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**Transforming China's Electricity Sector:
Institutional Change and Regulation in the Reform Era**

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Abstract

Aiming to reduce the politicization and direct administration of electricity generation, transmission and distribution, the central planners launched three major episodes of institutional changes in the reform era culminating in the creation of an independent ministry-level agency – the State Electricity Regulatory Commission (SERC) - to oversee an oligopoly of restructured power companies in 2002. However, a new regulator operating in face of powerful state-owned firms and an hierarchical and competitive bureaucratic landscape is bound to open a new chapter in contentious politics.

We argue that the influential role of the National Development Reform Commission (NDRC) has undercut the institutional role and autonomy of the SERC, resulting in growing discrepancy between the SERC's legal mandate and its efficacy in establishing clarity in rules of competition. Hampered in their growth potential, independent power providers and grid operators have focused their business strategic efforts on crowding out the private sector and foreign investors, and playing off ministerial supervisors for particularistic gains. The resulting regulatory outcome provides neither effective governmental management of oligopolistic dynamics and price fluctuations in the power sector, nor sustained momentum for privatization.

Introduction

China has become the second largest electric power market in the world. It is predicted that the Chinese power industry will invest over two trillion US dollars in the next 30 years, and that the nation's purchasing of power generation equipment alone will account for some 32 percent of the world's total.¹ Indeed, data based on China Electricity Council (CEC) study indicate that by the end of 2009 China's total installed power capacity had reached 874 GW (gigawatt) (CEC, 2010).² This represents an increase of 10.2 percent up from 2008 and reflects an average annual growth rate of 10.8 percent since 1949.³ Per capita consumption is low at around 2,149 KWh (kilowatt hour) in 2006, suggesting a massive expansion of power infrastructure would be necessary if China's consumption is to approach the global average. Meanwhile, according to the International Energy Agency's (IEA) *International Energy Outlook 2007* rapid continual growth is expected in China's power generation capacity as well as rapid development in the country's transmission and distribution power supply capability (IEA 2007). It is estimated that by 2030 China's power consumption will double up to 8,472 TWh (terawatt hour) and that the nation's power generation capacity will reach 1,775 GW.⁴

To counter these enormous expectations and to support the development of China's electricity sector, the government launched a series of reforms at the end of the 1990s and early 2000 with a view to creating a more dynamic power market structure and to establishing a rational regulatory framework. The first time that China's electricity industry became subjected to legislative control was with the passing of the first national electricity law in 1995 that guaranteed the development of the electric power industry and pledged to safeguard the legal rights and

¹ "Meet and network with China's Electric Power business," *EP Shanghai 2009*, 8-10 July 2009, Shanghai International Exhibition Centre (INTEX), China. www.ceejay.com.hk/EP%20Shanghai%2009.doc

² Founded in 1988 by the approval of the State Council, China Electricity Council (CEC) is a consolidated organization of all China's power enterprises and institutions. Since 2002 electricity sector reforms, the CEC operates under the supervision of the State Electricity Regulatory Commission (SERC). It advises in the formulation of rules and regulations for the electricity sector and enforces the industry to function in accordance to the SERC's rules and regulation. It also provides consulting services at the request of its members. The CEC has 1440 members, 10 classified branches and 9 specialty committees. It is entrusted by the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council and other related government bodies to administer 6 nation-wide specialty [electricity] societies. All of the 30 power industry associations at provincial, autonomous region, and municipality level form the Council Members of CEC. Nominally, the CEC is the all-encompassing institutional structure for China's electricity sector that enforces rules and regulations for the sector and provides national electricity sector administration and planning. In reality CEC is little more than a weak industrial association and public-relations organization, as we will explain below.

³ The average annual growth rate is calculated based on the total installed power capacity data from CEC: 1.85GW in year 1949; 874.07GW in 2009

⁴ China Power and Energy News, Issue No. 61, April 2009

interests of investors, operators and users of electric power.⁵ It was a landmark legislation that set the next stage of reforms in 2002 with the creation of the State Electricity Regulatory Commission (SERC) to establish a coherent bureaucratic framework for regulating the power sector. It also led to key regulations to supervise and regulate electricity-related issues such as pricing of electricity, and issuing and managing electric business permits that were promulgated in 2005 with a view to creating a more balanced market. The reform process and the transformation of the market governing structures are on going, and while progress has been promising, they are today mired in numerous unintended consequences and problems that dampen not only electricity development but the efficient provision of electricity across the country.

China's unique system of governance is markedly different to the neoliberal governance designs implemented across a number of Asian countries since the 1990s. Indeed, the emerging regulatory framework for China's power sector is best understood not as a unique local adaptation of Western models, but as a historically contingent expression of the Chinese state transforming its own capacities – specifically, Beijing's ambitious project of state-led privatization and marketization of China's commanding heights since the mid-1990s. The central premise of this national industrial restructuring project is the dismantling of the command economic authority and exchange relations based on ministerial direct supervision of production units. Two decades of reform from early 1980s to the end of the 1990s had demonstrated that clunky planned output quotas, redistributive targets, policy mandated credit allocation, and administrative price signals no longer fulfilled even the basic goals of industrial policies, public sector sustainability, and macroeconomic stability.

The reforms established new ground rules, mandating the new state-controlled corporations to pursue commercial imperatives in response to dynamic market signals.⁶ Unquestionably, market considerations must be subjugated to the firm's overriding role in defending national interests through their intimate ownership and regulatory ties to political principals in Beijing. In this new political economic context, what constitutes national interests, and which actors interpret these interests, become points of contention and compromise that affect the performance of new corporate institutions. Against this background we view China's

⁵ Electricity Law of the People's Republic of China (Dec. 28, 1995).

⁶ We acknowledge the significance of renewable energy developments in China and their implications to regulatory outcomes for market operators, however, given the constraints of a short academic paper, our focus here is only on the narrative concerning the regulatory reform its outcomes with respects to key government agencies and their ability or inability to drive China's electricity market reforms.

electricity sector as a conundrum where overlapping and sometimes opaque institutional governance structures and competing public and private interests undermine the management of the sector's affairs. We argue that it is this blatant phenomenon that bears on the facility of the nation's electricity sector reformers to carry out planned structural changes in order to diminish the level of politicization in energy policy and administration, to strengthen the sector's performance, and to counter the enormous energy challenges facing China.

Indeed, the case of China's electricity sector governance is a pertinent illustration of a struggling regulatory governance system in a fast growing economy where long-established institutional structures, vested interests, and even institutional deficiencies impede planned structural changes. The global diffusion of regulatory capitalism, traces of which can be observed in other Asian countries to a variable degree, is recognizable in China even if the regulatory model better qualifies as unique adaptation of western models.⁷ Regulatory capitalism fits well with countries with long-established governance processes and institutional norms and strong administrative capacities. But in countries where these functions are absent or less developed or institutional structures are still maturing, the regulatory governance model imposed by multilateral development agencies such as the World Bank (WB) can lead to structurally promising institutional designs, yet with weak operational capacities. Problems associated with the diffusion of regulatory capitalism are found for example in Thailand's electricity sector (Jarvis, 2009) and in the Indonesian power sector (Purra 2010; Jarvis 2010). The cases are fitting examples of the adoption of a regulatory governance system whose design ignores the developing and maturing nature of the underlying key sector governing institutions.

The form of power sector governance in China is an example of a centralized regulatory regime which, in spite of reform policies, continues to display high levels of overlapping regulatory authority and bureaucratic competition for rule ownership and rule formulation between the sector governing agencies. As the newly established regulatory agencies struggle to fulfill their statutory functions and responsibilities, market players including the major power companies, provincial grid operators, and primary energy producers expend inordinate amount of political and firm capital coping with policy uncertainties, illegitimate collusion and unbridled competitions.

⁷ See Levi-Faur (2005) *The Global Diffusion of Regulatory Capitalism* for more in-depth discussion on regulatory capitalism and how the globalization of regulation is transforming the neoliberal agenda of deregulation and privatization. That is, how governance has transformed from *laissez-faire* capitalism to welfare capitalism to regulatory capitalism in the past century and in particular since the 1980s.

