

Pipe Dreams:

Datang's Failed Coal Chemical Initiative,
and the Story of China's Coal Chemical Sector



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1. Introduction

1. According to Datang's 2015 mid-year report, there has been neither further news nor details regarding this restructuring.

China has a need for gas. Richly endowed with coal resources, China has relied on the “black gold” for much of its energy needs, with 66% of its energy consumption coming from coal burning in 2014. However, rampant air pollution and other harmful environmental problems, coupled with the government's desire to diversify its energy resources, have led China to pursue other sources of energy aggressively.

Given that gas burns more cleanly than coal, China's government is keen to expand the use of gas in its energy portfolio, and plans to increase its energy consumption from gas to 10% in 2020 from 5.9% in 2013. This has been key driver for China's dash for gas, a dash that has seen it secure new gas pipeline sources from central Asia and Russia, increase liquefied natural gas (LNG) purchases on the international market, expand exploration of its shale resources in southern China, and spur China's state owned enterprises (SOE) to explore converting coal resources into synthetic natural gas (SNG), oil

products, and other chemical products.

In this report, Greenpeace explores the development of China's coal-to-chemical sector and environmental problems of the industry. We look at the efforts of one such SOE, the Datang group, one of China's top 5 state-owned power sector giants, which had the ambition of building China's largest and most advanced coal-to-gas plants, and its most extensive coal chemical portfolios. We review the history of this portfolio, its genesis and development, and take a deep dive looking at one of the coal chemical projects, the Fuxin Coal-to-gas project, which when completed, will be China's sixth largest coal-to-gas project. We also cover Datang's stunning strategic reset, when it announced July 2014 that it would be selling its entire coal chemical portfolio¹, completely retreating from a sector beset by environmental, financial, technology and policy risks. Finally, we take a look at the broader implications to China's dash for gas, and for the coal chemical industry in general, as the country attempts to diversify away from coal.



2. China's Coal Chemical Sector

2. Macquarie Research, "China coal-to-chemical", 9 Feb 2015

Datang's expansion into the coal chemical sector is intimately connected to China's energy context. As is well known, China is richly endowed with coal resources, but is poor in oil and gas resources, thus making the coal-to-chemical sector an attractive area of development.

Converting coal into chemical has actually had a long history, stretching back to the late 19th century Europe, and has seen varying degrees of boom and bust cycles, as competing fossil fuels, oil and gas,

naturally displaced coal as the preferred feedstock. While a complete history of the coal chemical sector is beyond the scope of this note, suffice to say that China's modern coal-to-chemical sector only started significant development in 2004, and by both its scale and ambition, it is unique from the rest of the world. China is building the world's largest industrial-scale coal gasification, and is driving ahead to extend coal's industrial chain to an unprecedented wide variety of downstream products (see image 1 below)².



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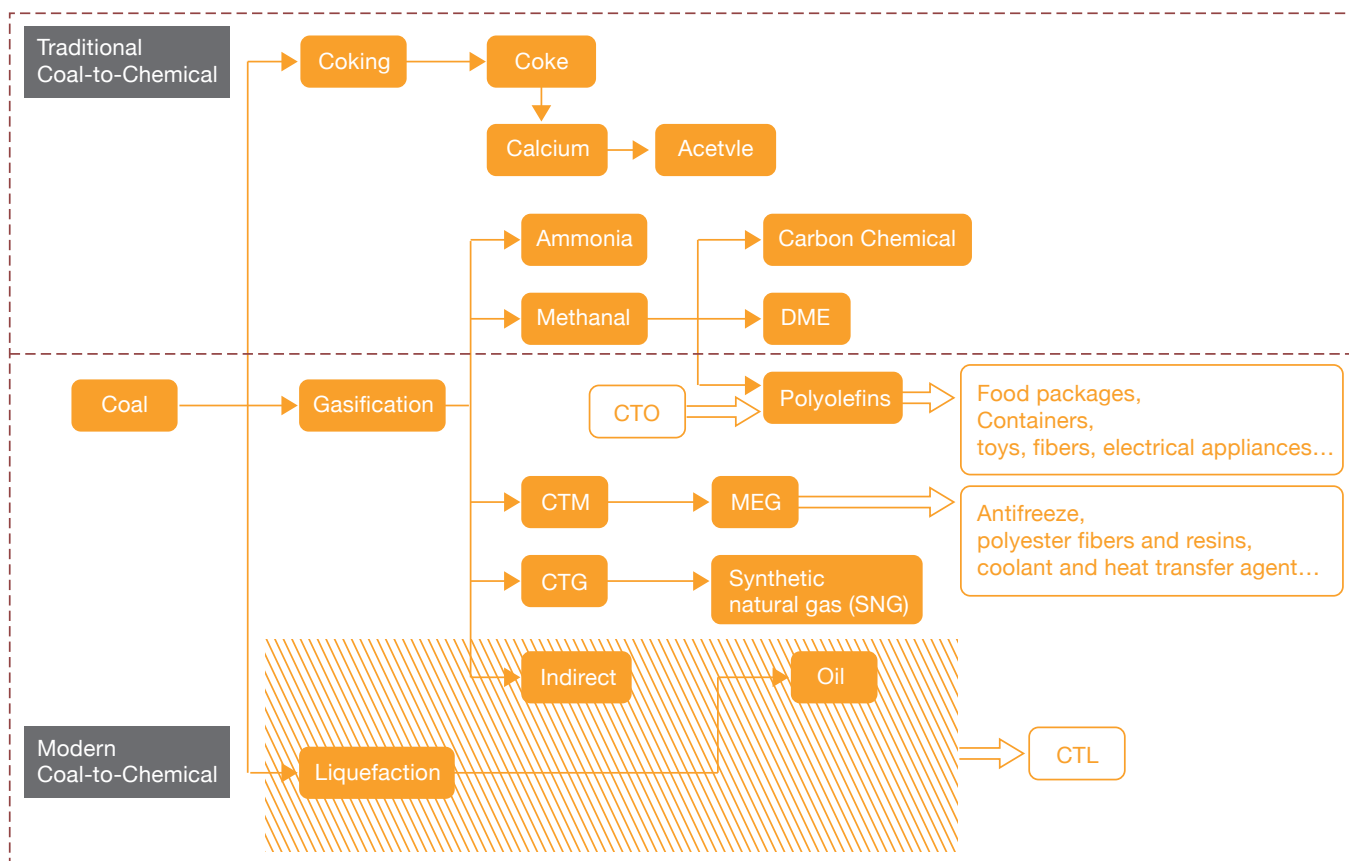


Image 1: The Coal Chemical Flowchart



3、http://news.xinhuanet.com/fortune/2007-04/11/content_5960916.htm

4、央企重组十年路线“100 家央企”整合目标未能达成

<http://www.21cbh.com/HTML/2013-3-9/3NNjUxXzYzNTc3NQ.html>

5、For example, CPIC moved into the nuclear power sector, Huadian moved into the financing sector, and Datang, into the coal chemical sector

6、山西省人民政府关于加快三大煤炭基地建设促进全省煤炭工业可持续发展的意见

<http://www.shanxigov.cn/n16/n1116/n1458/n1518/n34105/1002981.html>

7、山西省人民政府印发山西省煤炭工业可持续发展政策措施试点工作总体实施方案的通知

<http://www.shanxigov.cn/n16/n1116/n1458/n1518/n34105/1002607.html>

8、At the time, with the exception of Shenhua Coal, most of the entire coal companies were dependent on the Ministry of Railways, which had a monopoly on coal transportation.

There are three important points that underpin the development of coal chemicals in China.

First, China's 11th Five Year plan (FYP) on Energy (2006 - 2010)³, issued in April 2007, signaled the government's support for the development of coal chemical technology demonstration projects. Specifically under section 3: "Replacing Oil as an Energy Source", the plan said that China should "increase the speed of development of coal power bases, biomass fuels and coal chemical technologies, through key demonstration projects."

Second, the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), which was and still is the largest shareholder of the Datang Group, was at the time, embarking on a massive effort to consolidate and improve the performance of China's state-owned companies. The 2005-appointed head of SASAC, Mr Li Rong Rong, was tasked with reducing the number of key SOEs by 40%, from 140 to 100.⁴ As a result, China's top 5

power companies, China Huaneng Group (Huaneng), China Huadian Corporation (Huadian), China Guodian Corporation (Guodian), China Power Investment Corporation (CPIC), and China Datang Corporation (Datang or Datang Group), began to diversify into other sectors⁵ and increase source of income.

Finally, local provincial governments⁶, in an effort to raise local GDP-growth, began to limit the simple extraction of raw coal resources by coal power companies, and instead aggressively pushed these companies to convert locally sourced raw coal into high value-added products⁸.

As a result of these factors, traditional coal mining companies such as Shenhua and China Coal, which were also facing coal transportation bottlenecks⁸, began to move downstream into the power generation and coal chemical sectors. Conversely, power companies such as Huaneng and Datang, began to move upstream into the coal mining and coal chemical space.



3. Datang Makes a Move

9、《大唐集团初步提出发展战略第二阶段行动计划目标》,2005-11, 国务院国有资产监督管理委员会
<http://www.sasac.gov.cn/n86114/n326638/c626741/content.html>
10、http://quotes.money.163.com/f10/ggmx_600744_149869.html

Datang's foray into the coal chemical sector was initiated during 2005, when the company was setting its goals for the China's 11th Five Year Plan (2006 – 2010)⁹, and in the plan, it explicitly says that “new energy and other related business would occupy a greater proportion of the business”.

According to industry analysts, Datang's strategy to diversify into coal chemical related business was enthusiastically championed by Datang group deputy general manager and board member, Mr Liu Shunda¹⁰, and was ultimately approved by the board. At the same

time, according to industry analysts, Datang's move into the coal chemical sector was also motivated by a desire to compete with Huaneng for title of China's most important power company.

A succession of 5 major coal chemical projects were proposed, at combined investment cost of approximately RMB 70 billion: 2 coal-to-gas plants, 1 coal chemistry project, 1 coal fertilizer project, and a huge coal mine in Inner Mongolia, dedicated to provide the lignite coal that was needed.

Name	Keqi Coal to Gas	Fuxin Coal to Gas	Duolun Coal-to-Chemical	Hulunbeier Fertilizer	Xilinhaote Mining
Basic Description	Datang's first and China's first large-scale coal-to-gas development to provide gas to Beijing.	Datang's second coal-to- gas project to provide gas to Shenyang,Liaoning	Datang's coal-based methanol to propylene (MTP) complex	Datang's coal-based fertilizer plant.	Datang's coal mining company
Main operating company	Inner Mongolia Datang International Keshiketeng Coal-based Gas Company Limite	Liaoning Datang International Fuxin Coal- based Gas Company Limited	Datang Inner Mongolia, Duolun Coal Chemical Company Limited	Datang Hulunbeier Fertilizer Company Limited	Inner Mongolia Datang International Xilinhaote Mining Company Limited
Approval date	20 August 2009 Construction began 30 August 2009	Approved and construction began Mar 2010	Approved and construction began 2005	Registered at Sep 2007,construction began 27 May 2008	Registered at Aug 2007
Equity Ownership ¹¹	Datang Energy Chemical 51% , China Datang Corporation10%	Datang Energy Chemical 90%, China Datang Corporation 10%	Datang Energy Chemical 60%, China Datang Corporation 40%	Datang Energy Chemical 100%	Datang Power 60% , China Datang Coal Industry Company 40%
Location	Keshiketeng Qi Chifeng City, Inner Mongolia	Fuxin City, Liaoning	Duolun County Xinlinguole League, Inner Mongolia	Hulunbeir city, Inner Mongolia	Xilinhaote city, Inner Mongolia
Capacity	2.67 billion m3/year	4 billion m3/year	0.46 million tons/year	0.18 million tons of ammonia and 0.3 million tons of urea/year	10 million tons/year
Total Investment Required (RMB) ¹²	RMB 25.7 billion	RMB 24.5 billion	RMB 16.2 billion	RMB 1.94 billion	RMB 1.67 billion
Description	Developed to provide gas to Beijing. China's first large-scale coal- to-gas development was suspended in 2014 ¹³ for 3 months due to corrosion of the gasifiers.	Developed to provide gas to Shenyang, Liaoning. Datang's second coal-to- gas project. There has been no target date for commissioning since the problems at Keqi.	Commissioned end-2013, this has faced problems at the methanol to propylene (MTP) units. ¹⁴	Started production since Oct 2013	Set up in 2007, focusing on the exploitation, construction and operation of an open-pit coal mine

Table 1: Datang's Coal Chemical Projects

11. Datang Power, annual reports & announcements
 12. Datang Power, announcement dated May 25, 2010, circular dated September 4, 2009 and other public source
 13. <http://finance.sina.com.cn/chanjing/gsnews/20140331/093118664075.shtml>
 14. <http://special.21so.com/index/special/sid/12087>
 15. Datang Power, annual reports

From 2008 to 2014 Datang's coal chemical assets grew at an annualized rate of more than 20% versus 17.2% for coal mining, and as the size of the coal chemical investments grew larger, Datang's asset base began to be increasingly diversified. Growth was especially fast in 2009 and 2010, as the year-on-year increase of coal chemical assets was 46.8% and 57.0% respectively. By the end of 2014, Datang's coal chemical business accounted for 22.9% of its asset base, up from 9.9% in 2008, while its power business fell from 84% to 66% over the same period (see Image 6A & 6B below).

