

# Chinese Climate Leadership: Feign or Future?

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## Abstract

As industrial civilization confronts the devastating consequences of global climate change, the difficult choices surrounding its solutions have only become more complicated following the election of President Donald Trump and his recent declaration of intent to exit the Paris Climate Accord. This paper analyzes whether China is prepared and credible to fill the void left by the US. Specifically, whether China's domestic climate mitigation efforts are sufficient to demonstrate willingness and capability to be the world's climate policy leader. This article ultimately determines that China is both ready and willing to act as the preeminent climate power, despite imperfections in domestic energy and environmental policy.

## Introduction

China emits more greenhouse gases (GHGs) than any other country on the planet. However, China may also become the world's next climate leader. With the election of Donald Trump, many analysts speculate that the United States may downsize its role in climate negotiations in the near future. Faced with this reality, it is critical to determine whether China's domestic efforts to combat climate change legitimize its global ambitions to lead the rest of the world in doing the same. As China attempts to fill the power vacuum left by the United States and improve its standing relative to the rest of the world on global warming initiatives, domestic Chinese climate policies will be scrutinized by competitors and followers to determine the efficacy of China's strategy.

Some argue that China's domestic efforts are imperfect, yet do indicate a willingness and capacity to address climate change by promoting renewable development and by its eagerness to participate in international climate agreements. Contrarians posit that China is unable to effectively lead global action to reduce emissions because of its continued reliance on fossil fuels domestically while fighting against binding emissions restrictions under international frameworks. There is robust data on both sides, and it is difficult to conclude that one position or the other is completely correct. However, the stronger argument is that countries are willing to accept China as the climate action leader because most states recognize that China has taken sufficient action to demonstrate a commitment to the problem of global warming, even if China has not solved its own fossil fuel addiction.

## Literature Review

Those in favor of the idea that China's domestic climate efforts legitimize its leadership goals generally present two core arguments: China is the global leader in renewable energy and China is the global leader in climate agreements. Falkner cites China's 2014 investment of 83.3 billion USD in renewable energy as particularly significant being that it was the largest ever investment in alternative energy in a single year.<sup>1</sup> In addition, China has ramped up solar-cell production from 50 megawatts to 23,000 in less than ten years.<sup>2</sup> Li et al. forward a similar argument by citing specific programs the central government has formulated: the China Renewable Energy Development Program and China Renewable Energy Scale-up Program have both been tremendous successes and have put Chinese-manufactured renewables on the cutting-edge of global energy development.<sup>3</sup> These investments and programs are particularly important for determining China's leadership capacity because they have focused on promoting export capacity which can be an effective way to disseminate technology and influence other countries.

Proponents also defend China's domestic efforts based on China's willingness to establish linkages with other actors. Falkner argues that the bilateral agreement negotiated in 2014 between the

1 Falkner, Robert, "The Paris Agreement and the New Logic of International Climate Politics," *International Affairs* 92 no. 5 (2016): 1112.

2 Falkner, Robert, "The Paris Agreement and the New Logic of International Climate Politics," *International Affairs* 92 no. 5 (2016): 1113.

3 Hu, Biliang, Jia Luo, Chunlai Chen, and Bingqin Li, "Evaluating China's Low-carbon Cities," *East Asia Forum*. N.p., 06 (September 2016): 740.

United States and China was the single most important climate deal ever. This was not only because it brought the issue of climate change to the forefront of each country's respective political discourse, but also because it was critical in paving the way for the success of the Paris agreement that would follow a year later.<sup>4</sup> The goal to lead the world in climate action is also tied to China's foreign policy priority of avoiding international ridicule.<sup>5</sup> Li et al. argue that one of the major motivations for China to develop a domestic emissions-trading scheme is to eventually be able to link it with the European Union's cap-and-trade and lead the developing countries wing of emissions trading.<sup>6</sup> While these arguments posit that China's domestic efforts as a strong foundation for international leadership tend to focus on the overarching goals and general trends, arguments against this position tend to focus on the specific details of emissions and policy.

Aldy and Pizer argue that China cannot be a top climate leader until its emissions are under control. They cite that total Chinese emissions have grown 250% since 1997, Chinese emissions intensity is five times that of the United States, and that Chinese coal consumption continues to grow rapidly while US and EU rates fall.<sup>7</sup> This study uses absolute emissions totals and chooses not to account for population growth. Although the energy intensity of growth accounts for rising incomes, the significance of the combined influence of income, population, and technology will be explored later in this paper.