A number of elements in this article validate our claims of the bureaucratic and institutional and structural obstacles to effective market governance by an independent national regulatory agency in China's electricity sector. For example, the National Development and Reform Commission (NDRC) as the latest reincarnation of the Soviet-era State Planning Commission (SPC) has seriously challenged the institutional mandate of the State Electricity Regulatory Commission (SERC) as it seeks a clearer rule-based market structure for China's electricity sector.⁸ In fact, the rules creation in the electricity sector has been notably undermined by a pattern of arbitrary administrative interventions by the NDRC. Moreover, the diffusion of regulatory institutions in a highly authoritarian environment continues to produce markedly different governance forms across industry sectors. Comparing similar statist objectives state-sponsored oligopolies and corporatist industry associations in the restructuring of power, oil and petrochemical, telecommunications, and transport sectors, we conclude that the re-centralization of government-business relations in China since the late-1990s is far from adequate to achieve an orderly market economy.

State Priorities as Impediments to Market Liberalization and Regulatory Reform

Generally speaking, the national interests that drive the overarching market considerations across China's commercial and industrial sectors are embedded in the following operational principles.⁹ First is the centrality of state ownership. The State Assets Supervision and Administration Commission (SASAC) serves as the property manager of state owned shares in the corporatized

⁸ The National Development Reform Commission (NDRC) functions as the secretariat that sets in motion the operational implementation of the five-year plan. In essence, the NDRC functions not only as the central government agency overseeing the implementation, enforcement and monitoring of the plan, but also as the key agency in operationalizing and administering the political agenda of both the Chinese Communist Party (CCP) and the National People's Congress (NPC). It is a government agency with over 20,000 staff and functions as the bureaucratic arm of the CCP, the NPC and the State Council.

⁹ The following principles are summarized from the major findings of these representative studies: Hongping Fei (1998), *Zhongguo qiye zhuzhi zhanlue xingwei* (The Strategic Orientation of the Organization of Chinese Enterprises). Beijing: Jingji guanli chubanshe; Garnaut, R, Ligang S, Stoyan T, Yang Y (2005) *China's Ownership Transformation*. Washington, DC: IFC; Lin KC (2008) Macroeconomic Disequilibria and Enterprise Reform: Restructuring the Chinese Oil and Petrochemical Industries in the 1990s. *The China Journal*, No. 60, July 2008, 49-79; Lin YM (2001) *Between Politics and Market: Firms, Competition, and Institutional Change in Post-Mao China*. Cambridge: Cambridge University Press; Nolan P (2001) *China and the Global Economy: national champions, industrial policy and the big business revolution*. Houndsmill: Palgrave; Sutherland D, Lutao N (2009) China's Business Groups after Three Decades of Economic Reform: Diversified Conglomerates or Focused Industrial Groups? In: *China's Three Decades of Economic Reforms*, Li X, Zhang W (eds) London: Routledge; Wang Y, Wan Y, Wang B (eds) (1999). *Guoyou konggu gongsi lilun yu shijian* (Theory and Practice of State-Controlled Shareholding Companies). Beijing: Jingji kexue chubanshe.

state firms (Green & He 2005).¹⁰ Domestic and foreign investors are accorded a minority shareholding presence in the public listings of these firms at home and abroad. The State Council plans to gradually sell off state-shares toward the tipping point of majority ownership control, contingent on the firm's fundraising needs and the stability of the domestic stock markets. Complete divestiture has been ruled out as an immediate option.

Second, regulation based on mediation of interests is not an arms-length approach. In contrast to the global template of privatization plans with legally delineated state regulatory functions and limited public-private partnerships (PPP), China has taken a path-dependent approach in seeking consensus among inter-governmental and emerging business interests in the policymaking process (Kennedy 2005). Neither capture by organized corporate interests nor autonomous in the sense of standing apart from the private sector, Chinese regulators bargain with contending ministerial and corporate officials in an institutional landscape of "fragmented authoritarianism." (Liberthal & Oksenberg 1988; Lieberthal & Lampton 1992)

Third, fiscal stability for the central government constitutes a key justification for gradualism in reform and in particular restrained competition and administrative price controls in utilities and key energy inputs. Evidenced in the political resistance to adjust domestic prices for refined oil products in recent years, Chinese planners have shunned price instability that may come with the kind of Schumpeterian creative destruction if markets are truly liberalized and state-controlled corporations are vulnerable to bankruptcy or corporate takeovers from losing out in fair fights.

Fourth, after two decades of enterprise reform based on decentralization of decision-making authority, financial controls, and property rights to sub-national state agents, Beijing spearheaded partial policy reversals recentralize corporate governance starting in the mid- and late-1990s. Earlier policy innovations such as managerial contract responsibilities had created attenuated principal-agent relations that generated considerable economic and fiscal losses for Beijing. In restructuring heavy industries in the past decade, central planners aimed to enhance control and financial returns through adopting highly centralized organizational forms such as the multidivisional form (M-form) in oil and petrochemical sectors (Lin 2006a; Freeland 1996).

¹⁰ The State-owned Assets Supervision and Administration Commission (SASAC), established as part of the government reforms in 2003, replaced the State Economic and Trade Commission (SETC). It has the key role of overseeing the state-owned enterprises (SOEs). It supervises their performance, appoints and removes senior executives, sets out auditing requirements, and approves key decisions.

Fifth, corporate restructuring that builds on existing strengths is evident. As David Stark has pointed out in the Eastern European context, organizational adaptations in post-socialist economies find building materials from salvaging the institutional rubrics of the former system (Stark 1996). Chinese enterprise reforms are also bounded by the existing organizational possibilities. In practical terms, new corporations must have roots in older bodies, such as the administrative monopolies in functional areas such as oil exploration and development, coal industries, or regional power grids. In the oil and petrochemical industries, the socialist line ministries comprising of oilfields, refineries, and distribution channels were converted into national oil corporations through asset swaps that established some measure of integration in operation similar to Western majors (Lin 2006a).

And finally, as financial diversification is historically a serious drain and risk factor on domestic commercial banks, state-owned enterprises have been corporatized with an eye toward obtaining liquidity from the domestic and foreign stock markets. The impetus toward public listing took off in the 1990s with the rapid growth of these stock markets and politicized drive by provincial planners to list firms for expansion and merger and acquisition purposes. The Asian Financial Crisis of 1997-8 reinforced in Beijing's mind the importance of financial diversification to take the pressures and risks off the back of domestic banks, while drawing further capital into China as an engine of regional and global growth. The central government has allowed foreign direct and portfolio investments in the new corporations, which have not generated significant impact on corporate governance and control by Chinese stakeholders. Significantly, a fledgling corporate bond market also exists that has widened the financing options for businesses (Shih 2006).

These state priorities have resulted in fundamental constraints to market liberalization and indeed to radical regulatory governance reforms. State-controlled corporations have exerted a direct influence on the rules of competition as their dominating market shares, exclusive networks of upstream and downstream integration, and policy privileges virtually guarantee corporate viability and significant gains from oligopolistic collusion. Beijing had anticipated that industrial self-governance would go hand in hand with market expansion, supplying the competitive and coordination mechanisms to obviate further socialist planning. The economic rent from oligopolistic collusion would buffer the destabilizing experience of privatization, extending a lifeline to the numerous managers, workers and consumers who have long relied on subsidies from State-Owned-Enterprises (SOE). Predictably, the regulatory framework typically

falls short of reducing the potential for conflicts of interest among the market actors, introducing transparency and procedural regularity in the shareholding and regulatory functions of the state, and preventing collusion between the industry and government agencies (Andrews-Speed et al 2000).