	2008	2009	2010	2011	2012	2013	2014
Chemical segment asset (RMB'000)	7,063,474	25,056,663	39,345,040	49,088,856	63,388,719	73,422,380	73,823,372
Chemical segment YoY growth%		↑ 46.8%	↑ 57.0%	↑ 24.8%	↑ 29.1%	↑ 15.8%	↑ 0.5%
Total segment asset (RMB'000)	172,858,392	188,827,532	218,538,562	256,462,394	283,656,495	310,196,825	322,859,716
Chemical segment asset %	9.9%	13.3%	18.0%	19.1%	22.4%	23.7%	22.9%

Table 2: Segment assets of Datang Power's chemical business from 2008 to 2014¹⁵

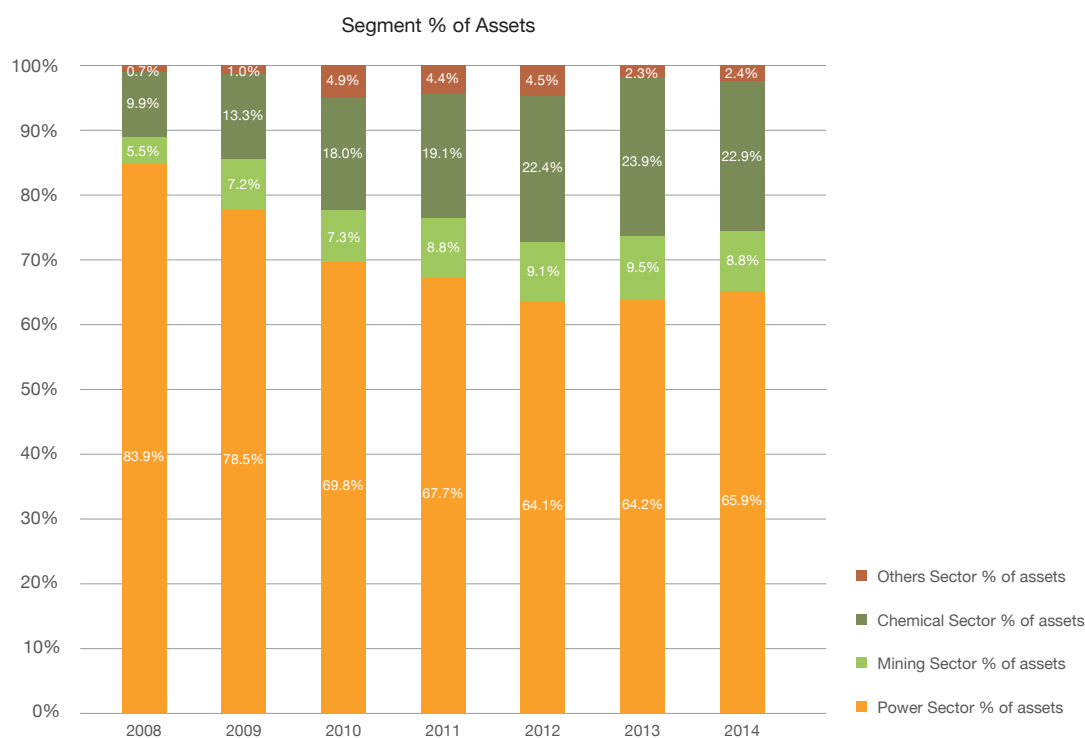


Image 3: Datang Power's Asset Base

Datang's coal chemical projects were all subsidiaries of Datang Energy and Chemical Company Limited (Datang Energy Chemical), which itself was 100% owned by Datang International Power Generation Co., Ltd (Datang Power), a company listed on both the Hong Kong (Stock code: 991.HK) and Shanghai stock exchange (Stock code: 601991.SH).

Compared with other companies that invested in coal

chemical projects, which typically kept such high-risk assets off the company's balance sheet by making them separate legal entities, Datang decided to develop its coal chemical projects as part of its listed entity. According to industry analysts, the intention was to allow investors to take part in the revenue growth potential of these projects, thereby lifting the company's overall share price, and standing with the investment community¹⁶.

16、28/08/2007 大唐发电：大举进入煤化工，半年报业绩同比增长36% <http://www.99qh.com/s/news20070828075243030.shtml>

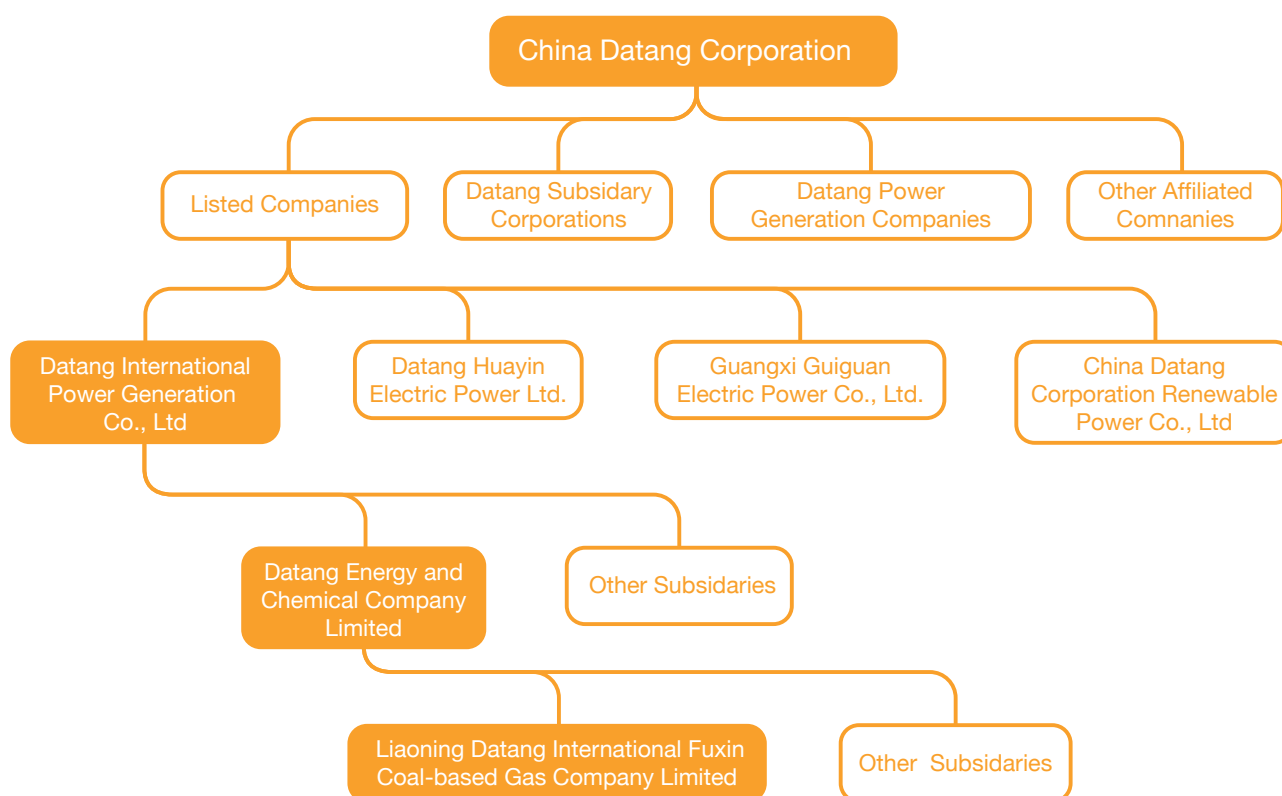


Image 4: The Corporate Structure of Datang

The investment community was broadly optimistic of these developments. In September 2010, Everbright Securities called Datang's coal chemical business a "income growth catalyst". In February 2011, JP Morgan said that Datang's coal-chemical project was a "positive catalyst in 2011". Even in Jan 2012,

after news of increased technology problems and project delays were released, Cantor Fitzgerald said that Datang's coal chemical projects were "profit catalyst" and would make it "the most diversified power company among its listed peers".



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4. Funding Datang's Move into Coal Chemical: The Initial Impetus

17. According to the 2014 Annual Report, the total "非募集资金" for coal chemical is RMB 72.182 billion, of which RMB 64.318 billion had been invested.

18. http://www.gov.cn/zwtgk/2005-09/08/content_30251.htm

19. Specifically, the policy said: "Banks of a policy nature, state-owned commercial banks and joint-stock commercial banks should actively improve their financial services and effectively support the development and construction of coal enterprises that conform to state industrial policy and conditions for development." (政策性银行、国有商业银行和股份制商业银行应积极改进金融服务,加大金融产品创新力度,切实支持符合国家产业政策和市场准入条件的煤炭开发建设。)

20. http://www.sdpc.gov.cn/fzgggz/gylz/gylz/200607/t20060713_76372.html

21. Specifically, the policy said: "The coal chemical sector is large scale, integrated, and needs to cater to local conditions; Technology and financing hurdle are high." (煤化工产业具有规模化、大型化、一体化、基地化的特征;技术含量高,投资强度大)

Funding Datang's initiative into the coal chemical sector was going to be a monumental task, given the large capital investments (approximately RMB 70 billion)¹⁷ that would be needed.

As a result, it was important for Datang to get the support of local Chinese financial institutions, which themselves looked to the central government for the approval to fund such large projects.

Datang took cue from 2 key policies:

First, in June 2005, the State Council issued the policy document "Pushing the Healthy Development of the Coal Industry" 《国务院关于促进煤炭工业健康发展的若干意见》¹⁸, where it explicitly mentioned that the government should "speed up and support the development of coal-related business" and that

Chinese financial sector should support this.¹⁹

Second, in July 2006, the National Reform and Development Commission (NRDC) issued the policy document "Strengthening the Management of Coal Chemical Projects" 《关于加强煤化工项目建设管理,促进产业健康发展的通知》²⁰ identifying the funding problems²¹ that coal chemical projects faced.

However, as the next section highlights, unanimous government support for the coal chemical sector was by no means assured. Indeed, over the next ten years, various regulatory bodies - the State Council, NDRC, and NEA, displayed wavering support towards the coal chemical sector, and a variety of policies and recommendations.



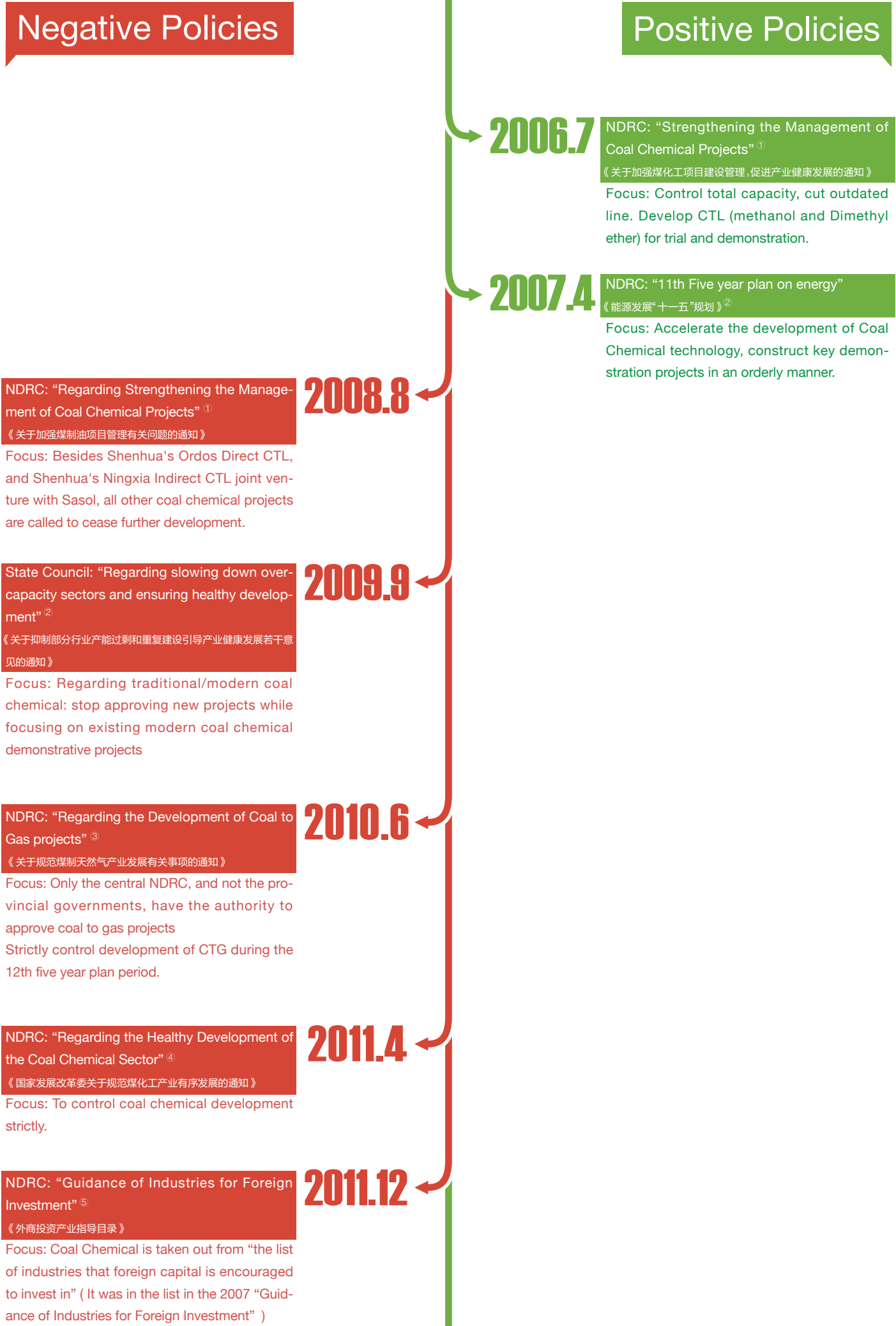
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5. The Policy Environment: Consistently Inconsistent

Below we map out the key policies that have influenced the development of the coal chemical sector in China. Datang's financing and development plans were in varying degrees, influenced by these policies. At the same time however, given that Datang's projects were large-scale key demonstrative project, they also had an influence on the policies themselves.

As demonstrative projects grew in size, scope and experience, and as technological, operational, financial and environmental constraints became more apparent, the government in turn adjusted its own recommendations for the sector. This may also have been another key reason for the government's seemingly inconsistent and confusing position over the past ten years.

Table 3: China's Overall Coal Chemical Policy Environment 2006-2015



2012.1

NEA: "Strategy Plans to deepen the Development of the Coal Sector" ^③

《煤炭深加工示范规划》和《煤炭深加工产业发展政策》

Focus: 18 key demonstrative projects including 15 "high value added" coal demonstrative projects in Inner Mongolia and Xinjiang etc.

2012.6

NEA: "Encouraging Private Sector Investment in the Energy Sector" ^④

《关于鼓励和引导民间资本进一步扩大能源领域投资的实施意见》

Focus: The NEA encourages private capital investment in the energy industry, including CTG projects.

2013.1

State Council: "12th Five year plan on energy"

《能源发展“十二五”规划》^⑤

Focus: Support the development of coal chemical demonstrative projects in Xinjiang, Inner Mongolia, Shaanxi, Shanxi, Yunnan, Guizhou and Anhui.

