

# Solutions to Climate Change: Lessons from China's Practices

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## Thrust of Innovation, Policy and Entrepreneurship

Climate change poses an existential threat to humanity, marked by rising global temperatures, extreme weather events, and ecological instability. The urgency to act is underscored by scientific warnings that current emission trajectories could lead to catastrophic warming of 2.6–3.1°C by 2100. Addressing this crisis demands comprehensive, multi-sectoral strategies. China, as the world's largest developing economy and carbon emitter, offers valuable insights through its ambitious policies and practices. This essay explores key solutions to climate change, drawing from China's efforts in renewable energy adoption, industrial innovation, green transportation, circular economy models, policy frameworks, and international collaboration.

Firstly, China has made the main transition from the traditional energy to the renewable energy. As is known to all, shifting from fossil fuels to renewable energy is fundamental. China has become a global leader in renewable energy deployment, with its wind, solar, and hydropower capacities surpassing coal-fired installations. By 2024, China's renewable energy capacity reached 1.73 billion kW, accounting for 54.7% of its total energy mix. Notably, its solar and wind sectors achieved 2030 installation targets six years ahead of schedule. Projects like the 300 GW photovoltaic base in Inner Mongolia and offshore wind farms demonstrate scalable solutions for replacing coal. Such investments not only reduce emissions but also enhance energy security and create green jobs.

Through innovation and efficiency, China has decarbonized heavy industries, which contribute over 70% of China's industrial emissions. China has phased out outdated coal, steel, and cement capacities while promoting hydrogen-based metallurgy and carbon capture. The Baowu Steel Group's hydrogen-powered furnace eliminates 500,000 tons of CO<sub>2</sub> annually, showcasing hydrogen's potential in heavy industry. Digitalization further aids emission reductions; for instance, Danone's smart factories optimize energy use through AI-driven systems. Breakthroughs in CCUS (carbon capture, utilization, and storage), such as the Shengli Oilfield project sequestering 1 million tons of CO<sub>2</sub> yearly, highlight technology's role in achieving net-zero goals.

Secondly, China's green transportation accounts for 10% of global emissions, necessitating electrification and smart infrastructure. China's EV market, with a 53.3% penetration rate in 2024, exemplifies rapid adoption. Cities like Shenzhen have electrified public transport, while vehicle-to-grid (V2G) pilots leverage EVs as mobile energy storage units. Urban planning also plays a role: Shenzhen's Net-Zero Transportation Hub integrates solar panels and energy-efficient designs, reducing building emissions by 40%. Policies mandating green construction materials and retrofitting old buildings further cut urban carbon footprints.

Great accomplishments always requires the effort from government. Effective governance and green financing have also accelerated the climate action. China's carbon emissions dual-control system sets binding targets for regions and industries,

while carbon trading markets incentivize reductions. Green financial tools—like green bonds and loans exceeding \$4.3 trillion in 2024—fund renewable projects and eco-friendly startups. Tax incentives for energy-efficient industries and penalties for polluters create market-driven accountability.

For the globalization, climate change is a global challenge requiring collective action. China’s Africa Light Belt initiative provides solar energy to 50,000 households in underserved regions, merging climate action with poverty alleviation. Partnerships under the U.S.-China Climate Working Group focus on shared goals like methane reduction. Despite geopolitical tensions, such collaborations underscore the necessity of multilateralism in achieving Paris Agreement targets.

China’s climate strategies illustrate that solutions must be systematic, combining technology, policy, and societal engagement. While challenges persist—such as balancing growth with decarbonization—the integration of renewables, industrial innovation, and circular principles offers a replicable blueprint. However, global success hinges on unity: nations must transcend political divides, share technologies, and uphold climate finance pledges. As China’s practices show, the path to a sustainable future lies in bold, coordinated action—and the time to act is now.

Appendix: AI Statement

I asked ChatGPT what are the solutions to the climate change. Based on the answers from AI, I referred some research reports and government’s reports, I completed this essay.

