Deutsche Bank
Markets Research

Rating
Sell

Asia
China

Utilities
Utilities

Company
CGN Power

Reuters	Bloomberg	Exchange	Ticker
1816.HK	1816 HK	HKG	1816

Date
7 January 2015

Initiation of Coverage

Price at 6 Jan 2015 (HKD)	3.40
Price target - 12mth (HKD)	2.90
52-week range (HKD)	3.62 - 3.31
HANG SENG INDEX	23,721

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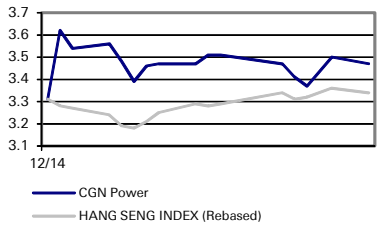
Price/price relative



Performance (%)	1m	3m	12m
Absolute	–	–	–
HANG SENG INDEX	-1.2	1.7	4.6

Source: Deutsche Bank

A leading nuclear play but at demanding valuation; initiate with Sell

Demanding valuation with overlooked risks; initiating with Sell

CGN Power is a prime beneficiary of government policy to steer energy consumption away from coal. Its strong capacity growth outlook was a major factor behind its successful IPO last month. However, we have four key concerns which should be incorporated into the analysis of the company - risks related to the costly Taishan project; a potential drop in utilization rates; operational challenges; understated liabilities for decommissioning. After a 26% gain on listing, the shares are trading at 20x 2015E PE and 20% above our DCF-based target price of HK$2.90. We therefore initiate coverage with a Sell.

Taishan Nuclear – execution risks for the world's first GIII EPR project

CGN has a proven track record in construction and operations but there are risks from the proposed acquisition of Taishan Nuclear, which include: 1) further construction delay and capex overrun; 2) insufficient tariff to compensate for the higher costs; and 3) low utilization during initial operating period for a new technology plant. Another potentially acquired plant, FCG, is likely to face low utilization due to severe power oversupply in Guangxi.

Several other risks spotted; likely amplified impact on valuation multiples

We also see several other downside risks to future earnings, including: 1) lower utilization in regions with power oversupply; 2) tariff discount or profit-sharing scheme, 3) expiration of Daya Bay's preferential VAT treatment; and 4) potential upward revisions in decommission liabilities will be a negative surprise to the market, even though earnings impact will be minor.

DCF-based target price of HK$2.90; risks

We derive our target price via DCF through 2060E, with zero terminal value and a WACC of 6.9%. Upside risks including higher-than-expected plant utilization, higher-than-expected tariff for Taishan, ahead-of-schedule new project start-ups and a greater-than-expected interest rate cut.

Forecasts And Ratios

Year End Dec 31	2012A	2013A	2014E	2015E	2016E
Sales (CNYm)	17,575	17,365	19,448	21,642	28,043
EBITDA (CNYm)	9,553	9,182	10,382	11,259	14,628
Reported NPAT (CNYm)	4,144	4,195	5,352	6,181	7,640
Reported EPS FD(CNY)	0.165	0.153	0.118	0.136	0.168
DB EPS FD (CNY)	0.165	0.153	0.118	0.136	0.168
DB EPS growth (%)	-42.7	-7.2	-23.2	15.5	23.6
PER (x)	–	–	23.1	20.0	16.2
Price/BV (x)	0.0	0.0	2.7	2.5	2.2
EV/EBITDA (x)	–	–	17.2	23.4	18.6
DPS (net) (CNY)	0.000	0.000	0.062	0.045	0.055
Yield (net) (%)	–	–	2.3	1.6	2.0
ROE (%)	24.6	21.3	15.6	12.9	14.4

Source: Deutsche Bank estimates, company data

[1] DB EPS is fully diluted and excludes non-recurring items

[2] Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close

Model updated:07 January 2015

Running the numbers

Asia

China

Utilities

CGN Power

Reuters: 1816.HK Bloomberg: 1816 HK

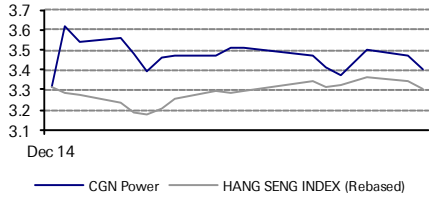
Sell

Price (6 Jan 15)	HKD 3.40
Target Price	HKD 2.90
52 Week range	HKD 3.31 - 3.62
Market Cap (m)	HKDm 154,526
	USDm 19,929

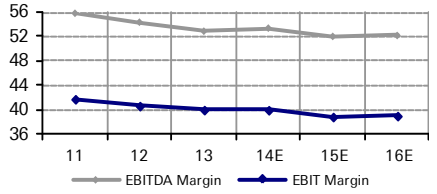
Company Profile

CGN Power Co., Ltd. (CGN Power) is the largest nuclear developer in China by both total installed capacity and attributable capacity, and among one of the only three licensed nuclear operator in China. As of June 2014, CGN Power operated and managed 11 nuclear generating units with a total installed capacity of 11.6GW.China General Nuclear Power Corporation (CGNPC), a central SOE under SASAC, is its parentco with 66.38% of stake.

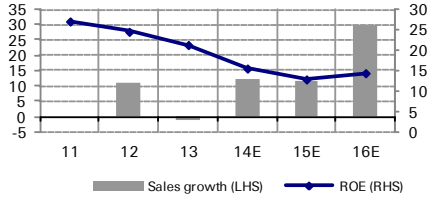
Price Performance



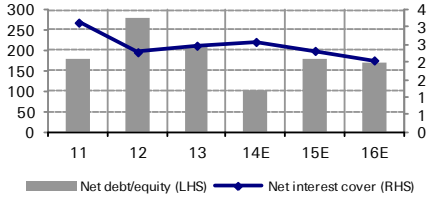
Margin Trends



Growth & Profitability



Solvency



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Fiscal year end 31-Dec	2011	2012	2013	2014E	2015E	2016E
Financial Summary						
DB EPS (CNY)	0.29	0.17	0.15	0.12	0.14	0.17
Reported EPS (CNY)	0.29	0.17	0.15	0.12	0.14	0.17
DPS (CNY)	0.00	0.00	0.00	0.06	0.04	0.06
BVPS (CNY)	1.1	0.6	0.8	1.0	1.1	1.2
Weighted average shares (m)	16,403	25,088	27,369	45,449	45,449	45,449
Average market cap (CNYm)	na	na	na	123,810	123,810	123,810
Enterprise value (CNYm)	na	na	na	174,800	261,472	268,330
Valuation Metrics						
P/E (DB) (x)	na	na	na	23.1	20.0	16.2
P/E (Reported) (x)	na	na	na	23.1	20.0	16.2
P/BV (x)	0.00	0.00	0.00	2.70	2.47	2.22
FCF Yield (%)	na	na	na	nm	nm	3.4
Dividend Yield (%)	na	na	na	2.3	1.6	2.0
EV/Sales (x)	nm	nm	nm	9.0	12.1	9.6
EV/EBITDA (x)	nm	nm	nm	16.8	23.2	18.3
EV/EBIT (x)	nm	nm	nm	22.5	31.1	24.5
Income Statement (CNYm)						
Sales revenue	15,881	17,575	17,365	19,448	21,642	28,043
Gross profit	10,129	10,830	10,644	12,058	13,126	17,022
EBITDA	8,866	9,553	9,182	10,382	11,259	14,628
Depreciation	2,234	2,413	2,240	2,612	2,854	3,695
Amortisation	0	0	0	0	0	0
EBIT	6,631	7,141	6,942	7,770	8,404	10,933
Net interest income(expense)	-2,114	-3,118	-2,804	-3,006	-3,609	-5,318
Associates/affiliates	153	-9	292	722	1,456	2,041
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	1,662	1,853	1,639	1,956	2,091	2,751
Profit before tax	6,332	5,867	6,070	7,442	8,342	10,407
Income tax expense	936	890	998	1,062	1,047	1,112
Minorities	669	833	877	1,027	1,114	1,655
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	4,727	4,144	4,195	5,352	6,181	7,640
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	4,727	4,144	4,195	5,352	6,181	7,640
Cash Flow (CNYm)						
Cash flow from operations	10,218	8,660	9,493	10,966	12,193	15,991
Net Capex	-12,128	-7,774	-9,923	-11,546	-17,409	-11,785
Free cash flow	-1,910	886	-430	-580	-5,215	4,205
Equity raised/(bought back)	7,510	2,823	1,832	21,558	0	0
Dividends paid	-2,769	-9,843	-1,655	-4,175	-1,766	-2,040
Net inc/(dec) in borrowings	-967	11,394	190	6,506	11,457	4,093
Other investing/financing cash flows	2,227	-10,279	1,138	-23,834	-17,723	-10,424
Net cash flow	4,092	-5,018	1,075	-524	-13,248	-4,165
Change in working capital	*-39*	*2,540*	*1,168*	*874*	*790*	*1,234*
Balance Sheet (CNYm)						
Cash and other liquid assets	10,453	5,434	6,640	23,637	10,390	6,225
Tangible fixed assets	70,068	79,185	87,042	99,129	188,859	201,377
Goodwill/intangible assets	511	629	765	765	714	714
Associates/investments	16,750	11,287	13,568	15,364	15,011	17,316
Other assets	15,926	25,728	19,660	20,805	25,854	29,952
Total assets	113,708	122,263	127,675	159,700	240,828	255,585
Interest bearing debt	52,837	73,391	73,819	80,325	140,149	143,492
Other liabilities	37,328	24,722	22,164	23,921	27,563	31,722
Total liabilities	90,165	98,114	95,983	104,246	167,712	175,214
Shareholders' equity	17,452	16,304	23,052	45,787	50,202	55,802
Minorities	6,091	7,845	8,640	9,667	22,914	24,569
Total shareholders' equity	23,543	24,150	31,692	55,455	73,116	80,372
Net debt	*42,384*	*67,957*	*67,179*	*56,688*	*129,759*	*137,267*
Key Company Metrics						
Sales growth (%)	nm	10.7	-1.2	12.0	11.3	29.6
DB EPS growth (%)	na	-42.7	-7.2	-23.2	15.5	23.6
EBITDA Margin (%)	55.8	54.4	52.9	53.4	52.0	52.2
EBIT Margin (%)	41.8	40.6	40.0	40.0	38.8	39.0
Payout ratio (%)	0.0	0.0	0.0	52.9	33.0	33.0
ROE (%)	27.1	24.6	21.3	15.6	12.9	14.4
Capex/sales (%)	78.3	44.4	57.2	59.4	80.4	42.0
Capex/depreciation (x)	5.6	3.2	4.4	4.4	6.1	3.2
Net debt/equity (%)	180.0	281.4	212.0	102.2	177.5	170.8
Net interest cover (x)	3.1	2.3	2.5	2.6	2.3	2.1

Source: Company data, Deutsche Bank estimates

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Investment thesis

Outlook

CGN Power is a prime beneficiary of government policy to steer energy consumption away from coal. Its strong capacity growth outlook was a major factor behind its successful IPO last month. CGN has a proven track record in construction and operations but there are significant risks to its earnings outlook from the proposed acquisition of Taishan Nuclear. These include: 1) further construction delay and capex overrun; 2) insufficient tariff to compensate for the higher costs; and 3) low capacity utilization during initial operating period for a new technology plant. Meanwhile, another potentially acquired plant, Fangchenggang Nuclear (FCG), is likely to face low utilization due to severe power oversupply in Guangxi province. We also see several downside risks to future earnings, including: 1) lower utilization in regional with power oversupply, especially for the Hongyanhe project in Liaoning; 2) tariff discount or profit-sharing scheme, which was adopted in the Ningde project in Fujian; 3) the expiration of Daya Bay's preferential VAT treatment; and 4) potential upward revisions in decommission liabilities will likely be a negative surprise to the market, even though earnings impact should be minor.

After a 26% gain on listing, the shares are trading at 20x 2015E PE or 40-70% premium to wind/thermal peers and 20% above our DCF-based target price of HK$2.90. We therefore initiate coverage with a Sell recommendation.

Valuation

Our target price of HK$2.90 is based on a discounted cash flow (DCF) projection through 2060E, where we assume zero terminal value, as all the units (except for Taishan) will be decommissioned by then. We have added the value of Taishan (operative until 2076E) by assuming similar cash flow generation as of 2060E. We assume a WACC of 6.9%, based on a 6.5% pre-tax cost of debt, a 3.9% risk-free rate, a 5.6% equity risk premium, 1.2 beta, and a 60% target debt-to-capital ratio.

Risks

Key upside risks include: 1) higher-than-expected capacity factor for all of its nuclear units on strong power demand and higher operation efficiency; 2) good earnings delivery from Taishan Nuclear as a result of timely start-up with stringent investment cost control and a higher-than-expected tariff; 3) parent company asset injection at favorable pricing; and 4) a greater-than-expected interest rate cut.

Valuation

DCF is our preferred approach given visible cash flow

We tend to value all types of IPPs using a discounted cash flow (DCF) method, given these companies' relatively visible and stable long-term cash flow generation profiles. Compared to thermal and wind IPPs, nuclear power producers' cash flow appears to have even less volatility given their more stable fuel cost (through long-term uranium supply contracts) and utilization hours (base load generation), especially in the context of China due to the lack of perfect implementation of fuel tariff linkage for thermal power and regulated tariffs for nuclear power. Nevertheless, our DCF approach in valuing CGN still incorporates a few specific factors that are unique to nuclear power.