2013.9

State Council: "National Air Pollution Plan"

《大气污染防治行动计划》^⑥

Focus: Address China's air pollution issue by focusing on diversifying energy sources. Gives greater support for gas.

2014.1

NEA target for 50bcn CTG by 2020, which accounts for 12.5% of domestically made gas" ^⑦

NEA: "Notice on the Development of the Coal to Liquids and Coal to Gas projects" ^⑧

《关于规范煤制油、煤制天然气产业科学有序发展的通知》

Focus: Strictly control approval process, capacity requirements for coal chemical projects.

2014.7

① http://www.sdpc.gov.cn/fzgggz/gyfz/gyfz/200607/t20060713_76372.html

② http://news.xinhuanet.com/fortune/2007-04/11/content_5960916.htm

③ http://www.cppei.org.cn/fz_text.asp?id=72992&classid=12&cname=%E6%94%BF%E7%AD%96%E6%B3%95%E8%A7%84

④ http://www.nea.gov.cn/2012-06/20/c_131665600.htm

⑤ http://www.gov.cn/zwgk/2013-01/23/content_2318554.htm

⑥ http://www.gov.cn/zwgk/2013-09/12/content_2486773.htm

⑦ http://paper.people.com.cn/zgnyb/html/2014-02/24/content_1395422.htm

China reduces unofficial 2020 targets for the coal chemical sector, and will not approve new CTG plants until 2020 ^⑨

2014.12

① http://www.gov.cn/zwgk/2008-09/04/content_1087244.htm

② http://www.gov.cn/zwgk/2009-09/29/content_1430087.htm

③ http://www.gov.cn/zwgk/2010-06/18/content_1630289.htm

④ <http://baike.baidu.com/view/11798051.htm>

⑤ 2007: <http://www.mofcom.gov.cn/aarticle/b/f/200711/20071105248462.html>
http://www.mofcom.gov.cn/aarticle/b/f/201112/20111207907901.shtml
http://www.mofcom.gov.cn/aarticle/b/c/201503/20150300911747.shtml

2011: <http://images.mofcom.gov.cn/wzs/accessory/201112/1325217903366.pdf>

⑥ http://zfxgk.nea.gov.cn/auto83/201407/t20140722_1828.htm

⑦ <http://www.worldcoal.com/coal/23122014/China-curbs-development-of-coal-to-gas-projects-1707>

⑧ <http://www.chinalaw.gov.cn/article/xwzx/fzxw/201404/20140400395810.shtml>

New environment protection law ^⑧
《中华人民共和国环境保护法》enforced starting from Jan 1st 2015

2015. 1



6. A Long and Winding Road: The Short Version

As mentioned, Datang both influenced and took cue from government policies to develop its coal chemical portfolio. This in turn provided the overall financing support it needed to move ahead.

In the below page, we outline the financing timeline of Datang's Fuxin Coal-to-gas project (hereafter referred to "Fuxin"), and its relationship with other projects in Datang's portfolio.

Note that even though the individual coal chemical projects produced different products, were in different locations, and operated in different market conditions,

they were all owned by the same parent company, Datang Energy Chemical, and so how they were financed was strongly inter-connected.

For example, an important assumption that was made was that the revenues generated by earlier completed projects would be used to fund the financing costs of subsequent coal chemical projects. Thus, any delays in the Datang's earlier projects (Duolun) would have implications for later ones (Keqi, Fuxin).

In the case of Fuxin, below is the financing summary for the RMB 24.5 billion project from 2009 to 2013.

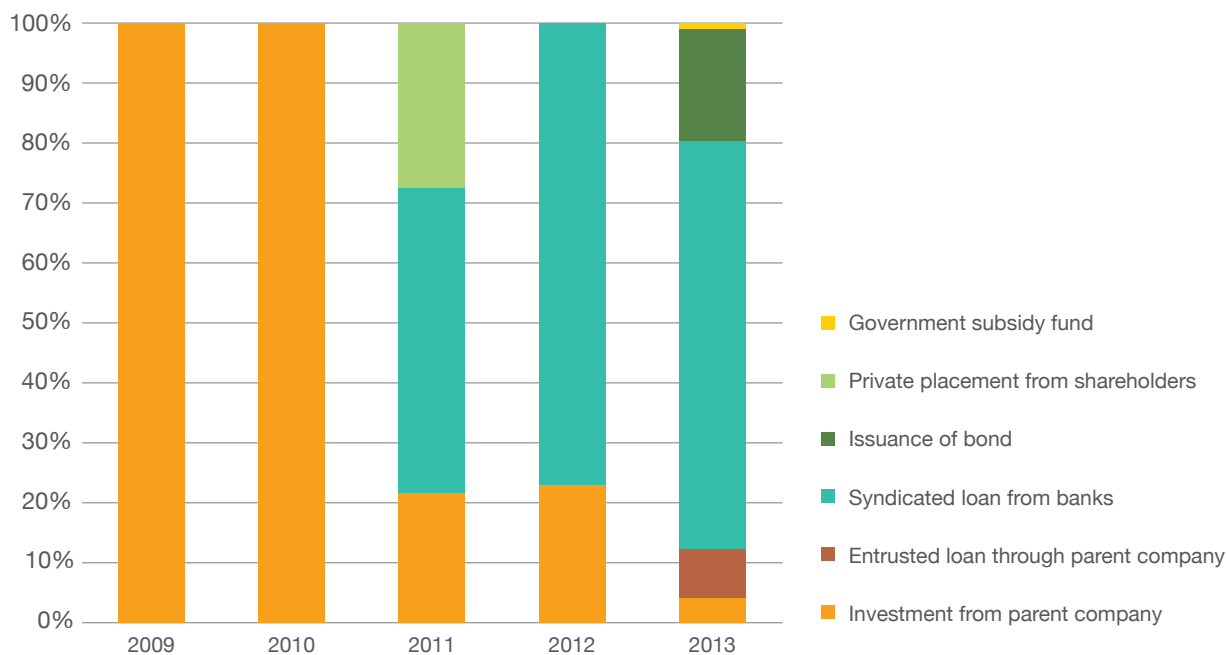


Image 5: Financing summary for Fuxin

1) 2009 – 2010

Early on, Fuxin relied mainly on investments from its parent company.

2) 2011 – 2012

Fuxin radically diversified its financing. In 2011, investment from parent company was no longer the only source of funding, it also received funding from bank syndicated loans and private placement from shareholders. In 2012, funding from syndicated loan from banks exceeded investment from the parent company.

3) 2013

Syndicated loan from banks continued to be the major source of funding. At the same time, Fuxin explored a variety of alternative funding sources. It started to receive financing through entrusted loans from the parent company, bond issuances and government subsidy funds.

According to industry analysts, Datang had originally planned to use traditional means of financing (parent company investment, loans), but over time, this morphed into a slew of other financing channels such as syndicated loans, bonds, private placements, and direct subsidies from the local government, reflecting the challenging nature of funding such a large project.

However, what exactly happened? What were the specific events that led Datang down this difficult path? Below, we do a comprehensive review to explain.



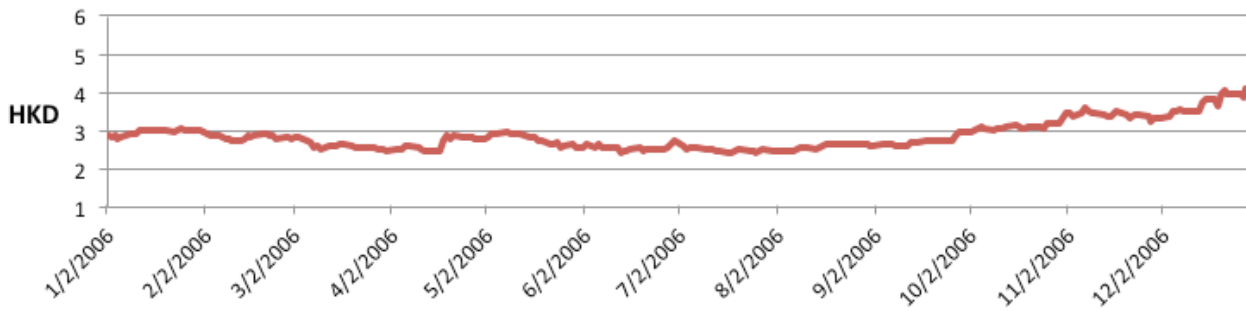
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7. A Long and Winding Road: The Long Version



2006

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



Datang Power Share Price on HKSE (HKD)

Start:	2.85
End:	4.05
Min:	2.41
Max:	4.08
Mean:	2.84

Government Policies

POSITIVE

July 2006: NDRC: "Strengthening the Management of Coal Chemical Projects" 《关于加强煤化工项目建设管理，促进产业健康发展的通知》²²

Datang Development Plans

End 2005/early 2006:

Construction on Datang's first coal chemical project in Duolun begins in end 2005/early 2006. Completion date is estimated to be 2009

Financing

Comment

It is the start of the 11 FYP plan (2006 - 2010)

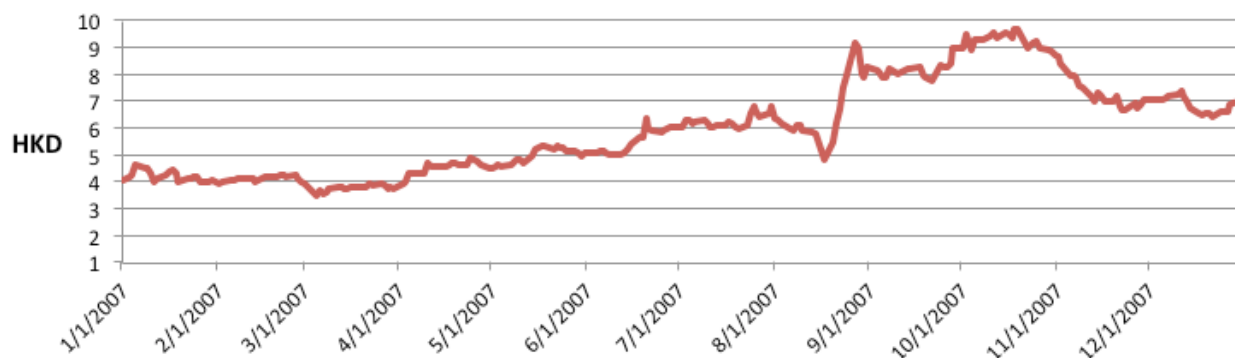
The NDRC policy "Strengthening the Management of Coal Chemical Projects" lays out the key principles for coal chemical developments in China:

- control total capacity, i.e. cut outdated line
- develop CTL (methanol and Dimethyl ether) for trial and demonstration.

Datang starts preparatory work on its first coal chemical project, Duolun, located in Northern Inner Mongolia.

This will be challenging project, as Duolun's coal resources are low quality. However Datang and the local government say that Duolun would have "zero pollution" and be "environmentally friendly"³³. According to industry analysts, making this bold claim actually helps to speed up the application process with the NDRC.

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



Datang Power Share Price on HKSE (HKD)

Start: 4.05
End: 6.96
Min: 3.49
Max: 9.66
Mean: 5.95

Government Policies

POSITIVE

April 2007:

NDRC: 11th Five Year Plan on Energy (2006 - 2010)²⁴

Comment

An important year, as in April 2007, the NDRC issues the 11th Five Year plan (FYP) on Energy (2006 - 2010), which for the first time, provides guidance and support for the coal chemical sector.

Datang Development Plans

The plan says that China should “increase the speed of development of coal power bases, biomass fuels and coal chemical technologies, through key demonstration projects.”

Financing

22、http://www.sdpc.gov.cn/fzgggz/gfz/gfz/200607/t20060713_76372.html
23、http://yqb.dlx.gov.cn/wtgd_xgyw/yqbyqgh/yqbxhj/200804/t20080420_126698.html
24、http://news.xinhuanet.com/fortune/2007-04/11/content_5960916.htm

25、http://www.gov.cn/zvzgk/2008-09/04/content_1087244.htm
25、http://218.70.35.236/2013xw/pd/2009-09/17/content_352999.htm

2008

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



Operating Income (RMB millions)

Power Sector:	916.4
% of total:	207.8%
Coal Mining:	-444.9
% of total:	-100.9%
Chemical Sector:	23.8
% of total:	5.4%

Datang Power Share Price on HKSE (HKD)

Start:	6.96
End:	4.10
Min:	2.26
Max:	6.96
Mean:	4.63

Government Policies

NEGATIVE

August 2008:

NDRC: "Regarding Strengthening the Management of Coal Chemical Projects" 《关于加强煤制油项目管理有关问题的通知》²⁵

Datang Development Plans

Datang's 2008 strategy (announced in 2007) is to "focus on power generation, diversify into other business." (以电为主、多元协同)²⁶

Financing

Comment

The NDRC backtracks slightly and calls for coal chemical developments to slow down. Besides Shenhua's Ordos Direct CTL, and Shenhua's Ningxia Indirect CTL joint venture with Sasol, all other coal chemical projects are called to cease further development.

Datang's 2008 strategy (announced in 2007) is to "focus on power generation, diversify into other business." This is the company's key strategic slogan and will last until 2012, when it changes focus.

