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The China Model and U.S. Energy Policy

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INTRODUCTION

Americans are right to be dismayed with U.S. energy policy. For forty years, presidents of both parties have backed a series of fanciful “breakthrough technologies.” From synfuels to Solyndra, these schemes have turned out to be costly disappointments and the source of a recurring political drama. After failures become clear, Congress sometimes conducts oversight hearings. But it welcomes each new scheme as a pretext for pork barrel politics. Neither the executive nor the legislature ever learns from past failures.

President Obama has added a new element to the story line. He often worries aloud that the People’s Republic of China (PRC) might be outpacing the United States in what he portrays as a race to deploy “green energy.” The public, by a large margin, 68 to 26 percent, supports subsidies to alternative energy.¹ Even 53 percent of Republicans back subsidies, although this number has fallen during the Obama administration.² Much of the public also seems to share a fear of China’s state-led economy. Today, 43 percent of Americans name China as the world’s leading economic power, versus 38 percent who name the United States.³

The president, in linking green energy to fears about China, is making green energy a test case for a broader “industrial policy” agenda. In the United States, much of the left has long embraced this kind of state-led economic development.⁴ But the allure, and dread, of China’s industrial policy also exists on the right. Recall that Senator Santorum wanted to use tax breaks to all manufacturers, not just to green energy suppliers, as one means of waging a “trade war” on China.⁵

This paper will contend that, with a stress on green energy or without one, China presents, not a better economic model, but a cautionary tale. My argument covers five points. First, for the PRC the task of maintaining high GDP growth rates will become increasingly difficult. Second, China’s institutions display deep flaws that, if not corrected, will make sustaining high growth harder still. Third, far from being a world leader in energy policy, the PRC has a very mixed record in the field, and its successes have come in spite of its institutions, rather than because of them. Fourth, while the PRC needs economic reform, the Party-state is likely to resist it. Fifth, for the United States, imitating Beijing’s dirigiste energy policies produces the same kind of wasteful patronage politics that plagues the PRC.

¹ Pew Research Center, *Partisan Divide*, 6.

² *Ibid.*, 1.

³ Pew Global Attitudes Project, *China Seen Overtaking U.S.*, 16.

⁴ Morris, Nivola and Schultze, *Clean Energy*, 1.

⁵ Council on Foreign Relations, “Campaign 2012 Essential Documents.”

WILL CHINA'S RAPID GROWTH CONTINUE?

For the PRC, maintaining high GDP growth rates is almost certain to become increasingly difficult. In many other countries, growth has surged, then lost momentum. Moreover, the stark differences between the PRC's institutions and those of today's wealthiest states suggest that China will need further reforms to sustain growth for the long haul.

China's growth in context

For about three decades, the PRC has sustained quite high growth rates. Between 1990 and 2008, China's real dollar GDP per head grew at a rate of 7.11 percent per year.⁶ This performance is impressive. Still, at a comparable stage in their development, several other countries have done much the same. When Japan, South Korea, Taiwan, and other neighbors of China were at levels of GDP per head like those in today's PRC, they too grew rapidly.⁷

Indeed, other countries have had growth surges, only to then regress. The Soviet Union grew rapidly through the 1960s and 1970s. By the end of the next decade, it had collapsed. In the late nineteenth century, Argentina had grown into one of the world's richest countries. Then its growth stalled. Brazil did the same in the twentieth century. It seems clear, then, that a growth surge, even a strong one, does not always presage future success.

To form a better idea of China's future prospects, therefore, one must look more deeply into the sources of its past and present growth. In China's case, three large-scale transitions have played major roles. One is the shift from a rural to an urban society. Another is the passage from a closed command economy to one deeply involved in world trade and with many markets open to entry and exit. The third is the substantial narrowing of the gap in productivity between China's technology and that of the industrial democracies, largely as a byproduct of the opening to trade. The combined effect of these three trends has been to greatly raise China's productivity and income.

These sources of growth, though, are fading. China's once vast pool of cheap surplus labor is close to being exhausted. Wages have been rising; the size of the labor force will begin shrinking as early as 2015, and the old-age dependency ratio will double by 2030.⁸ Also, the effects of earlier reforms, and those of the first round of technology imports, have been largely absorbed, and total factor productivity growth has slowed.⁹ A recent assessment observed:

⁶ Maddison, *Statistics*.

⁷ Dam, *China as a Test Case*, 6.

⁸ World Bank; Development Research Center of the State Council, the People's Republic of China, *China 2030*, 8.

⁹ *Ibid.*, 8.

The pace of China's economic growth almost certainly will slow, or even recede, even with additional reforms to address mounting social pressures arising from growing income disparities, a fraying social safety net, poor business regulation, hunger for foreign energy, enduring corruption, and environmental devastation. Any of these problems might be soluble in isolation, but the country could be hit by a "perfect storm" if many of them demand attention at the same time.¹⁰

Beyond these largely domestic forces, China's past growth has also relied on strong U.S. and European demand for its exports, perhaps a waning force as these economies grapple with aging populations and the burden of fiscal over-indulgence. For all of these reasons, further reform may be a prerequisite of the PRC's long-run growth.

The PRC's unique institutions

Institutions matter in economic performance, and the PRC's institutions differ markedly from those that prevail in the industrial democracies, the only states, other than the big oil producers, that have so far achieved high GDP per head. Six sets of institutions merit attention.

The Party-state oligarchy

First, the Chinese Communist Party (CCP) runs China "like a vast political machine".¹¹ Decision-making within the PRC works through the CCP's control over personnel policy. While the government makes and implements many decisions, the CCP controls all key personnel decisions over senior posts in both the Party and the state. A number of key bureaucracies constitute established power centers with a voice in personnel and policy.

At the same time, senior Party officials use their influence to appoint followers to lucrative and powerful job slots. By doing so, they build networks of loyal clients, and leaders' power depends greatly on their clients' posts and on their loyalty. The PRC's politics revolve around a mix of informal personal patronage networks and bureaucratic interest groups. These include the CCP itself, the major regions and cities, the central ministries, and the military.

The PRC Party-state is a narrow oligarchy. The CCP maintains a monopoly of political power, but Party membership is only about six percent of the total PRC population. The oligarchy is, in reality, much smaller than the CCP's size would suggest. The number of people who might realistically be said to have a part in selecting the PRC's leadership is very small, perhaps less than five hundred people.¹²

¹⁰ National Intelligence Council, *Global Trends 2025*, 29-30.

¹¹ Shirk, *China: Fragile Superpower*, 40.

¹² Shirk, *Political Logic of Economic Reform in China*, 10.

Within the Party, leaders are selected in a largely top-down process.¹³ At the same time, leaders are ultimately answerable to the CCP Central Committee. Also, patrons, to maintain their networks' vigor, must reward their clients' loyalty. The PRC's political process, therefore, involves a degree of two-way accountability.¹⁴

Reputedly, at the peak of CCP politics, two broad alliances have coalesced into rival factions. Each faction is tied to a regional base and espouses a distinct policy agenda, and each commands roughly equal power within the Politburo Standing Committee. Sitting atop this system, the CCP General Secretary, rather than acting as a supreme autocrat, must ride the waves of fluid coalition politics.¹⁵

Economic decentralization

Second, the CCP and the PRC have developed a system that strongly motivates subnational governments to foster economic growth.¹⁶ Since the Mao era, indeed even before that, subnational governments have overseen much of the PRC's economy. The fact that the economy is relatively decentralized has also helped to make subnational governments a powerful constituency in Beijing's politics.