Incorporating only existing pipelines

Preliminary-stage projects are mostly reserved at parentco level and thus not incorporated in our model

Although China will continue to ramp up its nuclear capacity in the next 20 years and CGN is highly likely to get a slice, we have factored in only projects under construction, as preliminary-stage projects that are currently retained at the parentco level might be injected into listcos later. However, the timing and pricing of injection remain unknown. This is in line with our practice of not incorporating parentco asset injection when valuing thermal IPPs, despite the great scope of asset injection and reiterated parentco commitment.

Although we have factored in 1-2GW new wind capacity per year for wind IPPs in 2015-20E, we believe it is less uncertain based on China's 2020 wind capacity target and rare delays in project construction. Currently, based on the existing capacity pipeline, CGN is set to grow until 2019, but growth beyond that depends on the project approval status and asset injection timeline, with any earnings contribution at least five years away.

Nevertheless, we believe the asset injection of Fangchenggang 1-2 represents a near-term upside, as these two units are scheduled to be operational by 2016. We provide a scenario analysis for potential value upside, but we would like to caution potential utilization rate challenge for Fangchenggang based on our Guangxi power market forecast included in our FITT report "*Nuclear Power Generation in China – risk reality check*".

Discounted cash flow through whole life cycle with zero terminal value

We adopt a DCF through 2060E with zero terminal value, as most of the units will be decommissioned by then

Nuclear units have a designed lifespan of 40 years for Generation II/II+ projects and 60 years for Generation III projects. Unlike thermal and wind, any nuclear power site is forfeited forever when decommissioned. Thus, we tend to value the cash flow throughout the whole life cycle.

By 2060E, most of CGN's units will have been decommissioned given they are Generation II/II+ projects. For the Generation III Taishan Nuclear project, which will be operational until 2076E, we have added value by assuming similar cash flow generation for another 16 years, up to 2076E.

Nuclear decommission liabilities

Unlike coal-fired/wind IPPs, a nuclear power unit has to bear a cash outflow for project site decommissioning at the end of its operating cycle. (For an introduction on nuclear decommissioning, please refer to our FITT Report). In our DCF valuation, we have excluded the decommission cash flow from the operating cash flow at the year end, but have applied a separate discount rate

for such long-term liability, which is similar to the valuation of corporate pension liability.

JV/Associates contribution

With the sequential commissioning of Ningde Nuclear (JV) and Hongyanhe Nuclear (Associate), JV and associates income will become an important earnings contributor for CGN (28.4% in 2017E). Thus, we have separately discounted their equity cash flow contribution to CGN through 2060E.

WACC

Our WACC assumption is 6.9%, based on a 6.5% pre-tax cost of debt, a 3.9% risk-free rate, a 5.6% equity risk premium, 1.2 beta, and a 60% target debt-to-capital ratio. Our WACC for CGN is lower than the 8.7-9.3% used for thermal IPPs and 8.6-9.8% used for wind IPPs, which is justified by its lower exposure to the volatility of fuel costs and wind conditions.

We illustrate the sensitivity to WACC assumption in Figure 1 and detailed cash flow projection in Figure 2. **Our target price of HK$2.9/share implies 17x/14x/12x/10x FY15E/FY16E/FY17E/FY18E PE.**

Figure 1: Sensitivity of target price to WACC assumptions

WACC assumed	6.5%	6.7%	6.9%	7.1%
Target price (HK$)	3.4	3.1	2.9	2.8

Source: Deutsche Bank estimates

Figure 2: Detailed DCF projection through 2060E

DCF Model (Rmb mn)		2015E	2016E	2017E	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	....	2060E
EBIT			**13,684**	**17,134**	**20,200**	**22,503**	**23,059**	**22,331**	**21,763**	**21,559**	**21,372**	**20,983**		**16,501**
Cash tax			(1,047)	(1,112)	(1,597)	(1,739)	(1,947)	(2,240)	(2,385)	(2,653)	(2,904)	(3,089)		(1,829)
EBIT after tax			12,638	16,022	18,603	20,763	21,112	20,091	19,378	18,906	18,468	17,894		14,672
add back Depreciation & Amortization			3,695	4,725	5,537	6,054	6,213	6,196	6,196	6,196	6,213	6,196		0
less: Projected Capex			(11,785)	(7,698)	(5,247)	(2,705)	(1,614)	(1,614)	(1,614)	(1,614)	(1,614)	(1,614)		(350)
Total			4,547	13,049	18,892	24,112	25,711	24,673	23,960	23,488	23,067	22,476		14,322
movement in WC			(1,234)	(1,449)	(1,407)	(1,340)	(1,392)	(1,524)	(2,042)	(2,558)	(2,762)	(2,956)		(638)
Cashflow proxy			**3,313**	**11,599**	**17,485**	**22,772**	**24,319**	**23,149**	**21,918**	**20,930**	**20,305**	**19,520**		**13,684**
Discount factor		1.00	1.07	1.14	1.22	1.31	1.40	1.50	1.60	1.71	1.83	1.96		20.55
Discounted Cashflow ex TV			3,098	10,141	14,294	17,406	17,381	15,470	13,696	12,229	11,093	9,971		666
Total DCF	**236,137**													
Terminal value (for Taishan)	6,313													
JV (Ningde Nuclear)	**33%**													
Pre tax cashflow available for distribution			3,930	4,935	4,898	4,851	4,832	4,764	4,937	5,042	5,170	5,248		0
Less cash tax paid			(69)	(147)	(207)	(332)	(403)	(472)	(574)	(618)	(665)	(704)		0
Less debt repayment			(2,124)	(2,832)	(2,832)	(2,832)	(2,832)	(2,832)	(2,832)	(2,832)	(2,832)	(2,832)		0
Equity injection			(36)	0	0	0	0	0	0	0	0	0		0
Total cashflow to equity			1,701	1,956	1,859	1,687	1,598	1,460	1,531	1,592	1,672	1,712		0
Equity cashflow to CGN			**566**	**651**	**619**	**562**	**532**	**486**	**510**	**530**	**557**	**570**		**0**
Discount factor		1.00	1.07	1.14	1.22	1.31	1.40	1.50	1.60	1.71	1.83	1.96		20.55
Discounted Cashflow ex TV			529	569	506	429	380	325	318	310	304	291		0
Total DCF (inc TV)	**10,988**													
Associate (Hongyanhe Nuclear)	**38%**													
Pre tax cashflow available for distribution			3,363	3,632	3,624	3,601	3,603	3,561	3,739	3,858	3,996	4,092		0
Less cash tax paid			(35)	(80)	(104)	(163)	(205)	(243)	(311)	(355)	(403)	(444)		0
Less debt repayment			(2,182)	(2,909)	(2,909)	(2,909)	(2,909)	(2,909)	(2,909)	(2,909)	(2,909)	(2,909)		0
Equity injection			(15)	0	0	0	0	0	0	0	0	0		0
Total cashflow to equity			1,132	644	611	529	489	410	520	594	683	739		0
Equity cashflow to CGN			**432**	**246**	**233**	**202**	**186**	**156**	**198**	**227**	**261**	**282**		**0**
Discount factor		1.00	1.07	1.14	1.22	1.31	1.40	1.50	1.60	1.71	1.83	1.96		20.55
Discounted Cashflow ex TV			404	215	191	154	133	104	124	132	142	144		0
Total DCF (inc TV)	**7,945**													
Less Net Debt (cash) at Year End	129,759													
Less Minority Interest (Market Value)	22,914													
Less nuclear liabilites	3,438													
Associate + JV (DCF)	18,933													
Investment	0													
Total Equity Value (Rmb m)	**105,272**													
Total per share (HKD)	**2.9**													
			rf	b	mrp	kd	implied ke	fter tax debt	Tax Rate	% equity	%	debt		
WACC	**6.9%**		3.9%	1.20	5.6%	6.0%	10.62%	4.5%	25.0%	40%		60%		
TV Growth	**0.0%**													

Source: Deutsche Bank estimates

Scenario 1: upside from acquisition of Fangchenggang

Background of Fangchenggang Nuclear

Fangchenggang Nuclear, located in Guangxi province, plans to build six 1,000MW units. Phase I has two 1,080MW units featuring CPR1000 (GII+) technology, which started construction in July and December 2010, respectively, and which are scheduled to come on line in June 2015 and February 2016. Phase II will have two 1,080MW units with Hualong One technology (GIII), although the final approval to start construction is still pending. Fangchenggang Nuclear is financed by CGNPC (61%) and Guangxi Investment Group (39%).

Impact on NAV and earnings

Based on: 1) the investment of Rmb28.2bn for Phase I disclosed by CGNPC; 2) the benchmark tariff of Rmb430/MWh; and 3) a relatively low capacity factor of 80% (see our FITT report for Guangxi power market forecast), we calculated that the total equity enhancement will be Rmb4.2bn, or a 4.0% increase to our current target price to HK$3.0. Assuming the 61% equity interest acquisition is funded by internal cash, CGN's 2017E earnings will be increased by 8.9% if the deal is completed by end-2016. This subsequent c.30ppt hike in net gearing to over 200% in end-2016, would increase the chances of another equity placement.

The acquisition of Fangchenggang might increase the NAV to HK$3.0/share

Scenario 2: upside from potential life cycle extension

Most of CGN's units are GII/II+ projects with a designed life cycle of 40 years. However, in practice, the actual operating life could be extended to 60 years as long as their equipment is in good condition and the external operating environment supports an extension. For example, as of end-2013, the US has approved the operation extension for 72 of its 100 operating units, of which 20 have entered 40 to 60 years of operation.

By simply assuming similar cash flow generation, we estimate that a 20-year life extension for all units (except Taishan) could add a 12% upside to our current target price to HK$3.30. However, this is just a "blue-sky" scenario that has yet to take into account several considerations: 1) the tariff for extended operations might be subject to downward revisions; 2) incremental capex and maintenance costs will be required for the extension; and 3) it is a remote upside scenario similar to the remote downside scenario from a potential underestimation of decommission liability, as discussed below. Nevertheless, even valuation under this scenario suggests 6% downside to the current share prices.

A 20-year life extension will increase the NAV to HK$3.3/share – a remote consideration subject to several downside factors

Figure 3: NAV/share under 20-year life extension

Source: Deutsche Bank estimates

Scenario 3: adjusting for likely underestimated liabilities

CGN currently uses the PBOC benchmark lending rate for five-year and above (6.55%), subject to changes in China's benchmark lending rate and inflation. Following the 40bps lending rate cut in November 2014, our China economist, Zhiwei Zhang, believes there will be another two rounds of 25bps cuts in 2Q15 and 3Q15, respectively.

The discount rate might be adjusted down to 5.65% along with China's interest rate cuts…

If CGN adheres to this policy, we believe the company will have to adjust the discount rate down to 5.65% by early 2016E (assuming adjustment from the beginning of next year). Nevertheless, this remains the highest globally.

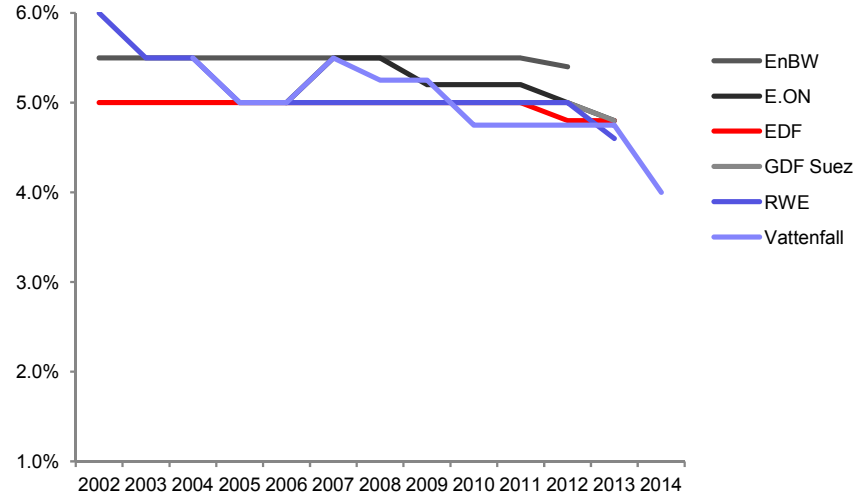
- In France, the rate is chosen by the operator based on regulatory constraints. EDF, Areva, and CEA (French Alternative Energies and Atomic Energy Commission) currently use 5%.
- In the US, the rate is 3-5% based on the owner's discretion.
- The rate in Spain is lower (1.5%).

Figure 4 shows the history of discount rates used by a number of nuclear operators for nuclear liabilities in France, Germany and Belgium. While there is a downward trend in the discount rates, all operators are using rates of 4% or more. Nevertheless, there are reasons to expect a more severe step down in the discount rates used in future years. Vattenfall, which operates nuclear stations in Germany, cut the discount rate it uses for its balance sheet provision at its 1H13 results from 4.7% to 4.0%. Vattenfall said that while it always monitored the rate to be used, it had decided that it needed to make a 'deep dive' on the issue, based on dialogue with its auditors and evidence from the market.