In addition to the statistically driven critique of China's potential international leadership role, Godement reasons that China is not fit to lead the international community because of its opposition to binding international agreements.<sup>8</sup> Although China has played a proactive role in negotiating climate agreements, the 2008 financial crisis exposed potential weaknesses in the Chinese economy, prompting CCP leaders to be more cautious regarding measures that could threaten growth. Godement argues that China has pushed its

4 Falkner, Robert, "The Paris Agreement and the New Logic of International Climate Politics," *International Affairs* 92 no. 5 (2016): 1114.

5 Hu, Biliang, Jia Luo, Chunlai Chen, and Bingqin Li, "Evaluating China's Low-carbon Cities," *East Asia Forum*. N.p., 06 (September 2016): 709.

6 Ibid.

7 Aldy, Joseph, and William Pizer, "Alternative Metrics for Comparing Domestic Climate Change Mitigation Efforts and the Emerging International Climate Policy Architecture," *Review of Environmental Economics and Policy* 10, no. 1 (2016): 9.

8 Godement, Francoi, "EXPANDED AMBITIONS, SHRINKING ACHIEVEMENTS: HOW CHINA SEES THE GLOBAL ORDER," *EUROPEAN COUNCIL ON FOREIGN RELATIONS* (2017): 4.

domestic growth agenda ahead of and onto its foreign climate agenda, making it less ambitious and more flexible which is mirrored in agreements like COP21, also known as the Paris accords.<sup>9</sup> The precise nature of international agreements is an important arena to explore because these deals operate as the nexus at which foreign policy negotiation and domestic policy implementation either reinforce or weaken one another.

## Analysis

This section will focus on justifying the claim that China's domestic climate policy does legitimize its international leadership efforts. However, there is one implicit assumption that must be thought through first: *can* domestic efforts legitimize international leadership efforts in the first place? The answer to this question is also yes.

There are several reasons why domestic efforts are critical to international ones, so each will be discussed only briefly in the next few paragraphs. First, Chinese decisionmakers and the Chinese public must be convinced that particular solutions work before they are willing to risk their political livelihoods and international image on their results.<sup>10</sup> With this in mind, the domestic arena acts as a laboratory and training ground for such solutions. Second, Chinese leaders have tried to frame the country's ascendance to a position of global leadership around its intention to be a "responsible great power."<sup>11</sup> Climate has become the ultimate area of 'responsibility' on the international stage. As a result, China's climate action has become a litmus test of this promise.

Striving to be a responsible great power is a component of a larger foreign policy goal: to avoid international ridicule.<sup>12</sup> China has been roundly criticized by many Western powers for not doing enough to curb its emissions. This criticism has generated a fear among Chinese leaders that a negative perception of the Chinese government may 'spill back' to influence Chinese public opinion.<sup>13</sup> Using climate

9 Ibid.

10 Hallding, Karl, Guoyi Han, and Marie Olsson, "A Balancing Act: China's Role in Climate Change," *The Commission on Sustainable Development* (2009): 98.

11 Hallding, Karl, Guoyi Han, and Marie Olsson, "A Balancing Act: China's Role in Climate Change," *The Commission on Sustainable Development* (2009): 104.

12 Hu, Biliang, Jia Luo, Chunlai Chen, and Bingqin Li, "Evaluating China's Low-carbon Cities," *East Asia Forum*. N.p., 06 (September 2016): 709.

13 Ibid.

action as an opportunity to demonstrate that China is a responsible power, committed to a rules-based order would go a long way towards silencing critics and promoting Chinese leadership.<sup>14</sup>

In order to complete this argument, it is necessary to consider whether the relationship between Chinese domestic climate efforts and international ones is both necessary and sufficient. This would mean that an absence of effective domestic policy would make international leadership impossible (thus making domestic efforts *necessary*) and that the presence of robust domestic climate action would be *sufficient* to legitimize Chinese leadership. It is almost undoubtedly true that if China were to take no domestic action, it could not lead parallel international efforts. However, the question investigated herein is the threshold for that action. Godement argues that one of the critical factors holding back Chinese climate leadership is the internationally perceived lack of domestic follow through.<sup>15</sup> By this argument and those above, it seems that domestic efforts are a necessary prerequisite to international leadership. Yet, it is difficult to make the case that domestic efforts – on their own – are a sufficient condition for international leadership. There are many variables that factor into whether a particular country follows another on a particular issue, but in the case of China, many of those alternative factors – leadership void, growing global interdependence, et cetera – are also trending in favor of climate leadership. With these conditions, it appears that domestic policy can act as a sufficient foundation for global leadership.<sup>16</sup>