The transformation from administrative to corporate hierarchy in industrial governance across the Chinese commanding heights – including oil and petrochemical, airlines, telecommunications, banking, railroad, and power industries, etc. – has taken on varying institutional adaptations contingent on specific challenges in each sector (Chung, 2003; Lin 2008). China's power sector reforms and the associated regulatory outcomes provide a particularly insightful window to the challenges facing industry sector reformers across developing markets. The article is divided into three sections. The first section discusses the nuances of the Chinese regulatory state and lays out our argument in more detail. The second section assesses the evolution of China's electricity sector and shows the key developments and phases that have come to define its progress. The third section discusses the SERC's institutional standing in light of China's power sector reforms particularly since the 2002 power sector reform.¹¹

The Rise of a Regulatory State in China

The case study of the power sector addresses the current academic debate over the rise of the “regulatory state” in China (Lin 2005; Pearson 2005). Proponents of the regulatory state perspective predict that the state-owned enterprises will become market oriented as the central state sheds its meddlesome ownership role in most industries (Guthrie 1999). They point to the scrapping of numerous old-styled line ministries and the creation of dedicated regulatory agencies staffed with new officials, original capacities, and institutional autonomies (ADB 2003; Yang 2004; Pei 2005; Lin 2006b). However, this line of thinking lacks analytical separation for distinct functions and motivations of the national government toward public enterprises – in particular the complex duality of its roles as a majority owner of SOEs and as the regulator of industries. Within this duality, Beijing balances between short-term financial and fiscal gains against market distortions and longer-term political and social costs of sustaining oligopolistic

¹¹ Much of the data that have been used for this study have been collected in numerous meetings and interviews with government agencies and private sector participants in China's power sector. In the absence of explicit references to a source, the identity of the source has been omitted by his/her request.

firms. Furthermore, a bird's-eye view of central regulatory interests and capacities tends to neglect strategic counteractions of local states as traditional stakeholders in state-owned enterprises as potential veto-players in the privatization process.¹² Lastly, the claims of a rising regulatory state would appear to presuppose the reconciliation of independent and contending institutional interests within the State Council and ministries, which would be premature given the “fragmented authoritarian” structure that governs policymaking process and bureaucratic exchanges in Beijing.¹³ Whether the central government can successfully manage the shifting relations among various bureaucratic agencies and corporate groups should constitute a paramount empirical inquiry. The present case study of the power sector holds up these criticisms.

The Chinese experience sheds light on comparative theories of re-regulation and new industrial policy, which propose bureaucratic and market failure causes for national regulators to step up their lawmaking and institution building efforts (Hira et al 2004; Rodrik 2004; Hausmann & Rodrik 2006; Vogel 1999). Equally important as a cause of reregulation are intra- and inter-sectoral coordination imperatives as each industry maintains forward and backward linkages to other producers and consumers. The Chinese power sector suffers extraordinary geographical fragmentations of power supply bases, transmissions infrastructure, and markets, and lags in its capacity to fuel China's dramatic economic growth. The management of these collective action problems and spillover effects represents the core challenges for the autonomous bureaucracy in pursuing a coherence approach and effective adjustments to the overall national developmental strategy (Doner 1992). However, these comparative regulation theories pay inadequate attentions to the institutional risks in creating new regulatory bodies – the re-regulatory view downplays the independent effects of regulatory bodies from the power players that created them, and the new industrial policy perspective emphasizes the precondition of market and government failures to invite strategic industrial policy.

The China's context exposes the problems of these analytical biases. The initial state of Chinese reform of the power sector is not necessarily government or market failure, which had been plenty evident for a long time. Instead, the reform objective is precisely to redefine state-market relations before attempting to manipulate the operations of the respective spheres.¹⁴

¹² For accounts of bottom-up reactions from local stakeholders in response to the restructuring of the oil and petrochemical industries in the late-1990s, see Lin (2009).

¹³ Lieberthal and Oksenberg (1992).

¹⁴ By implication, reform could generate short-term output growth, while producing little efficiency gains. A parallel strand of institutional analysis on industrial policy has been developed by Daron Acemoglu and James Robinson (2008a), “The Role

Equally importantly, the boundary of the public and the private is hardly clear enough for conventional analysis of relative capacities of the state or the market in industrial governance. In fact, this very ambiguity – captured by the partially privatized corporate entities – poses binding constraints on institutional reform and complications for the use of policy levers. Regulatory agencies, once created, also generate a set of risks and coordination problems for the regulators and stakeholders. The institutionalization of these agencies is in itself a major challenge. We show how the nominal autonomy of the new, ministerial-level power regulatory body has produced limited effectiveness against competing regulatory sources in the State Council, as well as problems in containing corporate rent-seeking interests.

Placing industrial restructuring in a broader political context, we find that the primary driving force for reform and policy design stems from the central dilemma of the Chinese party-state's self-preservation. Even as the Politburo and central bureaucratic elite attempt to build capacities for the long-run maintenance of the economic bureaucracy, it cannot prevent sub-national state agents – i.e. regulators, local officials, state-appointed managers – from acting strategically for short-run gains at the expense of the overall design. In other words, reformers face a kind of time-consistency problem, from which the state would pull back from optimal reform policies in anticipation of unintended consequences during implementation. Some of the reform measures we examine in the power sector would seem half-baked, tentative, or broken up in sequence, not because the reformers do not know what they were doing but that they deliberately refrained from a coherent and complete sequence of changes that might produce a major backlash that combines fiscal, economic, and social disruptions. Of course, the evaluation of these risks can only be political. Hence we also examine the elite political equilibrium behind regulatory choices, and its impact on the level of institutional and policy commitment (Acemoglu & Robinson 2006; Acemoglu & Robinson 2008b).

Here, we identify these specific interests in China's power sector, and showcase the extent of which the current institutions have met their demand. We focus on the linchpin of the national regulatory framework - the SERC - that was created in 2002 as a supra-ministerial agency with a mandate stipulating a wide-ranging authority over power generation, transmission and distribution. SERC was the first non-financial, independent regulatory body in the post-

of Institutions in Growth and Development," Working Paper No. 10, Commission for Growth and Development of the World Bank. Washington, DC: World Bank. They attribute policy changes with no apparent growth impact to a "see-saw effect" in which expropriation threats, persistent populist demand for redistribution, de facto and de jure political power affect performance of economic institutions. See William Easterly's online critiques of this strand of new institutional economics, <http://larrywillmore.net/blog/tag/william-easterly/>

command economic landscape. An understanding of its political and institutional context helps us to anticipate the form and effectiveness of the new regulatory models that have also been considered for other sectors and policy areas in China.

Long-term Reform Objectives – From State Monopoly to (Notional) Free Market Structure 1949-2009

The Challenge of Institutional Reform

In light of the evolutionary stages, the institutional reform of China's power sector revolves around four core policy challenges and constraints involving complex coordination between the domestic market, industrial players, and bureaucracies at central and local levels:

- 1) Meeting China's growing energy demand, preferably through market determination: While acknowledging a clear need to invest in capacity expansion to align supply with demand, Beijing also faces chronic problems of managing energy usage cycles and the unequal distribution of power generation areas and consumption centers across China. The dynamics of the alternating shortage and surplus crises are complex and have not been systematically investigated, but are likely amplified by the local political distortions that produce boom-and-bust cycles in capital formation and local state protectionism and market fragmentation (Walton & Finn 2005; Zhu & Li 2003).
- 2) Promotion and regulation of competition in the absence of a functional market: In this case the central state regulator acts to compensate for deficiencies in the market, in particular with respect to energy prices and access to energy transmission networks. Refraining from unrestrained competition, Beijing defends concerns for collective goods such as upgrading the power grids and energy delivery and service standards across China's vast territories, and private goods such as stable prices for consumers and policy aids on technological upgrading and capitalization for the power companies (Xie 2009; He 2003).
- 3) Aligning upstream-downstream interests: Industrial analysts often point out conflicts of interests among coal producers, generators, and transmission and distribution companies.

These businesses have traditionally come under different lines of administration, and remain weakly mediated by market forces. There is a common perception that competition in regional markets is likely to be ineffective, thus price liberalization is likely to cause tremendous volatility. Instead, the State Council has occasionally intervened to promote long-term supply contracts between coal suppliers and power plants to improve risk management and profitability (Ng 2008). It has also established guidelines for price increases and cross-regional differences that attempt to spread the costs of rising inputs. These interventions keep Beijing at the center of a Catch-22 dilemma of reacting to failures of competition and being blamed for not pushing for liberalization.

- 4) Defining the functions and bureaucratic standing of the new regulatory body: Given the weakness of the SERC and the contentious government-business and central-local relations to be described below, top Chinese leaders have sought ways to add another layer of strategic governance of energy-related policies and industries. In 2005, the State Council established a National Energy Leading Group to serve as the highest political forum for addressing China's energy security issues, and also to provide a formal, unified governmental interface with the emerging corporate interests of the national oil companies. These developmental strategic and industrial governance functions have become disarticulated in March 2008 upon the State Council's establishment of the National Energy Administration (NEA) as a supra-ministerial agency housed within the NDRC. In January 2010, the State Council established the National Energy Commission (NEC) to take rein of strategic policy-making and coordination.¹⁵ This move resurrected a supra-ministerial body on energy policy, which had been absent since the Energy Ministry was disbanded in 1993. The question remains how the new commission would relate to SERC, with implications for the power relations in the bureaucratic field and redistribution of authority and resources (Hafsi & Tian 2005; Lan 2007).