..but still higher vs. that of global peers

Vattenfall also uses a 4% discount rate for its Swedish nuclear liabilities, while E.ON uses a 3.0% discount rate in Sweden and 4.8% in Germany.

Figure 4: Discount rates used for nuclear liabilities in France, Belgium and Germany



Source: Company data, Deutsche Bank

In addition, although CGN's policy states the "discount rate is a pre-tax rate taking into account the risks specific to the effect of inflation based on the historical inflation rates", the 6.55% rate looks a bit high on a "real" rate basis.

CGN will have a total back-end decommission liability of Rmb24.2bn, based on its 10% estimation policy for the fixed assets of the existing project pipeline. In 2019, when all the projects are commissioned, the PV will be Rmb3.8bn, Rmb4.8bn, Rmb5.6bn, and Rmb7.9bn, respectively, based on a discount rate of 6.55% (currently used by CGN), 5.65% (adjusted by three rounds of rate cuts), 5% (benchmarking the French practice), and 3.77% (China's current 10-year government treasury yield).

Given the low present value for such a long-term liability, the impact to NPV is limited even if it is underestimated. **At a discount rate of 3.77%, the NPV will be reduced by HK$0.09/share to HK$2.80/share.** However, as we discussed in our FITT report, the potential regulation change, either reducing the discount rate or raising the percentage of cost to more than 10%, could bring a more meaningful impact to stock price as such specific risks of nuclear power become more aware to the market.

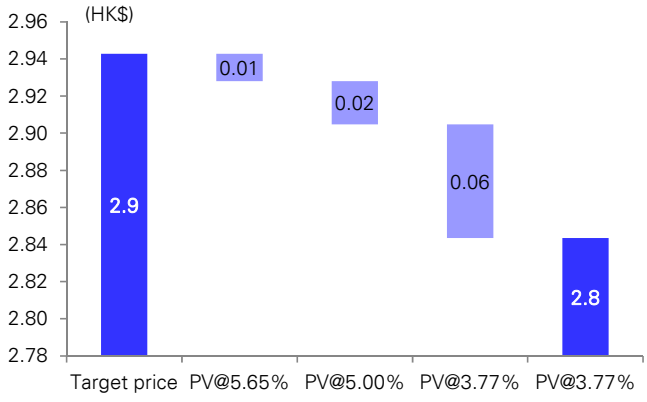
Be aware of the risks from potential upward revision in nuclear liabilities – though impact to NAV is limited at this stage

Figure 5: PV of decommission liabilities at different discount rate

	Back-end	Year to	Present value			
(Rmbm)	liabilities	2019	6.55%	5.65%	5.00%	3.77%
Daya Bay - 1	1,731	15	668	759	832	993
Daya Bay - 2	1,731	15	668	759	832	993
Ling'ao - 1	1,666	23	387	471	543	711
Ling'ao - 2	1,666	24	363	446	517	686
Lingdong - 1	1,095	31	153	199	241	348
Lingdong - 2	1,095	32	144	189	230	335
Yangjiang - 1	1,281	35	139	187	232	351
Yangjiang - 2	1,281	36	131	177	221	338
Yangjiang - 3	1,306	37	125	171	215	332
Yangjiang - 4	1,306	38	117	162	205	320
Yangjiang - 5	1,354	39	114	159	202	320
Yangjiang - 6	1,354	40	107	150	192	308
Taishan - 1	3,659	37	350	479	602	930
Taishan - 2	3,659	38	328	453	573	897
Total	**24,185**		**3,795**	**4,760**	**5,637**	**7,863**
Discount to 2015			**2,944**	**3,821**	**4,638**	**6,781**

Source: Deutsche Bank estimates

Figure 6: Impact to NPV/share



Source: Deutsche Bank estimates

Valuation comparison vs. peers

As CGN is a unique nuclear power pure play, we compared its valuation with China IPPs (coal-fired and wind power), China environmental plays (waste-to-energy), and international power utilities with nuclear exposure. The results show that CGN's current valuation is less attractive than that of its peers, either by PE vs. EPS growth, EV/EBITDA vs. EBITDA growth or by PB vs. ROE. Other than its likely scarcity value as the only listed nuclear pure play in the world, we are less convinced of its current valuation from the growth and risk angles. As we discussed in our FITT report, there are four areas of potential concerns that the market may be overlooking when balancing the growth outlook with risk for nuclear power players like CGN. In turn, we believe the stock is overvalued.

PE vs. EPS growth

- In Figure 7, we compare the 2014E PE vs. the 2014-16E EPS CAGR (as the earnings forecast for most companies are available to 2016E). The companies to the right have better EPS growth, while those in the upper section have more-expensive valuations.
- CGN's PER is outstandingly high at 23.2x 2014E PE vs. 7.5-20.7x for its peers. However, its 2014-16E EPS growth CAGR of 19% is only about half of that of China wind developers (36-42%). On FY16E PE, CGN currently trades at 16.4x vs. Longyuan's 11.2x, HNR's 8.1x, and Huadian Fuxin's 5.8x. As we have extended our forecast to FY18E for CGN, the stock trades at 12.3x FY18E PE, still higher than wind developers, which are likely to have even lower PE on continued capacity growth and reduced curtailment on UHV completion.
- Compared to thermal IPPs at 7x FY16E PE, it could be argued that CGN deserves higher multiples due to its stronger long-term growth outlook and more-stable earnings profile. We agree with this based on organic growth. However, thermal IPPs do have substantially greater asset injection potential than CGN given the large scale of their assets that are still retained at the parentco level.

CGN is trading at higher PE while EPS growth is only about half of China wind developers

- Compared to leading waste energy players (e.g. China Everbright International-Hold HK$11.54), CGN's FY16 PE appears on par. Although some tend to put CEI and CGN in same group because of their scarcity value and market leading positions, we like to draw a subtle difference between them. We believe any earnings upside is more likely for CEI than for CGN, as CEI can surprise the market by winning more projects with a current market share of less than 10% in the very fragmented waste/water market. CGN is unlikely to do so, given concentration of the nuclear market and its 60% market share.

PB vs. ROE

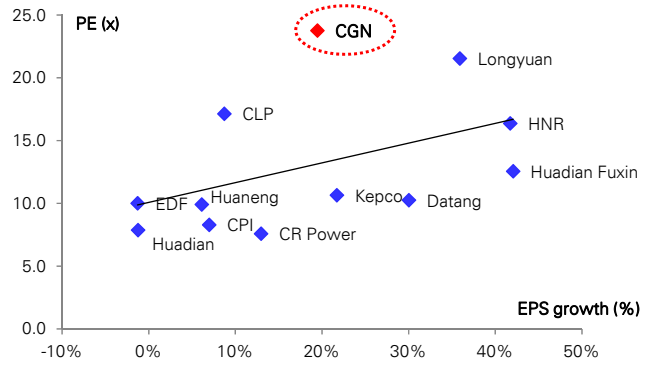
- In Figure 8, we compare 2015E PE to ROE (CGN's 2014E ROE is distorted by a lower equity base given that its IPO took place at year-end). Companies to the right have higher ROE ratios, while those in upper section have more-expensive valuations.
- CGN's PBV ratio is also the highest at 2.5x compared with the 0.5-1.7x of its power peers.
- China IPPs (CR Power, Huaneng, and Huadian) trade at 1.1-1.5x PB (c.50% discount), while their ROE is higher at 17.0-17.9%. Meanwhile, CGN's net gearing is similarly high at 160% vs. 82-225% for those three IPPs.

CGN is trading at about twice as high P/B vs. China IPPs despite a lower ROE

EV/EBITDA vs. EBITDA growth

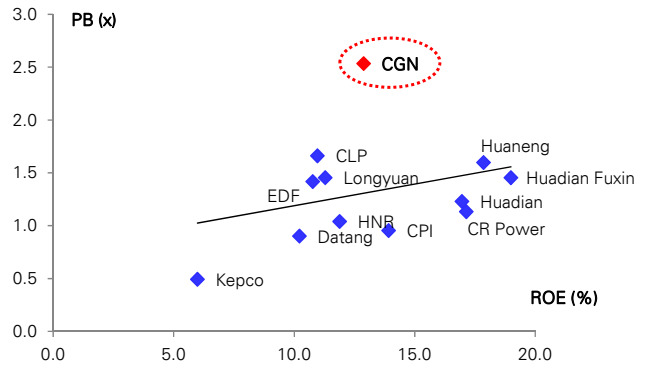
- CGN is also trading at the highest EV/EBITDA among the peer group at 13.2x (14E) relatively to its 19% CAGR in 2014-16E EBITDA.
- China thermal IPPs are trading at much lower multiples despite also decent growth. For example, Huaneng and CR Power, are trading at 3.3-3.9x 2014E EV/EBITDA with 10-15% EBITDA CAGR in 2014-16E.
- China wind developers enjoy 17-32% EBITDA growth while their 2014E EV/EBITDA is at 20-30% discount (8.8-10.2x).

Figure 7: 2014E PE vs. EPS CAGR (2014-16E)



Source: Deutsche Bank estimates; share price as of 30 Dec 2014

Figure 8: 2015E PB vs. 2015E ROE



Source: Deutsche Bank estimates; share price as of 30 Dec 2014

Figure 9: CGN – comps and share price performances

Share price as of 1/2/2015							Performance		Valuations						Returns & Gearing (%)					
				Price	% to	Mkt. Cap.	Absolute	Relative	P/E		EV/EBITDA		P/BV		RoE		ROA		Gearing	Yield
Company	Ticker	Price	Rating	target	target	US$m	3m	3m	14E	15E	14E	15E	14E	15E	14E	15E	14E	15E	13A	14E
China Thermal IPPs with nuclear exposure																				
Datang	0991.HK	HKD4.25	Buy	HKD5.50	29%	7,292	8%	(9%)	10.3	6.9	9.2	7.8	1.0	0.9	9.7	10.2	1.4	1.8	287.9	3.9
Huadian Fuxin	0816.HK	HKD3.68	Buy	HKD6.10	66%	3,786	(15%)	(28%)	12.6	8.3	8.8	7.9	1.7	1.5	14.9	19.0	2.5	3.4	292.8	1.6
Shenergy	600642.CH	CNY6.46	NA	NA	NA	4,853	39%	0%	11.8	11.1	9.1	8.5	1.3	1.2	12.0	10.6	5.6	5.4	5.1	3.0
Zhejiang Energy	600023.CH	CNY7.17	NA	NA	NA	13,877	29%	(7%)	14.0	11.6	NA	NA	NA	NA	15.0	NA	NA	NA	68.6	NA
					Average		**15%**	**(11%)**	**12.2**	**9.5**	**9.0**	**8.1**	**1.3**	**1.2**	**12.9**	**13.3**	**3.2**	**3.5**	**163.6**	**2.8**
China Wind/Hydro IPPs																				
Longyuan	0916.HK	HKD8.21	Buy	HKD10.00	22%	8,505	9%	(7%)	21.5	13.5	10.2	8.8	1.6	1.5	7.7	11.3	2.2	3.1	144.4	1.2
HNR	0958.HK	HKD2.53	Buy	HKD3.50	38%	2,755	(1%)	(16%)	16.4	9.8	9.4	8.1	1.2	1.0	7.8	11.9	1.7	2.4	197.3	1.2
Yangtze Power	600900.CH	CNY10.67	NA	NA	NA	29,108	39%	(0%)	17.2	16.6	11.3	11.4	2.2	2.0	12.9	11.9	7.6	7.9	72.8	3.0
Guotou Power	600886.CH	CNY11.44	NA	NA	NA	13,445	78%	28%	15.9	13.9	9.5	8.4	3.8	3.1	24.1	23.6	3.2	3.3	326.0	1.7
					Average		**31%**	**1%**	**17.8**	**13.5**	**10.1**	**9.2**	**2.2**	**1.9**	**13.1**	**14.7**	**3.7**	**4.2**	**185.1**	**1.8**
Regional power utility with nuclear exposure																				
CLP	0002.HK	HKD67.25	Hold	HKD59.50	(12%)	21,903	8%	(9%)	17.1	15.5	8.2	7.6	1.7	1.7	12.8	11.0	5.4	4.8	58.1	3.9
Kepco	015760.KS	KRW42700	Buy	KRW60800	42%	24,920	(14%)	(11%)	10.7	7.8	6.1	5.7	0.5	0.5	4.7	6.0	1.5	2.0	113.5	2.6
					Average		**(3%)**	**(10%)**	**13.9**	**11.6**	**7.1**	**6.7**	**1.1**	**1.1**	**8.7**	**8.5**	**3.5**	**3.4**	**85.8**	**3.2**
International power utility with nuclear exposure																				
EdF	EDF.PA	USD15.51	Sell	USD18.00	16%	54,599	(16%)	(20%)	10.0	10.4	5.7	5.9	1.5	1.4	9.4	10.8	1.4	1.7	69.7	5.8
Exelon	EXC.N	USD37.57	Buy	USD43.00	14%	32,299	9%	4%	15.3	15.3	8.6	8.3	1.3	1.3	8.8	8.5	2.6	2.4	80.0	3.3
RWE	RWEG.DE	EUR25.68	Hold	EUR29.00	13%	19,188	(13%)	(18%)	12.5	14.7	3.2	3.3	2.5	2.5	13.6	12.9	1.5	1.3	252.3	3.9
EON	EONGn.DE	EUR13.95	Hold	EUR15.00	8%	32,934	(1%)	(7%)	16.6	17.6	3.6	3.9	0.8	0.8	5.1	5.0	1.2	1.2	87.9	3.6
Fortum	FUM1V.HE	EUR18.04	Hold	EUR16.50	(9%)	19,479	(4%)	(8%)	15.1	18.6	6.5	8.4	1.3	1.1	16.2	9.2	12.5	3.7	73.6	6.1
CEZ	CEZ.PR	CZK592	NA	NA	NA	13,749	(8%)	(7%)	11.0	13.1	6.5	7.0	1.2	1.2	10.8	8.9	4.3	3.6	66.1	5.9
					Average		**(6%)**	**(9%)**	**13.4**	**15.0**	**5.7**	**6.2**	**1.5**	**1.4**	**10.6**	**9.2**	**3.9**	**2.3**	**104.9**	**4.8**
CGN Power	**1816.HK**	**HKD3.50**	**Sell**	**HKD2.90**	**(17%)**	**20,391**	**25%**	**6%**	**23.8**	**20.6**	**13.2**	**13.3**	**2.8**	**2.5**	**15.6**	**12.9**	**3.7**	**3.1**	**174.4**	**2.2**