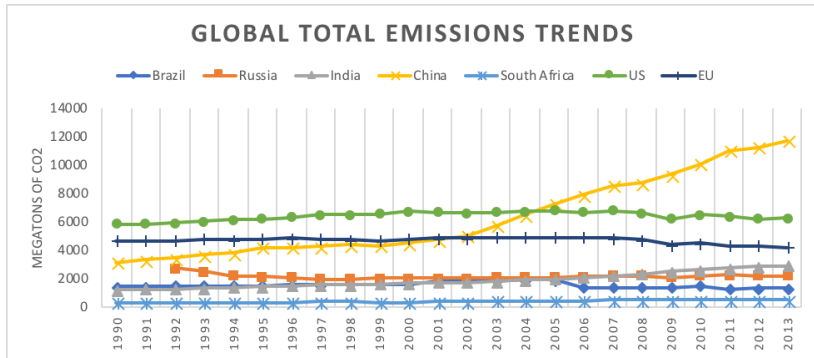
Having provided a basis for the assumption that domestic climate policy has a bearing on global leadership initiatives, there are two subdivisions that can be made regarding the influence of domestic policy: practical and perceived. Practical considerations regarding domestic climate policy include calculations such as whether emissions are increasing or decreasing, the energy intensity of growth, and so on. The perceived impact of domestic efforts deals with whether countries believe China is a climate leader, regardless of the effectiveness of their action.

14 Preston, Felix, “China Is Well Positioned to Take on the Green Mantle,” *The World Today* (2017): 21.

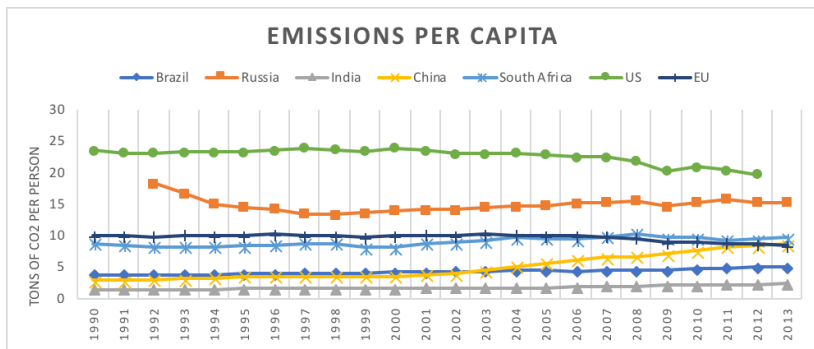
15 Godement, Francoi, “EXPANDED AMBITIONS, SHRINKING ACHIEVEMENTS: HOW CHINA SEES THE GLOBAL ORDER,” *EUROPEAN COUNCIL ON FOREIGN RELATIONS* (2017): 7.

16 Preston, Felix, “China Is Well Positioned to Take on the Green Mantle,” *The World Today* (2017): 21.

It is undeniable that Chinese emissions are the largest single source of greenhouse gases and are increasing. Precisely how the issue is framed can make the Chinese central government seem more or less culpable. As explained in the arguments section, Aldy and Pizer focus on cumulative emissions. From this perspective, it is clear that Chinese emissions are only climbing higher and are the source of a massive portion of global greenhouse gases.



*However, when analyzing per-capita GHG trends, it is a different story.*



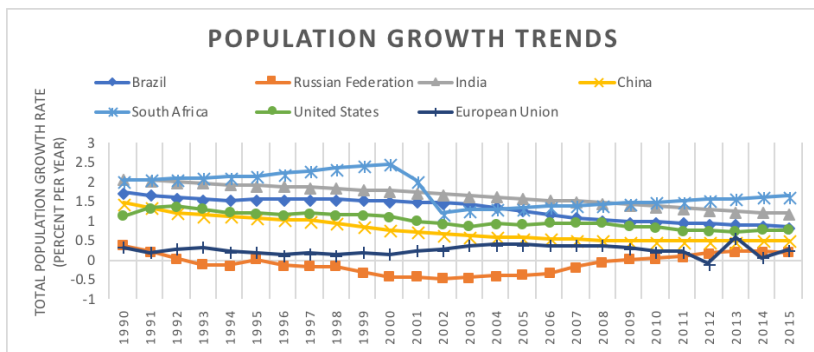
From this alternative view, Chinese emissions are increasing, but remain only a fraction of American and Russian emissions while being roughly equivalent to those of the EU. Moreover, it is important to consider factors that impact emissions such as affluence and population. The idea that environmental impact is, basically, a function of population, affluence, and technology is relatively well accepted in both environmental science and policy-making circles because it accurately describes complex environmental problems while collapsing

that complexity into just a few digestible variables.<sup>17</sup> Although there are criticisms of this model for its lack of specificity in the context of specific environmental issues, it is useful for describing broad trends over time.

$$I = PAT \text{ or } IPAT$$

$$\text{Environmental impact} = \text{population} \times \text{affluence} \times \text{technology}$$

With IPAT in mind, not only do per capita emissions become more relevant, but population growth and affluence (income and wealth) trends as well. Total population growth rates are somewhat sporadic for some countries, but in the case of China, there is a smooth downward trend.



