥13.6 trillion (\$1.9 trillion), or just over 10% of its GDP, indicating potential compatibility between climate policy and growth.⁹
- China's integration of renewable technologies into its industrial economy has lowered the cost of expensive technologies like solar panels, making green transitions more accessible to less developed countries.¹⁰

Findings Consistent with Malm's Fossil Economy Theory:

- The historical trajectory of China's industrialization and its transition into state-capitalism has structurally entrenched coal dependency in the economy, driving a continued increase in coal consumption that constrains Xi Jinping's capacity to fully decarbonize China (Fig. 2).
- The methods Deng Xiaoping used to facilitate China's market reforms in the 1990s reinforced the prioritization of GDP growth above all else and institutionalized intense intragovernmental competition among local officials.
- This GDP-driven competition combined with decades of decentralization to local governments has created fragmented "provincial fortresses" in electricity dispatch systems, where local protectionism sustains coal reliance and obstructs the expansion of renewable energy.
- As a result of these institutional legacies, China is actually in a state of energy expansion, not an energy transition. To meet the demands of a rapidly growing economy and the surging electricity needs from the shift toward electrification, China has pushed forward with energy expansion in all directions—both renewable and fossil energy.¹¹

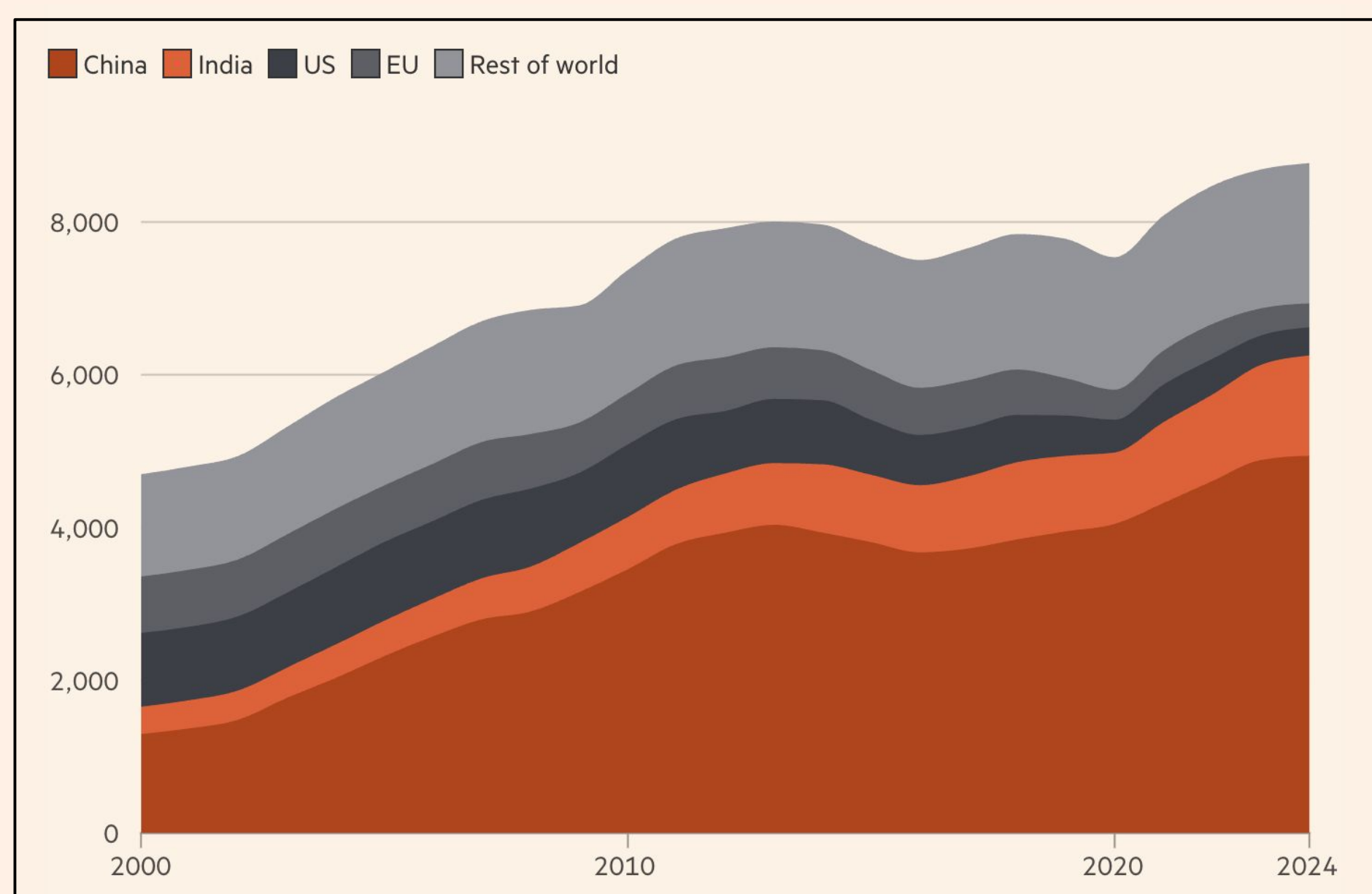


Figure 2. Global coal consumption by region, 2000–2024. Source: International Energy Agency, as published in *Financial Times*.¹²

CONCLUSION

- Although China's state-capitalist framework permits the passage of aggressive environmental legislation while maintaining economic growth, their systemic reliance on coal to sustain said growth ultimately prevents achieving complete carbon neutrality, revealing a core contradiction within China's decarbonization efforts.
- China's case demonstrates that decarbonization is not simply a technical question of energy substitution, but a structural and political one. This suggests that for other rapidly industrializing economies, the challenge lies not only in scaling up renewable technologies, but also in addressing entrenched energy dependencies, governance structures, and growth imperatives that constrain transformative change.



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