All estimates are DB estimates and all stock data is from Bloomberg Finance LP

Definitions: 1) Gearing is net debt / shareholders equity; 2) EV is after deducting estimated value of associates;

Share price as of 1/2/2015			Share price performance (local currency)						avg. daily trade	Relative performance (local currency & local country index**)						avg. daily trade	Share price statistics (current /current/)						avg. daily trade
Company	Price	Rating	1wk	1m	3m	6m	12m	3yr	US$, 1m*	1wk	1m	3m	6m	12m	3yr	US$, 6m*	52w H	52w L	52W H	52W L	10yr H	10yr L	US$, 1yr*
China Thermal IPPs with nuclear exposure																							
Datang	HKD4.25	Buy	1%	2%	8%	41%	27%	96%	10.1	(1%)	(3%)	(9%)	21%	9%	62%	11.2	4.60	2.62	0.92	1.62	7.93	1.58	7.8
Huadian Fuxin	HKD3.68	Buy	9%	(3%)	(15%)	(7%)	9%	125%	15.4	7%	(8%)	(28%)	(20%)	(7%)	87%	8.1	4.94	3.08	0.74	1.19	4.94	1.31	8.4
Shenergy	CNY6.46	NA	3%	19%	39%	59%	57%	59%	86.6	(1%)	6%	0%	(1%)	(0%)	4%	37.0	6.91	3.89	0.93	1.66	11.93	2.50	23.1
Zhejiang Energy	CNY7.17	NA	2%	18%	29%	61%	45%	10%	70.6	(2%)	5%	(7%)	1%	(8%)	(28%)	42.0	7.77	4.46	0.92	1.61	7.77	4.46	31.5
	Average		**4%**	**9%**	**15%**	**38%**	**35%**	**73%**	**45.7**	**1%**	**0%**	**(11%)**	**0%**	**(2%)**	**31%**								
China Wind/Hydro IPPs																							
Longyuan	HKD8.21	Buy	3%	1%	9%	(3%)	(16%)	44%	10.1	2%	(4%)	(7%)	(17%)	(28%)	19%	13.4	10.21	7.12	0.80	1.15	10.72	4.40	16.0
HNR	HKD2.53	Buy	5%	(2%)	(1%)	(0%)	(31%)	30%	5.9	4%	(7%)	(16%)	(15%)	(41%)	8%	7.4	3.81	2.14	0.66	1.18	3.83	0.86	8.9
Yangtze Power	CNY10.67	NA	5%	19%	39%	82%	86%	101%	183.2	2%	6%	(0%)	14%	18%	31%	63.0	11.26	5.29	0.95	2.02	12.85	3.21	39.4
Guotou Power	CNY11.44	NA	15%	58%	78%	135%	223%	418%	273.7	11%	41%	28%	47%	104%	239%	87.3	12.55	3.62	0.91	3.16	12.55	1.42	56.3
	Average		**7%**	**19%**	**31%**	**53%**	**65%**	**148%**	**118.2**	**4%**	**9%**	**1%**	**8%**	**13%**	**74%**								
Regional power utility with nuclear exposure																							
CLP	HKD67.25	Hold	(1%)	(0%)	8%	7%	15%	13%	18.7	(3%)	(5%)	(9%)	(8%)	(2%)	(6%)	18.9	67.90	54.62	0.99	1.23	67.90	28.12	19.4
Kepco	KRW42700	Buy	(3%)	(9%)	(14%)	12%	22%	55%	83.2	(2%)	(6%)	(11%)	18%	24%	51%	78.1	50200	33250	0.85	1.28	50200	19548	61.7
	Average		**(2%)**	**(5%)**	**(3%)**	**10%**	**19%**	**34%**	**51.0**	**(3%)**	**(5%)**	**(10%)**	**5%**	**11%**	**22%**								
International power utility with nuclear exposure																							
EdF	USD15.51	Sell	1%	(7%)	(16%)	(20%)	(4%)	(4%)	3.3	3%	(6%)	(20%)	(23%)	(15%)	(40%)	1.7	20.24	13.94	0.77	1.11	21.74	13.94	1.7
Exelon	USD37.57	Buy	(3%)	6%	9%	13%	47%	5%	223.7	(1%)	6%	4%	9%	30%	(35%)	221.5	38.93	25.58	0.97	1.47	68.33	25.48	242.3
RWE	EUR25.68	Hold	(2%)	(14%)	(13%)	(20%)	4%	8%	103.0	(0%)	####	(18%)	(18%)	0%	(32%)	94.5	32.98	23.95	0.78	1.07	67.06	17.91	108.5
EON	EUR13.95	Hold	(3%)	(9%)	(1%)	(8%)	11%	(2%)	183.2	(2%)	(6%)	(7%)	(6%)	7%	(39%)	153.6	15.47	12.23	0.90	1.14	34.37	10.38	164.8
Fortum	EUR18.04	Hold	(1%)	(9%)	(4%)	(7%)	17%	36%	34.8	(1%)	(7%)	(8%)	(9%)	10%	(5%)	38.0	20.32	14.62	0.89	1.23	22.97	5.35	43.5
CEZ	CZK592	NA	1%	(4%)	(8%)	4%	22%	(6%)	8.6	(1%)	0%	(7%)	4%	26%	(12%)	10.3	672	269	0.88	2.20	951	208	12.1
	Average		**(1%)**	**(6%)**	**(6%)**	**(7%)**	**16%**	**6%**	**92.8**	**(0%)**	**(4%)**	**(9%)**	**(7%)**	**10%**	**(27%)**								
CGN Power	**HKD3.50**	**Sell**	**0%**	**25%**	**25%**	**25%**	**25%**	**25%**	**193.4**	**(1%)**	**19%**	**6%**	**7%**	**7%**	**4%**	**193.4**	**3.66**	**2.78**	**0.96**	**1.26**	**3.66**	**2.78**	**193.4**

* in USD millions

**Relative performance is against the HSCEI

Source: Deutsche Bank estimates, Bloomberg Finance LP, Datastream; share price as of 2 Jan 2014

Key upside risks

Higher-than-expected capacity factor

Our assumptions of 74-88% capacity factor might be subject to upside risks from: 1) a shortened overhaul period from smoother-than-expected maintenance/refueling work conducted; 2) high plant availability with less unplanned outage from equipment breakdowns or operation mishandling; and 3) better-than-expected power dispatch even in regions with power oversupply.

Stronger than-expected contribution from Taishan

This mainly includes 1) timely or even ahead-of-schedule start-up of Taishan Nuclear; 2) lower-than-expected investment costs, though the possibility is low based on its current capex spending; 3) higher-than-expected on-grid tariff to lend support to the project as the first EPR project in the world; and 4) other preferential treatment from government such as additional tax incentives.

Parentco asset injection at favorable pricing

Based on the non-competition deed, CGN will have the right to acquire the parentco nuclear assets after they are "substantially completed or ready for commercial operation". Currently CGNPC has another project under construction, Fangchenggang Nuclear (2x 1,080MW featuring CPR1000 technology). CGNPC has a 61% stake while Guangxi Investment Group holds the remaining 39%. The two units started construction in 2010 and are scheduled to commence operation by 2016.

We believe CGN will likely announce the acquisition of Fangchenggang Nuclear in 2016 or 2017 when the project begins operations. The deal could be value-enhancing at favorable pricing and presents potential upside to our current 2016-17E EPS forecast.

More-than-expected interest rate cut

Given the high debt-to-equity ratio for nuclear project funding, interest expense is a major cost element, accounting for as much as c.25% of total revenue in the early stages of operation. For CGN, every additional 25bps decrease in average finance cost on top of a 50bps cut assumed will result in a 1.9% and 2.5% earnings upside for FY15E and FY16E.

Taishan project – an outlier for CGN

Summary

It is fair to say that CGN has demonstrated good track record in construction and operations in GII/GII+ units, but the proposed acquisition of Taishan GIII Nuclear will add some uncertainty to CGN's earnings growth visibility, for the risks identified below:

- Further construction delays and capex overruns cannot be ruled out given the lack of prior experience for EPR GIII units worldwide and the construction delays and budget overrun for same type of reactors built in France and Finland. Our analysis on project milestones suggests a one year longer delay than management guidance for Unit 2.
- The tariff to be set may not be sufficient to guarantee similar return to GII+ projects under the benchmark tariff given the incurred high costs at Rmb20,900/kW vs. c.Rmb12,500/kW for GII+ units.
- As Taishan will have the world's first GIII EPR units, plant operation will be challenging when it comes to ramping up capacity for the first several years.

Taishan acquisition planned to close in 1Q15

CGN plans to acquire 41% stake in Taishan at Rmb9.7bn, or 1.1x PB

As stated in the prospectus, upon the completion of its Hong Kong listing, CGN is planning to acquire from its parentco a 12.5% equity interest in Taishan Nuclear and a 60% interest in Taishan Investment (one of Taishan Nuclear's current shareholders). The transaction will effectively increase CGN's stake in Taishan Nuclear by 41%, and Taishan Nuclear will become a 51% subsidiary from a 10% equity investment. The acquisition price of Rmb9.7bn will be funded by IPO proceeds.

- Based on the disclosed Rmb20.97bn NAV as of June 2014, the acquisition price would represent 1.1x PB, or c.1.0x if we factor in the further equity contribution for planned capex during the period.
- Taishan Nuclear, located in Guangdong Province, has two 1,750MW units that are currently under construction applying the GIII EPR technology.
- While the transaction is still pending due to relevant approvals from the MOFCOM, CGN expects completion in by end of March 2015. We have factored the consolidation into our model from 2015.

Construction progress of EPR units have encountered universal delay

Taishan Nuclear Units 1-2, firstly scheduled to commence operations in end-2013 and October 2014, are now postponed to 1H16 and 2H16, respectively, according to the latest guidance provided by CGN. The cost is estimated to be Rmb73.2bn (Rmb20,900/kW), up 46% from the original estimates of Rmb50bn.

Moreover, reading through progress of other EPR units under construction, it is still too early to say whether further delays and cost overruns are unlikely. Currently, there are another two EPR units under construction outside China (Flamanville Unit 3 in France and Olkiluoto Unit 3 in Finland).

- **EPR in France: five-year delay**

Estimated construction period of EPR units in Finland and French are as long as 13 years and 10 years

Flamanville Unit 3, developed by EDF, started construction in December 2007 with an originally designed construction period of 54 months (start-up in 2012). In December 2012, EDF announced completion would be delayed until 2016 and that the cost would increase to EUR8.5bn (Rmb64bn, or Rmb37,200/kW). In November 2014, EDF announced a further postponement into 2017 due to delays in component deliveries from Areva.

- **EPR in Finland: 10-year delay**

In August 2005, Finland began construction on the world's first EPR unit, which was originally expected to go on line in 2009. It is currently expected to go live by late 2018, as its prolonged construction period (more than 13 years) has delayed it by nearly a decade. It may even be pushed back further. The cost overrun is also substantial. In December 2012, Areva estimated the total cost would come to EUR8.5bn (Rmb64bn, or Rmb37,200/kW), almost three times its original planned EUR3bn.

A closer look at Taishan's construction progress

Because Taishan is the only GIII project under construction for CGN and because its inclusion from 2015 was disclosed in the IPO prospectus, construction schedule and costs are critical for CGN to meet expectations. Therefore, we conducted a more detailed analysis on the milestones of progress achieved and compared it to other nuclear projects under construction. We conclude that Taishan Unit 1 and 2 should start operations in July 2016 and July 2017, respectively, compared to management guidance of 1H16 and 2H16.

Outpacing its French/Finnish peers

According to the September press release from Areva, 95% of components as well as the operational I&C system for the Taishan 1 plant in China have been delivered, and the first commissioning activities have started. This seems to be further along than the two other EPR reactors being built in France and Finland. The Flamanville Unit 3 in France completed RPV installation in January 2014 (Figure 10) and received four steam generators by September, while Taishan Unit 1 completed such steps a year ago.

In Finland, progress is lagging a long way behind. It was hindered by the dispute on compensation for capex overspend, which led to a construction halt, and problems with its contract workers.