2009

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



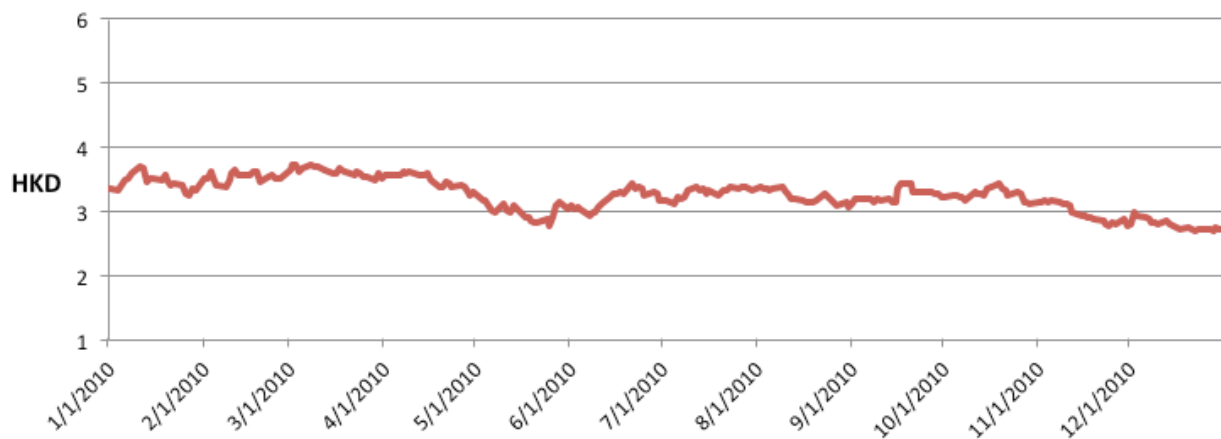
27. http://www.gov.cn/zwglk/2009-09/29/content_1430087.htm

28. <http://energy.people.com.cn/n/2014/0623/c71661-25184647.html>

29. Datang Power, 2014 Annual Report

Operating Income (RMB millions)	Datang Power Share Price on HKSE (HKD)
Power Sector: 2,672.3 % of total: 86.4% Coal Mining: 213.9 % of total: 6.9% Chemical Sector: 20.2 % of total: 0.7%	Start: 4.10 End: 3.35 Min: 3.06 Max: 5.34 Mean: 3.97
Government Policies	Comment
<p>NEGATIVE</p> <p>Sept 2009</p> <p>State Council: "Regarding slowing down overcapacity sectors and ensuring healthy development" 《关于抑制部分行业产能过剩和重复建设引导产业 健康发展若干意见的通知》²⁷</p> <p>Focus: Regarding traditional/modern coal</p>	<p>This is a huge year for Datang as it builds its coal chemical portfolio. Investors appear to like the prospects for this business, and Datang Power's share price rises steadily through the first half of 2009 and peaks in early August.</p> <p>In 2009 Q1, the newly established Datang Energy Chemical becomes the parent company of all of the coal chemical projects, which facilitates the financing of coal chemical projects, and minimizes scrutiny of Datang Power's investments in this sector.</p>
Datang Development Plans	
<p>2009 Q1:</p> <p>Datang Energy & Chemical Co., Ltd. is established, has a registered and paid up capital of RMB 9.7 billion. It is a wholly-owned subsidiary of Datang Power²⁹</p> <p>Duolun's completion is delayed to 2011, from 2009 previously.</p> <p>2009 Q3</p> <p>Construction begins on Datang's Keqi coal-based natural gas project.</p>	<p>Construction begins on Datang's Keqi coal-based natural gas project and Duolun coal chemical project.</p> <p>However it is also the start of trouble for Datang's coal chemical plans, as its flagship Duolun project faces various problems, including environmental problems, and has to delay its completion by 2 years²⁸. This is significant as it means that Datang Energy Chemical cannot use projected revenue from Duolun to pay back its loans, or to invest in new projects. Instead, it has to borrow to keep on track.</p> <p>As a result, Datang Energy Chemical negotiates with multiple banks, included a policy bank and three state-owned commercial banks for support via syndicated loans. However the response from the state-owned commercial banks is negative, thus forcing Datang to consider more expensive finance options.</p>
Financing	
<p>2009 Q1</p> <p>Parent company commits RMB 7.4 billion</p> <p>2009 Q4:</p> <p>Datang Energy Chemical starts negotiation with multiple banks (a policy bank and three state- owned commercial banks) on direct project loans via syndicated loans.</p>	<p>Investors appear to take notice, and Datang Power's share price reverses all of the gains it made in the first eight months of the year.</p>

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



30、 http://www.gov.cn/zwgk/2010-06/18/content_1630289.htm

31、 CBRC: Chinese Banking Regulatory Commission

32、 http://www.chinaknowledge.com/Newsires/News_Detail.aspx?NewsID=39185

Operating Income (RMB millions)	Datang Power Share Price on HKSE (HKD)
Power Sector: 3,786.5	Start: 3.35
% of total: 81.8%	End: 2.73
Coal Mining: 369.4	Min: 2.7
% of total: 8.0%	Max: 3.73
Chemical Sector: 331.7	Mean: 3.26
% of total: 7.2%	
Government Policies	Comment
NEGATIVE	The troubles from the previous year continue.
June 2010:	
NDRC: "Regarding the Development of Coal-to-gas projects"	On the policy front, the government's attitude is unclear, wavering both for and against the coal chemical development in China.
《关于规范煤制天然气产业发展有关事项的通知》 ³⁰	
Datang Development Plans	In June, it issues the policy document "Regarding the Development of Coal-to-gas projects" which says only the central NDRC, and not the provincial governments, have the authority to approve coal-to-gas projects.
2010 March:	
Fuxin Coal-to-gas project was officially approved by the NDRC.	Then in October, given falling coal prices, the NDRC issues the policy document "Regarding the Consolidation of the Coal Mining Sector" which now gives additional support for greater integration of the coal and power sector, encouraging them to diversify into coal chemical, metallurgy and transportation business.
Financing	
2010 Dec:	
Datang Power announces that the CBRC has approved its application to do private placement.	Specific to Datang, Fuxin gets official approval from the NDRC. Target completion is end 2014, and it is divided into 3 phases, with the 1st phase to be completed by end 2013. It is an aggressive timeline. Construction continues to move ahead for Datang's first CTG project, Keqi.
	The combination of taking on 2 giant CTG projects (approx. RMB 50 billion investment) and Duolun's delay in completion creates huge financial pressure on the company, and it is forced to raise capital by issuing more shares through an expensive private placement, because banks are unwilling to provide support through syndicated loans.
	To do the private placement, it has to seek the approval of the CBRC ³¹ . It applies for this in Oct, and in Dec, Datang announces it has the approval to do a RMB 6.8 billion private placement. This move also gives a Chinese policy bank greater confidence to consider arranging syndicated loans in future years. The CBRC approval is time bound; It allows Datang Power to do a private placement sometime within the next 6 months. If it delays past 6 months, the company must reapply.
	However, even as some financial respite seems to be coming, there is more trouble, as the news of the private placement causes the share price of Datang Power to fall significantly. In fact, the share price is so severe that it leads Datang Power to question whether it can raise RMB 6.8 billion from the planned private placement.
	As a result, Datang Power has to seek the assistance of its parent, Datang Group, to help the company by buying its shares ³² .
	Nonetheless, Datang Power share price ends the year on a low note, around HKD 2.73, from HKD 3.35 at the start of the year.

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



33. http://www.gov.cn/zwgk/2011-04/13/content_1842862.htm

34. http://www.gov.cn/gongbao/content/2012/content_2144287.htm

Operating Income (RMB millions)	Datang Power Share Price on HKSE (HKD)
Power Sector: 1,329.8 % of total: 36.4% Coal Mining: 1,658.6 % of total: 45.3% Chemical Sector: 471.6 % of total: 12.9%	Start: 2.76 End: 2.57 Min: 1.83 Max: 3.1 Mean: 2.54
Government Policies	Comment
NEGATIVE Apr 2011 NDRC: "Regarding the Healthy Development of the Coal Chemical Sector " 《国家发展改革委关于规范煤化工产业有序发展的通知》 ³³	2011 is a year of extraordinary financial pressure for Datang Power. On the policy front, the NDRC issues 2 policy documents that are basically aimed to stem overinvestment in the sector.
NEGATIVE Dec 2011 NDRC: "Guidance of Industries for Foreign Investment" 《外商投资产业指导目录》 ³⁴	The first, "Regarding the Healthy Development of the Coal Chemical Sector ", issued in April 2011, says that coal chemical developments should be strictly controlled. The second, "Guidance of Industries for Foreign Investment" issued in Dec 2011, no longer encourages foreign capital for coal chemical projects as it did in 2007.
Datang Development Plans	For Datang, it only adds to its challenges, as it goes all out to secure funding for its coal chemical portfolio.
Financing	
2011 Q2: Fuxin receives financing from parent Datang Power's private placement.	In May 2011, just before the private placement approval deadline is over, Datang Group buys 2.33 million A shares of Datang Power, and says that it will increase this stake to no more than 2%. According to industry analysts, this allows Datang Power to go through with the private placement in Q2 2011, raising approximately RMB 6.74 billion (target is 6.8), of which Fuxin receives approximately 25%. At the same time, this influx of funds gives greater confidence to a Chinese policy bank and other state-owned commercial banks, and so they grant Fuxin a syndicated loan commitment at end of 2011, with a relatively high rate, reflecting project's risk.
End 2011: Fuxin received financing from syndicated loan, including majority from a Chinese policy bank, and the remaining from state- owned commercial banks.	However, despite getting financial support for its projects, it appears that investors are not happy with the performance of the company. In Oct 2011, Datang Power's share price falls below HKD 2 for the first time ever, to a multi-year low of HKD 1.83. Note that only four years earlier, in Oct 2007, it peaked at HKD 9.66.

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



- 35、 http://www.cppei.org.cn/fz_text.asp?id=72992&classid=12&cname=%E6%94%BF%E7%AD%96%E6%B3%95%E8%A7%84
- 36、 http://www.nea.gov.cn/2012-06/20/c_131665600.htm
- 37、 <http://coalchem.anychem.com/2014/06/14-392.html>
- 38、 <http://special.21so.com/index/special/sid/12087>
- 39、 <http://www.audit.gov.cn/n1992130/n1992150/n1992500/3599377.html>
- 40、 http://wo.cs.com.cn/html/2012-10/24/content_442333.htm?div=-1

Operating Income (RMB millions)	Datang Power Share Price on HKSE (HKD)
Power Sector: 5,659.5 % of total: 73.9% Coal Mining: 1,699.8 % of total: 22.2% Chemical Sector: 108.0 % of total: 1.4%	Start: 2.57 End: 2.96 Min: 2.46 Max: 3.12 Mean: 2.74
Government Policies	Comment
POSITIVE Jan 2012: NEA: "Strategy Plans to deepen the Development of the Coal Sector" 《煤炭深加工示范项目规划》和《煤炭深加工产业发展政策》 ³⁵	<p>Finally after years of struggling, there appears to be a light at end of the tunnel for Datang's Duolun project, as it starts trial production after long delays.</p> <p>However, soon after starting, Duolun faces further technical and environmental problems³⁷, and government authorities orders Duolun to temporarily cease operation for several months³⁸. According to industry analysts, this affects Datang Energy Chemical's financing for other coal chemical project, as it cannot rely on revenues from Duolun to service loans.</p>
POSITIVE June 2012 NEA: Encouraging Private Sector Investment in the Energy Sector 《关于鼓励和引导民间资本进一步扩大能源领域投资的实施意见》 ³⁶	<p>As a result, Datang Group and Datang Power sign agreements to increase business with the various Chinese banks, which then makes it easier for Fuxin to secure part of the syndicated loan from the banks.</p>
Datang Development Plans	
Mar 2012: Duolun starts trial production.	<p>Later in Q4 2012, China Audit Department finds many operational and environmental problems with Datang Group, especially in its coal chemical division.³⁹</p>
Dec 2012: Duolun, the prolonged construction-in-progress transferred to fixed asset	<p>On the overall policy environment, the government appears to now be favorable towards the sector. In Jan, the NEA issues the "Strategy Plans to deepen the Development of the Coal Sector", which approves 18 key demonstrative projects including 15 coal deep processing demonstrative projects in Inner Mongolia and Xinjiang. And in Jun, the NEA announces the policy "Encouraging Private Sector Investment in the Energy Sector" to encourage private capital investment in the energy industry, including CTG projects. However, according to industry analysts, these largely coal chemical supportive policies do not have an impact on Datang, as their projects are well into development phase.</p>
Financing	
End 2012: Fuxin received financing from syndicated loan, including from a Chinese policy bank and other state-owned commercial banks.	
2012 Q4 Fuxin received RMB 435.5 million subsidy from local government ⁴⁰	

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index

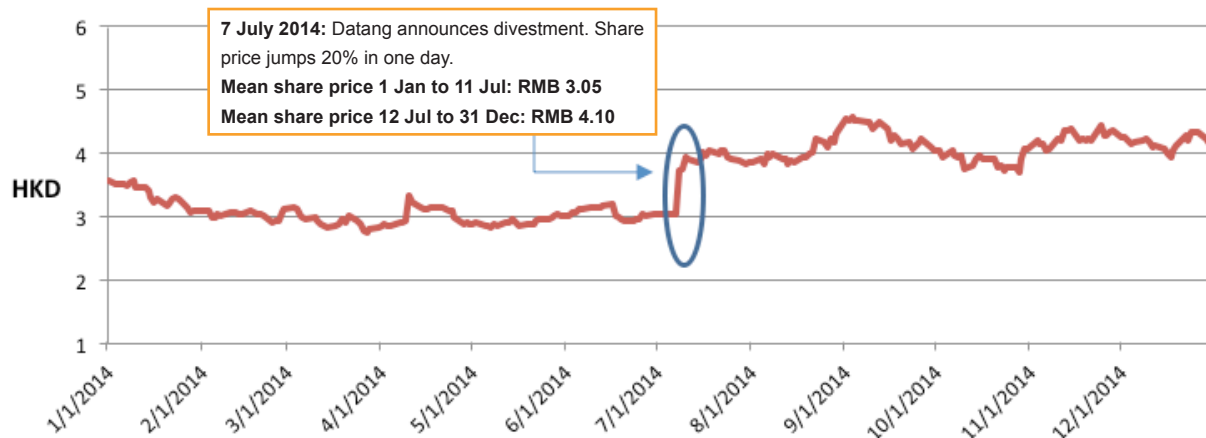


Operating Income (RMB millions)		Datang Power Share Price on HKSE (HKD)	
Power Sector:	9,494.6	Start:	2.96
% of total:	115.7%	End:	3.58
Coal Mining:	463.0	Min:	2.83
% of total:	5.6%	Max:	3.89
Chemical Sector:	-2,186.3	Mean:	3.40
% of total:	26.6%		

41、 http://www.gov.cn/zwqk/2013-01/23/content_2318554.htm
 42、 http://www.gov.cn/zwqk/2013-09/12/content_2486773.htm
 43、 <https://www.chinadialogue.net/article/show/single/en/6563-China-s-coal-industry-at-a-crossroads> and <http://m.magazine.caxin.com/m/2013-11-30/100611686.html>

