

China's Power Sector Reform: Efforts, Dilemmas, and Prospects



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Content



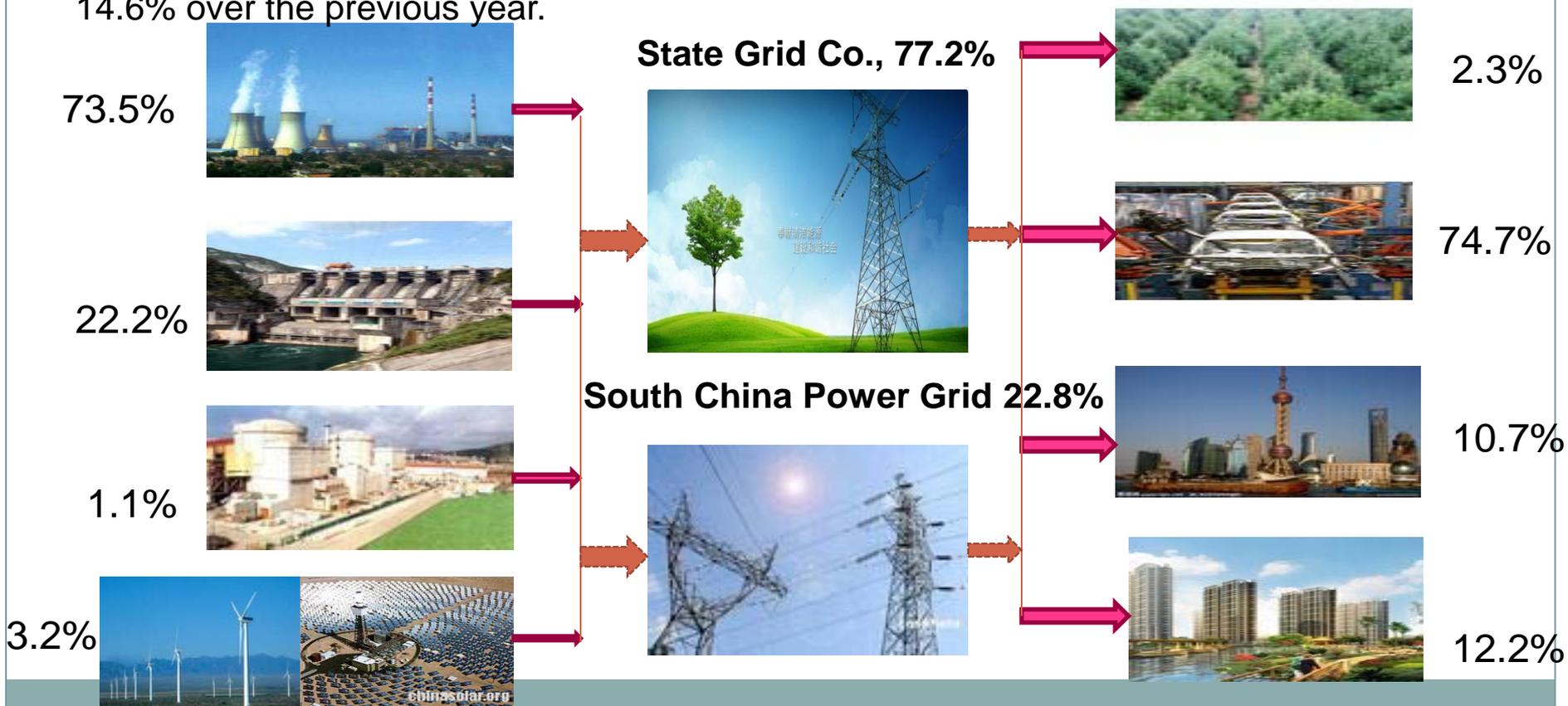
- **Efforts of the past reforms**
 - Industrial facts at a glance
 - Three phases of past reforms
- **China's current dilemma**
 - China stuck midway in market-oriented reform
 - Governmental position
- **Prospects of the future: reforming the unformed**
 - Who, what, when, and where