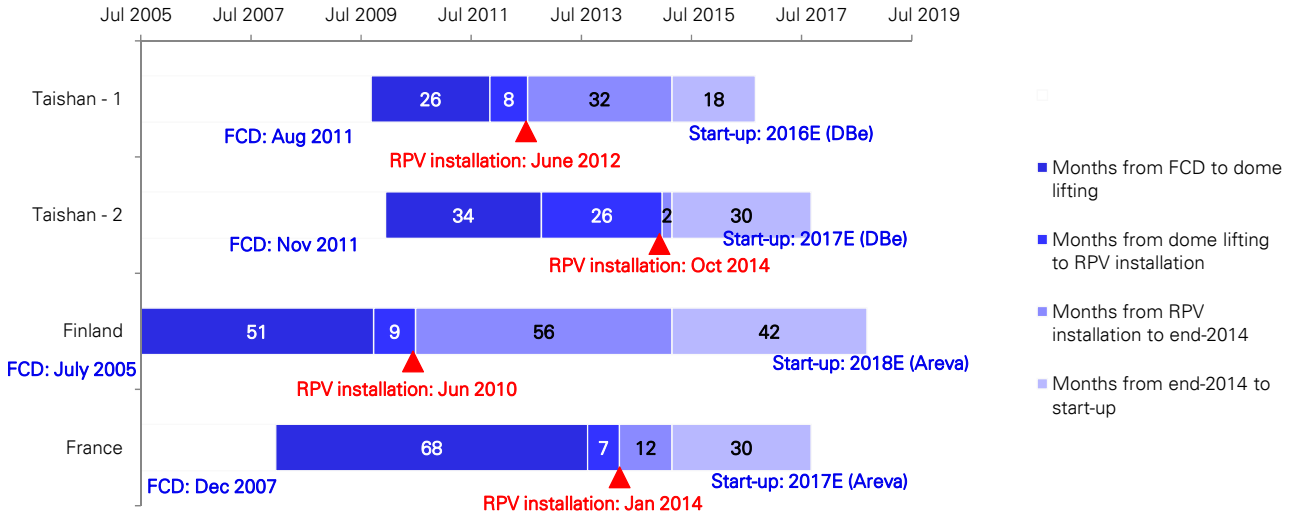
Project milestone achieved suggests likely delay versus guidance

We also noticed that Taishan completed the installation of its hoisting main pump motor on 29 September. As of mid-December 2014, cold testing of Taishan has not started and another 16 months will be needed after cold testing before commercial operation can begin, if we assume a similar cycle as GII+ units (Ningde 1: 17 months; Hongyanhe 2: 15 months). Therefore, we assume a start-up of Unit 1 in July 2016, leaving a two- to three-month buffer between now and cold testing.

Unit 2 completed reactor pressure vessel (RPV) installation in October 2014, about 30 months behind Unit 1. Nevertheless, we expect the pace of construction in Unit 2 to pick up, as it benefits from the experiences of Unit 1. Although CGN management guidance calls for a 2H16 start-up, Areva's estimate is one year behind Unit 1, which looks more reasonable based on current progress. Therefore, we expect a start-up in July 2017.

Taishan Unit 2 is likely to start operation one-year behind company guidance

Figure 10: Construction progress for EPR units



Source: Areva, Deutsche Bank estimates

Taishan investment costs might be revised up further

As capex overspend is usually a consequence of construction delays, we are not too worried for the GII+ units, given the delay is normally within one year. However, the question remains open on Taishan Nuclear, which is likely to be the first GIII EPR project in the world.

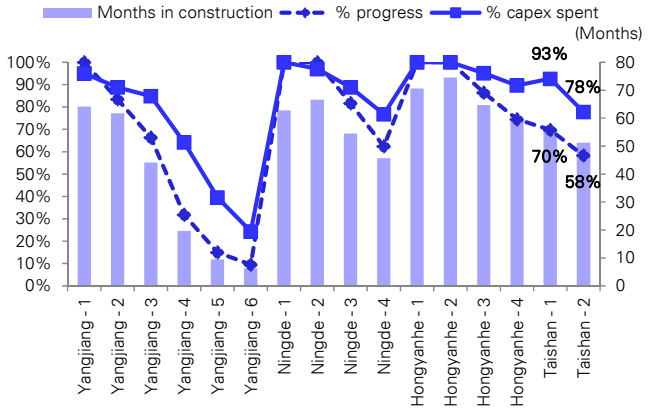
Although the total investment estimated for the France and Finland projects might not be indicative given the much longer construction period, EU officials revealed in October that costs for Hinkley Point C in the UK (HPC, 2x1,630MW, EPR) would reach GBP24.5bn (Rmb72,800/kW), almost double the unit investment for Taishan. Hinkley Point C has not started construction yet but the UK government has agreed to pay EDF GBP0.0925/kWh (Rmb0.9/kWh) for the electricity output from Hinkley Point C.

The investment of Taishan could be revised up considering higher cost estimates of its peers and the proportion spent up-to-date

Based on our estimated schedule, Taishan Unit 1 and 2 have completed 70% and 58% of construction, respectively, based on months in construction

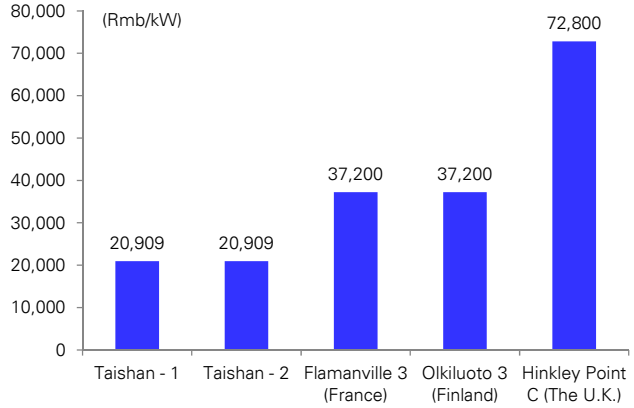
divided by months needed, while the incurred capex up to 1H14 has reached 93% and 78% of total capex budget. The figure might not be proportional to time of construction as the capex should be frontloaded – the last few months are mostly testing with major equipment purchases completed – but we believe there is still a risk that Taishan may report another round of cost increases (after revising up by 46% from Rmb50bn in total previously).

Figure 11: Construction progress vs. % capex incurred



Source: Company data, Deutsche Bank

Figure 12: Estimated unit capex comparison



Source: Company data, Deutsche Bank estimates

Uncertainty in the tariff setting of Taishan Nuclear

Taishan might need a tariff of Rmb540/MWh to cover its high investment

There is currently no clear policy guidance regarding the tariff setting for GIII units. As Taishan's investment is 70-100% higher than CGN's GII+ units, we believe that even if a higher tariff is granted, the amount could still be insufficient to make it earn comparable return to GII units. For reference, CNNC stated that it would propose a Rmb510/MWh (tax-inclusive) tariff for Sanmen Nuclear if the final investment runs over by 20% to c.Rmb19,600/kW. On a similar calculation, the potential tariff needed by Taishan Nuclear would round up to Rmb540/kWh (without factoring any further capex overrun), which is 26% higher than the current GII+ benchmark tariff of Rmb430/MWh and 8% higher than the local coal-fired tariff of Rmb502/MWh in Guangdong.

Currently, we assume tariff of Rmb510/MWh in our model, which is slightly above local coal-fired tariff. An Rmb25/MWh change in Taishan's tariff will lead to 0.8%/3.2% earnings change in CGN's 2016/17E earnings.

Figure 13: Taishan – project IRR under different tariff and investment case

Tariff	Unit investment (Rmb/kWh)				
(Rmb/MWh)	19,855 (-5%)	20,900 (base)	21,945 (+5%)	23,042 (+10%)	24,194 (+15%)
430 (GII+)	5.3%	5.0%	4.8%	4.5%	4.3%
470	6.0%	5.7%	5.4%	5.2%	4.9%
510 (base)	6.6%	6.3%	6.0%	5.7%	5.5%
550	7.2%	6.9%	6.6%	6.3%	6.0%
590	7.8%	7.5%	7.1%	6.8%	6.5%

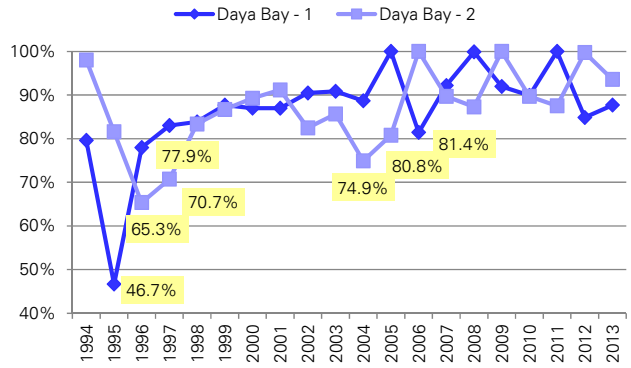
Source: Deutsche Bank estimates

Operation challenge for the first EPR project in the world

Despite a high designed capacity factor and dispatch priority, nuclear utilization is not immune to risks from 1) lack of operating experiences; 2) teething issues; and 3) equipment breakdowns. As Taishan is likely to be the worlds' first EPR units, plant operation will come as another big challenge once commissioned, and if any breakdown happens, the overhaul period could be prolonged. The same has been experienced during the early days of Daya Bay operation. As shown in Figure 14, Daya Bay reported a low capacity factor in 1995 (46.7%, Unit1) and 1996 (65.3%, Unit 1; 70.7%, Unit 2). Although we believe CGN has demonstrated a strong operation track record, it is prudent to apply caution given the challenge for the first EPR GIII project.

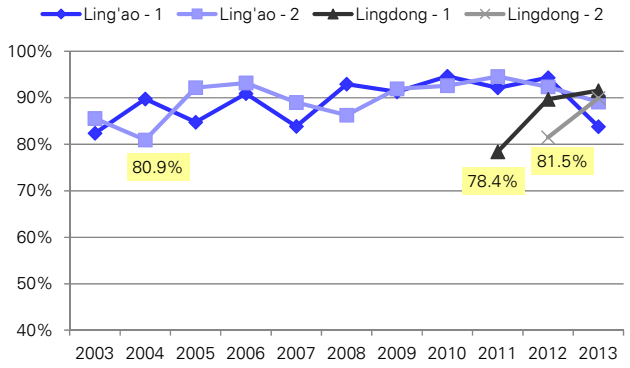
Plant operation could be challenging for Taishan during the first several years – as experienced in Daya Bay

Figure 14: Historical utilization – Daya Bay



Source: IAEA, Deutsche Bank

Figure 15: Historical utilization – Ling'ao and Lingdong



Source: IAEA, Deutsche Bank

Profitability risk for other units

Summary

Besides the GIII Taishan project uncertainty discussed, we see several risks relating to the future profitability of GII/II+ projects, including:

- Lower utilization from regional power oversupply. For each 1% decrease in capacity factor (or 88-hour decrease in utilization hours), CGN's FY15E earnings will be reduced by 3.3%.
- Potential tariff discount or profit sharing for extra outputs above 80% capacity factor to support peak-shaving pump storage plants.
- Expiration of Daya Bay's preferential tax treatment and VAT rebate may pose a downside risk. In addition, nuclear plants have a higher sensitivity to labor cost hikes compared with other types of power generation.

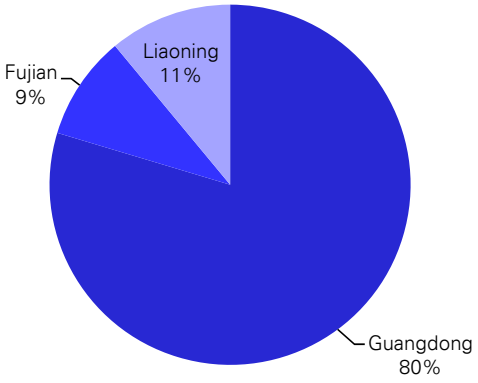
Market risk from regional power oversupply

Nuclear utilization is increasingly subject to market risks under potential regional oversupply

In addition to the capacity loss coming from the generating plant itself, nuclear utilization is increasingly subject to market risks, especially in regions with abundant supply. There are anecdotal reports that China's nuclear power might participate in peak shaving in the future when nuclear become a meaningful source of energy supply. i.e. >15% of local power market, which could lower their annual utilization to c.7,000 hours.

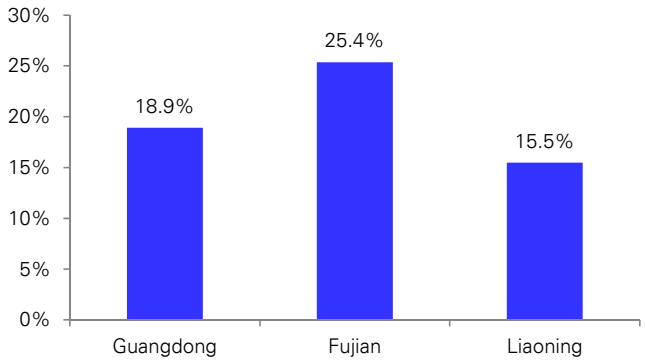
CGN's units are concentrated in Guangdong, Liaoning, and Fujian provinces, where nuclear power will account for 15-25% of total generation in 2017E. Among the three, Liaoning is already subject to lower utilization (<7,000 hours). Guangdong, the most important market to CGN, is likely to maintain utilization of 7,500 hours, but is still exposed to risk from unfavorable change in local power demand growth and volume of hydro power imports from southwest China under the West-to-East Power Transmission arrangement.