These challenges have been a distinct feature throughout the evolution of China's electricity sector particularly since the mid-1980s. In varying stages of state-led privatization they are indicative of the progressive policy changes that the government has been implementing on the one hand, and of the intricate balancing act the government is forced to play in the creation of more competitive market to satisfy the power demand of the growing economy on the other

¹⁵ "China Sets up National Energy Commission," *Xinhua News Agency*, January 27, 2010.

hand. Until the 1990s, the development stages of the electricity sector aligned with the broader industrial policy undertakings of the Communist Party since 1949. For example, the government, through the monopolistic Ministry of Electric Power Industry (MEPI), provided electricity production and service as a vertically integrated monopolized utility from 1949 to 1985. In essence, the MEPI also functioned as the industry regulator overseeing all functions of power generation, transmission and distribution.¹⁶

The command economic system ensured coherence between upstream and downstream interests even if the allocation and distribution of both coal and electricity remained under strict planning control. However, while the state monopoly reflected the minimal goals of the five-year plans, it struggled to meet the growing electricity demands of the Four Modernizations.¹⁷ Power shortages and public dissatisfaction were prevalent across the country, as electricity remained in short supply. Overall, the growth of the sector remained negative throughout the 1960s and 1970s despite the reforms (See appendix 2.). Some contend that the electricity shortages in this period are largely attributed to the fundamental nature of the command economy that crowded out other sources of investment, independent power producers (IPPs), and all other feasible incentives for sustained and balanced power generation (Zhang 2004).

From 1985 onwards and consistent with the general direction of enterprise and fiscal reforms, a notable shift toward a more decentralized mechanism took hold. By initiating sector-specific construction funds the government encouraged the provincial and local government to plan the financing of electricity generation. The purpose of these funds was to increase the incentives for local governments and the private sector to participate in electricity generation and ultimately meet the increasing power demands of China's rapid industrialization. In all, the provinces were recognized as independent units responsible for the planning, regulation, and operation of their local and regional electricity utilities and encouraged to invest and create self-sustaining regional electricity markets.¹⁸ Indeed, in 1985 the State Council for the first time allowed financing of power plants by provincial governments, private enterprises and even foreign investors (State Council 1985). It was the first step toward exposing the power sector to

¹⁶ The MEPI was rebranded on a number of occasions - Ministry of Fuel Industries (1949-55); Ministry of Electric Power Industry (1955-8; 1979-92); Ministry of Water Resources and Electric Power (1958-79).

¹⁷ The Four Modernizations, a part of Deng Xiaoping's reforms, was initiated in December 1964 by Premier Zhou En'lai. It sought to stimulate the growth of agriculture, industries, national defense, and science and technology. It was officially launched in December 1978 at the Third Plenum of the 11th Central Committee, by Deng Xiaoping who had assumed the leadership of the Party after Mao's death. This formally marked the beginning of the reform era.

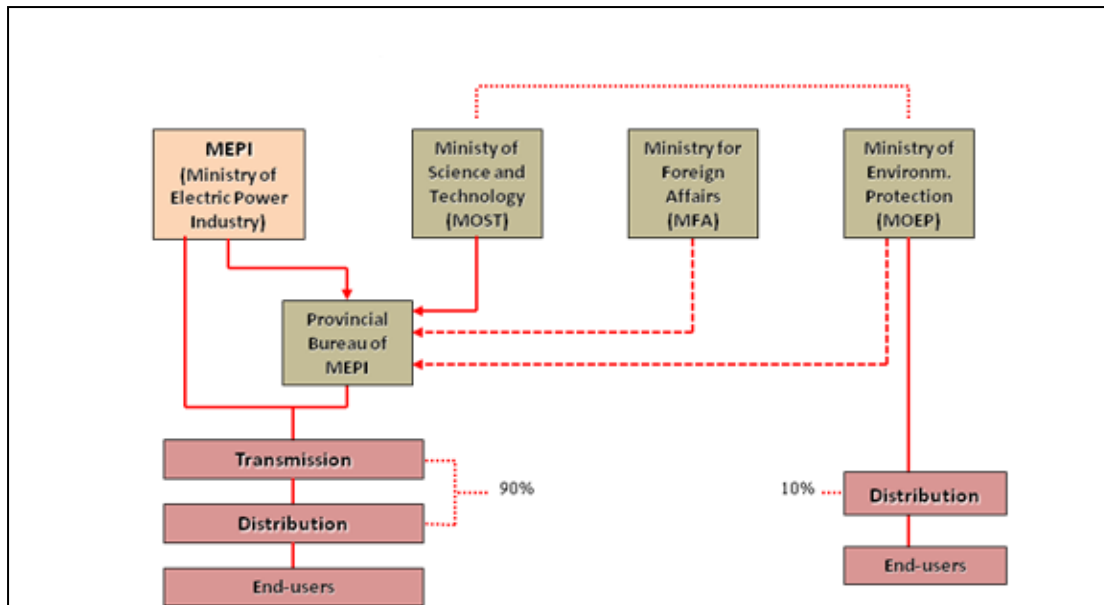
¹⁸ The principal of "Who is Generating Power Should Benefit from" is stated in the State Council Regulation No. 72, *Provisional Regulation on Encouraging Fund Raising for Electric Power and Multiple Rates of Power Tariff*, 1985.

commercialization and management autonomy and to incentivizing state-appointed managers to respond to these forces. The regulatory authority was decentralized and the provincial governments were empowered to directly approve power projects that were 50MW or smaller in size (Zhang, 2004; Wirtshafter, 1990).

Even as the majority of transmission and distribution assets remained in the control of the central government, the proportion of state-owned generating assets was reduced to 46 percent by the mid 1990s with the remaining 54 percent staying in the hands of local governments and the IPPs (Wong, 1998). Notably, some 84 large and medium sized foreign funded electricity projects were build during the period totalling US\$19.4 billion in value. Overall, the period marked a significant shift toward a more sustainable electricity generation in China. With an overall capacity of 236.54 GW, a nation-wide generation surplus was achieved by 1996 that ranked China second in terms of the installed electricity generating capacity and output in the world.

Yet, while the positive effects of the decentralization were notable, the distinct discrepancies between the local governments and the centrally controlled grid companies also started to emerge at the time. The grid companies, despite the agreed “Transmission and Distribution” principle, often raised electricity tariffs for their state-affiliated generating plants all the while compressing the ongrid prices and volumes for the provincial plants and other IPPs (Zhang and Heller 2004). These measures markedly undermined the implementation of the “New Plant, New Price” policy as well as the planned unification of transmission and distribution. Provincial protectionism as an emerging phenomenon also began to lay barriers for the opening of transmission and distribution channels to the IPPs from other provinces and regions.

Figure 1. Electricity system after 1986 reform (1986-1996)



Source: LKY School of Public Policy research 2011 (National University of Singapore).

The explicit adoption of market economy principles in China's electricity sector is recognizable from 1997 onwards. From 1997 to 2002, the government implemented measures to separate the daily running of commercial enterprises from government functions with the aim of reducing politicization and ministerial administration. With the establishment of the State Power Corporation (SPC) the government created a monopolized state-owned corporation to control all facets of electricity generation, transmission, and distribution including all infrastructure investment, production quotas, power allocation and pricing. The SPC's branches and subsidiaries also extended across the country to the regions, paving the way for the reorganization of the electricity market. To counter the local protectionist tendencies of provincial planners, who have often blocked the uploading of generated capacity from neighboring provinces as well as the central government onto their transmission networks, the SPC received a mandate from the central government to overcome these regional power dynamics.