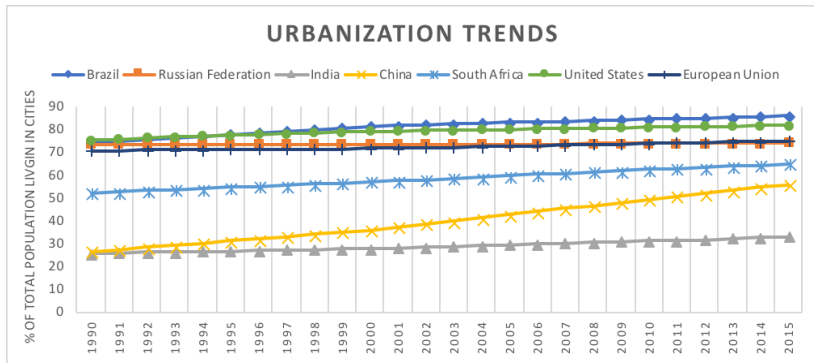
This population stabilization should make it easier for China to get a handle on its pollution because energy expansion can be built out predictably by renewable sources that take longer to fund and construct rather than by coal plants that spring up to meet rapidly increasing demand. Considering aggregate population trends in tandem with urbanization rates is key to effectively scrutinize emissions because higher levels of urbanization generally produce lower emissions.<sup>18</sup> This reduction is likely to be amplified in China as the central government increasingly pushes localities to plan megacities in a low-carbon, sustainable fashion.<sup>19</sup> Overall urbanization trends show that while many industrialized countries and even developing nations like India are

17 Ehrlich, Paul, "Human Impact: The Ethics of  $I=PAT$ ," *ETHICS IN SCIENCE AND ENVIRONMENTAL POLITICS* 14 (2014): 11.

18 Creutzig, Felix, Giovanni Baiocchi, and Robert Bierkandt, "Global Typology of Urban Energy Use and Potentials for an Urbanization Mitigation Wedge," *PNAS* 112 no. 20 (2013): 6286.

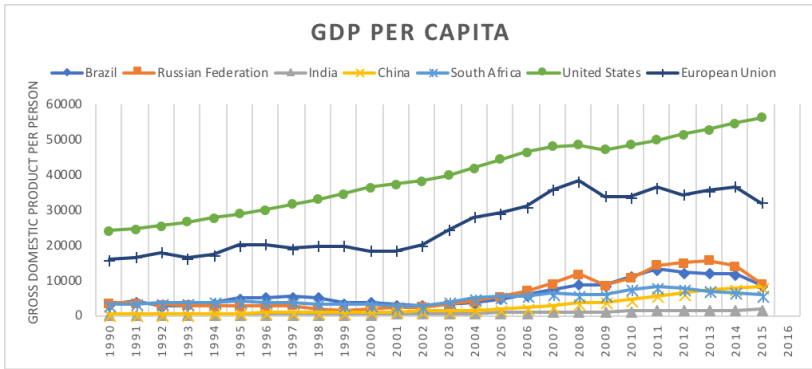
19 Hu, Biliang, Jia Luo, Chunlai Chen, and Bingqin Li, "Evaluating China's Low-carbon Cities," *East Asia Forum*. N.p., 06 (September 2016): 755.

slowly becoming more urban, China's urban population is growing at a rapid pace.

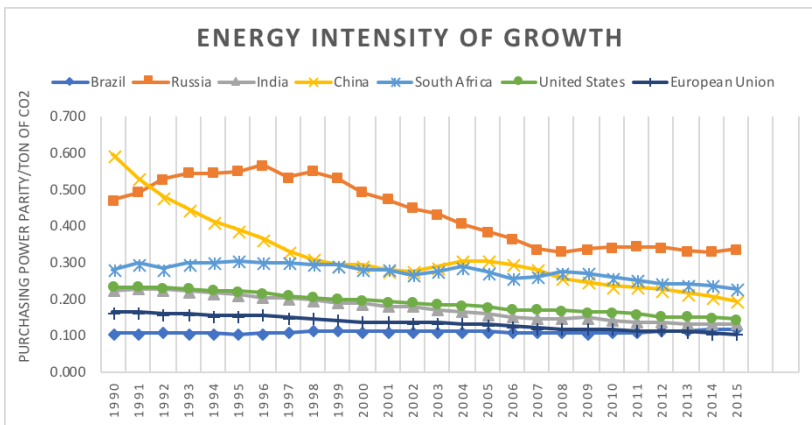


This rural to urban migration inevitably strains resources and puts stress on municipal infrastructure, including energy utilities, to provide for the rapidly growing population. As such, emissions may increase in the interim, but it is a boon for climate action down the road. These urbanization trends suggest that most developed countries do eventually stabilize at a particular level of urbanization, and this stabilization is likely to occur in China as well. Once the transition is over and city planners can rework some basic systems, there is likely to be a drastic reduction in emissions.