Government Policies	Comment																
<div>POSITIVE</div> <div>Jan 2013: State Council: “12th Five Year Plan on Energy (2011 – 2015)” «能源发展 “ 十二五 ” 规划»⁴¹</div>	<p>Datang continues to struggle with financing its coal chemical portfolio, and it now relies on an even bigger set of options. This is also the year of the “airpocalypse” which hits Beijing significantly, and compels the government to respond.</p> <p>On the policy front, in Jan 2013, China issues the 12th Five Year Plan on Energy (2011 – 2015) and again repeats support for the healthy development of coal-to-chemical Projects in key regions such as Xinjiang, Inner Mongolia, Shaanxi, Shanxi, Yunnan, Guizhou and Anhui.</p> <p>And in Sep 2013, there is renewed interested in the coal-to-gas sector as the September National Air Pollution Plan increases targets for gas consumption, which may have influenced the NDRC’s decision to approve seven coal-to-gas projects⁴³.</p>																
<div>Datang Development Plans</div>																	
<div>Financing</div>	<p>For Datang, it continues to be a year of struggles, and it is very active year for financing.</p>																
<div>2013 Q1: Fuxin receives financing from bond offering by Datang Power</div>	<p>In Q1 2013, Datang Power issues bonds for RMB 3 billion on the Shanghai Stock Exchange, and approximately RMB 5 billion on the Hong Kong Stock Exchange, of which Fuxin receives RMB 1.5 billion. The amounts raised are used to finance its debt on pre-existing syndicated loans.</p>																
<div>2013 Q3: Fuxin receives entrusted loan through Datang Energy Chemical.</div>	<p>Then in Q3 2013, Fuxin gets approximately RMB 0.7 billion entrusted loan through Datang Energy Chemical.</p>																
<div>End 2013: Fuxin receives syndicated loan, majority was from a Chinese policy bank, and the remaining from other state-owned commercial banks.</div>	<p>And then in end 2013, Fuxin receives syndicated loans from a Chinese policy bank and other state-owned commercial banks. This time, compared to 2012, there is no new commitment from Datang Power for further business with state-owned commercial banks, and so the policy bank takes up most of the commitment, while the state-owned commercial banks only offer a fraction of the financing.</p>																
<div>2013 Q4: Fuxin receives approximately RMB 50 million from local Fuxin government</div>	<p>Finally, in Q4 2013, Fuxin received approximately RMB 50 million loan/investment directly from the local Fuxin government, suggesting indicating the perceived importance of the project to the local city’s economy.</p> <p>However, there are signs that the end is near for Datang’s coal chemical dream.</p> <p>First, there is a change in the top management, as Datang’s chairman, and the key person drives its coal chemical strategy, Mr Liu, leaves Datang to join SASAC Audit Committee at the end of 2012.</p> <p>Second, for its 2013 strategy, Datang has significantly modified its key slogan. It no longer says to “Focus on power generation, diversify into other business.” and instead says that it will “consolidate leadership position in the power sector, improve the profitability of the non-power sector, optimize the company business structure.” For 2013, Datang Power has lost RMB 2.2 billion on its coal chemical sector.</p>																
<div>Datang’s Coal-to-chemical Segment Accounted for 24% of Total Assets and Was Loss-making in 2013</div> <table><tr><th>(Rmb mn)</th><th>Segment assets</th><th>Segment NAV</th><th>Segment profit (loss)</th></tr><tr><td>Total</td><td>310,197</td><td>64,974</td><td>8,207</td></tr><tr><td>Coal-to-Chemical</td><td>73,422</td><td>13,687</td><td>(2,186)</td></tr><tr><td>Chemical % total</td><td>24%</td><td>21%</td><td>nm</td></tr></table>		(Rmb mn)	Segment assets	Segment NAV	Segment profit (loss)	Total	310,197	64,974	8,207	Coal-to-Chemical	73,422	13,687	(2,186)	Chemical % total	24%	21%	nm
(Rmb mn)	Segment assets	Segment NAV	Segment profit (loss)														
Total	310,197	64,974	8,207														
Coal-to-Chemical	73,422	13,687	(2,186)														
Chemical % total	24%	21%	nm														
(Source: Morgan Stanley)																	

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



Operating Income (RMB millions)		Datang Power Share Price on HKSE (HKD)	
Power Sector:	12,421.8	Start:	3.58
% of total:	237.7%	End:	4.17
Coal Mining:	-1,515.9	Min:	2.76
% of total:	-29.0%	Max:	4.57
Chemical Sector:	-5,165.0	Mean:	3.56
% of total:	-98.8%		

44、 <http://www.platts.com/news-feature/2014/naturalgas/china-coal-to-gas-projects/index>
 45、 http://zbxgk.nea.gov.cn/auto83/201407/20140722_1828.htm
 46、 <http://www.worldcoal.com/coal/23122014/China-curbs-development-of-coal-to-gas-projects-1707>
 47、 China Reform Holdings Corporation is a wholly state-owned enterprise of SASAC which served as a platform to facilitate business layout restructuring of state-owned enterprise
 48、 Datang annual report 2014
 49、 <http://finance.sina.com.cn/changjing/>

[gsnews/20140714/020819690227.shtml](http://news.cb.com.cn/html/money_10_23284_1.html)
 50、 http://news.cb.com.cn/html/money_10_23284_1.html
 51、 http://www.cs.com.cn/xwzx/cj/201504/20150409_4682945_1.html
 52、 <http://www.worldcoal.com/coal/23122014/China-curbs-development-of-coal-to-gas-projects-1707>
 53、 <http://www.cb.com.cn/index.php?m=content&c=index&a=show&catid=21&id=1106838&all>

Government Policies	Comment
<p>POSITIVE</p> <p>Jan 2014:</p> <p>NEA target for 50bcn CTG by 2020, which accounts for 12.5% of domestic gas⁴⁴</p> <p>NEGATIVE</p> <p>Jul 2014:</p> <p>NEA: "Notice on the Development of the Coal-to- Liquids and Coal-to-gas projects" 《关于规范煤制油、煤制天然气产业科学有序发展》⁴⁵</p> <p>NEGATIVE</p> <p>Dec 2014:</p> <p>Reports emerge that China has reduced its unofficial 2020 targets for the coal chemical sector, and will not approve new CTG plants until 2020⁴⁶</p>	<p>The year starts with rumors that government is raising 2020 targets for CTG production to 50 billion m3, but for Datang, its coal chemical dream is probably come to the end.</p> <p>For its 2014 annual strategy, Datang changes its key slogan again. It drops any mention to "improve the profitability of the non-power sector" and now says that its goal is to "Consolidate leadership position in the power sector, optimize the company business structure". In the 1st half report for 2014, it says that it also focused on "speeding up the restructuring of low/non- efficient assets."</p> <p>And in July 2014, it executes this strategy. After years of struggle, bad results, and little return for investors, Datang announces it has entered into a framework agreement for reorganization with China Reform Holdings Corporation ("China Reform Holdings")⁴⁷. China Reform Holdings will acquire assets or equity interests of Datang's coal chemical segment and related projects (including Fuxin, Keqi and Duolun). Investors appear to support this move as the share price of Datang Power rises over 20%, reaching 1-year high of HKD 3.73.</p>
Datang Development Plans	
<p>Jan 2014:</p> <p>Datang Power announces that it suspending further development of the Fuxin CTG project.⁵³</p> <p>Jul 2014:</p> <p>Datang Power announces that it is selling its entire coal chemical portfolio to China Reform Holdings Corporation</p>	<p>For the year 2014, Datang's coal chemical business will eventually report suffered a loss of RMB 5.2 billion⁴⁸ for the year. The company appears to have had longstanding problems with its coal chemical business. In July 2014, the Securities Times publishes a critical report⁴⁹ of Duolun highlighting how the company did not use environmental equipment for 174 days in 2013. In December 2014, Datang Power announces that it suspending further development of the Fuxin CTG project.⁵⁰ Datang refocuses its business on power generation, and starts to get more power plants onto its balance sheet⁵¹ under the context of power sector reform.</p>
Financing	
<p>2013 Q1:</p> <p>Fuxin receives financing from bond offering by Datang Power</p> <p>2013 Q3:</p> <p>Fuxin receives entrusted loan through Datang Energy Chemical.</p> <p>End 2013:</p> <p>Fuxin receives syndicated loan, majority was from a Chinese policy bank, and the remaining from other state-owned commercial banks.</p> <p>2013 Q4:</p> <p>Fuxin receives approximately RMB 50 million from local Fuxin government</p>	<p>On the policy front, the government appears to have a cautious attitude towards the sector. In Jul, the NEA issues the "Notice on the Development of the Coal-to-Liquids and Coal-to-gas projects" which reiterates the strict approval process and capacity requirements for coal chemical projects. Then in Aug, the NDRC, in its "Guidance on Favoured Industries for Development in Western China" excludes coal chemical from the catalogue of encouraged industries in western China.</p> <p>Finally, in Dec 2014, media reports⁵² say that the Chinese government has now reversed its positive stance on CTG has reduced its unofficial 2020 targets for the coal chemical sector.</p> <p>Coal-to-gas (m3): 15b from 50b previously Coal to Oil (tons): 6.6m from 30m previously Coal-to-Olefins (tons): 15m from 24m previously</p> <p>Also, the government will not approve new CTG plants until 2020. However, industry analysts believe that for projects already in the pipeline, such as Keqi and Fuxin, they are still expected to see completion.</p>

Datang Power Share Price on Hong Kong Stock Exchange (Source: Bloomberg)



Share Price Change Comparison (Source: Bloomberg)

■ Datang Power ■ Huaneng ■ Hang Seng Index



54、 http://www.china-cdt.com/dtwz/indexAction.do?action=showDoc&d=6C782813-A7D4-8EB0-B904-1A704DED71BD&t=index_news
55、 <http://finance.sina.com.cn/chanjing/gsnews/20151121/040423813883.shtml>
56、 <http://finance.sina.com.cn/chanjing/gsnews/20151121/040423813883.shtml>

Operating Income (RMB millions) Six months ended 30 June 2015		Datang Power Share Price on HKSE (HKD)	
Power Sector:	6,027.6	Start:	4.17
% of total:	148.6%	End:	2.56
Coal Mining:	-135.2	Min:	2.56
% of total:	-3.3%	Max:	4.94
Chemical Sector:	-1,805.5	Mean:	3.70
% of total:	-44.5%		
Government Policies		Comment	
NEGATIVE		Between Feb to April 2015, the government sends inspection team to check on Datang's operations and concludes that the compnay "blindly invested in non-power generation industry, causing massive number of inefficient assets" ⁵⁴ .	
New environment protection law enforced starting from Jan 1st 2015			
Datang Development Plans		After a year since the reorganization announcement, progress has been slow. Reports emerge that the negotiating parties face difficulty agreeing about the value of the coal chemical assets. ⁵⁵ At the same time, Fuxin suffers an annual finance fee of RMB1 billion and an annual maintenance fee of RMB100 million, and there are no further future financing plan for Fuxin in 2016 ⁵⁶	
Jun 2015: Coal chemical reorganization continues			
Financing		Coal chemical remains in the Datang portfolio and continues to suffer major loss. According to Datang's interim report, coal chemical business has suffered a loss of RMB1.8 billion for the 1st half of 2015.	



8. After the Fire:

Why did Datang Give Up

As the timeline above suggests, Datang's failure could be traced to a combination of technology and operational difficulties, financing constraints, environmental issues, coupled with an overestimation of the company's understanding of the coal-to-chemicals sector. Datang's sale of its RMB 70 billion coal chemical portfolio was a stunning retreat for a company that had bet so boldly its future on the sector.



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When it made its sale announcement on July 7th, 2014, investors were ecstatic.

Citi Research (July 8th, 2014) noted that the move "looks positive for Datang, which would have Rmb800m attributable loss from these assets in FY14E, offsetting 20% of its net profit."

Deutsche Bank Market Research (July 8th, 2014) remarked that "this could be positive news for the company", as the market has ascribed "significant negative value to Datang's coal chemistry businesses" and as a result, "Datang's share price (had) underperformed peers by 46%, 30% and 122% over the last 6, 12 and 36 months"

Nomura Global Markets Research (July 8th, 2014) in a note titled "Let it go – GOOD bye coal-chemical" said numerous mishaps including various delays and repairs at the projects had "continuously tested the investors' patience" and that the sale would remove the "biggest overhang on the stock,".

Standard Chartered Equity Research (July 8th, 2014) said that "the coal-to-chemical (i.e., polypropylene) project remains an unproven venture and has suffered continuous losses (2013: RMB 910mn net loss; 1Q14: RMB 500mn net loss)"

JP Morgan Asia Pacific Equity Research (July 8th, 2014) remarked that "While Datang (would) forgo potential upside from its two coal-to-natural gas projects, it will alleviate the company's high gearing position (>300% in 1Q2014)

As of 2015, there appears to be little further news on Datang's coal chemical reorganization. As a result of this, banks continue to believe that the chemical business remains a drag on Datang Power's financial performance (See below).



Macquarie Research (October 30th, 2015) said that Datang's 3Q15 net profit fell 8.4% YoY to Rmb1,543m, mainly dragged by a decline in utilization and poor performance of its non-power business

Citi Research (October 30th, 2015) noted that Datang's coal-to-chemical business was loss making, offsetting about 40% recurrent profit of the company's power generation business in 1H15.

What ultimately led to Datang's decision to leave the sector? We believe it to be a combination of factors:

- 1.) Change of strategy
- 2.) Financial Difficulties
- 3.) Continued Operational Problems

1.) Change of strategy

The first key reason for Datang's departure may be the change in Datang's strategy.

Datang and paved the way for new leadership to make radical changes to this failed strategy.

As highlighted earlier, according to industry analysts, Datang's strategy to diversify into coal chemical related business was enthusiastically championed by Datang's top management. But in late 2012, top management left

Looking at Datang Power's annual reports over the past several years, we can see how Datang's corporate strategy evolved.