Figure 16: CGN – attributable capacity breakdown by province (including units under construction)



Source: Company data, Deutsche Bank

Figure 17: Nuclear percentage of total generation (2017E)



Source: Deutsche Bank estimates

Liaoning – nuclear has to compromise on high mix of cogeneration and wind

Liaoning has been facing power oversupply for a couple of years. In 2013, utilization for coal-fired units was only 4,353 hours, one of the lowest in China. With the sequential commissioning of nuclear units and a quick wind capacity addition, Liaoning will likely suffer from a more severe power oversupply in the next few years.

- In 9M14, Hongyanhe Unit 1 recorded only 4,194 hours of utilization, indicating a <6,400-hour full-year utilization.
- Even assuming a 6,500 hours of nuclear utilization and treating coal as a plug-in, coal utilization will still face a significant drop to 4,000-4,162 hours in 2015-17E.
- Given that most coal units supply heat for local residents, the dispatch of coal-fired cogeneration units must be prioritized during winter.

Guangdong: less of a concern but potential threat from cheaper hydro imports

Currently, more than 80% CGN's attributable nuclear outputs came from Guangdong province. Therefore, the power demand and supply forecasts in Guangdong are extremely important to CGN's utilization outlook.

By assuming 7,500 hours of nuclear utilization (vs. 7,600-7,800 hours historically), we believe Guangdong's coal utilization will remain above 4,900 hours until 2017, even with the commissioning of the 4.4GW Yangjiang Nuclear (units 1-4) and 3.5GW Taishan Nuclear, due to the large size of the power market and the expectations for stronger growth. However, the results are sensitive to the power demand growth assumption – by assuming a 5% demand growth p.a. instead of 7% in our base case, thermal utilization will drop to 4,455 hours in 2017E, in which case utilization rate of nuclear units will also be vulnerable.

In addition, another swing factor is cheaper hydro imports from southwest China such as Yunnan and Guangxi, given their lower generation costs (Rmb290/MWh) than nuclear (Rmb430MWh). From both dispatch priority policy and cost competitiveness perspectives, hydro is superior to nuclear.

Fujian: better than Liaoning due to strong demand growth and export potential

By assuming 7,500hrs of nuclear utilization, we calculate that Fujian's coal utilization will remain above 5,000hrs in 2015-16 but we will see a likely 4% decline to 4,958hrs in 2017E. Indeed, nuclear will represent 25% of provincial

generation output in 2017, the highest among all provinces in China. However, the outlook is better than for Liaoning thanks to:

- A relatively healthy power market with strong demand growth (9.3% in 11M11) and high coal utilization hours (5,296 in 2014E, 450hrs above national average), and
- The Ultra-High-Voltage transmission line being built for exporting power to neighboring Zhejiang province, which will export 12% Fujian output in 2017, based on our estimates.

However, a 1% drop in the annual power demand growth in Fujian, over the assumed 6% pa in 2015-17E will further bring down the 2017E coal-utilization to 4,710hrs. Meanwhile, given Fujian's higher reliance on hydro (20%), there is likely downside risk in the year when rainfall is extremely favorable to hydro.

Guangxi: increasing oversupply risk under quick ramp up of thermal capacity

In 2015/16/17, we estimate that the total installed capacity in Guangxi will increase by 10.2%/12.1% and 4.5%, respectively, mainly contributed by thermal and nuclear. As compared to a power demand growth of 6.0% p.a., the excessive capacity growth will result in a significant oversupply situation in 2016-17E while the high hydro generation mix (47% in 11M14) increases the volatility in thermal utilizations.

We assume a normalized 2,800hrs of utilization during 2015-17E. Nevertheless, the power oversupply still looks severe in 2016-17E with a substantial thermal new capacity to come online. We forecast thermal utilization likely to fall to only 3,602hrs in 2017E, suggesting it may be a challenge for nuclear to maintain above 7,000hrs. In addition to pressure from thermal utilization collapse, in a year of better-than-expected water flow, it is likely that nuclear utilization will be further squeezed given the priority dispatch of hydro over nuclear.

CGN may enter into Guangxi province through the acquisition of Fangchenggang Nuclear, which we discussed in our valuation scenario analysis.

In our FITT report, we conducted a more detailed analysis for the power market outlook in Liaoning, Fujian, Guangdong and Guangxi, based on our proprietary bottom-up, plant-by-plant pipeline for thermal, nuclear, and large hydro.

Potential tariff discount or profit sharing scheme

In contrast with wind tariff, where a 20-year time frame has been specified, the nuclear benchmark tariff is only stated to "remain relatively stable" and "adjustable based on the changes in technology, costs, power demand and supply". **In a supply-surplus situation, we believe a tariff discount or some kind of profit-sharing schedule could be introduced for the excess power generation over a certain level.**

For example, in May 2014, State Grid Fujian Electric Power signed a Peak-shaving Compensation Agreement with Ningde Nuclear, which will have a profit-sharing scheme for the excess power generation over the planned 7,008 hours in order to support local pump storage plant undertaking peak-shaving functions.

Besides, the undergoing power reform could also be a game changer over the long term. Currently the Direct Power Supply volume remains low at 5%/10% of total electricity sales of IPPs in 2015/2016 based on the plan announced by various provinces and is mostly limited to large thermal and hydro plants. However, rolling out the scheme further would potentially require the participation of nuclear power – when nuclear gencos may have to trade tariff discount for volume given its relatively low marginal operating cost.

Limited impact from new nuclear approval in 2015-16

New nuclear project approval in 2015, although sentimentally positive to the whole industry, will have limited impact on CGN given:

- Hongyanhe 5-6, likely to be approved in 1H15 and included or injected in listco, seem to be less exciting due to Liaoning's power oversupply discussed earlier.
- Other new projects are reserved at the parentco level, contingent on the timing and pricing of injections, and will not contribute any earnings before 2020E – such as Lufeng and Xianning.
- Several other likely approved projects not invested by CGN, such as Shidaowan, Fuqing 5-6, Ningde 5-6, Tianwan 5-6, Xudapu 1-2, Sanmeng 3-4, Haiyang 3-4 and Zhangzhou 1-2.

Hongyanhe Units 5-6 likely under listco, but profitability is a concern

Hongyanhe Phase II (Units 5-6), featuring a relative mature ACPR1000 technology, are among the most likely units to receive approval first. Assuming a construction start in April 2015, the two units could be commissioned in 2020 and 2021, respectively, based on the planned construction period of 65 months. While the final decision is still up to the government, it is likely that Units 5-6 will be approved as a Phase II project subordinated to Phase I and included in the CGN listco. However, we are concerned over profitability given the already severe power oversupply in Liaoning province. The market may not view it favorably if Hongyanhe Phase I generates low returns.

Except for Hongyanhe 5-6, other new projects to be approved are reserved at parentco level and injection is unlikely before 2020

Other new projects reserved at parentco level

Other than Hongyanhe 5-6, the projects currently pending approval are still under parentco (Figure 18). Among them, Fangchenggang Units 3-4 might receive approval in mid-2015 and start operations before 2020. However, based on our Guangxi power market analysis, Fangchenggang could face similar utilization rate challenges like Hongyanhe in Liaoning. Meanwhile, the commissioning of Lufeng (AP1000) and Xianning (in-land) should be post-2020 due to significant delays in pilot AP1000 projects.

Based on the non-competition deed, CGN will have the right to acquire the parentco nuclear assets after they are "substantially completed or ready for commercial operation". As a result, to CGN, the benefit from nuclear resumption is contingent on pricing and timing of project injection, while actual earnings contribution is either with uncertainties or post-2020.

Figure 18: CGNPC – projects under construction/at preliminary stage

Unit	Location	Technology	Size (MW)	Stake	Attri.	Construction start	Operation start (DBe)	Comment
Fangchenggang Unit 1	Guangxi	CPR1000	1,080	61%	659	Jul 2010	Jun 2015	Under construction
Fangchenggang Unit 2	Guangxi	CPR1000	1,080	61%	659	Dec 2010	Feb 2016	Under construction
Fangchenggang Unit 3	Guangxi	Hualong One	1,080	61%	659	Apr 2015	May 2019	Preparatory stage (not approved)
Fangchenggang Unit 4	Guangxi	Hualong One	1,080	61%	659	Jan 2016	Mar 2020	Preparatory stage (not approved)
Lufeng Unit 1	Guangdong	AP1000	1,250	100%	1,250	Jan 2016	Post-2020	Preparatory stage (not approved)
Lufeng Unit 2	Guangdong	AP1000	1,250	100%	1,250	Oct 2016	Post-2020	Preparatory stage (not approved)
Xianning Unit 1	Hubei	AP1000	1,250	60%	750	Jul 2016	Post-2020	Preparatory stage (not approved)
Xianning Unit 2	Hubei	AP1000	1,250	60%	750	Apr 2017	Post-2020	Preparatory stage (not approved)

Source: Deutsche Bank, CGNPC

Other risks

Expiration of preferential tax treatment

Daya Bay Nuclear has been in operation for more than 15 years and still enjoys a full VAT refund for all of its power sales to Guangdong Grid, which accounts for 30% of its generation. This preferential treatment expires at end-2014, and there is a risk that CGN may not receive an extension. If this is the case, CGN's 2015/16E earnings will be reduced by 0.9%/0.8% (currently we assumed a 50% rebate from 2015E). In addition, Daya Bay and Ling'ao are considered high-tech enterprises and therefore enjoy a three-year preferential tax rate of 15%. This rate was renewed in 2014 but might fail to be renewed upon its next expiration in 2017.

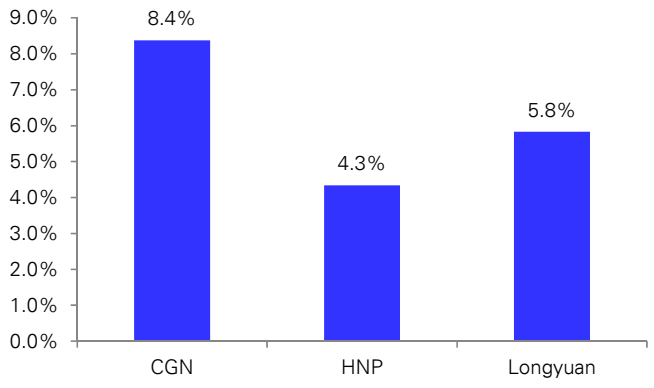
Daya Bay enjoys full VAT rebate for mainland power sales and 15% tax rate – both might expire

Labor cost hikes

Nuclear power has a lower portion of fuel costs within its operating costs. However, interestingly, it has the highest proportion of labor costs of revenue among all types of power generation. As shown in Figure 19, labor costs account for 8.4% of revenue for CGN vs. 4.3% for Huaneng and 5.8% for Longyuan. A 10% hike in labor costs will lead to a 3.4% earnings downside to CGN (2015E). With a considerable amount of nuclear capacity coming into operation in the next three years, a potential shortage of talent may push up labor costs.

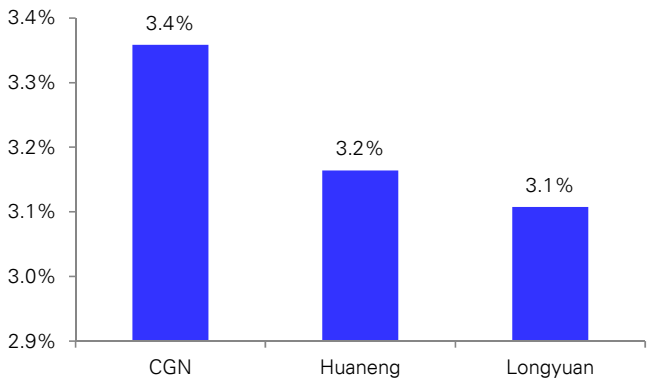
High sensitivity to labor cost increase -- a concern if skilled staff run short of the quickly ramping-up capacity

Figure 19: Labor cost as percentage of revenue (2013)



Source: Deutsche Bank, Company data

Figure 20: Earnings sensitivity to 10% labor cost change (2015E)



Source: Deutsche Bank estimates

Key operating assumptions

Commissioning schedule

Status check for the constructing GII+ units: on track

With the exception of Taishan, CGN's constructing units use a mature GII+ CPR1000/ACPR1000 technology, for which CGN has an established track record of construction time control. For Lingdong Units 1-2, Yangjiang Unit 1, and Ningde Units 1-2, construction took between 58 and 67 months, while Hongyanhe Units 1-2 took slightly longer (71-75 months) due to the winter break needed in the northeast region.