Affluence must also be considered to determine the full impact of population. Emissions are likely to remain low despite a large population if that population is generally impoverished, as was the case in China some time ago and in India more recently. Or, there can be a smaller group that earns much more and emits according to their ability to consume, as in the case of the United States. GDP per capita indicates that although Chinese GDP has grown at unprecedented rates over the last two decades, the average Chinese income is still much lower than the American or European income.

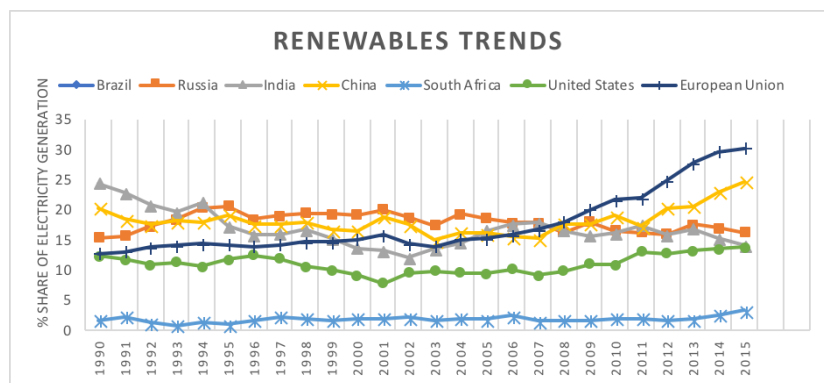


This represents a threat to climate action and a potential argument to project ballooning Chinese emissions: there is still a high ceiling on wealth and, in turn, emissions. However, data about the energy intensity of growth shows that while Chinese growth remains relatively energy intensive, it is a dramatic decline from just two decades ago and the trend continues to point downward. Energy intensity is a measure of how much energy is required to produce a given unit of growth.

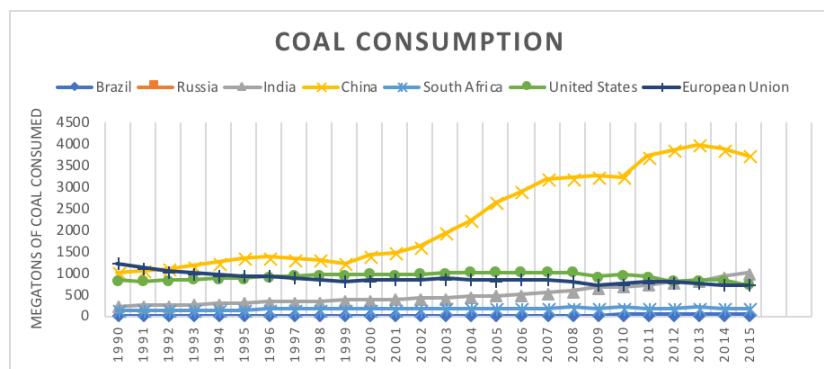


This exposes an error in Aldy and Pizer's analysis: they simply consider Chinese growth intensity relative to the US, but fail to account for how high that intensity has been and how low it could get the future. Less energy-intensive growth can mitigate the impact of an increasingly wealthy population by decoupling that wealth from emissions. The trend toward fewer emissions per dollar of purchasing power has yet to level off and is likely to continue as China develops a more robust renewables capacity, the technological factor in IPAT.

Perhaps the most promising trend in Chinese domestic policy is the increasing growth of renewable energy. In absolute terms, China has the largest capacity of solar and wind projects of any country in the world.<sup>20</sup> Global renewables data show that as many actors stagnate in their adoption of renewables, China continues to expand its renewable use – nearly keeping pace with the EU.



Although this graph is promising for China's prospects as a climate leader, figure 8 presents the opposite. This figure shows the clearest difference between actors of any graph presented: China's coal consumption remains sky-high. Despite its best efforts and burgeoning renewables, China cannot seem to substantially reduce its coal consumption.



Although this curve has begun to level off and even dip, it is unlikely that China's consumption will sink to levels comparable with

20 Hilton, Isabel, "With Trump, China Emerges As Global Leader on Climate," *Yale E360*. Yale University, 21 Nov. 2016.

the other countries presented any time soon. The question then becomes whether these levels of coal consumption restrain China's ability to become a climate leader. While it will invariably be criticized, China's coal consumption is not sufficiently limiting to prevent its climate rise.