In today's system, those in charge of the regions and cities enjoy fairly wide discretion, but as just noted, the CCP holds sway over these officials' career prospects. Officials whose districts achieve higher growth rates than those of their peers are promoted.¹⁷

Senior subnational officials, rather than the central organs of the CCP, control much more of the bureaucracy than was the case in the USSR.¹⁸ The senior subnational officials presumably also have motives to reward their subordinates for economic growth in the state and Party subunits over which the latter preside. Since short-run economic growth can be measured in a timely and reasonably objective way, the incentives are effective.

Substitutes for weak contract enforcement

Third, the Party-state cannot be trusted to act as an impartial and effective enforcer of laws, rights, or contracts. Without access to this vital public good, people must rely on informal networks to enforce contracts. These networks are often centered on family and regional ties.

¹³ Li, "Battle for China's Top Nine Leadership Posts," 131.

¹⁴ Shirk, *China: Fragile Superpower*, 40.

¹⁵ Li, "Battle for China's Top Nine Leadership Posts."

¹⁶ Xu, "Fundamental Institutions of China's Reforms," 1078.

¹⁷ *Ibid.*, 1079.

¹⁸ Shirk, *Political Logic of Economic Reform in China*, 156.

In dealings within such networks, members are subject to norms of probity. Violating these norms could cause one to be barred from further dealings with all network members, which may include local officials of both the state and the Party. The threat is credible, and the cost of incurring the sanction is likely to be substantial.

Therefore, within such networks, trust is high, while transaction costs can be very low; conversely, outside of such networks, the weakness of third-party contract enforcement implies that transaction costs may be high.¹⁹ Such high transaction costs may impede the development of integrated national markets.

State-owned enterprises

Fourth, government uses its control of state-owned financial institutions as well as other means to steer capital to state-owned enterprises (SOEs).²⁰ SOEs can be divided into at least two tiers. The first consists of those firms overseen by Beijing, and the second consists of those overseen by regional or local governments.²¹ In 2010, there were approximately 114,500 SOEs of both tiers. This number was down from 159,000 in 2003. Many of the second-tier SOEs have been effectively privatized, and their legal status is often blurred.²²

Central SOEs can be further divided into three classes. First are the firms overseen by the State-owned Assets Supervision and Administration Commission (SASAC). These firms consist of 1) those centered in defense, communication, transportation, and utilities; 2) firms centered in natural resources such as oil, minerals, metals; and 3) firms centered in construction, trade, and other industrial products. Financial companies in banking, securities, and insurance are the second major class. A third class comprises firms in media, publications, culture, and entertainment.

The national SOEs, especially those regulated by SASAC, tend to be large, oligopolistic, and engaged in heavy industry. These firms are slowly shrinking in number but quickly growing in wealth. From 2003 to 2010, the number of SASAC firms fell from 130 to 121, but during these same years their assets rose from 3 trillion RMB to 20 trillion RMB.²³ The heads of all the SASAC firms are members of the CCP, and these firms have many close ties with top Party officials, their families, and their friends.²⁴

¹⁹ Redding and Witt, *Future of Chinese Capitalism*.

²⁰ The World Bank; Development Research Center of the State Council, the People's Republic of China, *China 2030*, 28.

²¹ Li, "China's Midterm Jockeying," 3-4.

²² Dollar and Wei, *Das (Wasted) Kapital*, 3.

²³ Li, "China's Midterm Jockeying," 4.

²⁴ Li, "Battle for China's Top Nine Leadership Posts," 22.

Administered markets for land and labor

Fifth, as with capital, the state also exerts extensive control over land and labor markets. Long-term leases on agricultural land are permitted, but outright ownership is not. In reality, agricultural land tenure rights are often insecure, and local governments hold a monopoly on converting land from rural to urban purposes.²⁵

In such land-use conversions, farmers are paid only for the value of the land in its agricultural use. Government and developers, therefore, can and do divide the economic rents that flow from converting land to much higher-value industrial property. Such transactions have become a major revenue source for local government. Hence, solving the problem of insecure land tenure may well also require finding some added source of fiscal support for subnational government.

Government policy also shapes labor markets. A household registration system plus non-portable, locally administered insurance and pension systems effectively force many workers to remain in rural areas.²⁶ These institutions thus keep surplus labor away from the cities. As labor becomes scarcer in coming years, the economic costs of continuing this pattern are likely to rise.

Particularistic policies

Sixth, the PRC's partial embrace of the market progressed more through exceptions to existing rules than through new rules of general application. Specific regions, industries, markets, and firms moved haltingly and with many twists and detours toward a market economy. Economically, compared to a swifter and more sweeping reform, the approach was wasteful.

Politically, though, particularistic policies make sense. Small increments of reform spark less intense resistance than large ones. Moreover, partial reform can create more concentrated economic rents than would result from uniform rules.

Adopting a universal rule may enhance efficiency, but the competition that it unleashes tends to dissipate any rents that the policy creates. A particularistic policy change, in contrast, tends to shelter rents from competition. Therefore, by offering to impose such policies, power holders can exact some of the rents for their own use.²⁷ The fact that a particularistic policy is anomalous increases the clients' dependence on the power holders who decree and maintain it. Thus, the use of particularistic measures may more than compensate those in power for the economic waste that it causes.

²⁵ World Bank; Development Research Center of the State Council, the People's Republic of China, *China 2030*, 31.

²⁶ *Ibid.*, 32.

²⁷ Shirk, *Political Logic of Economic Reform in China*, 280-281.

INSTITUTIONALIZED INEFFICIENCY

China's institutional idiosyncrasies affect its economic performance. So far, since the dawn of the reform era, whatever the effects of the PRC's institutions, the economy has grown rapidly. But the prospects for future growth are likely riding on the chances for institutional reform. Three points deserve careful notice. First, government has failed to carry through its announced plans to "rebalance" the economy. Second, the policies favoring the SOEs degrade productivity. Third, corruption is rampant and costly.

Failure to rebalance

The PRC's 12th Five-Year Plan calls for economic "rebalancing". The latter implies a combination of measures. They include raising household consumption standards in preference to growing exports, boosting productivity rather than adding more and more inputs, and reducing environmental harm.²⁸ Yet, the Plan takes no concrete steps to do these things.²⁹ To change this pattern would require tackling interest groups that appear to hold veto power over policy.

Notwithstanding the plan, fixed-asset investment (FAI) remains heavy. Much of the investment in infrastructure is poorly managed, and a good deal of it may prove to be of little value.³⁰ Three forces that seem to be implanted in the Party-state's DNA push China toward high levels of FAI.

First, SOEs in construction and heavy industry stand to profit from new FAI. These firms have very strong ties to both Party and the state. They can and do use those ties to promote funding for such projects.

Second, as noted above, the CCP rewards local officials for short-run economic growth. FAI projects conform to this incentive. Even projects that will not actually produce much value can help to boost the career of officials who promote them. By the time a project's limits have appeared, its sponsor may well have moved on to another post.

Third, FAI projects become large-scale vehicles for graft. Bid rigging, overcharging for inputs, bribery, and extortion offer a large scope for private gain. Government, Party, and SOE officials are well placed to cash in. Many clearly do.³¹ Again, even a project that will harm the local economy in the long run can be a source of income for the well connected.

²⁸ Naughton, "What Price Continuity?" 3.

²⁹ *Ibid.*, 5.

³⁰ Yu, *China's Policy Responses*, 12.

³¹ Pei, "Fighting Corruption," 241.

Favoring the SOEs

Other public policies also favor over-investing in the SOEs. Government uses a combination of financial sector entry barriers, currency controls, and regulations to hold returns on savings to very low levels. It then pushes financial institutions to lend these funds to SOEs at very low rates of interest. The state assesses relatively light tax and dividend burdens. Moreover, the PRC bars privately owned firms from entering sectors that have been designated “strategic” or “pillar.” The SOEs are thereby sheltered from competition. The effect of these policies is to confer large opportunities for asset stripping on the senior Party members who control these firms.