However, the establishment of the SPC only marked the beginning of a protracted process of fundamental, formal institutional changes that attempted to disentangle pre-existing complexities in state-market relations. The electricity sector witnessed a wave of operational and administrative restructuring from 2002 onwards, of which two specific changes are particularly noteworthy. First, in the State Council document No. 5 of 2002 partitioned the SPC by separating the power generating business from the grid transmission, in effect breaking up the

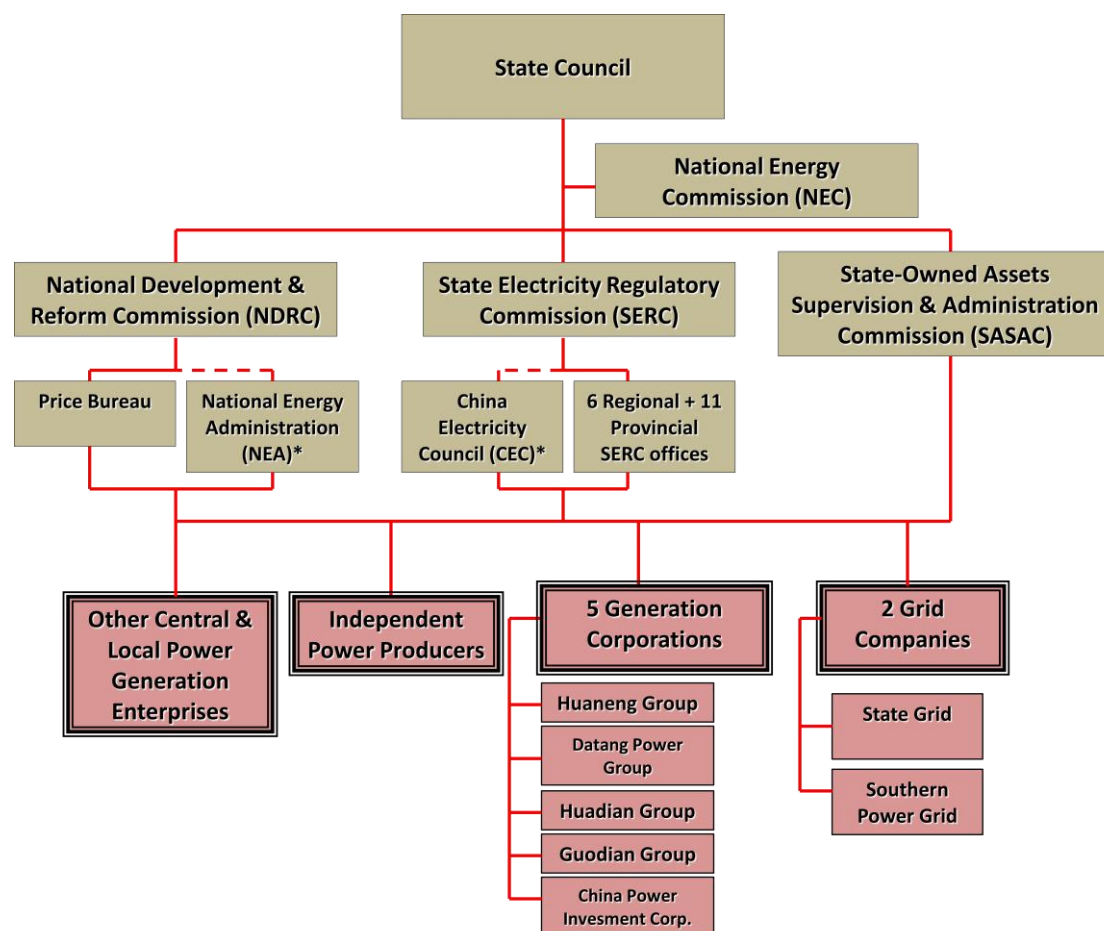
socialist legacy of the integrated monopoly (State Council 2002). The state-owned productive assets under SPC were subsequently dismantled and regrouped into five generating companies, namely the Huaneng, the Datang, the Huadian, the Guodian, and the China Power Investment Company. SPC's transmission and distribution assets were split into two grid companies roughly along geographical lines; namely the State Grid Company (SGC), responsible for most of northern China, and the China Southern Grid Company (CSGC) covering the southern provinces. Second, the administrative structure was also fundamentally altered by the creation of a *regulator* for the power sector - the SERC - in 2003 (State Council 2002). Endowed with authorities to manage the state monopoly break-up, oversee industry reforms, and promote a competitive market structure of the power sector, the promise of SERC was groundbreaking as an institutional governance structure in China (State Council 2003). This was at least the goal of the proponents of modern electricity sector reform in China.

The reformed electricity market structure is depicted in Figure 2. It displays the parallel roles of NDRC, SASAC, and other relevant ministries alongside the SERC in commanding the sector's industrial segments from generation to transmission and distribution. This apparently promising structure, in place since 2008, fails to clearly elevate the position of the regulator and instead places the SERC right back in the midst of fragmented bureaucratic politics that demands compromises and resource exchanges among agencies with overlapping jurisdictions. In fact, the SERC's position as a regulator is undermined by the electricity sector's inherent structure and underlying regional politics and the fact that China's power sector on the whole lacks the standard best-practice model where electricity transmission is separated from generation and funded by transmission fees. In other words, China has a wholesale price on electricity that includes both generation and transmission.

For the transmission companies, namely the newly established State Grid and China Southern Grid Company, this constitutes a severe problem. Their only means to subsist, grow, or be cost-effective is by trading generated electricity of which they take temporary ownership (contrary to the standard 'unbundled electricity market model') from the State, regional, or provincially owned power generators, or even private IPPs. If China's electricity sector were to follow the standard generation-transmission separation model, a federal regulator would regulate the transmission side. In this case, it would be the SERC; however, as we shall see in the next section, the absence of 'federally' regulated transmission prices and the weakness of the regulator in the face of regional politics and the power of the transmission companies raise serious

problems for China's electricity sector. In reality, the launch of regional competitive electricity markets in northeastern China and other parts of the country has met with only marginal success predominantly due to inter-agency rivalries and the powerful position of the state-owned power generating companies that continue to whittle down the reach of the central regulator in the provinces.

Figure 2. Electricity market structure after 2008 reforms



*CEC and NEA are independent organizations but under supervision of SERC and NDRC.

Source: LKY School of Public Policy research 2011 (National University of Singapore).

Between the Rock and a Hard Place: SERC's precarious institutional standing

Echoing the long-term reform objectives for China's power sector, the 2002 electricity sector reform had multiple goals. It sought to create a fair and competitive power market structure with

a wholesale market and independent regulation; to improve efficiency and lower costs; to optimize resource allocation and promote development and national grid interconnections; and to continue the rural electricity structural reforms (Zhang & Heller, 2004). To achieve these goals, the SERC was mandated with wide-ranging statutory powers that, in addition to the regulatory function, provided the agency with the authority to stipulate and enforce technical standards and propose tariffs and adjustments to government electricity pricing authority, and to investigate market violations (State Council 2003). The mandated powers provided the agency with an authoritative statutory platform to oversee the electricity sector. In other words, the institutional governance mechanism designed into and around the SERC sought to streamline and facilitate the electricity governance for the fast growing economy. Yet, it goes without saying that a realignment of long-established administrative norms even in a command-control system like China, will not materialize without notable challenges.

By and large, the challenge for an efficacious regulatory reform in China's power sector stems from a lack of clarity as to the structure of the electricity system. In principle, effective regulation follows, or should be determined, by the choice of the electricity structure. The shortcomings in the proper sequencing of the institutionalization of the SERC following the implementation of the competitive electricity market structures are palpable and in fact indicative of higher-level politicized capture among the China's governing elites. The execution of SERC's mandate is an on-going process that is dependent on the outcomes of a combination of essential elements in the electricity market. These elements culminate in four distinct explanatory factors that shed light on the underlying power structures that impede the fulfillment of a fully competitive energy market on the one hand, and explain the intensification of an underlying struggle between the informal leverages of local governments and the new regulatory arms of the central government on the other hand.

a) Power Politics within the State Council

To begin with, the precarious institutional standing of the SERC and its inability to flex its wide-ranging formal mandates are best explained by the high level of politicization of energy policymaking within the State Council. The power sector reforms including the institution of the SERC took form during the tenures of Zeng Peiyan (1998-2003) and Ma Kai (2003-2008) as the

Chairmen of the NDRC.¹⁹ Both individuals were strong proponents of the power sector reforms and Ma Kai was a particularly strong proponent of the establishment of the SERC.²⁰ Their advocacy partly produced the decisive changes in the institutional structure in the 2002 reform, but also created the political conditions for the subsequent institutional standoffs and the dependence on high-level interventions in the form of a supra-ministerial leadership committee to push toward power reforms and mediate conflicting interests. Since 2010 that elite political impetus has been the NEC (National Energy Commission). Countercurrents are ever-present. Zhang Ping, the Chairman of the NDRC since 2008, has been less of a proponent of the decentralization of China's power sector and has openly preferred a stronger central government involvement in the key substantive and technical areas of energy administration.