Table 4: Datang Power's strategy setting from 2006 to mid-2015

Year	Wording of Strategy	Greenpeace Comment	Datang's action
2006	<p>“ 电源结构由单一的常规火电向水电、核电、风电等可再生能源发电转变； 产业结构由单纯的发电产业向相关产业链转型 ”</p> <p>"Diversify from conventional power generation towards hydro power, nuclear power, wind power and other renewable energy sources; Transform the power generation business towards other related businesses"</p>		Duolun commenced
2007	<p>“ 电源结构由单一的常规火电向水电、风电等可再生能源发电转变； 产业结构由单纯的发电产业向相关产业链转型 ”</p> <p>"Diversify from conventional power generation towards hydro power, wind power and other renewable energy sources; Transform the power generation business towards other related businesses."</p>	Compared with 2006, nuclear power has now been removed from the strategy	Duolun under construction
2008	<p>“ 以电为主、多元协同 ”</p> <p>"Focus on power generation, diversify into other business."</p>	A new slogan/strategy is introduced	Duolun under construction
2009	<p>“ 以电为主、多元协同 ”</p> <p>"Focus on power generation, diversify into other business."</p> <p>2008-2010: 多元产业布局阶 Planning to the diversify business</p> <p>2011-2012: 多元产业初具规模 Developing the new diversified business</p> <p>2013-2015: 多元产业成熟阶段 New diversified business reaches maturity</p>	A timeline for executing the new mid-term strategy is proposed.	Duolun delayed Keqi project started
2010	<p>“ 以电为主、多元协同 ”</p> <p>Implement "Focus on power generation, diversify into other business."</p> <p>“ 加快煤化工核心技术推广应用，全力推进煤化工产业布局 ”</p> <p>"Actively speed up the development coal chemical"</p>	Coal Chemical is specifically highlighted as a focus area.	Fuxin approved

Year	Wording of Strategy	Greenpeace Comment	Datang's action
2011	<p>“以电为主、多元协同”</p> <p>Implement “Focus on power generation, diversify into other business.”</p> <p>“要特别加快以多伦煤化工、克旗煤制天然气”</p> <p>“Specially speed up developing Duolun and Keqi project”</p>		Fuxin project construction
2012	<p>“以电为主、多元协同”</p> <p>Implement “Focus on power generation, diversify into other business.”</p> <p>“以煤化工为新增长点”</p> <p>“(Develop) Coal chemical as a new profit source</p>		Duolun starts trial operation but faces technical and environmental problems
2013	<p>“巩固发电优势地位，努力改善非电板块盈利水平，加快调优业务结构”</p> <p>“Consolidate leadership position in the power sector, improve the profitability of the non-power sector, optimize the company business structure.”</p>	<p>The wording of strategy to diversify Datang is modified.</p> <p>There is now new emphasis to “refocus on the power generation business.”</p>	Duolun starts production
2014	<p>“巩固发电优势地位，加快调优业务结构”</p> <p>“Consolidate leadership position in the power sector, optimize the company business structure.”</p> <p>“加快清理处置低效无效资产”</p> <p>“Speed up the restructuring of low/non-efficient assets”</p>	<p>Compared with 2013, “improve the profitability of the non-power sector “ has now been removed from the strategy</p> <p>Then in 1st half report for 2014, Datang mentions that it is now focused on speeding up the restructuring of low/non-efficient assets</p>	Sell chemical portfolio

2.) Financial Difficulties

The second key reason for Datang's departure may be related to the company's financial difficulties throughout the entire coal chemical development process.

As we can see below, Datang's coal chemical segment never truly met its potential to significantly diversify the company's earnings. In 2008, the chemical segment

accounted for 0.02% of the 2008 profits and this grew to 12.9% in 2011, but this dropped significantly in the following years. Even after the announcement of reorganization, Datang's coal chemical continued to suffered losses, RMB5.2 billion in 2014 and RMB1.8 billion respectively for the first six months of 2015,

	2008	2009	2010	2011	2012	2013	2014	Six months ended 30 June 2015 (unaudited)
Total segment profit / (loss) (RMB'000)	30 June 2015 (unaudited)	52,772,899	4,629,490	3,657,307	7,662,881	8,206,790	5,225,052	4,056,984
Chemical segment profit/ (loss) (RMB'000)	9,412	198,817	331,707	471,600	108,011	(2,186,275)	(5,164,994)	(1,805,489)
Chemical % Total	0.02%	0.38%	7.2%	12.9%	1.4%	-26.6%	-98.9%	-44.5%

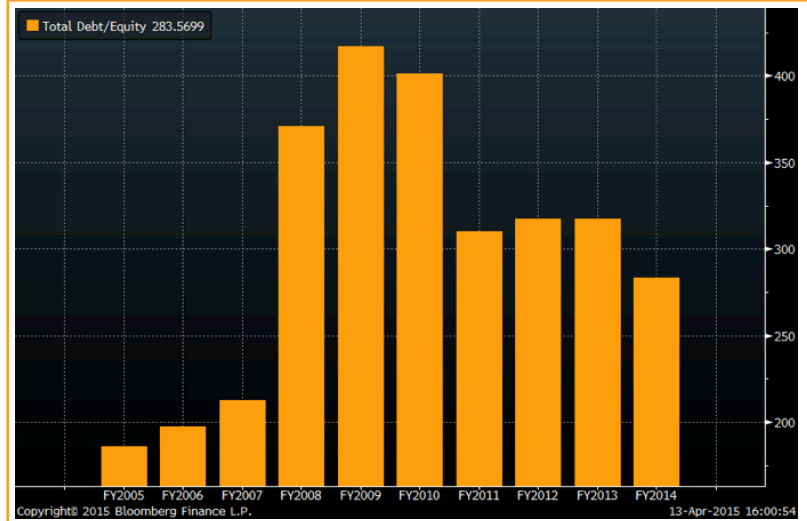
Table 5: Datang's coal chemical profit/ loss from 2008 to 2015:

Source: Datang's Annual/Interim Report

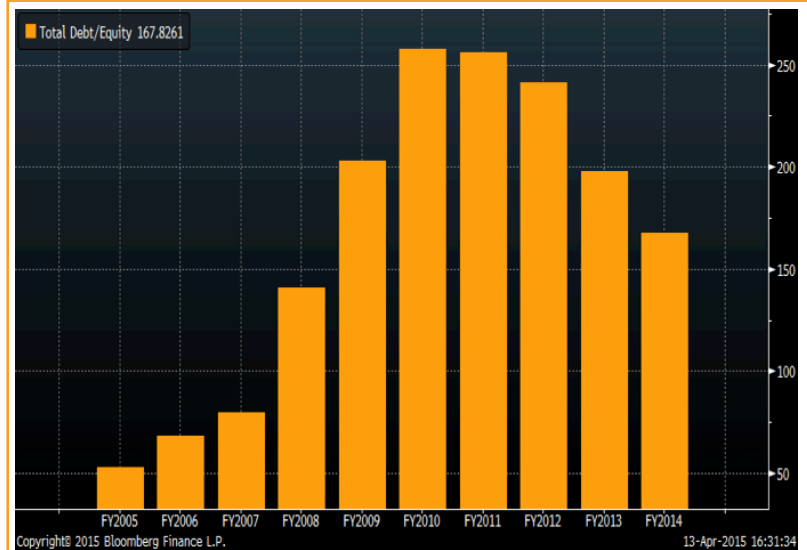
In addition to the financial losses, Datang's debt-to-equity ratio increased significantly from 2005 to 2010, as Datang borrowed heavily to fund its coal chemical expansion (See below). While there was similar debt-to-equity ratio increase in other power companies such as China Power and Huadian, the ratio was much higher for Datang. In 2009 and 2010, Datang's debt-to-equity

ratio was more than 400%. Comparatively, from 2005 – 2015, China Power peak debt-to-equity ratio was 258% in 2010, and Huadian's was 281% in 2011. Granted, the debt-to-equity ratio is just one of several other indicators of a company's financial health and liquidity, but on this metric alone, it suggest that the Datang's financial health may not have been as healthy as its peers.

Datang (991.HK)



China Power (2380.HK)



Huaneng (902.HK)

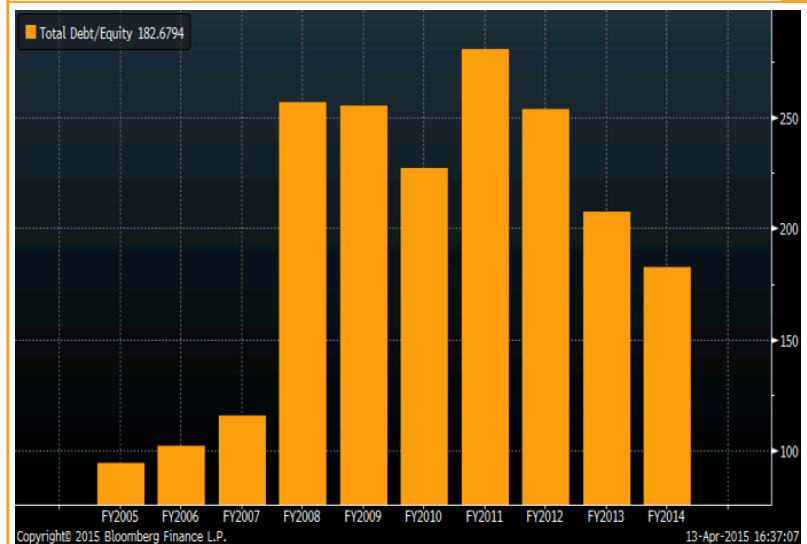


Image 6: Datang's debt ratios exceeded its peers

Looking at the Datang's stock price from Jan 2006 (approximately the time when it started development of Duolun) to November 2015, on the Hong Kong exchange, Datang' share price underperformed compared to the Hang Seng Index, and its competitors, China Power and Huaneng

Taken together, losses in company's coal chemical segment, increased financial pressure due to higher borrowings, and the company's underperforming share price relative to other players, may have been the key financial factors that influenced Datang's decision to sell its coal chemical business.



Image 7: Datang's performance in HK exchange

Source: Google Finance

3.) Continued operational problems

58. <http://energy.people.com.cn/n/2014/0623/c71661-25184647.html>
 59. <http://finance.sina.com.cn/chanjing/gsnews/20140714/020819690227.shtml>
 60. <http://finance.sina.com.cn/chanjing/gsnews/20140331/093118664075.shtml>
 61. <http://www.cb.com.cn/index.php?m=content&c=index&a=show&catid=21&id=1106838&all>
 62. Datang Power, 2014 Annual Report

The third key reason that may explain Datang's decision to sell its coal chemical portfolio were the operational difficulties that it faced in its all of its major projects: Duolun, Keqi and Fuxin.

For the Duolun Project, which commenced in 2005, it first faced various technical and environmental problems in 2009, which forced it to delay construction by two years.⁵⁸ The project was put into trial production in 2012, but it again faced problems and was ordered by environmental authorities to cease operations until the problems were fixed.⁵⁹ For the Keqi Coal-to-Gas project, which commenced in 2009, it was found to be causing environmental pollution problems in 2014, and was also ordered by environmental authorities to cease operations until the problems were fixed.⁶⁰ For the Fuxin, the newest of the projects, commenced in 2010, it has been no different from Duolun or Keqi. It too has faced significant operational and logistical difficulties⁶¹.

these projects has faced, while significant, was not fundamentally important in understanding why Datang decided to sell its portfolio. Instead, it was the fact that all three projects were executed within a short time frame, was thus interlinked from a financing perspective. This exacerbated any individual project's problems and had a spillover effect on other projects. For example, Duolun's problems in 2012 resulted in missed revenues that its parent company Datang Energy Chemical needed, in order to service loans that it had taken to support Keqi and Fuxin. Thus, these cascading series of operational problems may have ultimately been too painful for Datang to bear, resulting in its eventual decision to sell the entire coal chemical portfolio.

Looking at the financial performance of all three major coal chemical projects, Duolun, Keqi and Fuxin, we can see below that all three generated minimal revenue for the parent company.

According to industry analysts, by themselves, the individual operational difficulties that each of

	2013		2014	
	Revenue RMB'000	Profit/(loss) RMB'000	Revenue RMB'000	Profit/(loss) RMB'000
Duolun	2,547,629	(1,512,825)	1,117,587	(4,866,973)
Keqi	-	(132,564)	-	(296)
Fuxin	266	(92,709)	139	106

Table 6: 2013, 2014 Financial performance of Duolun, Keqi and Fuxin Projects⁶²



9. After Datang's departure: The Current Landscape

63. 3 of which are Industrial
Demonstration Projects under 200 kilo-
tons (small)

Despite Datang's difficult experience in the coal chemical space, there appears to be strong ambitions for this sector to grow. According to November 2015 Greenpeace analysis, there are an estimated 136 projects in various stages of completion in China: 30 Coal-to-gas, 13 Coal-to-Liquids, 51 Coal-to-Olefins, 37 Coal-to-MEG and 5 Coal-to-Aromatics projects (See below).

In terms of the progress, Coal-to-gas and Coal-to-Liquids projects are moving slowly, with 3 and 5 projects⁶³ in production respectively. Coal-to-Olefins and Coal-to-MEG industries are more mature, with 18 and 15 projects in production respectively, while most Coal-to-Aromatics projects are in the early demonstration stage.

Table 8: China's coal chemical projects by projects

Types of Coal-to-Chemical	Numbers of Projects				
	Operating	Under Construction	Preparation	Planning	Total Number
Coal-to-Gas	3	1	17	9	30
Coal-to-Liquids	5	4	4	0	13
Coal-to-Olefins	18	20	12	1	51
Coal-to-MEG	15	9	12	1	37
Coal-to-Aromatics	2	2	0	1	5

Table 9: China's coal chemical projects by capacity

Types of Coal-to-Chemical	Capacity				
	Operating	Under Construction	Preparation	Planning	Total
Coal-to-Gas (billion m ³ /year)	3.11	8.31	68.00	40.51	119.92
Coal-to-Liquids (million tons/year)	2.58	7.35	10.80	0	20.73
Coal-to-Olefins (million tons/year)	11.36	14.39	8.75	0.80	35.30
Coal-to-MEG (million tons/year)	3.33	2.45	6.20	0.30	12.28
Coal-to-Aromatics (million tons/year)	0.10	0.70	0	1.20	2.00

Source: data compiled by Greenpeace, as at November 2015

In addition, Greenpeace estimates that the total planned investment for the above projects exceeds RMB 2 trillion⁶², with most investments in Coal-to-Gas or Coal-to-Olefins projects.