Overall, the consequences of such policies seriously impair industrial productivity.³² Generally, the heavy industry sector has been less productive than light industry. Also, many of the heavy industrial SOEs are concentrated in the less-productive provinces. The policies favoring SOEs thus tend to steer capital away from its most productive use.

Statistics bear out what one might reasonably predict about the SOEs’ productivity. A 2005 survey of 12,400 firms in 120 cities found that private firms earned average rates of return that were 50 percentage points higher than those of wholly state-owned firms. Across the sample and even after accounting for regional and sectoral effects, average returns were highest for private and foreign-owned firms, lower for partially state-owned firms, and lowest of all for wholly state-owned firms.³³ Another study found that in 2009 the private sector’s net return on investment was 8.18 percent, compared to 3.05 percent for the SOEs.³⁴

Innovation also suffers. Another study shows that, between 1978 and 2007, total factor productivity growth (a measure of efficiency improvements) in the state sector was a third of that in the private sector.³⁵ Thus, while proclaiming a goal of speeding innovation, PRC policy is allocating capital in ways that retard it.

Aware of this problem, Beijing has again promulgated measures that, were they to be enforced, would end discrimination against the private sector. The new policy, though, largely restates those that were already supposedly in place. It does not inquire into why the earlier pronouncements were ineffectual, and it proposes nothing new to change the result.³⁶ Such measures cannot cancel the effects of cases in which the PRC’s murky justice system has

³² World Bank; Development Research Center of the State Council, the People’s Republic of China, *China 2030*, 26.

³³ Dollar and Wei, *Das (Wasted) Kapital*, 10-12.

³⁴ Li, “China’s Midterm Jockeying,” 22.

³⁵ World Bank; Development Research Center of the State Council, the People’s Republic of China, *China 2030*, 26.

³⁶ Naughton, “What Price Continuity?” 6.

prosecuted and sentenced to jail private entrepreneurs attempting to encroach on an SOE's market.³⁷

Degrading land and labor productivity

Other policies affect labor and land. In China, the amount of land per farmer is often too small to permit efficient farming. Consolidating holdings into larger units could raise output per unit of agricultural labor. Further, allowing the surplus agricultural workers to move into other sectors would be a way of alleviating the tightening labor markets.

Yet an array of institutional barriers impedes this seemingly obvious adjustment. For instance, as noted above, agricultural land tenure is insecure. That insecurity blocks land transfers that could increase farm size. And it locks labor into low-productivity agriculture when they could be producing more elsewhere in the economy.

Meanwhile, the household registration system and the non-portable safety net reinforce the rural lock-in. These institutions, by holding down urban unemployment levels, do help to keep unrest away from the cities. They reach this end, though, at the cost of lower average output per farm worker, and they risk exacerbating the emerging labor shortages.

Rampant corruption

In the PRC, corruption is pervasive. China's central bank has estimated that, over a fifteen-year period, corrupt officials smuggled \$123.6 billion out of the country.³⁸ Corruption in government spending on procurement, administration, FAI, and land may amount to three percent of GDP. The financial sector, the SOEs, and pharmaceuticals are rife with bribery, fraud, insider trading, and asset stripping.³⁹ The armed forces, too, are plagued by structural and endemic corruption.⁴⁰ Corruption of the judiciary is common.⁴¹

The Bo Xilai-Gu Kailai Affair suggests that corruption is also rife at the level of subnational government. In fact, media coverage suggests that Chongqing has been nothing short of a major city run as a Mafia state. Further, Bo's fall seems more an artifact of chance and of Beijing power rivalries than the result of anti-corruption efforts. And Beijing seems much more interested in hushing up the entire matter than it is in getting to the bottom of it.

³⁷ Acemoglu and Robinson, *Why Nations Fail*, 437-438.

³⁸ Downs and Meidan, "Business and Politics in China," 11.

³⁹ Pei, "Fighting Corruption," 237-241.

⁴⁰ Mulvenon, "The Only Honest Man?" 3.

⁴¹ Dam, *China as a Test Case*, 20.

By inference, the real costs of corruption must be very large indeed. Costs include sales lost because of the fear of adulterated products. They include the value of all the transactions that do not occur because no one can trust the courts to enforce contracts, laws, and property rights. They encompass, as well, the pollution damage that results from standards left unenforced – a subject that will be addressed at length in a later section. More subtly, corruption is a major source of public discontent with the regime.

PRC GREEN ENERGY: A PRODUCT OF CONSTRAINTS

The U.S. survey respondents who rate the PRC's economy so highly are probably unaware of these aspects of it. What they, and the president, may perhaps have more in mind is Beijing's green energy policies. Yet those measures, too, should be viewed in context. In reality, the PRC's green energy policies reflect, in part, limits imposed by the Party-state's unique institutional and strategic constraints. Green energy is only a minor component of Beijing's larger energy strategy. That larger strategy, in any case, reflects many of the same sorts of problems that plague other aspects of PRC decision-making.

Green energy: a modest factor in PRC policy

For the PRC, green energy is merely one fairly minor component of an all-of-the-above energy policy. That policy focuses much more on supply and security than on environment. Within this hierarchy of goals, supplying the energy needed to sustain economic growth seems to hold pride of place.

An all-of-the-above energy supply strategy

Beijing is grappling with its energy supply challenges by means of a muscular, all-of-the-above strategy.

Since 1949, the main priority of China's government in the energy sector has been to raise domestic production of energy and thus to enhance security of supply. It is a remarkable achievement to have expanded energy supply at a sufficient rate to support an economy which expanded by about twenty-fold over the period 1978 to 2010. Over this period energy consumption grew by more than five times and doubled over the eight years 2001-2008...⁴²

As the PRC has taken on the task of increasing supply, its energy sector has become a net importer of oil, natural gas, and even coal. China is now the world's largest importer of both oil and total energy.

⁴² Andrews-Speed, *China's Long Road*, 3.

Growing import dependence has raised concerns about security. Oil is especially problematic. China is a large oil importer from, among others, the major Persian Gulf producers. Like other countries, the PRC is subject to the risks posed by potential supply disruptions and oil price shocks. Also, the U.S. Navy, in a crisis such as a PRC attack on Taiwan, could threaten the PRC's sea lines of communication with the Persian Gulf.⁴³ Thus, oil import dependence limits Beijing's freedom of action in ways that do not affect the United States.

In response, the PRC has come to stress supply diversity. "Already the range of countries with which China does business has expanded dramatically: in 1989, the country secured all of its oil imports from five countries, by 2009, ten countries supplied over 80 percent of its imports."⁴⁴ In this spirit, Beijing has launched a number of pipeline projects seeking to bring oil and natural gas from Russia and Central Asia. These moves lessen the PRC's vulnerability to threats to its sea lines of communication.

The same theme prevails in the electric power sector. There, the PRC plans to expand coal, hydropower, nuclear, natural gas, wind power, and solar, yet coal remains the mainstay slated to supply 65 percent of all new power.⁴⁵ In this mix, renewables remain a quite small component.

Some end-user energy prices have risen. In theory, price increases should lead to energy conservation. In practice, demand is relatively inelastic,⁴⁶ as would be expected in oligopolistic markets and sluggish firms. Beijing has, nonetheless, set energy conservation targets for local governments and some firms, and it has sought to encourage replacing older, less-efficient equipment with newer, energy-saving technology.⁴⁷

⁴³ Friedberg, *Contest for Supremacy*, 228.

⁴⁴ Economy, "China's Energy Future," 462.

⁴⁵ Yergin, *The Quest*, 221.

⁴⁶ CENTRA Technology, Inc., and Scitor Corporation, *China: The Impact of Climate Change to 2030*, 37.