One of the factors mediating international perception of China's thirst for coal is the difference in exports between Chinese coal and alternative energy. Brazil has produced 90 percent or more of its electricity from renewable sources for over twenty years, but Brazil has not led a global effort to adopt low-carbon energy because its model of hydroelectric power is not universally replicable and Brazilian industry has struggled to export their innovations. For this same reason, China's renewable development is comparatively more influential than its coal consumption: while China is the leading exporter in renewable energy, it is a net importer of coal.<sup>21</sup> This means that the question of whether China is "green" or not is a matter of international perception. If China were a poor marketer, there is certainly enough evidence to make the case that Chinese climate leadership would represent hypocrisy, but if China is able to influence the interpretation of its energy consumption, then its alternative energy development can be emphasized.

The statistical discussion above should give the impression that China has a compelling case to be a climate leader, but it is not without fallacies. Despite having the highest levels of coal consumption in the world by far, China also has the highest level of renewables investment<sup>22</sup>, the highest levels of renewables exports<sup>23</sup>, and the highest level of solar and wind manufacturing and installations.<sup>24</sup> This has been produced by a commitment to international agreements and domestic policy that promote the growth of renewables such as COP21 and the Chinese emissions trading scheme.<sup>25</sup> This policy suite of technological advancement, international agreements, and market-based approaches has given China at least the image of being one of the most innovative

21 Matthews, John and Hao Tan, *China's Renewable Energy Revolution*, London: Palgrave-MacMillan, (2014): 27.

22 Werber, Cassie. "The World's Biggest Polluter Is Now the Global Leader in Renewable-energy Spending." *Quartz*, 18 Mar. 2016.

23 Matthews, John and Hao Tan, *China's Renewable Energy Revolution*, London: Palgrave-MacMillan, (2014): 80.

24 Hilton, Isabel, "With Trump, China Emerges As Global Leader on Climate," *Yale E360*. Yale University, 21 Nov. 2016.

25 Hu, Biliang, Jia Luo, Chunlai Chen, and Bingqin Li, "Evaluating China's Low-carbon Cities," *East Asia Forum*. N.p., 06 (September 2016): 709.

climate leaders.<sup>26</sup>

These policies and agreements were discussed earlier, but it is essential to consider them again in the context of international perception. Although Godement and others forward legitimate critiques regarding the implementation of these programs, these criticisms are only meaningful if there are preferable alternatives. In other words, if binding agreements were the norm, it is far more likely that China's resistance to such restrictions would damage Chinese leadership credibility. But that is not the plane on which status quo climate politics operates. Instead, countries with concern for climate change are looking for what Hallding refers to as "two minimals."<sup>27</sup> The purpose of China's domestic climate effort is not to build the world a silver bullet, but to demonstrate that the most coal-intensive, fastest-growing developing economy in the world can take climate action too. By demonstrating some level of commitment to climate action through domestic policy, other states can be provided the "assurance that China is sufficiently 'in' for there to be a realistic chance of containing global emissions."<sup>28</sup> In so doing, China can act as the global leader to build trust and bridge the gap between developing and developed economies to begin to resolve the ultimate first mover problem that is climate change.

## Conclusion

Combatting global climate change is a collective action problem that will require global coordination and leadership. China is well positioned to take on the position of global climate leader as determined by analyzing both objective and perceived metrics. Chinese emissions will begin to level off and decline in the future as urban populations grow and growth intensity continues to fall. However, this does not mean that Chinese domestic climate policy is clearly a success. There are still many measures by which China lags behind the rest of the world, namely, its increasing coal consumption. Yet it is because of China's importance and complexity that foreign countries are likely to look to China as the global climate leader based commitment to climate policy domestically, despite imperfections. Future research should track the United States'

26 Rock, Michael T., and Michael A. Toman, *China's Technological Catch-up Strategy Industrial Development, Energy Efficiency, and CO2 Emissions*, (New York: Oxford UP, 2015): 71.

27 Hallding, Karl, Guoyi Han, and Marie Olsson, "A Balancing Act: China's Role in Climate Change," *The Commission on Sustainable Development* (2009): 105.

28 Hallding, Karl, Guoyi Han, and Marie Olsson, "A Balancing Act: China's Role in Climate Change," *The Commission on Sustainable Development* (2009): 105.

international climate influence as the Trump administration's agenda takes shape and should pay special attention to China's actions at the 2017 Boston climate summit. Moreover, the trends observed in the figures of this paper should continue to be tracked given that the basic factors of population, affluence, and technology are likely to be decisive in determining emissions levels.