1. Efforts of the Past Reforms

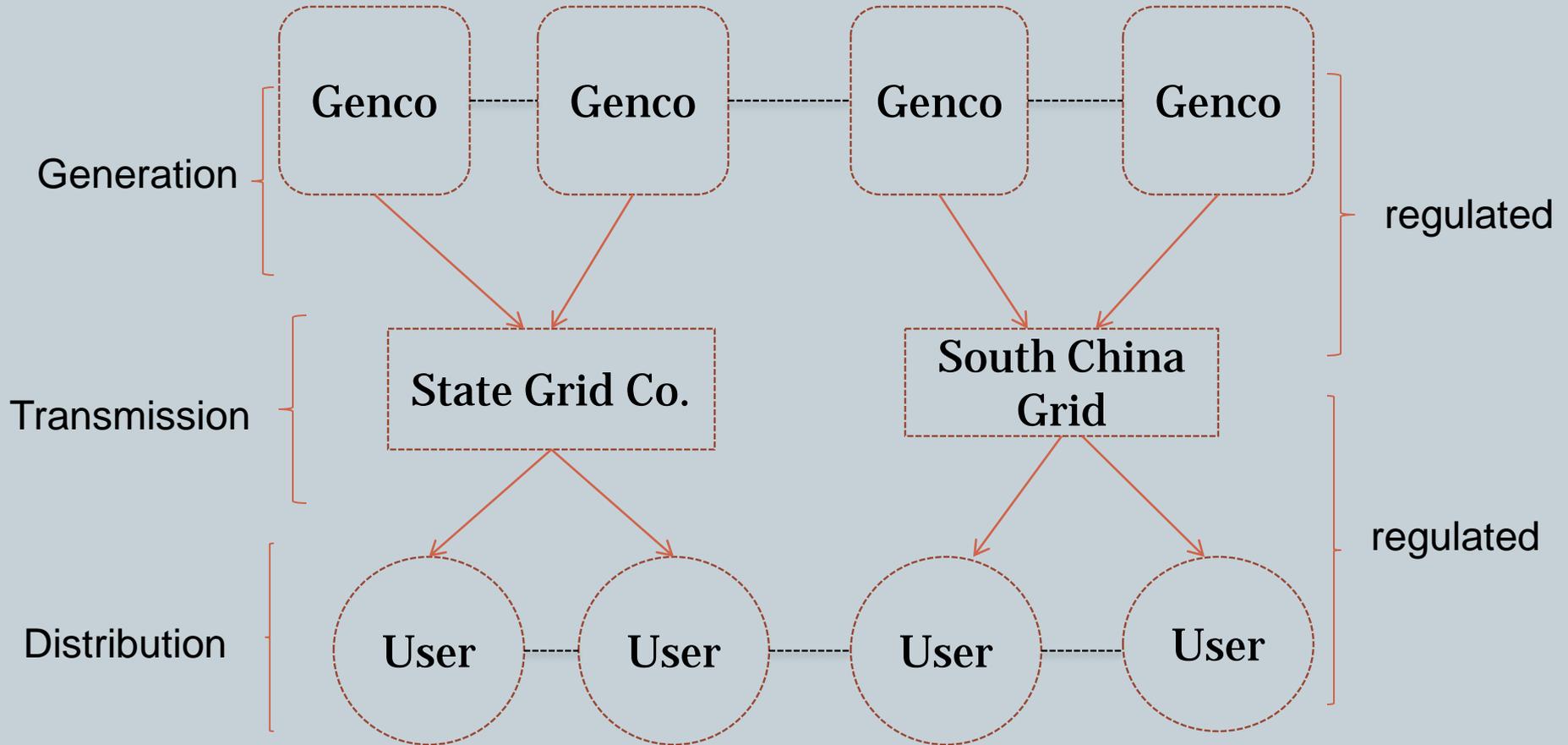


• Industrial facts at a glance

As of 2010, total installed capacity of power generation reached at 962m KW growing by 10% ; Total power consumption reached at 4.2 trillion kwh growing by 14.6% over the previous year.



Current Market Structure



Three Phases of Past Reforms Since 1980s



- **First phase of reform (1985 -- 1996)**
 - Before mid-1980s, highly centralized industry under command-and-control of central government.
 - In 1985, decentralized reform started to deal with long lasting power shortage, the bottleneck, by loosening strict control over market entry.
 - As a result, local IPPs boomed and shortage mitigated.
- **Second phase of reform (1997-2001).**
 - State Power Co. established in 1997, aimed at pushing separation between administration and corporate.
 - Six provinces and municipalities were involved in bid-based separation of generation and grid in 1998.
 - Nationwide discussion of power sector reform swept the country following a brief power surplus and huge deficits of Er Tan Hydropower plant, put into operation in 2000.

Three Phases of Past Reforms Since 1980s



- **Third phase of reform (2002--): Tough reforms after Mandate No.5**
 - The market-oriented reform was unveiled by Mandate No. 5 (2002) of the State Council;
 - Mapped out the clear target of the market-oriented reform by breaking down monopoly, introducing competition, optimizing resource allocation, setting up a healthy power system with regulated, fairly competing, orderly, and open electricity market;
 - Restructured whole industry by splitting the former vertically integrated State Power Co. into pieces: the State Grid Co. with five regional grid companies and South China Grid Co.; the big five power generating companies; four independent ancillary companies.