⁴⁷ Andrews-Speed, *China's Long Road*, 9, 4.

Pollution problems

All in all, the scramble for supply has come at a high environmental cost:

The production and consumption of energy in China has resulted in serious pollution at local, regional and global levels, not least because of the continuing predominance of coal in the energy mix. At [the] local level, land has been destroyed where coal mining has not been accompanied by land rehabilitation, rivers have been poisoned by mine effluent, solid waste, and oil spills, and the air in China's cities is amongst the worst in the world. . . . Sulphur dioxide emissions from power stations continue to create acid rain across China and neighbouring countries, and at a global level China is estimated to have been the world's largest emitter of CO₂ through energy use since 2007...⁴⁸

The costs of environmental degradation and resource depletion in China approached 10 percent of GDP over the past decade – air pollution accounted for 6.5 percent, water pollution 2.1 percent, and soil degradation 1.1 percent.⁴⁹

Climate change also poses challenges. In the short run, the problem is primarily diplomatic. China has come under some pressure from the United States and Europe to curb its greenhouse gas emissions. Its refusal has occasioned image problems. In the long term, climate change also threatens economic harm, but currently the threat that it poses to the economy is less acute than that from local pollution. The most serious risk is that climate change is likely to exacerbate regional water scarcity. The result may lead to a water crisis in China's drought-prone north and west; such a crisis might threaten political and social stability.⁵⁰

A secondary problem is that, over time, worsening storms and rising sea levels may threaten China's low-lying coastal cities. China's coastal regions account for 16.8 percent of its total land areas, 41.9 percent of its population, and 72.5 percent of its GDP. These areas contain extensive coastal lands with an elevation of less than 5 meters; such lands are vulnerable to sea-level rise and extreme climate events.⁵¹

Green energy: a costly patch for institutional weakness

To the extent that green energy supplants coal, it lessens some of these pollution costs. It also relieves pressure on China's hard-pressed coal transport system. These advantages are real, but, given the continuing large role of fossil fuels, Beijing could in principle achieve more by directly controlling emissions from these sources than it can by promoting green energy. It chooses the

⁴⁸ Ibid., 5.

⁴⁹ World Bank; Development Research Center of the State Council, the People's Republic of China, *China 2030*, 39.

⁵⁰ National Intelligence Council, *Global Trends 2025*, 4.

⁵¹ World Bank; Development Research Center of the State Council, the People's Republic of China, *China 2030*, 22.

latter course largely because doing so circumvents some of the deeply ingrained features of the Party-state's core institutions.

Environmental costs of the failure to rebalance

The PRC's inability to shift the focus away from heavy industry affects its environment as well as its economy. In fact, one main driver of the Chinese economy's high energy and greenhouse gas intensity is not energy policy per se (though distorted prices there do add to the problem), but rather the government's use of the financial services sector to funnel investment to heavy industry SOEs.⁵²

High rates of investment have, to be sure, led to modernization of plant and equipment. As a result, industry's energy efficiency has risen. The nature of heavy industries, though, limits the effect. Heavy industry is inherently energy intense. Therefore, the political system's failure to shift capital away from infrastructure and heavy industry is a major source of the PRC's environmental problems.

The stress on infrastructure may cause yet another unwanted side effect. Some of the investment in infrastructure is also being made in a pattern that encourages urban sprawl; such investments may reinforce the long-term trend toward an auto-centered transportation system.⁵³ If so, they may entail future costs in the form of yet greater oil import dependency and greenhouse gas emissions.

The regulatory impasse

Some of the harm caused by the failure to restructure the economy could be avoided if the PRC were able to enforce tough emission controls. But the heavy economic damage cited above testifies to the fact that environmental quality control is very weak. Universal rules limiting emissions exist, but the informal exemptions to the rules seem to be nearly as broad as the rules themselves.

In the electric power sector, a major source of air pollution and global warming gases, the conflicting incentives have led to substantial capital investments in power plant efficiency and pollution control equipment. These investments, however, have reaped disappointingly small payoffs in environmental quality. In effect, many power plants do not operate their pollution control equipment; as coal prices have risen, they have also substituted dirtier local coals for costlier, more distant supplies. The result is that even newer, more modern power plants are often polluting at levels far above legal standards.⁵⁴

⁵² Bergsten et al., *China's Rise*, 152.

⁵³ World Bank; Development Research Center of the State Council, the People's Republic of China, *China 2030*, 30-32.

⁵⁴ Steinfeld, Lester, and Cunningham, *Greener Plants, Grayer Skies?* 9, 29.

Some observers propose that the PRC should try to solve this problem by adopting pollution taxes. And the PRC is reportedly weighing a carbon tax on large enterprises. It has also adopted a regional carbon cap-and-trade system.

These proposals will have little, if any, effect on pollution.⁵⁵ The proposed carbon tax, for instance, features a very low tax rate, reputedly about \$1.60 per metric tonne of CO₂. This tax rate would imply a cost increase of roughly \$.014 per gallon of gasoline, if it actually applies to gasoline, which is unclear. The cap-and-trade system is also largely sham; it is designed not to actually lower total emissions, but to shift industry from east to west.

To lower emissions, a carbon tax must apply at least to firms that generate most of the emissions. It must, therefore, cover the energy sector as well as the large, energy-intensive heavy industries like chemicals, metals, cement, and mining. These are the sectors that count with regard to CO₂.⁵⁶

They are also sectors in which SOEs reign, and in which entry barriers blunt competitive pressures. Oligopolistic markets and informal networks invite collusion. Budget constraints are soft, finances are opaque, and the firms themselves are often slow to innovate.

In other words, one could scarcely imagine a worse milieu for hopes that a pollution tax would actually lower emissions. In sum, market-based environmental policies would be good policy tools only if the PRC had privatized the SOEs and withdrawn the entry barriers that protect them. Without such reforms, carbon taxes or cap-and-trade schemes can have little or no impact on emissions.

Command-and-control measures might seem like a workable second-best approach, but they too are plagued with implementation problems. One root of the problem is that the SOEs' political clout shields them from enforcement.

Entrenched quasistate groups that control the most polluting heavy industries have colluded with leading families tied to the energy industry to forestall environmental regulation and ensure China continues to build polluting power plants. When government reformers tried to create an "energy czar" so that China could manage both its energy needs and its environmental imperatives, such groups undermined the effort.⁵⁷

A second root problem is that local officials have very weak incentives to impose costly measures on the firms that generate the growth on which their career prospects depend. To cope with that problem, Beijing sought briefly to promulgate new incentives. These were

⁵⁵ Lee, "China's Fake Carbon Tax."

⁵⁶ Bergsten et al., *China's Rise*, 141.

⁵⁷ CENTRA Technology, Inc., and Scitor Corporation, *China: The Impact of Climate Change to 2030*, 21.

designed to reward officials for environmental improvement. Measurement, though, proved to be impossible; the system lacked credibility, and it rapidly collapsed.⁵⁸ Also, the judiciary, which is subject to political pressure, poses a barrier to enforcement.⁵⁹

Finally, Beijing sometimes disguises protectionist measures as environmental protection.

In the automobile industry, for example, China's standards are higher than the US Government's Corporate Average Fuel Economy (CAFÉ) standards. Although the principal purpose of the high standards is to disadvantage foreign manufacturers, if implemented effectively they would substantially improve fuel economy. Instead, they are largely ignored and China's cars remain inefficient. Because the state attempts to keep fuel prices depressed to bolster economic growth, there is little market incentive to move to hybrids or other high-efficiency vehicles.⁶⁰

The cumulative result is that, formally, the PRC has many stringent and sweeping environmental regulations. Informally, particularistic exceptions to these measures are the rule rather than the exception. The policies, therefore, either have no effect or have effects that are unrelated to their stated purpose.