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Figures

Below are larger versions of the figures in the text with source information. A brief note: 1990 was chosen as the base year because that was the earliest year for which all data sets were available. Brazil was not included in figure 7 because its incredibly high levels skewed the visual and made it difficult to distinguish the rest of the curves along the lower part of the graph. I chose to analyze the US, EU, and BRICS because data on those actors was consistently available across all data sets. These actors also represent the most influential states, a collection of many of the largest emitters, and a balance of developed and developing economies. Axis titles and each figure’s use in the text should make clear the purpose of each graph. All data was accessed by myself through the publicly available websites noted in parentheses.

Figure 1 (Source: World Resources Institute CAIT Tool)

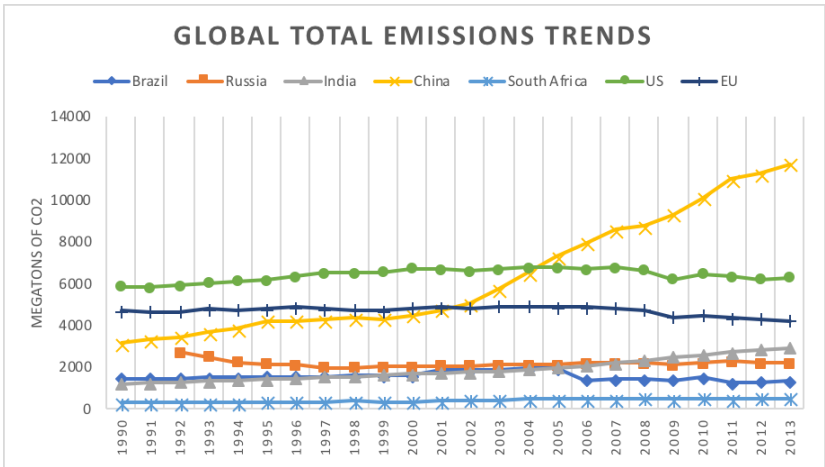


Figure 2 (Source: World Resources Institute CAIT Tool)

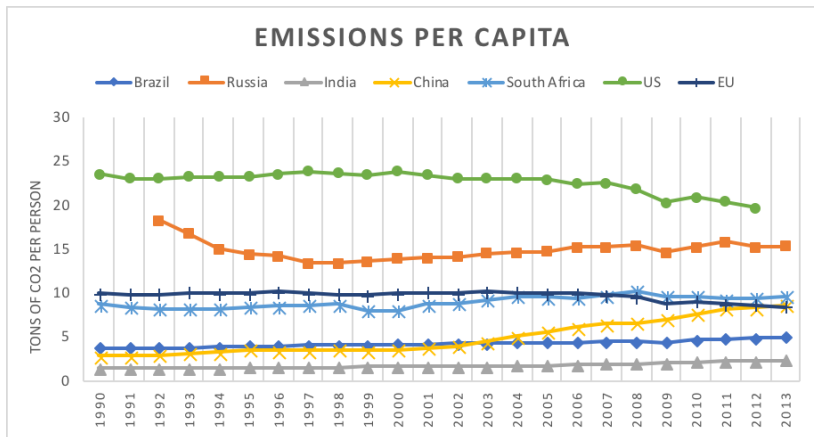


Figure 3 (Source: World Bank Population Statistics)

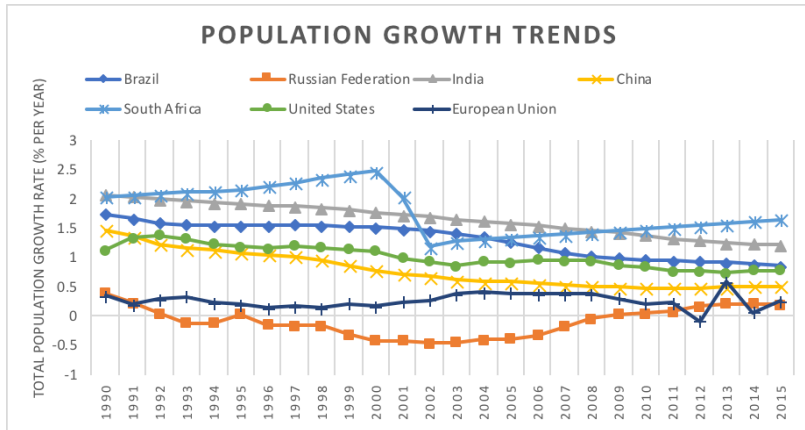


Figure 4 (Source: World Bank Population Statistics)