⁶² As of October 2015, RMB 230 billion of this amount has been invested on projects that are operating or under construction.



10. Conclusion

As we have highlighted in this report, Datang's failure in this space was due to many factors: local factors such as, underestimation of risks, constraints of technology, and broader market trends, such as the fall in oil prices, which have affected the financial viability of coal chemical projects in China. It has been an expensive failure; for 2014, Datang's coal chemical business loss of RMB5.2 billion.

The expensive failure may have also been driven by external parties and policies. As we have shown above, various government bodies were pushing for consolidation of the SOE sector, and for companies to diversify their revenue streams by moving into this sector. At the same time, shifting government attitudes, reflected in policies oscillating between positive and negative on coal to chemical through the years, led to a consistently changing picture for the industrial sector. In addition, one may also consider the importance of local Chinese financial players, which was the ultimate source of funding in Datang's coal to chemical project.

As China moves towards its 13 Five Year Plan, the first full economic plan under President Xi Jinping, Datang's coal chemical experience yields important lessons for SOEs, financiers, and policy makers alike.

1.) First, the Coal Chemical sector is extremely risky from an environmental, operational and financial point of view. Companies wishing to enter this sector must have management, operational and technical expertise par excellence in order to succeed.

2.) Second, Chinese state-owned banks and policy banks should exercise caution in extending financing to risky sectors, such as the coal chemical sector. Seeking third party assessment of the risks involved, may be prudent.

3.) Third, given that there is an estimated RMB 2 trillion planned investments in the coal chemical sector in China, policymakers should continue to be vigilant that this sector does not grow blindly and without constraints, given the many risks that have been highlighted in this report.

Appendix 1: Summary of Coal-to-chemical Projects

Coal-to-gas

Coal-to-chemical Sectors	Condition	Area	Name	Capacity Scale (billion m ³ /yr)	Investment (RMB billion)
Coal-to-gas	Operating	Inner Mongolia	Da Tang 4 billion m ³ coal-to-gas project in Ke Qi (phase I 1.33 billion m ³)	3.11	35.20
		Xinjiang	Qing Hua 5.5 billion m ³ coal-to-gas project in Yili (phase I 1.375 billion m ³)		
		Inner Mongolia	Hui Neng 2 billion m ³ coal-to-gas project in Inner Mongolia (phase I 0.4 billion m ³)		
	Under Construction	Liaoning	Da Tang 4 billion m ³ coal-to-gas project in Fu Xin	8.31	45.90
		Inner Mongolia	Da Tang 4 billion m ³ coal-to-gas project in Ke Qi (phase II 1.33 billion m ³)		
		Xinjiang	Qing Hua 5.5 billion m ³ coal-to-gas project in Yili (phase II 1.375 billion m ³)		
		Inner Mongolia	Hui Neng 2 billion m ³ coal-to-gas project in Ordos (phase II 1.6 billion m ³)		
	Preparation	Xinjiang	Xin Tian 2 billion m ³ coal-to-gas project in Yili	68.00	455.65
		Xinjiang	China Power Investment Corporation 6 billion m ³ coal-to-gas project in Huo Cheng		
		Inner Mongolia	Beijing Enterprises Group Company Limited. 4 billion m ³ coal-to-gas project in Ordos		
		Inner Mongolia	China National Offshore Oil Corporation 4 billion m ³ coal-to-gas project in Ordos		
		Shanxi	China National Offshore Oil Corporation 4 billion m ³ coal-to-gas project in Shanxi Da Tong		
		Xinjiang	Xinjiang Long Yu energy 4 billion m ³ coal-to-gas project in Hei Shang		
		Xinjiang	Su Xin Energy 4 billion m ³ coal-to-gas project in Zhun Dong		
		Xinjiang	Sinopec 8 billion m ³ coal-to-gas project in Zhun Dong		
		Xinjiang	Haung Neng 2 billion m ³ coal-to-gas project in Zhun Dong		
		Xinjiang	Zhe Neng 2 billion m ³ coal-to-gas project in Zhun Dong		
		Xinjiang	Beijing Enterprises Group Company Limited 4 billion m ³ coal-to-gas project in Zhun Dong		
		Xinjiang	Fu Yun Guang Hui 4 billion m ³ coal-to-gas project in Zhun Dong		
		Inner Mongolia	Xin Meng 4 billion m ³ coal-to-gas project in Ordos		
		Inner Mongolia	Jian Tou Tong Tai 4 billion m ³ coal-to-gas project in Ordos		
		Inner Mongolia	Hua Xin New Energy 4 billion m ³ coal-to-gas project in Ordos		
		Anhui	Guo Tou Xin Ji 4 billion m ³ coal-to-gas project in An Hui		
		Inner Mongolia	Inner Mongolia Mining Group Xin An Energy and Chemical Company 4 billion m ³ coal-to-gas project in Xing An Meng (former Guodian Corporation Xin An Meng Project)		
	Planning	Inner Mongolia	Da Tang 4 billion m ³ coal-to-gas project in Ke Qi (the third-period project 1.33 billion m ³)	40.51	178.08
		Xinjiang	Qing Hua 5.5 billion m ³ coal-to-gas project in Yili (the third-period project 1.375 billion m ³)		
		Anhui	Jing Wan 6 billion m ³ coal-to-gas project in An Qing		
		Inner Mongolia	Xin Tong 2 billion m ³ coal-to-gas project in Ordos		
		Inner Mongolia	Zhen Dong Energy 4 billion m ³ coal-to-gas project in Bao Tou		
		Inner Mongolia	Xin An Bo Yuan 4 billion m ³ coal-to-gas project in Xin An Meng		
		Shanxi	Jin Neng 4 billion m ³ coal-to-gas project in Shuo Zhou		
		Hebei	Xin Feng 1.8 billion m ³ coal-to-gas project in Han Dan		
		Shaanxi	4 billion m ³ coal-to-gas project in Xun Yi		
		Shaanxi	Sinopec 8 billion m ³ coal-to-gas project in Yu Lin		
		Inner Mongolia	Shen Hua 4 billion m ³ coal-to-gas project in Ordos		
	Total			119.92	714.83

Coal-to-Liquids

Coal-to-chemical sectors	Condition	Area	Name	Capacity Scale (million tons/yr)	Investment (RMB billion)
Coal-to-Liquids	Operating	Inner Mongolia	Shen Hua 1.08million tons indirect Coal-to-Liquids project in Ordos	2.58	41.99
		Shaanxi	YanKuang Group 5million tons indirect Coal-to-Liquids project in （phase I 1 million tons ）		
		Inner Mongolia	Shen Hua 0.18million tons direct Coal-to-Liquids industrial demonstration project in Ordos		
		Inner Mongolia	Shen Hua 0.16million tons indirect Coal-to-Liquids industrial demonstration project in Ordos		
		Shanxi	Lu An 0.16million tons indirect Coal-to-Liquids industrial demonstration project in Chang Zhi		
	Under Construction	Ningxia	Shenhua Ningxia Coal Industry Group Co., Ltd 4million tons indirect Coal-to-Liquids project in Ning Dong	7.35	112.54
		Inner Mongolia	Yi Tai 2million tons indirect Coal-to-Liquids project in Ordos		
		Inner Mongolia	Yi Tai 1.2million tons fine chemical indirect Coal-to-Liquids project in Hang Jinqi		
		Shaanxi	Yan Chang 0.15 million tons Coal syngas to liquids industrial demonstration project in Yu Lin		
	Preparation	Shanxi	Lu An 1.08million tons indirect Coal-to-Liquids project in Chang Zhi	10.80	175.50
		Xinjiang	Yi Tai 1million tons Coal-to-Liquids project in Yi Li		
		Xinjiang	Yi Tai Hua Dian Corporation 2million tons Coal-to-Liquids project in Ganquan Bao		
		Guizhou	Yu Fu Energy 6million tons indirect Coal-to-Liquids project in Gui Zhou		
	Total			20.73	330.03

Coal-to-Olefins

Coal-to-chemical sectors	Condition	Area	Name	Capacity Scale (million tons/yr)	Investment (RMB billion)
Coal-to-Olefins	Operating	Inner Mongolia	Shen Hua Coal-to-Olefins project in Baotou (phase I 0.6 million tons)	11.36	190.69
		Ningxia	Shenhua Ningxia Coal Industry Group Co., Ltd 0.5million tons Coal-to-Olefins project		
		Ningxia	Shenhua Ningxia Coal Industry Group Co., Ltd 0.5million tons methanol to olefins project		
		Inner Mongolia	Da Tang 0.46million tons Coal-to-Olefins project in Duolun		
		Jiangsu	Hui Sheng 0.3million tons methanol to olefins project in Nan Jing		
		Zhejiang	Fu De 0.6million tons methanol to olefins project in Ning Bo		
		Henan	Zhongyuan Petroleum Chemical Co.,Ltd 0.2million tons methanol to olefins project		
		Shaanxi	China National Coal Group 2.4million tons complex utilization and deep processing of methanol and acetic acid project in Yu Lin (phase I 0.6 million tons)		
		Shaanxi	Yan Chang China National Coal Group 3million tons Jingbian energy and chemical utilization project (phase II 0.6 million tons)		
		Shaanxi	2million tons clean energy Coal-to-Olefins project in Pu Cheng (phase I 0.7 million tons)		
		Ningxia	0.6million tons coke oven gas to olefins project in Bao Feng		
		Jiangsu	Fu De 1million tons methanol to olefins project in Chang Zhou		
		Zhejiang	Xing Xing 1.8million tons methanol to olefins project in Zhe Jiang		
		Gansu	Hua Ting 0.2million tons methanol to olefins project		
		Shandong	Shen Da 1million tons methanol to olefins project		
		Anhui	Huayi Chemical 0.5million tons Coal-to-Olefins project		
		Shandong	Rui Chang 0.6million tons methanol to olefins project		
		Shandong	Hua Bin 0.6million tons methanol to olefins project		
	Under Construction	Inner Mongolia	Zhongtian Hechuang Energy 3.6million tons Coal-to-Olefins project in Ordos (phase I 1.3 million tons)	14.39	382.02
		Inner Mongolia	Jiu Tai 0.6million tons methanol to olefins project		
		Inner Mongolia	China National Coal Group Meng Da Chemical 0.5million tons methanol to olefins project		
		Inner Mongolia	YanKuang Group Rongxin Chemical 0.6million tons methanol to olefins Inner Mongolia project		
		Inner Mongolia	Shen Hua Coal-to-Olefins project in Bao Tou (the second-period project 0.7million tons)		
		Jiangsu	Sailboat 0.83million tons methanol to olefins project		
		Henan	Sinopec 0.6million tons coal methanol to olefins project		
		Xinjiang	Shen Hua 0.68million tons Coal based new material project in Urumqi		
		Xinjiang	China National Coal Group 0.6million tons Coal-to-Olefins project in Yi Li		
		Qinghai	Da Mei 1.2million tons coal deep processing project		
		Qinghai	Qinghai mining 1.2million tons Coal-to-Olefins project		
		Qinghai	Qinghai Salt Lake Industry Group Company 1million tons Coal-to-Olefins project		
		Gansu	Hua Hong Huijin 0.7million tons Coal-to-Olefins project		
		Shandong	Shandong Yangmeihengton Chemical co.,LTD 0.3million tons methanol to olefins project		
		Shanxi	Shanxi Coking Coal Group co.,LTD 0.6million tons Coal-to-Olefins project		
		Shanxi	Datong Coal Mine Group Co., Ltd. 0.6million tons Coal-to-Olefins project		

		Anhui	Zhongan Joint Coalification Co.,LTD 0.7million tons Coal-to-Olefins project		
		Guizhou	Sinopec 0.6million tons Coal-to-Olefins project in Zhi Jin		
		Shandong	Longgang Chemical 0.4million tons methanol to olefins project		
		Shaanxi	Shen Hua 0.68million tons methanol to olefins project in Yu Lin		
	Preparation	Inner Mongolia	China Power Investment Corporation 0.8million tons Coal-to-Olefins project	8.75	165.35
		Xinjiang	State Development Investment Corp 0.6million tons Coal-to-Olefins project in Yi Li		
		Gansu	Jin Long Yang 0.7million tons Coal-to-Olefins project in Jiu Quan		
		Shandong	Dong Run 0.6million tons Coal-to-Olefins project		
		Liaoning	Fu Jia 3million tons Coal-to-Olefins project in Da lian		
		Heilongjiang	Long Tai 0.6million tons methanol to olefins project		
		Shaanxi	Shanxi Binchang Mining Group Co., Ltd 0.6million tons Coal-to-Olefins project i		
		Shandong	Liaocheng Meiwu 0.6million tons methanol to olefins project		
		Shandong	Shangdong Beiteer 0.3million tons methanol to olefins project		
		Shandong	Bai Rui 0.2million tons methanol to olefins project		
		Inner Mongolia	Shen Hua 0.75million tons Coal-to-Olefins project in Hulunbuir		
	Planning	Jiangsu	Xuzhou Mining Group 0.8million tons methanol to olefins project Pi Zhou	0.80	4.00
	Total			35.30	742.06