Political rather than technocratic policymaking

The above should explode the illusion that the PRC's energy policymaking is somehow an expert-led technocratic process. The process is instead thoroughly political. Government structure tells much of the story. No energy ministry exists. Instead, a bureau in the National Development Reform Commission (NDRC) is formally in charge of coordination; even then, another bureau controls energy pricing. To further complicate the coordination problem, neither the People's Liberation Army (PLA) nor the Ministry of Foreign Affairs, both of which have important roles in energy policy-making, is represented in the Bureau.

As a result, the policy process is fragmented. Interest groups directly lobby the top twenty-five to thirty-five elite policy-makers; this group includes the Politburo, members of the Secretariat of the CCP, the Standing Committee of the State Council, senior military commanders, and provincial leaders. Absent a ministry, decisions may be taken without a thorough analysis.⁶¹ The policy process, therefore, seems more political than technocratic, and it is more pluralistic than unitary.

⁵⁸ Xu, "Fundamental Institutions," 1139.

⁵⁹ Dam, *China as a Test Case*, 16.

⁶⁰ CENTRA Technology, Inc., and Scitor Corporation, *China: The Impact of Climate Change to 2030*, 35.

⁶¹ Downs, "Chinese Energy Security Debate," 30.

Renewables as a way around resistance

Thus hemmed in, Beijing's environmental policy has in large measure taken the form of throwing money at problems. Beijing's investment in green energy is a case in point.⁶² These investments offer a way of dealing with environmental problems without having to face down the SOEs. Indeed, the latter are beneficiaries of green energy mandates and subsidies. More than half of the PRC's wind turbine manufacturers, for instance, are SOEs.⁶³ Their electric power sector customers, of course, are all SOEs. At least one of the national oil companies is also involved in wind farm development. If, as Beijing hopes, the PRC is able to use EU and U.S. wind and solar subsidies as means of building an export market, it is the SOEs that will reap the profits.

How much environmental good any of this investment is doing is, of course, another question. Granted, the PRC has built many wind projects. Yet output from them remains low; indeed, as of 2008, almost one third of the capacity built was not even connected to the grid.⁶⁴ The outcome seems more like Soviet-style "storming" (rush production to meet quotas within the allotted time span) than it resembles experts calmly plotting moves in a global economic chess game.

Climate policy

On climate policy, however, green energy promotion serves as a good device for greenwashing. As in other aspects of greenhouse gas (GHG) control, the PRC mostly follows a "no regrets" strategy. Yes, it has taken some steps to lower the growth in GHG emissions. Those steps, though, have also broadly served goals of energy supply and security, or they have produced ancillary benefits in local pollution control.

Beijing clearly intends for these measures to deflect criticism and ease diplomatic pressure, but they are meant to do so without changing the basic thrust of an energy policy. The PRC remains mainly focused on coal, oil, and natural gas.

This approach makes good sense. The constraints that subvert other pollution limits in the PRC would also work to frustrate GHG controls. Given that the PRC has stated that it will not adopt GHG controls that impede its economic growth, there is, after all, rather a low ceiling on the degree to which controls might affect climate change. Then too, even President Obama has rejected the idea of the United States paying the PRC to abate its GHG emissions. That U.S.

⁶² Andrews-Speed, *China's Long Road*, 2.

⁶³ China Electric Power Research Institute (CEPRI), Renewable Energy Department (RED) 2005-2012, *China Wind Power Center*.

⁶⁴ Wai-yin Kwok, *Weaknesses in Chinese Wind Power*.

policy seems unlikely to change, since the United States has an even higher capacity to adapt to climate change than China does.⁶⁵

Yet Beijing clearly takes climate change seriously. While it has announced that its policy is to place equal stress on GHG reduction and adapting to climate change, the first element is more rhetoric than substance. On adaptation to climate change, though, the PRC plans vigorous action. The biggest single element is to invest in diverting water from the Himalayas, with the idea being to move the water to the arid provinces of the north and west.

There is every reason to regard this plan as serious. Chinese governments have long expertise in large-scale water projects: “China already has initiated a massive South-to-North water diversion project, which will use thousands of miles of canals to divert water from the Yangtze River to the Yellow River. The first phase of the project is scheduled to be completed next year, the second phase by 2030.”⁶⁶ While this policy will harm downstream countries in South Asia and Southeast Asia, those countries have little realistic recourse, and the PRC is likely to proceed with little regard to their interests.⁶⁷

In large measure, however, it is economic growth itself that is Beijing’s best means of boosting its capacity to adapt to climate change. But growth, as was discussed above, may hinge on Beijing’s ability to change its policies. And policy change seems to demand deeper reform of institutions. The central question about the PRC’s climate policy, therefore, devolves into the central question about its entire economic future. That is, why has market reform halted halfway?

A TRANSITION STOPPED IN MID-COURSE

Politically, the CCP is seeking a species of reform that has been described as “legalism without democracy”.⁶⁸ It is, though, a formula that seems unlikely to resolve the three basic contradictions at the roots of the Party-state. First, the same policies that most threaten long-term growth are vital to buying the political support needed to keep the Party-state in control of China and the major CCP barons in control of the Party-state. Second, the small size of the selectorate at the heart of the CCP is inherently at odds with hopes to curb corruption. Third, only current elites could effect major reforms, but their interests are to defend the particularistic policies from which they derive both wealth and power.

⁶⁵ National Intelligence Council, *Global Trends 2025*, 25.

⁶⁶ *Ibid.*, 39.

⁶⁷ CENTRA Technology, Inc., and Scitor Corporation, *China: The Impact of Climate Change to 2030*, 41.

⁶⁸ deLisle, “Legalization without Democratization,” 185.

Legalism without democracy

Progress toward an impersonal rule-of-law appears to be a theme of the move toward legalization without democratization. Such a program would seem likely to replace particularistic policies with rules of general application. Changes of this kind, though, will meet pushback from all the forces that make particularism so attractive to those in power.

Still, some progress is evident. Age and term limits now apply for both Party and state officials. Civilian leadership of the military relies less on personal patronage and more on legal and bureaucratic rules. The policy process, as well as that of economic planning, follows regular cycles and set rules. Property rights and corporate governance are somewhat better defined. Many laws, rules, practices, and procedures have been codified.

In the same spirit of making rules work in a more impersonal way, the CCP has broadened its membership base. After much controversy, it now allows capitalists to be members, although none has as yet achieved any real stature in the Party. The CCP has, however, now made managers of the central SOEs a still small, but growing, recruiting pool for top jobs.⁶⁹

The CCP has also sought to improve its awareness of social trends. It has, therefore, experimented with forums in which the public is encouraged to surface concerns. It has also allowed greater news media openness in publicizing abuses.

While these changes show the CCP learns and experiments, the Party also remains resolved to hold on to its monopoly of political power.⁷⁰ The goal of the experimentation is to preserve top-down control, not to abdicate it. And the CCP wishes to keep the power to select the government concentrated within a very small number of people. Whatever the merits of this version of reform, it seems unlikely to be able to free the CCP from the contradictions that are inherent in the structure of the Party-state.

Structural roots of the failure to control corruption

Many members of the PRC elites must find the concept of a more impartial, rule-bound society appealing. And if rule-of-law reform were to curb corruption, it would produce real gains in legitimacy. At present, the CCP appears to be working to limit corruption, or at least it is working to appear to be trying to limit corruption. From 1982 to 2006, with one exception, the CCP Disciplinary and Inspection Committees disciplined over 100,000 members a year. Most of the punishments were of a largely symbolic nature, but some of them were quite severe.⁷¹ A few

⁶⁹ Downs and Meidan, "Business and Politics in China."