Shifts in the balance of power within the State Council are just one component, although significant, against which the slow structural development of China's power sector can be observed. If we recall the ambitious set of responsibilities that the SERC has been trusted with, uncertainty regarding the highest-level political support leaves the agency with a weak mandate regardless of its formal statutory position. Indeed, a careful breakdown of the major responsibilities of reform places the NDRC as the dominant regulator in the power sector. In its function to organize the sector by establishing a coherent regulatory structure and by exercising sectoral leadership through its regional branches, the SERC has been left with weak practical and immediately usable authority. In the proverbial horse and cart analogy, the SERC can only become a strong player if the domestic market is orderly and competitive, and only if regional corporate structures are strictly administered under central headquarters of both the power generation and grid companies. Neither condition preexists. Furthermore, the NEA (National Energy Administration) has taken the lead in power sector planning and promotion of new technologies along with approving new investments into the sector.²¹ Generally speaking, it has become evident since the State Council reform in 2008 that the NDRC has surrendered none of its authority and instead has only strengthened its authoritative grip on the power sector.

The evident capture of the regulatory process by various government entities apart from the federal power sector regulator, namely the SERC, extends to the realm of government-

¹⁹ Ma Kai joined the CPC in 1965 and has held various positions in the Central Planning function within the Party before becoming the NDRC Chairman in 2003. Zeng Peiyan in turn, while an equally long-running career within the Party, has a background as an electrical engineer and with Ministerial level appointments at the Ministry of Electronics Industry. He has also held financial planning positions within the State Planning Commission before his tenure as the NDRC Chairman.

²⁰ Interview with the National Energy Administration (NEA), 22 May 2009, and North China Electric Power University (NCEPU), 13 January 2010.

²¹ Interview with State Power Economic Research Institute, Beijing, 20 May 2009.

business relations. By statute, the SERC should be an effective regulatory and oversight agency able to design, implement, and enforce effective energy policies, including controlling national, provincial, and regional transmission fees. Yet, the political and institutional realities in China's power sector are prominently set against the institutional mandate of the agency. As has been proved since the establishment of the SERC, its ability to conduct regulatory monitoring and enforcement, despite its regional subsidiaries, is severely affected by the NDRC's dominant position. Both the NEC and the Price Bureau inside the NDRC exert such influence on the power sector that they leave the SERC in a notable power and governance vacuum.

A particularly good example of this is the SERC's ambition to improve the regional competitive landscape in the power sector by proposing anti-trust laws at both provincial and regional levels in order to uproot the anti-competitive and collusive business conduct of transmission companies.²² To force the grid companies, namely the State Grid and the Southern Power Grid, and their provincial and regional subsidiaries to abide by anti-trust laws, the regulator has called for the support of the NDRC – which has provided weak backing since it mainly leverages through price-setting and investment approval mechanisms. Notably then, as the heads of the state-owned electricity companies are appointed and confirmed at the highest levels of government, namely the NDRC and the State Council, the exercise of the SERC's authority must be politically circumspect.²³ Given this, hopes for constructing provincial and regional electricity market where transmission companies abide by competitive market principles and adhere to regulated national transmission fees (as per unbundled electricity market model) seem low.

Even as the broad institutional and political realities in China pose a significant hurdle to SERC's reform efforts, the NDRC's conduct in terms of information sharing has only worsened the situation. The NDRC effectively and exclusively controls all electricity generation and transmission (including distribution) related provincial and regional information that it often refuses to share with the SERC, hence leaving the agency with few tools to improve transmission-related pricing problems or to design oversight procedures for regional governance and accountability mechanisms.²⁴ Significantly, given the NDRC's price controls and the market

²² It has been the ambition of the SERC to achieve significant antitrust responsibilities since the establishment of the agency. This was highlighted in the SERC 2007 report on *Study of Capacity Building of the Electricity Regulatory Agency SERC, P.R. China*.

²³ Interview with Caijing Magazine, Beijing, 20 May 2009.

²⁴ Interview with a group of senior researchers at the North China Electric Power University (NCEPU), Beijing, 13 January 2010.

domination of the SOEs, the SERC' prerogative to issue licenses for market access including safety and standards certifications is rendered ineffectual in shaping the competitive dynamics of the electricity sector.²⁵ In effect, the NDRC acts as the final arbiter of whether or not a company can do business in the sector. As the NDRC previously controlled power purchase agreements (PPA) in contractual negotiations, it is accustomed to wielding significant influences over exchange relations among firms. That PPAs between power generating companies and central or provincial governments have not been used since 1998, has made China's electricity sector an increasingly unpredictable and even inoperable environment particularly for foreign investors and power companies.²⁶

b) The Market Dominance of Power Companies

The dismantling of the SPC into five separate power generating companies and the two grid companies formed a two-tier market structure inside China's electricity governance system. The five state-owned power generating companies formed roughly 45 percent of the electricity market at the end of 2008, while the rest, roughly 55 percent, remained divided among other central government and provincial power generating companies and private companies (See Figure 3 and Appendix 3).²⁷ Even as they engage in heated oligopolistic turf battles, the five power SOEs has been able to increase their collective national market share over other generating companies in the provinces - which stood at 49 percent at the end of 2009.²⁸ As the NDRC controls the electricity generation price, also known as the regional benchmark, the other power generating companies are not in a position to seriously compete with the SOEs which have direct access to the NDRC in its non-transparent price-setting process.²⁹ Furthermore, with their size and national scope of business, the SOEs have superior access to coal whose price they can manipulate and profit from by selling it to other power generating companies.³⁰ Consequently, provincial and private power companies face significant disadvantages in their long-term cost of production calculations.

²⁵ Ibid.

²⁶ Interview with Electricite de France (EDF), Beijing, 14 January 2010.

²⁷ From here on the abbreviation OGC (other power generating companies) is used to describe all other central and provincial government power generating companies and the private companies. The OGC specifically excludes the five SOEs.

²⁸ SERC Annual Report, 2009.

²⁹ Ibid.

³⁰ Interview with NCEPU, Beijing, 13 January 2010.

In short, the current electricity market system in China protects the dominant position of the SOEs and prevents the creation of regional or provincial competitive market structures with a separate monopoly transmission company(ies) and distribution monopolies that are *ex ante* regulated by local regulators according to federal guidelines. For example, in OECD (Organization for Economic Cooperation and Development) countries, the distribution monopolies can be responsible for retail sales but not always. When small scale generators are allowed to sell electricity over the local distribution network, the distribution fees, which are analogous to transmission fees, are set by the local regulator. In China however, the distribution arrangements are more complex and problematic. A lack of clear division between transmission and distribution networks across China makes the pricing of distribution, and more generally the way the system works, very difficult to comprehend. In fact, no explicit distribution charges exist, only a regulated retail tariff to final consumers that is controlled by the NDRC.³¹ The result is that the ill-defined authority lines of control over transmission and distribution networks seriously obscures the regulatory boundaries between the federal, provincial, and regional levels, and inhibits the creation of competitive generation market and retail competition.

Nonetheless, the limited extent of competition among the SOEs had reduced investment costs for the generation side and also lowered the operation costs of the power companies. Investment in a coal powered plant was reduced from 6000 yuan per kWh in 2000 to 4000 yuan per kWh today.³² Whether the oligopolistic competition has resulted in net efficiency gains for electricity market is debatable and empirically inconclusive, but endemic rent-seeking is evidenced by the increased collusion between regional power market operators and the SOEs. This collusion has been particularly striking as regards both electricity and coal pricing. While they do not own or control distribution networks, the provincial power companies do own inter-regional transmission systems and generation plants providing them with the resources to seek most beneficial power sharing deals with the SOEs. As the SOEs can usually get away with non-compliance with NDRC imposed regulations, their collusion with regional governments and power companies is predictable.³³