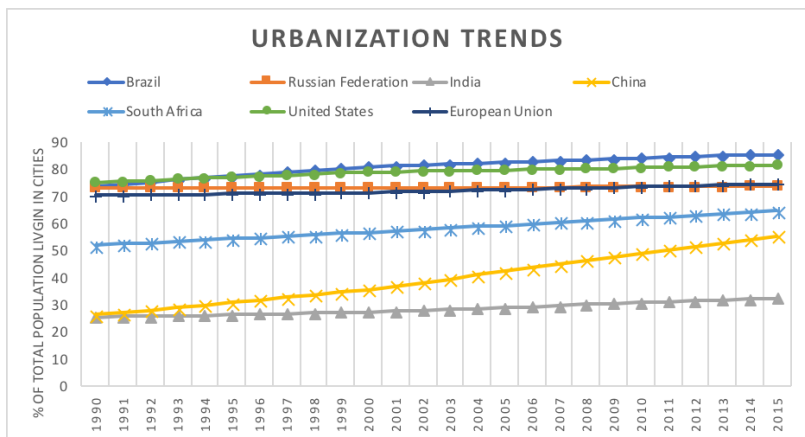


Figure 5 (Source: World Bank Income Statistics)

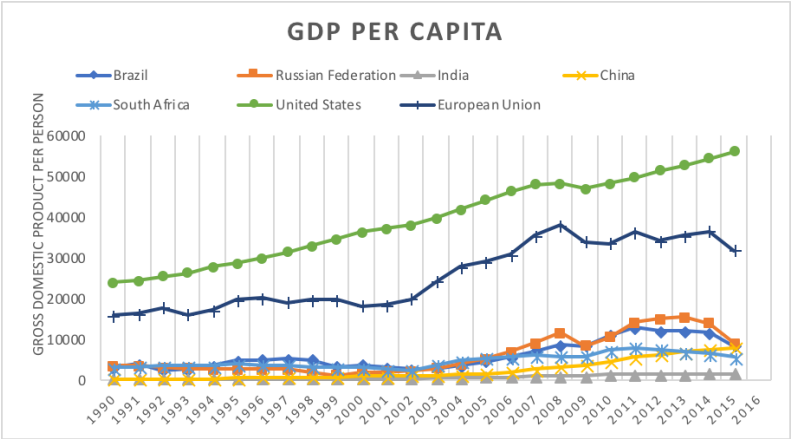


Figure 6 (Source: EnerData Energy Yearbook)

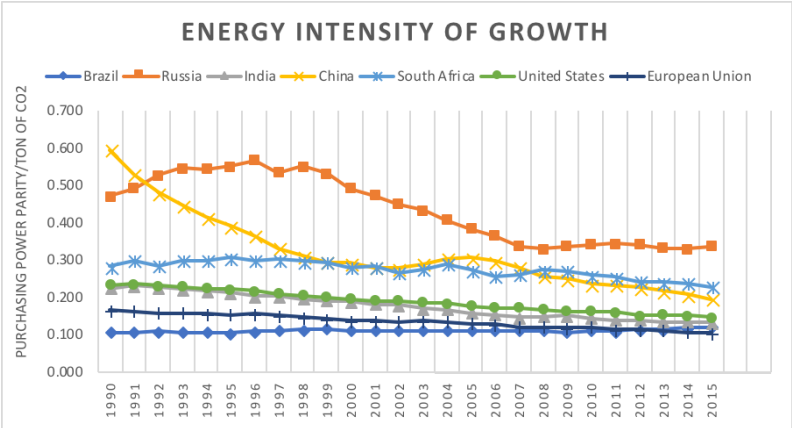


Figure 7 (Source: EnerData Energy Yearbook)

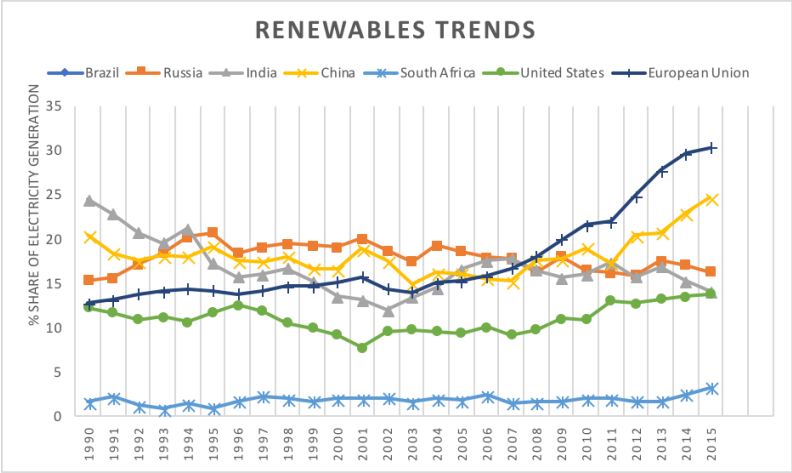


Figure 8 (Source: EnerData Energy Yearbook)