Three Phases of Past Reforms Since 1980s



- **Third phase of reform (2002--): Tough reforms after Mandate No.5 (cont'd)**
 - Aiming at forming a new pricing mechanism on the basis of bid-based access to the grid by setting up power dispatching center under regional grids; dividing electricity into access-to-grid, transmission, distribution, and end-sale prices. Pilot efforts in Northeast and East China failed.
 - By the end of 2010, major IPPs were supposed to participate in bidding for access;
 - Aiming at gradually pushing separation of transmission and distribution;
 - SERC established in March 2003 as an independent regulatory body.

2. China's Current Dilemma



- **China stuck midway in market-oriented reforms**
- **In comparison to Mandate No.5, very few objectives finished while many more left behind:**
 - Finished: competition on the generation side among nationwide big 5 and local IPPs; separating some ancillary services from grid company.
 - Unfinished: being stranded
 - Government, not market, plays the most important role in electric resource allocation;
 - Pricing mechanism: all prices are still being strictly regulated; conflict between coal and electricity;
 - Regional grid companies' functions have been weakened by the State Grid;
 - Bid-based regional market pioneering efforts suspended;
 - SERC is still in embarrassed position;
 - Separation of transmission and distribution still looks far off.

2. China's Current Dilemma



- **Governmental position in dilemma**
 - Reform or development to be first? Stressing pressure on power shortage and CPI (Consumer Price Index) made reforms more complicated and difficult; when is the best time for further reforms?
 - Will the reliability be impaired by the reforms? California's power crisis and South China's snowstorms in 2008 raised a question for framers;
 - Stressing marriage of coal and power sector, can they find solutions by themselves? Or, is it a typical market failure that government must intervene in? The government finds itself unwillingly involved in the conflict between coal and electricity;
 - Embarrassed position of SERC, a crippled regulatory body with missing regulated abilities;
 - Relationship between central and local government.

3. Prospects of the future: reforming the unformed



- **Who: Designer and director**
- **What: Focuses of the reforms**
- **When: Merit-order or sequencing**
- **Where: Regional or Nationwide Market**

Who: Designer and Director of the Reforms



- An independent, empowered, and ever-improving governmental authority with responsibilities for designing, directing, implementing, and revising reforms, is the primary necessity of the successful reforms.
- EAct of 1992 granted FERC the authority and responsibility to design and direct market-based reforms.

Making SERC More Like FERC: Transition Needed



- Complete endowment by laws and decrees to lead the reforms;
- Integrated but not separated functions of design, implementation, revision, and regulation rights;
- Complete electricity design and information system;
- Independent of Administration (like FERC independent of DOE);
- Dynamic review and amendment mechanism pursuant to changes of environment;
- Clear boundary of activities, e.g. interregional wholesale market;
- Keeping reliable, just, neutral position at any time and at any place.

What: Focuses of Reforms



- Institutional changes: legislation, administration and regulations;
- Market design: market model (nationally unified or regional models, final model or intermediate model); pricing regime; market system (wholesale and retail, spot and future); regulation; competition rules;
- Does power pool make sense at early stage?
- Restructuring whole industry: generation, transmission and distribution, ancillary services;
- Incentives to investors by pricing and taxes;
- Securing reforms by dealing with risks, uncertainty, interruption, subsidy, market power, universal services, etc;
- Facing new challenges from greener energy, smarter energy, innovation etc to comply with energy strategy

Making a Competitive Market



- Multiple buyers and multiple sellers;
- Open and free entry and exit, to and from the market;
- No abuses of market power or monopolistic power control over market;
- Regulation based on complete and transparent information system (like OASIS Rule);
- Bid-based, security-constrained, economic dispatch with nodal prices;
- A public-involved and complete game rules (NOI);
- A judge or referee stands at a neutral and unbiased position.

When: Merit-order or Sequencing of the Reforms



- Restructuring needed prior to pricing reform: open market entry to social investors to form multiple wholesale buyers and multiple wholesale sellers;
- From wholesale to retail market, California's lessons;
- Dispatching to be gradually independent of grid's operations, from functional to financial independence (then ISOs) ;
- Functional, financial and actual separation of transmission and distribution;
- RTOs extending from regional markets;
- Is there a best time for reforms? Or, does power supply exceeding demand make sense to trigger reforms?

Where: Regional or Nationwide Market



- Unified market model or multiple market models?
- Hybrid models in the U.S. with half market-based RTOs and half vertically integrated utilities at state level;
- Find the criteria or conditions for the most appropriate places to start reforms;
- Does regional trial-and-error method still make sense?
- Past trial failure impedes next reforms, whereas no trial increases risks and uncertainty;
- Reforming the governmental functions and policies.

Thanks for your attention!



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