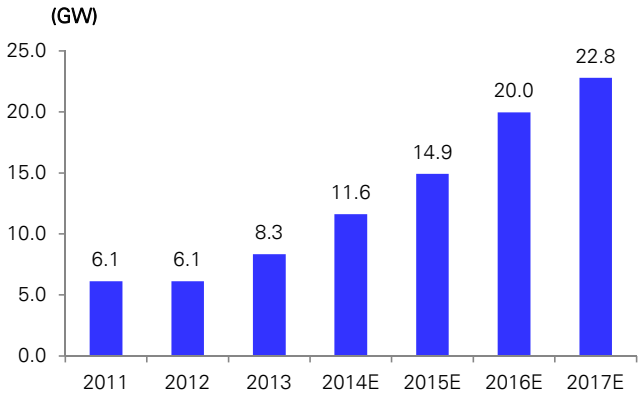
Except for Taishan, other CGN's projects look largely on track to be commissioned as scheduled

Attributable capacity growth: 20% CAGR in 2014-17E

Among the 13.3GW capacity under construction, we expect 11.2GW will be put into operation by end-2017, which will translate into a 20% CAGR in attributable capacity in 2014-17E. The capacity growth will mainly come from:

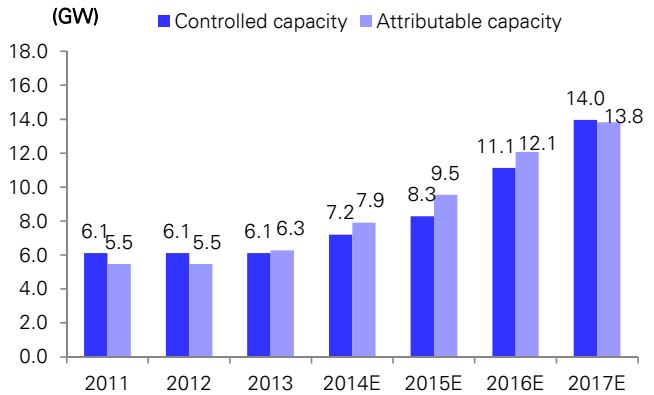
- **Yangjiang Nuclear** (subsidiary, 78.2% stake): While Unit 1 was successfully put into operation in March 2014, the remaining five units (5.4GW, 78.2% interest) are currently under construction. Based on our estimates, Units 2, 3, and 4 will be commissioned in July 2015, May 2016, December 2017, respectively, with a total of 3.2GW. Units 5-6, on the other hand, are likely to become operative in 2018-19.
- **Ningde Nuclear** (JV, 33.3% stake): Units 3 and 4 will be commissioned in July 2015 and October 2016, respectively, with a total of 2.2GW.
- **Hongyanhe Nuclear** (Associates, 38.2% stake): Units 3 and 4 will be commissioned in May 2015 and March 2016, respectively, with a total of 2.2GW.
- **Taishan Nuclear** (upon acquisition, subsidiary, 51% stake): Units 1 and 2 will be commissioned in July 2016 and July 2017, respectively, with a total of 3.5GW.

Figure 21: CGN – capacity growth, total (2011-17E)



Source: Company data, Deutsche Bank estimates

Figure 22: CGN – capacity growth, controlled and attributable (2011-17E)



Source: Company data, Deutsche Bank estimates

Figure 23: CGN – nuclear assets overview (in operation + under construction) post the acquisition of Taishan

Plant	Location	Technology	Size (MW)	Type	Stake	Attrib. (MW)	Status	Construction start	Operation (DBe)
Daya Bay Unit 1	Guangdong	M310	984	Consolidated	75.0%	738	In operation	Aug 1987	Feb 1994
Daya Bay Unit 2	Guangdong	M310	984	Consolidated	75.0%	738	In operation	Apr 1988	May 1994
Ling'ao Unit 1	Guangdong	M310	990	Consolidated	100.0%	990	In operation	May 1997	May 2002
Ling'ao Unit 2	Guangdong	M310	990	Consolidated	100.0%	990	In operation	Nov 1997	Jan 2003
Lingdong Unit 1	Guangdong	CPR1000	1,087	Consolidated	93.2%	1,013	In operation	Dec 2005	Sep 2010
Lingdong Unit 2	Guangdong	CPR1000	1,087	Consolidated	93.2%	1,013	In operation	Jun 2006	Aug 2011
Yangjiang Unit 1	Guangdong	CPR1000	1,086	Consolidated	78.2%	849	In operation	Dec 2008	Mar 2014
Yangjiang Unit 2	Guangdong	CPR1000	1,086	Consolidated	78.2%	849	In operation	Jun 2009	Jul 2015
Yangjiang Unit 3	Guangdong	CPR1000	1,086	Consolidated	78.2%	849	Under construction	Nov 2010	May 2016
Yangjiang Unit 4	Guangdong	CPR1000	1,086	Consolidated	78.2%	849	Under construction	Nov 2012	Dec 2017
Yangjiang Unit 5	Guangdong	ACPR1000	1,086	Consolidated	78.2%	849	Under construction	Sep 2013	Dec 2018
Yangjiang Unit 6	Guangdong	ACPR1000	1,086	Consolidated	78.2%	849	Under construction	Dec 2013	Jun 2019
Ningde Unit 1	Fujian	CPR1000	1,089	JV	33.3%	363	In operation	Feb 2008	Apr 2013
Ningde Unit 2	Fujian	CPR1000	1,089	JV	33.3%	363	In operation	Nov 2008	May 2014
Ningde Unit 3	Fujian	CPR1000	1,089	JV	33.3%	363	Under construction	Jan 2010	Jul 2015
Ningde Unit 4	Fujian	CPR1000	1,089	JV	33.3%	363	Under construction	Sep 2010	Oct 2016
Hongyanhe Unit 1	Liaoning	CPR1000	1,119	Associate	38.2%	427	In operation	Aug 2007	Jun 2013
Hongyanhe Unit 2	Liaoning	CPR1000	1,119	Associate	38.2%	427	In operation	Mar 2008	May 2014
Hongyanhe Unit 3	Liaoning	CPR1000	1,119	Associate	38.2%	427	Under construction	Mar 2009	May 2015
Hongyanhe Unit 4	Liaoning	CPR1000	1,119	Associate	38.2%	427	Under construction	Aug 2009	Mar 2016
Taishan Unit 1	Guangdong	EPR	1,750	Consolidated	51.0%	893	Under construction	Nov 2009	Jul 2016
Taishan Unit 2	Guangdong	EPR	1,750	Consolidated	51.0%	893	Under construction	Apr 2010	Jul 2017
Total			**24,970**			**15,520**			

Source: Company data, Deutsche Bank estimates

Tariff

In July 2013, China set a benchmark tariff of Rmb430/MWh for GII+ nuclear units coming into operation after January 2013, which is guided to stay relatively stable to encourage the healthy development of the industry. Among the 22 units to which CGN has exposure, 14 units apply or will likely apply the benchmark tariff with the exceptions of Daya Bay Units 1-2, Ling'ao Units 1-2 and Hongyanhe Units 1-4. For Taishan GIII project, we have assumed a tariff of Rmb510/MWh as discussed before.

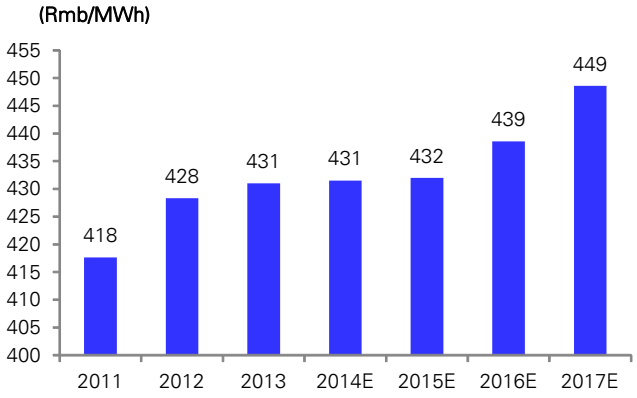
About half of CGN's units will apply benchmark nuclear tariff, with exceptions to Daya Bay, Ling'ao, Hongyanhe and likely Taishan

- **Daya Bay Nuclear**: its domestic sales to Guangdong Power Grid (c.30%) will apply an Rmb420/MWh tariff set under the "one plant, one price" tariff, as it started operation as early as 1994. For its power sales to Hong Kong, the tariff is negotiated based on a set of factors including the capacity factor, market condition, costs of generation, and exchange rates. Based on our calculation, the historical tariff ranges between Rmb430-441/kWh, which is slightly higher than the VAT-exempted tariff for domestic sales.
- **Ling'ao Nuclear**: commissioned during 2002-03, also applies the "one plant, one price" tariff set at Rmg429/MWh.
- **Hongyanhe Nuclear**: as Liaoning's coal-fired tariff is lower than the benchmark nuclear tariff, Hongyanhe Nuclear will apply the coal-fired

tariff at the time of commissioning. After the September 2014 coal-fired tariff cut, we expect a lower tariff to Rmb404/MWh for Units 3-4.

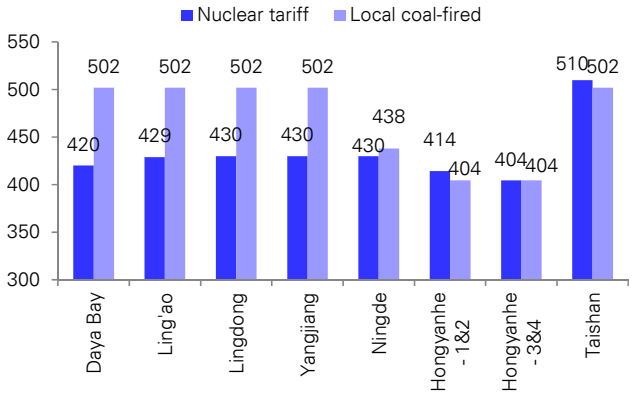
Overall, we expect the weighted average tariff of CGN (consolidated) will see a slight increase during 2015-17E contributed by the higher assumed tariff for Taishan Nuclear (Figure 24).

Figure 24: Weighted average on-grid tariff, including VAT (2011-17E)



Source: Deutsche Bank estimates, company data

Figure 25: Tariff by plant, including VAT (2011-17E)



Source: Company data, Deutsche Bank estimates

Utilization hours

We assumed a 83-85% capacity factor (or 7,300-7,500 hours of utilization) for most of CGN's operating units in 2015-17E by taking into consideration 1) the refueling cycle; 2) provincial power demand and supply; and 3) a safety buffer from unexpected equipment breakdown. For Hongyanhe Nuclear, our assumption is lower at 74.2% (or 6,500 hours) considering the more severe power oversupply issue in Liaoning Province. For Daya Bay, our assumption is higher at 88% (or 7,700 hours) considering it will supply 70-80% of power generation to Hong Kong.

Our capacity factor assumption ranges in 74-88%, with a company average (consolidated) of c.86% in 2015-17E

Refueling cycle

Refueling is a routine outage that occurs every 12 to 18 months depending on the specific plant. The process normally lasts for 30 days (c. 8% capacity loss on an annual basis), except in the second and tenth years of operation, when the process could be extended to 60-90 days (16-19% capacity loss). For example, the refueling outage sessions for Ningde Unit 1 and Hongyanhe Unit lasted for 91 days and 81 days, respectively, in their second year of operation.

- Daya Bay and Taishan Nuclear have a designed refueling cycle of 18 months. Note that the actual refueling interval could be different from the designed one based on operation arrangement.
- Ningde Nuclear, after the first reload 12 months after commissioning, could extend its refueling cycle to 18 months but the actual interval depends on the plant operation schedule.
- Other units all adopt a refueling cycle of 12 months.

Figure 26: Capacity factor (%) – plant breakdown (2011-17E)

Plant	2011	2012	2013	2014E	2015E	2016E	2017E
Daya Bay - 1	100.0	83.9	86.8	85.0	88.0	88.0	88.0
Daya Bay - 2	86.6	100.0	86.0	85.0	88.0	88.0	88.0
Ling'ao - 1	91.4	93.6	82.9	85.0	85.0	85.0	85.0
Ling'ao - 2	94.1	91.3	88.6	85.0	85.0	85.0	85.0
Lingdong - 1	72.1	88.5	90.1	85.0	85.0	85.0	85.0
Lingdong - 2	99.6	80.6	89.0	86.0	85.0	85.0	85.0
Yangjiang - 1				92.0	85.0	85.0	85.0
Yangjiang - 2				83.0	85.0	85.0	85.0
Yangjiang - 3					85.0	85.0	85.0
Yangjiang - 4					85.0	85.0	85.0
Yangjiang - 5					85.0	85.0	85.0
Yangjiang - 6					85.0	85.0	85.0
Ningde - 1			100.0	65.0	83.0	83.0	83.0
Ningde - 2				85.0	83.0	83.0	83.0
Ningde - 3					83.0	83.0	83.0
Ningde - 4					83.0	83.0	83.0
Hongyanhe - 1			99.9	74.2	74.2	74.2	74.2
Hongyanhe - 2				74.2	74.2	74.2	74.2
Hongyanhe - 3					74.2	74.2	74.2
Hongyanhe - 4					74.2	74.2	74.2
Taishan - 1					85.0	85.0	85.0
Taishan - 2					85.0	85.0	85.0
Consolidated	**89.4**	**89.5**	**87.3**	**86.0**	**85.8**	**85.6**	**85.5**

Source: Company data, Deutsche Bank

Figure 27: Net output (bn kWh) – plant breakdown (2011-17E)

Plant	2011	2012	2013	2014E	2015E	2016E	2017E
Daya Bay - 1	8.22	6.95	7.15	7.00	7.25	7.27	7.25
Daya Bay - 2	7.11	8.31	7.09	7.01	7.26	7.28	7.26
Ling'ao - 1	7.57	7.66	6.84	7.01	7.01	7.03	7.01
Ling'ao - 2	7.73	7.47	7.26	6.97	6.97	6.99	6.97
Lingdong - 1	6.33	7.72	7.94	7.49	7.49	7.51	7.49
Lingdong - 2	3.55	7.01	7.87	7.61	7.52	7.54	7.52
Yangjiang - 1				6.31	7.60	7.62	7.60
Yangjiang - 2				-	3.81	7.62	7.60
Yangjiang - 3				-	-	5.08	7.60
Yangjiang - 4				-	-	-	0.33
Yangjiang - 5				-	-	-	-
Yangjiang - 6				-	-	-	-
Ningde - 1			6.27	5.73	7.31	7.33	7.31
Ningde - 2				5.03	7.44	7.46	7.44
Ningde - 3				-	3.73	7.46	7.44
Ningde - 4				-	-	1.86	7.44
Hongyanhe - 1			4.98	6.49	6.49	6.51	6.49
Hongyanhe - 2				4.35	6.84	6.86	6.84
Hongyanhe - 3				-	4.57	6.86	6.84
Hongyanhe - 4				-	-	5.71	6.84
Taishan - 1				-	-	6.14	12.25
Taishan - 2				-	-	-	6.14
Consolidated	**40.52**	**45.11**	**44.16**	**49.40**	**54.91**	**70.08**	**85.02**

Source: Company data, Deutsche Bank

Fuel costs

Fuel costs account for 34% of CGN's COGS in 1H14 (Figure 28) and 13-16% of CGN's total revenue in 2011-1H14.