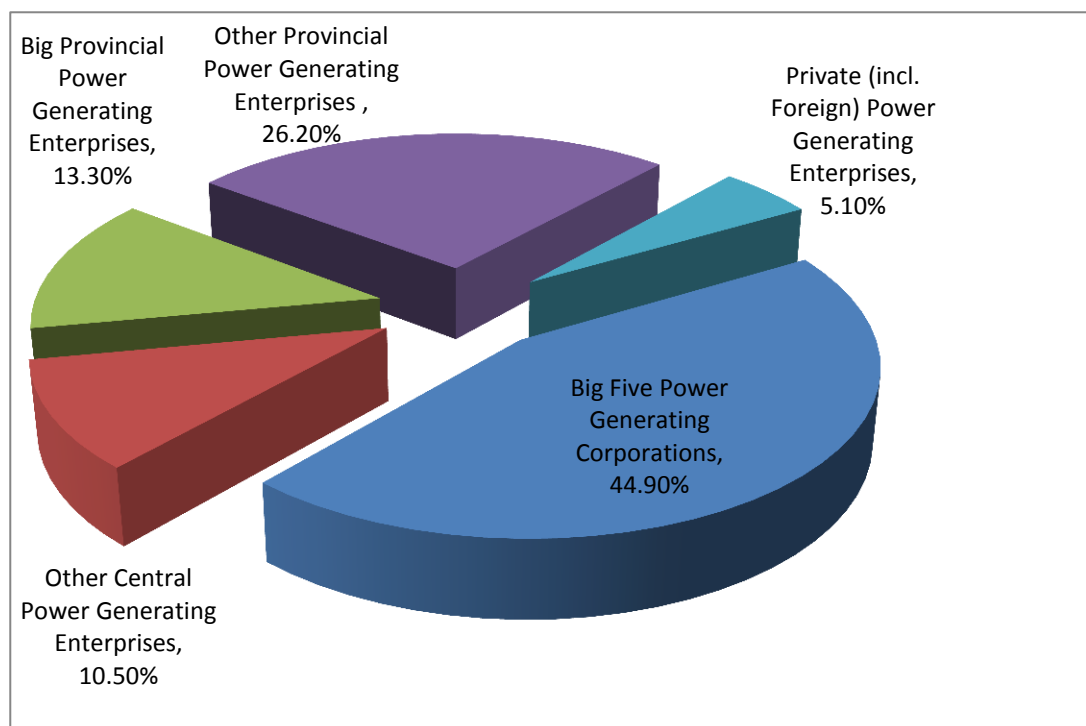
Figure 3. The Composition of China's Electricity Market by Market Share in 2008³⁴

³¹ Ibid.

³² Ibid.

³³ Interview with World Bank official, Beijing, 22 May 2009.

³⁴ The Big Five Power Generating Corporations, namely the five SOEs, are the China Huaneng Group, the China Datang Corporation, the China Guodian Corporation, the China Huadian Corporation, and the China Power Investment Corporation



Source: SERC Annual Report 2008

Indeed, as the SOEs have been able to expand their influence, the creation of the NEC (National Energy Commission) in 2010 has yet to bring significant clarity to the governance structure of the sector.³⁵ The commission has been unable to establish bureaucratic claims over the NDRC - this is perhaps best seen in light of the power sector reforms imposed by Zhang Ping, the incumbent Chairman of the NDRC, deviating from the 'independent' regulator model supported by his predecessors. The NDRC continues to unilaterally take actions and refuse to surrender any of its powers to other agencies.³⁶ At this point, the SERC is the lone voice supportive of the idea of integrating the NEA (National Energy Administration), the SERC, and the planned Ministry of Energy to administer the sector without significant and overbearing oversight by the NDRC.

c) Upstream-Downstream Relations and the Reach of the NDRC

(PIC). Other Central Power Generating Enterprises (6) are the State Development and Investment Corporation, the Shenhua Group, the China Three Gorges Corporation, the China Resources Power Holdings, the China's Nuclear Power Group, the China Guangdong Nuclear Power Group Co., Ltd. Examples of the Big Provincial Power Generating Enterprises (17) are the Guangdong Yudean Group, the Zhejiang Energy Group, and the Shangdong Luneng Group.

³⁵ Interview with NCEPU, Beijing, 13 January 2010.

³⁶ Ibid.

Central to the NDRC's control of the electricity market, retail pricing in particular, is the role of the national and provincial Price Bureaus (see Figure 2). The State Price Bureau is institutionally part of the NDRC and functions as the key decision-making entity regarding generation and retail price decisions. The State Price Bureau has provincial branches under the Provincial Development and Reform Commissions (PDRC), which historically have the authority to approve bundled wholesale and retail prices - a function that has a significant impact on the commercial viability of generating companies in the provinces. The Pricing Bureaus additionally determine the price of coal, the primary input in electricity generation. Notably, the government's ambitious policies regarding alternative and renewable energy sources are also taking hold across China. Yet, the full impact of these developments to the retail and wholesale market and pricing dynamics remains obscure, although the government intends wind, solar, and biomass energy to make up 8 percent of China's power generation capacity by 2020.³⁷

The Price Bureau and its provincial subsidiaries provide the NDRC with the control of retail prices, its authority to approve transmission licenses in the provinces and to control the benchmark price for transmission fees across the country remains unchallenged.³⁸ As a result, despite the centralized transmission licensing and pricing mechanisms, regional transmission price disparities create distortions in the market dominant power generating companies. In practice, the PDRCs decide on the price of the transmission for pilot projects, thus providing the provincial governments with power to influence regional pricing.

Furthermore, the central position of the NDRC is further strengthened by the nature of the electricity generation tariff structure. The government applies a single rather a multi-element electricity generation tariff. A single price for electricity generation benefits the power companies only if they produce the expected volume of power and therefore make the predicted rate of return. When the demand for electricity is lower than predicted, the State and Provincial Price Bureaus intervene in the market as happened in July 2003 with the suspension of the Zhejiang generation market.³⁹ The Price Bureau intervened with the suspension of the price bidding after power shortage resulted in the settlement of on-grid electricity (the price-bidding portion) according to the contract price.

³⁷ China Leading Global Race to Make Clean Energy, *The New York Times*, 30 January, 2010. See also, China's Latest Leap: An update on Renewable policy, *Renewable Energy World*, 21 July, 2010.

<http://www.renewableenergyworld.com/rea/news/article/2010/07/renewable-energy-policy-update-for-china>

³⁸ Interview with World Bank official, Beijing, 13 January 2010.

³⁹ Announcement on Adjustment On-grid Tariffs by the Zhejiang Southeast Electric Power Company Limited, 24 June 2004. <http://www.ukwire.co.uk/Article.aspx?id=200406240700260908A>

As the other power generating companies, apart from the five SOEs, have a share of 51 percent of the total national electricity generation capacity and the two state-owned grid companies buy electricity from these national and private small- and large-scale power plants before selling it to the end-users, any changes to this system is likely to have far-reaching consequences for China's electricity provision.⁴⁰ The most recent policy changes in 2008 and after, necessitated partly by the expansion of renewable energy generation, have allowed some of the power generating companies to sell electricity directly to provincial grid companies and to distribute it to end-users without the involvement of the state-owned grid companies.⁴¹ According to World Bank, a number of such pilot projects exist today and a greater number could eventually provide the SERC with the preconditions for wider scope and oversight authority, and hence with the ability to reduce transaction costs in the national electricity market.⁴² Yet, given the complexity of China's transmission and distribution networks, this gain seems unlikely unless the government takes decisive action in delineating the structure of its electricity market, or setting up a system for an functional and transparent 'unbundled' electricity provision mechanism.

d) Central local relations: local interests are narrowly pro-growth and protectionist

In addition to the authority vacuum of the SERC, the regional implementation of the power sector reforms has only added to the number of challenges facing the sector. As one of the policy goals has been to adopt a competitive price mechanism for the benefit of the end-users, problems in the institution of the transmission reforms between the local governments and the SOEs have left some regions with disparate power systems. Despite the reform goals of distancing local power companies from their generation departments, some of the local companies have decidedly refused to do so. In some cases, the provincial companies have even gone so far as to increase their investments into power plants without seeking central government approval.⁴³

⁴⁰ Interview with NCEPU, Beijing, 13 January 2010.

⁴¹ Ni, Chun Chun (2006) *Reform in China's Electric Power Industry - A Case Study of East China's Wholesale Electric Power Market*. Institute of Energy Economics, Tokyo, Japan, pp. 6. See also, China's Latest Leap: An update on Renewable policy, *Renewable Energy World*, 21 July, 2010.

⁴² Interview with World Bank, 13 January 2010.

⁴³ Interview with Asian Development Bank official, Beijing, 13 January, 2010. Interview with World Bank.