⁷⁰ Nathan, "China's Political Trajectory," 32.

⁷¹ Pei, "Fighting Corruption," 231-232.

instances of capital punishment were reported – doubtless *pour décourager les autres*, to slightly adjust Voltaire’s phrase.

Formally, a universal rule bans corruption. Informally, nearly everyone is exempt from it. But the formal rule remains on the books; therefore, it can be called upon in cases that become too embarrassing. It can also serve as cover for political payback in faction power struggles. (The Bo Xilai case seems to have a bit of both of these elements to it.)

Also, both the military and the civil government have made institutional changes that are designed to rein in corruption.⁷² Beijing’s efforts in this regard seem to avail very little. In fact, the trends might be moving in the opposite direction. Certainly, the state has not curtailed its role in economic management, which is in some measure the source of the problem.

In the past decade ... government employment has nearly doubled, the availability of effectively free money from the banks has meant that political influence translates directly into wealth, competition in the state and private sectors has weakened, foreign direct investment has been more restricted, and the involvement of senior military officers in business has once again flourished. The most sincere police campaigns cannot offset the weakening structural impediments to corruption.⁷³

In fact, in other ways as well, the Party-state is so structured as to make corruption endemic to its workings. Consider regimes where, unlike the PRC, large numbers of people select political leaders. These states are generally successful in limiting corruption. The key to this success is not merely having large numbers of people able to vote. The case of India shows that, where bosses and ward healers control large numbers of the votes cast, a large electorate may conceal the reality of a much smaller selectorate.

In polities with selectorates that are large in fact as well as in form, however, candidates for office mostly promise to supply peace, law, prosperity, and honest government. Large economies of scale make supplying such “public goods” affordable. Therefore, candidates can credibly promise to deliver them. No candidate in such a polity, though, could credibly promise to supply private goods of any real value to a majority of voters.

In contrast, in a polity with a small selectorate, contests for power hinge on promising private goods to the main power brokers.⁷⁴ In the PRC, where just five hundred people determine the composition of government, as in many political machines, such promises often take the form of the spoils of the patronage system. Thus, the PRC’s small selectorate is apt to reward leaders

⁷² Mulvenon, “The Only Honest Man?” 2012, 5; Pei, “Fighting Corruption,” 245-247.

⁷³ Overholt, “Reassessing China,” 126.

⁷⁴ Bueno de Mesquita et al., *Logic of Political Survival*, 104.

who offer to enrich the system's barons and their key clients. Anti-corruption efforts are, therefore, at odds with the core political logic of the Party-state.

Why market reforms have stalled

The main source of the PRC's economic problems is the failure to carry market reforms to their conclusion. The prime reason that such reforms have stalled is that completing them would weaken the CCP's control of the PRC and the major power brokers' control of the Party-state. In effect, the imperatives of economic growth clash with the dictates of gaining and holding power.

The various SOE stakeholders are certainly among the most potent interest groups in the PRC. They are the beneficiaries of the policies that coddle the SOEs and hobble the private sector. Keeping them happy wins a large and highly influential bloc of support for any CCP leader. Pork-barrel FAIs serve similar purposes.

The spoils from these policies provide the glue that holds together the Party-state patronage system. Allocating those spoils binds clients to patrons and vice versa. It motivates the CCP cadres' obedience. It strengthens the PLA subservience to the Party. It also helps to secure urban middle-class support for the current regime.

Similarly, while high rural unemployment and blocked rural-to-urban migration must lower output, these measures decrease the risk of urban unrest, as mentioned earlier. All else being equal, urban political unrest threatens regimes much more acutely than does unrest in the countryside.⁷⁵ The CCP is willing to pay a price in foregone economic output to further ensure its hold on power. Controlling a somewhat poorer state, after all, is far better than controlling none at all.

So far, such policies have paid off. They do, though, pose a dilemma for the longer term. On the one hand, the CCP is buying support with policies that impose a hefty price in foregone economic output; yet growth in output is the mainstay of regime legitimacy. On the other hand, market reforms could sustain the growth. Xi Jinping, the heir apparent as General Secretary, has, in the past, promoted private enterprise.⁷⁶ He may continue to do so as General Secretary. But reforms seem likely to entail elite disaffection, and disaffected elites might well seek more pliant leaders.

⁷⁵ Slater, *Ordering Power*, 14.

⁷⁶ Nathan, "China's Political Trajectory," 31.

Elites and reform

Many in the United States hope for a democratic transition in the PRC. Such an event would change much. Historically, though, moves to open political access come only when at least some existing elites calculate that such moves would benefit themselves; elites, after all, are better able than non-elites to solve the problem of organizing for collective action.

In China, though, current elites have motives for caution about any political opening. Majority voting might well trigger expropriation of elite wealth. China's income distribution is now very uneven; in fact, it may be one of the most unequal in the world.⁷⁷ Resentment against the rich runs high, as does the sense that they have obtained their wealth through corruption. With majority voting such sentiments might pose a serious threat.

At the extreme, a transition to more open politics might risk a breakdown of public order. Already, social conflict is rife. In addition to class conflict, tensions are evident along ethnic, regional, and religious fault lines.⁷⁸ The collapse of the Soviet Empire provides a cautionary case study. The PRC spends almost as much on internal security as it admits to spending on defense.⁷⁹ A leadership that did not perceive a genuine threat would be unlikely to incur such high costs.

WHAT DOES THE CHINA MODEL IMPLY FOR U.S. ENERGY POLICY?

The prior four sections of this paper should suffice to refute the notion that China, and its state-led economy, is a template which the United States should wish to copy. This section will home in on the narrower claims that the U.S. should copy Beijing's green energy policies. Three points are salient. First, U.S. conditions differ so much from those of the PRC that such borrowing is implausible on its face. Second, government is unable to conduct industrial policy competently, and the prospects for conducting a successful policy based on green energy are worse still. Third, for the United States, adopting green energy policies like those practiced in the PRC must bring in its train the same sort of wasteful patron-client politics that now plagues China.

China's energy policy of little U.S. relevance

Given the disparities between U.S. and Chinese conditions, any claim that the U.S. should emulate Beijing's green energy policies is implausible on its face. Unlike China, the United States faces no need to lessen demands on its coal transportation system. It has much less to fear

⁷⁷ Liu and Chen, *Why China Will Democratize*, 44.

⁷⁸ Horner and Brown, "A Century after the Qing."

⁷⁹ Liu and Chen, *Why China Will Democratize*, 48.

from oil dependence than does the PRC. It has also long since put in place effective curbs on air and water pollution.

Then too, U.S. wages are too high for the United States to match China's prowess in labor-intensive manufacturing. Production of many green energy technologies involves just this kind of work. Thus, in China, policies that promote the use of renewable energy sources may well lead to new domestic manufacturing activity. In the United States, though, promoting the use of these same technologies will stimulate imports, many of them from China, much more than it will boost domestic manufacturing.

True, despite the many distinctions between the two countries, they share a reluctance to adopt aggressive GHG controls. They both, therefore, wish to deflect criticism on this point. Spending tens of billions of dollars on green energy has, though, failed to quell foreign complaints about U.S. climate policy. And even if it had succeeded, it would surely have ranked as the most profligate campaign of public diplomacy ever waged.

Green energy as industrial policy

In any case, these days, President Obama talks about green energy far more as industrial policy than as a cure for environmental ills. In this regard, the Obama energy policy is very much like that of George W. Bush.⁸⁰ In fact, the main difference between the two presidents' policies is that the Obama administration has lavished far more money on the effort. Based on figures compiled by the U.S. Energy Information Administration, from FY2007 to FY2010, the U.S. government increased spending on energy-related subsidies by more than \$19 billion per year.⁸¹ Spending on conservation and renewable energy represented 65 percent of this increase.⁸² The Department of Energy (DOE) has also guaranteed nearly \$36 billion in loans to renewable energy firms and manufacturers of all-electric vehicle.⁸³ Two regulatory programs, the Renewable Fuels Program (RFS2) and the average corporate average fuel economy (CAFE) standards for cars and light trucks, add still more costs.