Coal to MEG

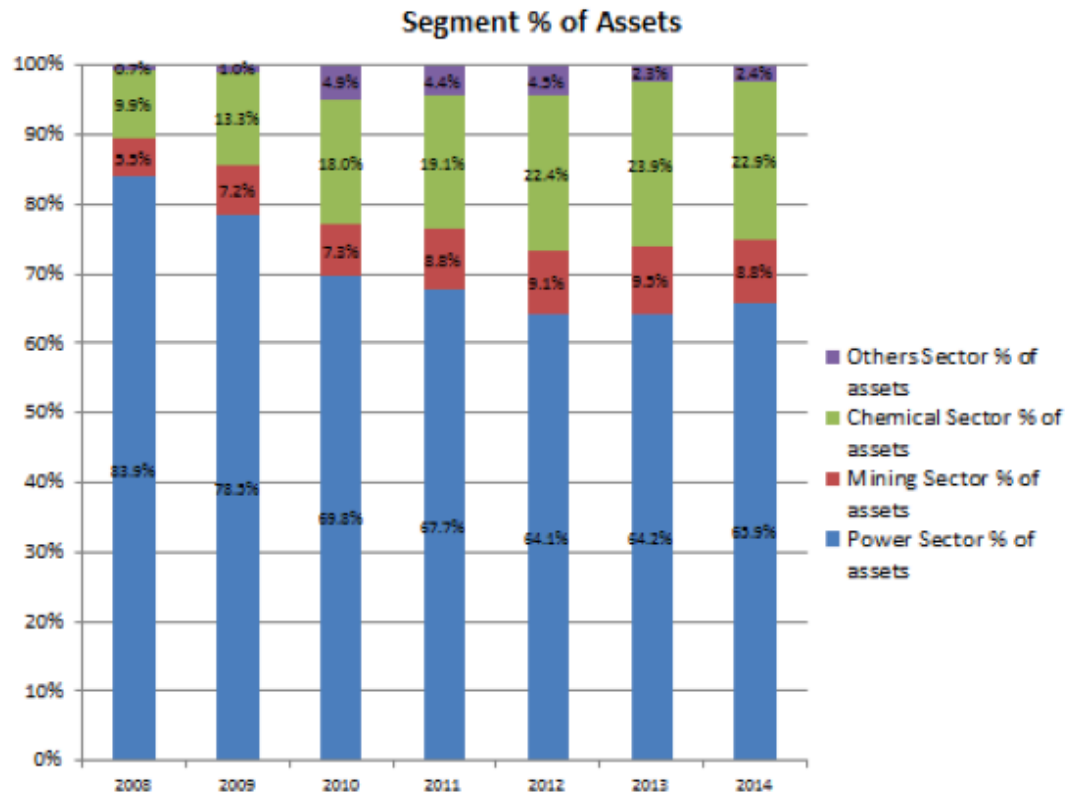
Coal-to-chemical sectors	Condition	Area	Name	Capacity Scale (million tons/yr)	Investment (RMB billion)
Coal to MEG	Operating	Inner Mongolia	Tongliao Jinmei Chemical Co.,Ltd. 0.2million tons Coal-to-MEG project	3.33	57.41
		Inner Mongolia	Xinhang Energy 0.3million tons Coal-to-MEG project in Ordos		
		Inner Mongolia	Cornell 0.6million tons Coal-to-MEG project		
		Henan	Yongjin Chemical 0.2million tons Coal-to-MEG project in An Yang		
		Henan	Yongjin Chemical 0.2million tons Coal-to-MEG project in Pu Yang		
		Henan	Yongjin Chemical 0.2million tons Coal-to-MEG project in Xin Xiang		
		Henan	Yongjin Chemical 0.2million tons Coal-to-MEG project in Yong Cheng		
		Xinjiang	Xinjiang Tianye carbide 0.05million tons end gas to MEG project (phase I)		
		Xinjiang	Xinjiang Tianye 0.2million tons Coal-to-MEG project(the second-period project)		
		Hubei	Sinopec 0.2million tons chemical fertilizer syngas to MEG project(phase II)		
		Shandong	Hualu Hengsheng 0.05million tons synthetic end gas to MEG project		
		Shanghai	Huayi Group 0.01 million tons Coal-to-MEG project		
		Guizhou	Qianxi Chemical 0.3million tons Coal-to-MEG project		
		Hebei	Yang Mei 0.22million tons Coal-to-MEG projectin Shen Zhou		
		Inner Mongolia	Liaotong Jinmei 0.4million tons Coal-to-MEG project		
	Under Construction	Inner Mongolia	Boyuan Sunit soda ash Co. Ltd 0.1million tons Coal-to-MEG project (phase I)	2.45	38.60
		Inner Mongolia	Jiu Tai 0.5million tons Coal-to-MEG project		
		Inner Mongolia	Kailuan chemical 0.4million tons Coal-to-MEG project in Ordos		
		Henan	Yong An 0.2million tons Coal-to-MEG project in Luo Yang		
		Henan	Hebi Baoma Technology Group 0.25million tons Coal-to-MEG project		
		Anhui	Huaihua Group 0.1million tons Coal-to-MEG project		
		Shanxi	0.2million tons syngas to MEG project		
		Shanxi	Yangmei Shouyang Chemical 0.4million tons Coal-to-MEG project		
		Shaanxi	Shanxi Binchang Mining Group Co.,Ltd. 0.3million tons Coal-to-MEG project		
	Preparation	Inner Mongolia	ShanDong Energy Group 0.4million tons Coal-to-MEG project in Hulunbuir	6.20	84.29
		Inner Mongolia	Huili Energy 0.2million tons Coal-to-MEG project		
		Inner Mongolia	Yangquan Coal Industry(Group) 0.2million tons Coal-to-MEG project in Xilin Haote		
		Anhui	Zhongan Joint Coalification Co.,LTD 0.6million tons Coal-to-MEG project		
		Heilongjiang	Sinopec 0.3million tons Coal-to-MEG project in He Gang		
		Jiangsu	1.2million tons Coal-to-MEG project in Yan Cheng		
		Guangxi	Hua Yi 0.2million tons Coal-to-MEG project in Qin Zhou		
		Guizhou	Jing Yu 0.6million tons Coal-to-MEG project in Xing Ren		
		Inner Mongolia	Guo Neng 0.6million tons Coal-to-MEG project in Bao Tou		
		Guizhou	Haitong Energy 0.3million tons Coal-to-MEG project		
		Inner Mongolia	Beijing Haohua 0.6million tons Coal-to-MEG project		
		Xinjiang	Qi Ya 1million tons Coal-to-MEG project		
	Planning	Anhui	CNSG Anhui Hong Sifang Co., Ltd. 0.3million tons syngas to MEG project	0.30	4.85
	Total			12.28	185.15

Coal-to-Aromatics

Coal-to-chemical sectors	Condition	Area	Name	Capacity Scale (million tons/yr)	Investment (RMB billion)
Coal-to-Aromatics	Operating	Shaanxi	Hua Neng megatonnage Coal-to-Aromatics industrial pilot project in Yu Heng	0.10	28.85
		Shaanxi	Kongdan Group 0.1million tons methanol to aromatics project		
	Under Construction	Heilongjiang	Longmay Tiantai 0.1million tons Coal-to-Aromatics project	0.70	5.70
		Henan	Sheng Run 0.6million tons methanol to aromatics project		
	Planning	Shaanxi	Hua Neng 1.2million tons Coal-to-Aromatics project in Yu Heng	1.20	33.06
	Total			2.00	67.60

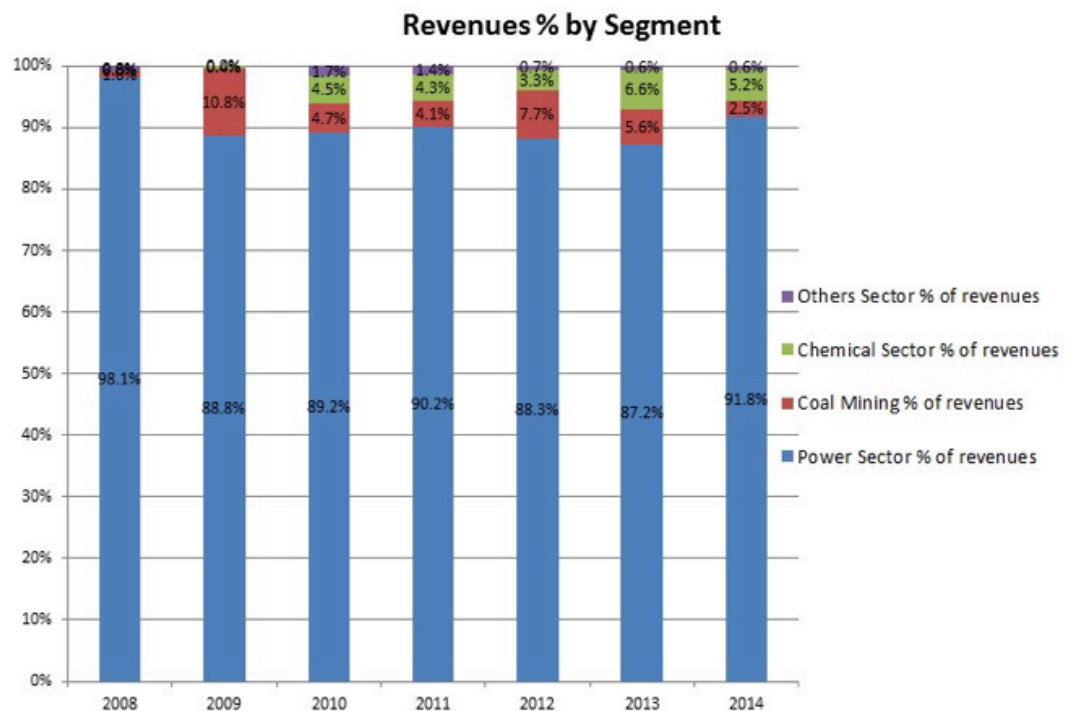
Appendix 2: Charts (Data from Datang International Power Generation annual report)

Datang slowly increased its assets in non-power sector over time, which led it to be a more diversified company

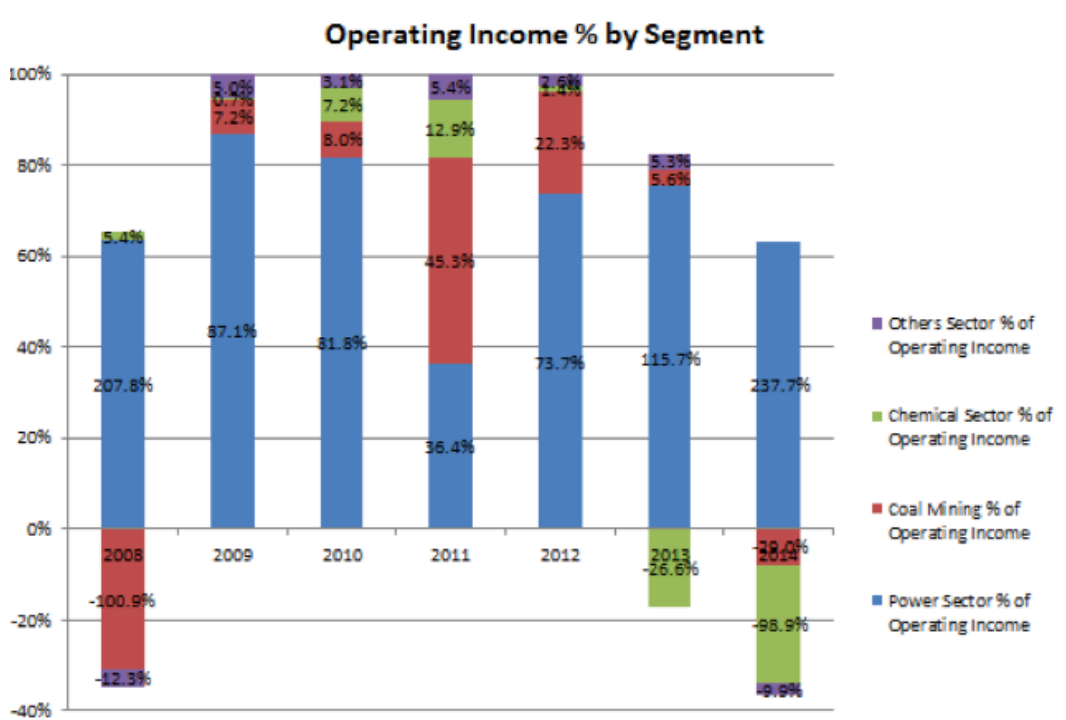
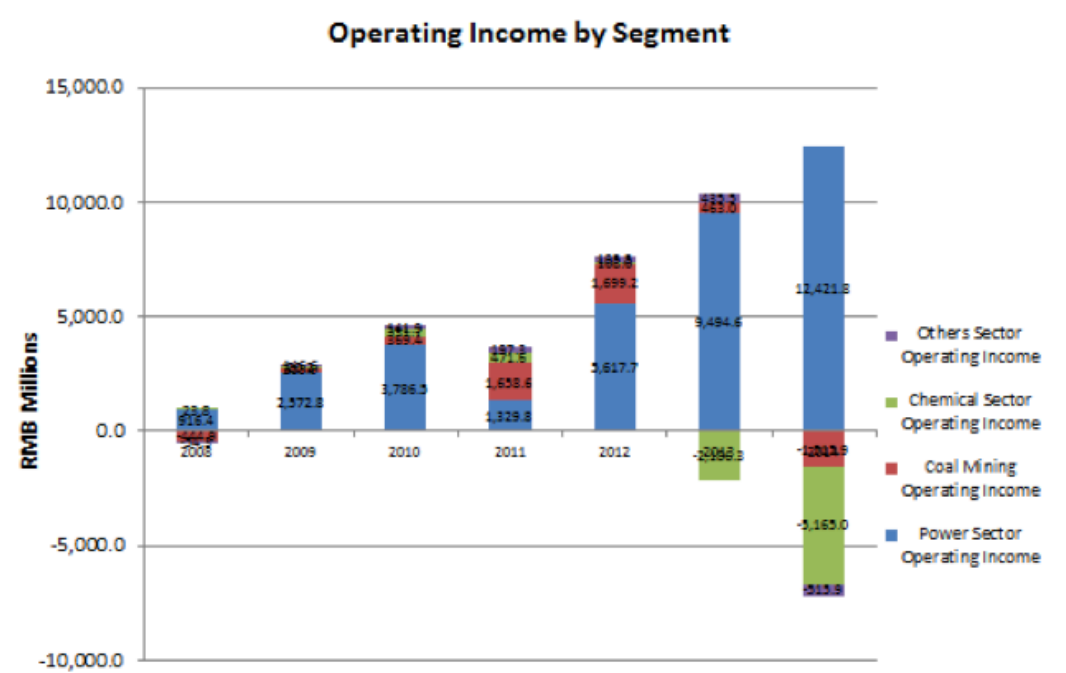


However, the real goal was to diversify its revenues, but this did not happen.

Revenues from the power sector continued to dominate, and the chemical contributed only a minor proportion.



Even worse, the coal chemical segments that Datang invested in, were extremely capital-intensive, and reduced its overall net operating income





Address: Room 303A, Tower B, Jiachengyoushu Office Building,
No. A 25,Dongsishitiao, Dongcheng District, Beijing China

Postcode: 100007

Tel: +86 (10) 65546931

Fax: +86 (10) 64087851

www.greenpeace.cn