Therefore, in direct violation of government policy, some grid companies have continued to operate their own power plants hence stalling the overall reform process. And, even as regional companies continue to defy central government reform policies in relation to generation, the transmission sector has been experiencing similar phenomena.⁴⁴ Despite being prohibited by law, private investments into the transmission sector have increased at the county level as some local governments have not been able to afford the maintenance and further development of their transmission networks.⁴⁵

Conclusion: Regulatory Capacities in Flux

As China's transitional electricity sector finds itself under growing pressure to support the country's fast expanding economy, inflexible, inefficient, and even collusive institutional structures continue to hamper the designed power sector reforms. Power struggle between the political elites, inability to reign in and adequately control regional and local power markets, collusive behavior even between regional administrative agencies in regard to transmission and distribution of electricity, and the controlling position of the NDRC all constitute enormous challenges to the power sector reformers. Indeed, China's electricity structure has shown little flexibility in adapting to the reformed regulatory system since 2002 and it remains to be seen whether the reform policies will have the desired effect of creating more competitive and dynamic electricity markets for China. A more in depth scrutiny of the reform outcomes in terms of efficiency gains in power generation, transmission, or distribution across the country and for the benefit of end-user in particular, is a question for more comprehensive study. But one thing is certain, it is highly unlikely that a country's energy sector, or any industrial sector for that matter, will provide a level-playing field for businesses and equally divided benefits for end-users in the absence of strong and established sector governing institutions that can control and defuse anti-competitive behavior. Policy norms play a significant role in the creation or reform of regulatory modalities for example, and such norms are generally not very well established in transitioning economic systems. China's power sector governing institutions have witnessed little

⁴⁴ Interview with NCEPU and EDF, Beijing, 14 January, 2010.

⁴⁵ For example, a county government in Sichuan province sold its network system to the New Hope Group, a private enterprise among the top 500 Chinese enterprises, in 2002. See *The 21st Century Herald Business*, December 29, 2004, <<http://www.nanfangdaily.com.cn/jj>>. Similar situations have been found in Henan and Guizhou provinces.

stability over decades and this trend appears to continue even after the 2002 and 2008 power sector reforms.

To summarize, the case of China's transitioning energy regulatory framework exhibits four particularly evident weaknesses that have both institutional and practical implications.⁴⁶ First is the SERC's inability to serve as the primary signal-caller of the electricity market and locus of nonmarket activities of oligopolistic power companies since 2002. Second, a lack of progress in industry policy to resolve market imbalances has manifested in spouts of power shortages, chronic capacity underutilization, and relentless price pressures. Third, the power companies' own inability or unwillingness to internalize commercial risks through market- or contract-mediated relations with grid companies, coal producers, and consumers. And finally fourth, emerging patterns of discriminatory policies or collusion between provincial and local governments and power companies suggest emerging anti-competitive dynamics that are seriously affecting any foreign participation in the sector.

These weaknesses speak volumes about the problems facing not only China's policy-makers but also the power market more generally. As we have indicated, institutional reforms and restructuring efforts since 2002 have had little practical impact and the regulatory regime remains deeply centralized with overlapping regulatory authority and blurred lines of rules ownership between sector governing agencies. It is evident that the establishment of a central regulatory agency provides no guarantee for improved regulatory performance and market order. And, excluding financial services, of all key industrial and infrastructure sectors such as energy, telecommunications, transport, and manufacturing, only energy pertains to a governance structure with a 'central' overseeing agency that maintains an arms-length relationship with the state-owned firms. For example, since 1992 the national oil and petrochemical corporations have reported directly to the State Council without the intermediation of an industry-specific agency. But with the creation of the Energy Commission in 2010, both the power companies and the national oil companies might find themselves operating under another level of political principal. These types of governance realignments, reforms, and changes are observable in the power sector while other sectors continue to pertain to the ways of the 'commanding heights' system.

Direct price setting by the NDRC is seen in electricity – with the regulator – and in oil and petrochemicals – without a regulator. However, this persistent administrative intervention in

⁴⁶ We hasten to point out that our conclusion is preliminary, as available evidence is far from adequate or reliable for rigorous data analyses. We plan to conduct further rounds of interviews with regulators, corporate officials, investors, and think-tanks and industrial associations refine our analysis.

setting price signals does not imply a lack of interest in price liberalization on the part of the central government. On the contrary, Beijing launched reforms with explicit intentions of giving oligopolies a chance to set prices. It was actually the failure of oligopolistic competition that has forced central regulators to resort to administrative prices (Lin 2008). Telecom and transport industries that remain embedded in ministerial control and ownership find ways to coordinate intra-sectoral price signals without inviting third-party interventions. This is not to say that the resulting prices for the ministry-directed industries are closer reflections of market equilibrium forces and thus are more efficient – a quick glance at the various local fees and levies and exorbitant and persistent highway tolls should convince us otherwise.⁴⁷

Corporatism in industrial interest aggregation and representation has been lethargic in all sectors despite government encouragements. For example, a State Administration of the Petroleum and Chemical Industries (SAPCI) was set up in 1998 to take up the administration of these strategic sectors in collaboration with newly established state-controlled shareholding concerns (Arruda & Li 2003). However, it proved too low in administrative status to adjudicate substantive disputes between CNPC and Sinopec and was disbanded in 2001 and replaced with a “service-oriented” peak association, the China Petroleum and Chemical Industry Association (CPCIA) (CPCIA 2001). Formally under SETC supervision, CPCIA lost its aim after SETC’s demise in 2003. The China Electricity Council (CEC) which operates under the supervision of the SERC also seems weak, with the most notable function in sponsoring trade shows.⁴⁸ No industrial associations exist in telecom operators and transport industries.

Another interest dimension of difference lies in the role of certain stakeholders that could potentially play a governing function. Foreign portfolio and direct investors could have constituted a positive force in corporate governance, yet they have yet to do so. Their passivity can partly be explained by limitations on their shareholding and conditionalities on their ownership of assets. Western oil majors divested themselves of Sinopec and PetroChina shares soon after they obtained exclusive deals to build joint-venture retail stations and refineries with the Chinese oil companies. Provincial and local governments that have significant information advantage and welfare concerns over infrastructures have been kept out of key decision-making

⁴⁷ See Kennedy S (2003) *The Price of Competition: Pricing Policies and the Struggle to Define China’s Economic System*. *The China Journal*, No. 49, for a broader discussion of oligopolistic price setting.

⁴⁸ The CEC is the electricity industry association founded in 1988. Its operations are currently strictly under the supervision of the SERC and it essentially provides assistance to the SERC as a service provider and enterprise coordinator. It does not effectively organize and coordinate civil society activities, but with its broad member base of 1500 power companies it plays a role in facilitating the interaction between the government and the private sector.

on industrial restructuring and strategic decisions of the new state-controlled firms. Lin (2008) has suggested that the dismal fiscal situations of local states, their profligate investment behaviors, and their local market protectionist tendencies under the previous period of decentralization in the 1980s and 1990s have discredited them in the eyes of the central planners. Certainly we can predict added management costs associated with local resistance to this recentralized governance approach, as we have observed in forms of local noncompliance with financial directives of the corporate headquarters of national oil corporations and illicit collusions between provincial officials and IPPs.⁴⁹

To a considerable degree differences in the regulator-stakeholders relations in electricity generation and other key sectors are not deducible from the generic nature of the network industries, but are endogenous to the restructuring policy.⁵⁰ For example, in the oil and petrochemical industries the State Council fairly effectively preempted provincial and local government interests in creating the national oil corporations, whereas provincial interests were institutionalized in telecom as the Provincial Telecommunications Administrations under the Ministry of Industry and Information Technology. Provisions for transport projects are clearly delegated to provincial authorities, whereas provincial planners go against central mandates for promoting competition in entering into collusion with the electricity generators.

Future research should focus on how central regulatory agencies interact with the quasi-federalist structure of Chinese administration to create opportunities for the representation of business interests at the sub-national level. For example, while the Ministry of Transport is a strong bureaucracy, its role is circumscribed by fiscal federalist constraints that place the financial burden of proposing and fundraising for road projects in the hands of provincial planners. Consequently, the politicized dynamics of competition and collusion mainly plays out at the local level. In contrast, while the SERC does not have any obligations or fiscal ties to local authorities, it also cannot govern the merging deals between provinces and power producers.

To conclude, we recall Andrews-Speed et al (2000) who astutely observed a decade ago that while the Chinese central government has lost or relinquished its vertical command and control, it has yet to take on new responsibilities in supervising or regulating horizontal, contractual relationships. The case study of the electricity sector reforms and a cursory comparison to other sectors provide an illustration of the formidable challenges to the Chinese policy planners in achieving the basic functions of a regulatory state.

⁴⁹ See Lin (2009) for case studies of grassroots resistance.

⁵⁰ For an updated general analysis of enterprise reform in China, see Yueh (2011).

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