Industrial policy provides a major rationale for these programs. As noted above, the concept is popular with the public. Most economists, though, while accepting a valid role for government-funded R&D, dismiss industrial policy.

One reason is technical. The idea of industrial policy hinges on the proposition that, as cumulative output rises, learning by doing (LBD) and economies of scale will cause production

⁸⁰ Ellerman, "Conflating Climate with Energy Policy."

⁸¹ U.S. Energy Information Administration, U.S. Department of Energy, *Direct Federal Financial Interventions*, xi.

⁸² *Ibid.*, xiii, xiv.

⁸³ Morris, Nivola and Schultze, *Clean Energy*, 1.

costs to fall rapidly. These effects, supposedly, will swiftly drive down production costs per unit. As costs fall, the theory has it, global market share will rise.

However, recent research has shown that, while LBD is real and sometimes very powerful, its effect may be smaller than was once believed.⁸⁴ It is certainly less ubiquitous. LBD's effects are limited in time and place; they are largely firm-specific, they are mostly confined within a single generation of technology, and the role of cumulative output in producing them is unclear.⁸⁵ Thus, many economists now take a more nuanced view of a key theory behind industrial policy.

Further doubts center on the Obama decision to base his industrial policy on green energy. Politically, this choice is reasonable. As mentioned in the introduction of this paper, green energy remains popular with the electorate. Some key green energy technologies, though, have features that raise doubts about whether they will conform to the model of unit costs that fall steeply as output rises.

Consider electric vehicles (EVs), a major feature of the Obama program. The root problem with EVs is that their batteries are expensive and heavy, and they restrict the range of the vehicles. Supposedly, EV subsidies, by boosting sales, will lead to cheaper, better batteries.

But will they? A recent National Research Council study found that lithium-ion batteries are already being produced in great numbers for other applications; hence, the steep drop in cost that often occurs with brand-new technologies is unlikely. The incremental cost to produce EVs is likely to decline by about one third by 2020; thereafter, progress will slow.⁸⁶

In other cases, the price of inputs limits the effects of LBD. Some rare earth elements, for instance, are critical to producing the efficient magnets needed for both EVs and wind turbines. Strong demand for these elements is already raising prices for them. And rising output of EVs and wind turbines can only add upward pressure. The higher input prices will tend to offset any cost decreases that appear in the manufacturing process.

Other objections to industrial policy center on government's lack of capacity to implement it. In practice, government planners often fail to foresee future economic trends; political factors also often warp judgments.⁸⁷ The Obama choice to focus on green energy, despite its drawbacks, may be an example. But politics can distort priorities in other ways as well.

⁸⁴ Nordhaus, *Perils of the Learning Model*, 7.

⁸⁵ Montgomery and Smith, "Price, Quality, and Technology Strategies," 332-333.

⁸⁶ Committee on Assessment of Resource Needs for Fuel Cell and Hydrogen Technologies; National Research Council, "Transitions to Alternative Transportation Technologies," 1.

⁸⁷ Morris, Nivola and Schultze, *Clean Energy*, 13.

Green energy and particularistic policymaking

In at least one vital way, U.S. green energy policies follow a pattern much like that which prevails with many of the PRC's policies. The common pattern is that U.S. green energy programs are quite particularistic. Indeed, a description applied to the Energy Independence and Security Act of 2007 would apply equally well to the Obama policies and to U.S. energy policy in general. They are "a dizzying array of tax incentives for specific types of energy, authorizations of funding for energy programs, and establishment of new programs and goals without any unifying objective ..."⁸⁸

The lack of coherence is striking. The marginal costs of abating a ton of CO₂ emissions or of saving a barrel of oil across the many kinds of green energy subsidies vary widely. The same is true of its several energy efficiency standards. Similarly, the marginal costs of the DOE standards are not aligned with those of the CAFE program. Each subsidy, each type of loan guarantee, each regulation operates in a stovepipe. Cost effectiveness varies widely among them, and the programs offer no ability to seek least cost solutions by making trade-offs among the disparate types of efforts.

The Congress is at least equally to blame. Time and again it prefers allocating money to specific technologies instead of using performance-based prizes. And it defines the technology-based programs narrowly. Thus, corn-based ethanol is in its own favored category where it competes only with fuels that no one knows how to produce in commercial amounts. Many "clean energy" standard proposals exclude nuclear power. Proposals for national renewable portfolio standards often exclude hydropower. Even the failed Waxman-Markey cap-and-trade bill was larded with countless particularistic provisions.

Economically, this particularism is wasteful. Widening the range of choice among the means that can be used to meet a regulatory or technology goal lowers the costs of compliance. Confining efforts within narrow stovepipes can be very costly.

Politically, though, particularism is as logical in Washington as it is in Beijing. Defining policies narrowly lessens the risk that competition will dissipate the rents that the policy creates. Hence, it increases the size of the pool of rents from which office holders can hope to exact a share. To the same end, officials have strong motives to back forms of green energy that depend heavily on their own political patronage. Stakeholders in these technologies know that their success rides at least as much on currying political favor as it does on pleasing consumers, and they act accordingly.

Consistent with this logic, the Obama administration spends much more on solar power and electric vehicles than these kinds of projects are likely to return in economic or environmental

⁸⁸ Ellerman, "Conflating Climate with Energy Policy."

benefits.⁸⁹ The president and his allies in Congress reap hefty political payoffs from the support of the interests that expect to cash in on these policies. True, the outcome is wasteful. No voter, though, is likely to perceive the loss in productivity that the policies cause.

Doubtless, compared with China, the more competitive U.S. political institutions limit the damage. Solyndra did, eventually, go bankrupt. In China, it might not have.

Also, the rising opposition to green energy subsidies suggests that supporting such schemes carries at least a modest political price tag. Because the growth in opposition is confined to the conservative side of the political spectrum, one must surmise that it is linked to ideological polarization. At present, such polarization is much decried; yet, ironically, it provides what little discipline on wasteful green energy schemes that the U.S. political system is able to supply.

Nonetheless, it is hard to take much solace from the political system's performance. U.S. political institutions are quite conducive to particularistic patronage politics. The United States is, after all, the country that coined the term "pork barrel politics." Nothing in the record of the country's energy politics suggest that this pattern is losing its relevance.

Americans, therefore, should consider how their institutions will affect the outcomes of their energy policy choices. On the one hand, energy markets are surely imperfect. Such markets fail to reflect some of the costs of pollution, and for-profit firms invest less in innovation than would be socially optimal. On the other hand, government decisions are often the products of machine politics that use taxpayer funds as a source of patronage. Therefore, if the U.S. persists in promoting PRC-style green energy, it must also expect to get a hefty dose of PRC-style patronage politics.

⁸⁹ Morris, Nivola and Schultze, *Clean Energy*, 15.

BIBLIOGRAPHY

- Acemoglu, Daron, and James A. Robinson. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Business, 2012.
- Andrews-Speed, Philip. *China's Long Road to a Low-Carbon Economy*. Online Report, The Transatlantic Academy, 2012.
- Arnold, R. Douglas. *The Logic of Congressional Action*. New Haven: Yale University Press, 1990.
- Bergsten, C. Fred, Charles Freeman, Nicholas R. Lardy, and Derek J. Mitchell. *China's Rise: Challenges and Opportunities*. Washington, DC: Peterson Institute for International Economics, 2008.
- Bueno de Mesquita, Bruce, Alistair Smith, Randolph M. Siverson, and James D. Murrow. *The Logic of Political Survival*. Cambridge: MIT Press, 2005.
- CENTRA Technology, Inc., and Scitor Corporation. *China: The Impact of Climate Change to 2030: China: Geopolitical Implications*. Conference Report, Washington: National Intelligence Council, 2009.
- China Electric Power Research Institute (CEPRI), Renewable Energy Department (RED). *The China Wind Power Center*. 2005-2012. <http://www.cwpc.cn/cwpc/en/node/6496> (accessed July 8, 2012).
- Committee on Assessment of Resource Needs for Fuel Cell and Hydrogen Technologies; National Research Council. "Transitions to Alternative Transportation Technologies-- Plug-in Hybrid Electric Vehicles." n.d., 1.
- Council on Foreign Relations. "Campaign 2012 Essential Documents." *Republican Debate Transcript, New Hampshire, October 2011*. October 11, 2011 . <http://www.cfr.org/united-states/republican-debate-transcript-new-hampshire-october-2011/p26169> (accessed August 17, 2012).
- Dam, Kenneth W. *China as a Test Case*. Working Paper, Chicago: University of Chicago Law School, 2006.
- deLisle, Jacques. "Legalization without Democratization in China under Hu Jintao." In *China's Changing Political Landscape: Prospects for Democracy*, edited by Cheng Li, 185-211. Washington: Brookings Institution, 2008.
- Dollar, David, and Shang-Jin Wei. *Das (Wasted) Kapital: Firm Ownership and Investment Efficiency in China*. IMF Working Paper, International Monetary Fund, 2007.

- Downs, Erica. "The Chinese Energy Security Debate." *The China Quarterly*, 2004: 21-41.
- Downs, Erica, and Michal Meidan. "Business and Politics in China: The Oil Executive Reshuffle of 2011." *China Security*, 2011: 3-21.
- Economy, Elizabeth C. "China's Energy Future: An Introductory Comment." *Eurasian Geography and Economics*, 2011: 461-463.
- Ellerman, Denny. "Is Conflating Climate with Energy Policy a Good Idea?" *Economics of Energy & Environmental Policy*, 2012.
- Friedberg, Aaron. *A Contest for Supremacy: China, America, and the Struggle for Mastery in Asia*. New York: W.W. Norton & Company, Inc., 2011.
- He, Xingqiang. "The RMB Exchange Rate: Interest Groups in China's Economic Policymaking." *China Security*, 2011: 23-36.
- Horner, Charles and Eric Brown. "A Century After the Qing: Yesterday's Empire and Today's Republics." *China Heritage Quarterly*, 2011.
- Joint Global Change Research Institute and Battelle Memorial Institute, Pacific Northwest Division. *China: The Impact of Climate Change to 2030*. A Commissioned Research Report , National Intelligence Council, 2009.
- Lee, John. "China's Fake Carbon Tax." *Wall Street Journal Asia*, January 12, 2012.
- Li, Cheng. "China's Midterm Jockeying: Gearing Up for 2012 (Part 4: Top Leaders of Major State-Owned Enterprises)." *China Leadership Monitor*, February 22, 2011: 1-34.
- . "The Battle for China's Top Nine Leadership Posts." *Washington Quarterly*, Winter 2012: 131-145.
- Liu, Yu, and Dingding Chen. "Why China Will Democratize." *The Washington Quarterly*, 2012: 41-63.
- Maddison, Angus. *Statistics on World Population, GDP, and Per Capita GDP, 1-2008*. March 2010. <http://www.ggdc.net/MADDISON/oriindex.htm>. (accessed June 18, 2012).
- Montgomery, David, and Anne E. Smith. "Price, Quantity, and Technology Strategies for Climate Change Policy." In *Human-Induced Climate Change: An Interdisciplinary Assessment*, edited by Kheshgi, Haroon S., Joel Smith, Michael E. Schlesinger, Francisco C. de la Chesna, John M. Reilly, Tom Wilson, and Charles Kolstad, 328-342. New York: Cambridge University Press, 2007.

- Morris, Adele C., Pietro S. Nivola, and Charles L. Schultze. *Clean Energy: Revisiting the Challenges of Industrial Policy*. Policy Research Paper, Washington, DC: Brookings Institution, June 4, 2012.
- Mulvenon, James. "The Only Honest Man?: General Liu Yuan Calls Out PLA Corruption." *China Leadership Monitor*, 2012: 1-15.
- Nathan, Andrew J. "China's Political Trajectory: What are the Chinese Saying?" In *China's Changing Political Landscape: Prospects for Democracy*, edited by Cheng Li, 25-43. Washington: Brookings Institution Press, 2008.
- National Intelligence Council. *Global Trends 2025: A Transformed World*. Washington, DC: National Intelligence Council, 2008.
- Naughton, Barry. "What Price Continuity?" *China Leadership Monitor*, 2012: 1-11.
- . *The Chinese Economy: Transitions and Growth*. Cambridge: The MIT Press, 2007.
- Nordhaus, William D. *The Perils of the Learning Model for Modeling Endogenous Technological Change*. Discussion Paper, New Haven: Cowles Foundation Discussion Papers, Cowles Foundation, Yale University, 2009.
- Overholt, William H. "Reassessing China: Awaiting Xi Jinping." *Washington Quarterly*, Spring 2012: 121-137.
- Pei, Minxin. "Fighting Corruption: A Difficult Challenge for Chinese Leaders." In *China's Changing Political Landscape: Prospects for Democracy*, edited by Cheng Li, 229-250. Washington: Brookings Institution Press, 2008.
- Pew Global Attitudes Project. *China Seen Overtaking U.S. as Global Superpower: 23 Nation Global Attitude Survey*. Pew Research Center, 2011.
- Pew Research Center for the People & the Press. *Partisan Divide Over Alternative Energy Widens*. National public opinion poll, Washington: The Pew Research Center for the People & the Press, 2011.
- Redding, Gordon, and Michael A. Witt. *The Future of Chinese Capitalism: Choices and Chances*. New York: Oxford: Oxford University Press, 2007.
- Shirk, Susan L. *China: Fragile Superpower*. New York: Oxford University Press, 2007.
- . *The Political Logic of Economic Reform in China*. Berkeley: The University of California Press, 1993.

- Slater, Dan. *Ordering Power: Contentious Politics and Authoritarian Leviathans in Southeast Asia*. New York: Cambridge University Press, 2010.
- Steinfeld, Edward S., Richard K. Lester, and Edward A. Cunningham. *Greener Plants, Grayer Skies? A Report from the Frontlines of China's Energy Sector*. Research Paper, Cambridge : MIT Industrial Performance Center , 2008.
- U.S. Energy Information Administration, U.S. Department of Energy. *Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2010*. EIA report, Washington: U.S. Department of Energy, 2011.
- Wai-yin Kwok, Vivian. *Weaknesses in Chinese Wind Power*. July 20, 2009.
<http://www.forbes.com/2009/07/20/china-wind-power-business-energy-china.html>
(accessed July 10, 2012).
- World Bank; Development Research Center of the State Council, the People's Republic of China. *China 2030: Building a Modern, Harmonious, and Creative High-Income Society*. Washington, DC: International Bank for Reconstruction and Development / International Development Association of The World Bank, 2012.
- Xu, Chenggang. "The Fundamental Institutions of China's Reforms and Development." *Journal of Economic Literature*, 2011: 1076–1151.
- Yergin, Daniel. *The Quest: Energy Security and the Remaking of the Modern World*. New York: The Penguin Press, 2011.
- Yu, Yongding. *China's Policy Responses to the Global Financial Crisis*. Richard Snape Lecture, Melbourne: Productivity Commission, 2009.

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