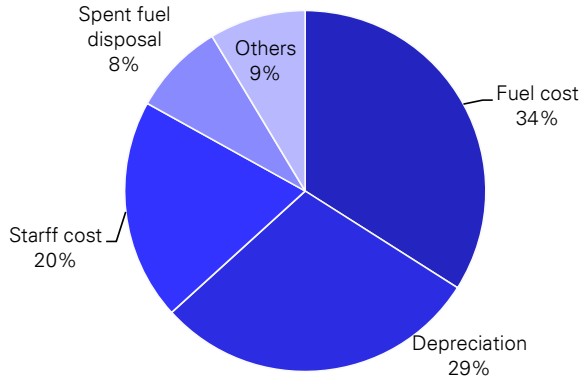
CGN procures most of its nuclear fuel via a 10-year contract from CGN Uranium, a subsidiary of CGNPC, with exceptions to only Daya Bay and Taishan.

Fuel cost will likely remain at c.15% of revenue considering the stable uranium price outlook and the long-term purchasing contract

- Daya Bay procures part of its enriched uranium from CNEIC (a subsidiary of CNNC, to expire in 2015) and nuclear fuel from overseas (contract period 2009-22).
- Taishan Nuclear will purchase the fuel assemblies for its first 15 deliveries of fuel directly from abroad under the agreement with Areva.
- However, CGN's management advised that despite using a different supplier, the cost is generally in line with the global long-term contract price, with limited differences.

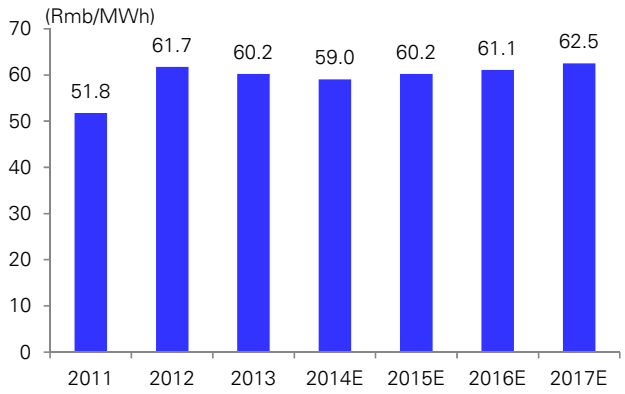
Given a relatively stable uranium contract price outlook, we assume fuel cost will continue to account for c.15% of CGN's total revenue in 2015-17E, with slight increase in unit fuel cost attributable to Taishan's overseas purchase.

Figure 28: CGN – cost breakdown (1H14)



Source: Company data, Deutsche Bank

Figure 29: Unit fuel cost trend



Source: Company data, Deutsche Bank estimates

Tax rate and VAT rebate

VAT rebate

Based on the VAT rebate policy, CGN's nuclear units are entitled to VAT refunds for the first 15 years of operation. The VAT refund rate is 75% for the first five years, 70% for the second five years, and 55% for the third five years.

Nuclear enjoys preferential treatment for VAT (first 15 years) and income tax (first 6 years)

Daya Bay Nuclear, though being in operation for over 15 years, enjoys a full VAT refund for all of its power sales to Guangdong Grid, which accounts for 30% of its generation. Although the preferential treatment will expire at the end of 2014, CGN is applying for an extension, though the actual refund rate is not clear yet. We assume a 50% refund from 2015E for its domestic sales, which will lower the effective refund rate of Daya Bay to 10% in 2015-17E from 30% earlier. The power sales to Hong Kong (c.80% of power generation) are exempt from VAT.

Preferential income tax rate

According to the State Administration of Taxation (SAT), nuclear power units will be exempted from 100% of corporate income tax in years 1-3 and from 50% in years 4-6 after operation commences. In addition, Daya Bay and Ling'ao are considered high-tech enterprises and enjoy a three-year preferential tax rate of 15%, which was renewed in 2014. However, we assume the preferential tax rate will expire from 2018 onwards, when the 25% statutory tax rate applies.

Figure 30: VAT rebate rate (2011-17E)

Plant	2011	2012	2013	2014E	2015E	2016E	2017E
Daya Bay - 1	30%	30%	30%	30%	10%	10%	10%
Daya Bay - 2	30%	30%	30%	30%	10%	10%	10%
Ling'ao - 1	70%	55%	55%	55%	55%	55%	0%
Ling'ao - 2	70%	70%	55%	55%	55%	55%	55%
Lingdong - 1	75%	75%	75%	75%	70%	70%	70%
Lingdong - 2	75%	75%	75%	75%	75%	70%	70%
Yangjiang - 1				75%	75%	75%	75%
Yangjiang - 2					75%	75%	75%
Yangjiang - 3						75%	75%
Yangjiang - 4							75%
Yangjiang - 5							
Yangjiang - 6							
Ningde - 1			75%	75%	75%	75%	75%
Ningde - 2				75%	75%	75%	75%
Ningde - 3					75%	75%	75%
Ningde - 4						75%	75%
Hongyanhe - 1			75%	75%	75%	75%	75%
Hongyanhe - 2				75%	75%	75%	75%
Hongyanhe - 3					75%	75%	75%
Hongyanhe - 4						75%	75%
Taishan - 1						75%	75%
Taishan - 2							75%

Source: Company data, Deutsche Bank

Figure 31: Income tax rate (2011-17E)

Plant	2011	2012	2013	2014E	2015E	2016E	2017E
Daya Bay - 1	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	25.0%
Daya Bay - 2	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	25.0%
Ling'ao - 1	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	25.0%
Ling'ao - 2	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	25.0%
Lingdong - 1	0.0%	0.0%	12.5%	12.5%	12.5%	25.0%	25.0%
Lingdong - 2	0.0%	0.0%	0.0%	12.5%	12.5%	12.5%	25.0%
Yangjiang - 1	-	-	-	0.0%	0.0%	0.0%	12.5%
Yangjiang - 2	-	-	-	-	0.0%	0.0%	0.0%
Yangjiang - 3	-	-	-	-	-	0.0%	0.0%
Yangjiang - 4	-	-	-	-	-	-	0.0%
Yangjiang - 5	-	-	-	-	-	-	-
Yangjiang - 6	-	-	-	-	-	-	-
Ningde - 1	-	-	0.0%	0.0%	0.0%	12.5%	12.5%
Ningde - 2	-	-	-	0.0%	0.0%	0.0%	12.5%
Ningde - 3	-	-	-	-	0.0%	0.0%	0.0%
Ningde - 4	-	-	-	-	-	0.0%	0.0%
Hongyanhe - 1	-	-	0.0%	0.0%	0.0%	12.5%	12.5%
Hongyanhe - 2	-	-	-	0.0%	0.0%	0.0%	12.5%
Hongyanhe - 3	-	-	-	-	0.0%	0.0%	0.0%
Hongyanhe - 4	-	-	-	-	-	0.0%	0.0%
Taishan - 1	-	-	-	-	-	0.0%	0.0%
Taishan - 2	-	-	-	-	-	-	0.0%

Source: Company data, Deutsche Bank

Nuclear provision

CGN's nuclear liabilities fall into three categories:

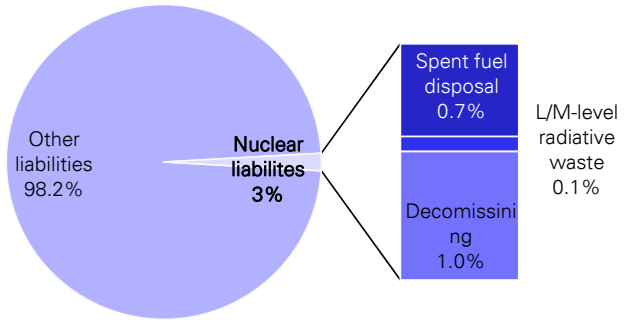
- Provision for **spent fuel disposal** (current liabilities): in accordance with the requirement of MoF/NDRC/MIIT, CGN contributes Rmb26/MWh to the Spent Fuel Fund based on actual on-grid sales volume for plants in commercial operation for five years or longer.
- Provision for **low- and medium-level radioactive waste** management (non-current liabilities): estimated by management (undiscounted). The amount is relatively small at Rmb11-14m p.a. during 2011-13.
- Provision for **decommissioning** (non-current liabilities): CGN makes decommissioning provisions based on 10% of the book value of the fixed assets upon the completion of the nuclear power station, and discounted to its present value. Currently, it uses the PBOC benchmark lending rate for five-year and above (6.55% before the November rate cut) as its discount rate, subject to changes in the benchmark lending rate and inflation.

As most of CGN's units are still at an early stage of operation, its nuclear provision represents a relatively insignificant proportion to its total liabilities at 3% as of 1H14. By type, provision for decommissioning, low-to-medium radioactive waste and spent fuel accounts for 1.0%, 0.1% and 0.7% of its total liabilities, respectively.

Nuclear provision represents a relatively small portion of CGN's total liability as most units are newly operative

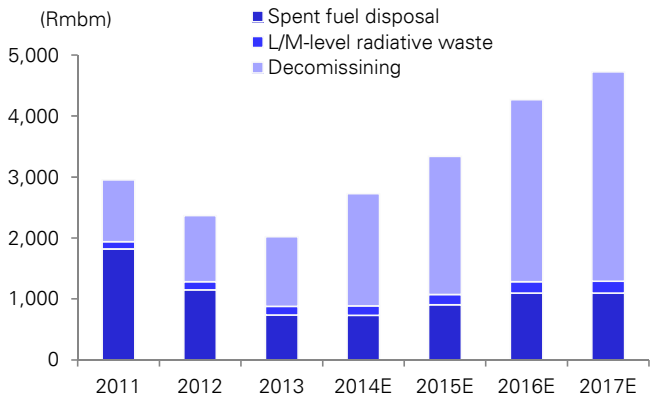
In 2015-17E, we expect its decommissioning provision to steadily grow at 23% CAGR as a result of: 1) addition from new units; and 2) incremental from a lower discount rate due to the cut in benchmark lending rate.

Figure 32: Nuclear liabilities overview (1H14)



Source: Company data, Deutsche Bank

Figure 33: Nuclear liabilities overview (2011-17E)



Source: Company data, Deutsche Bank estimates

Financial outlook

Revenue and earnings outlook

21% revenue CAGR during 2014-17E

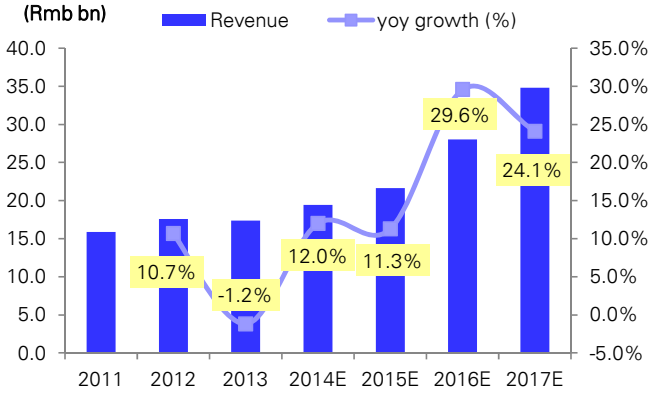
Compared to 2011-14E, when CGN's revenue growth is moderate at 7% CAGR, we expect CGN's revenue growth will pick up to 21% CAGR during 2014-17E. This will be driven by the 25% growth in installed capacity (controlled) with the sequential commissioning of its constructing units (Yangjiang Nuclear Units 2-4 and Taishan Nuclear Units 1-2).

Stable margin trend

Meanwhile, both EBITDA and EBIT margin should stay relatively stable at 52-53% and 39-40%, respectively, during 2015-17E given: 1) its high fixed costs nature; 2) our assumption of limited fluctuation in capacity factors; and 3) the fuel cost remaining largely fixed by the long-term purchasing contract.

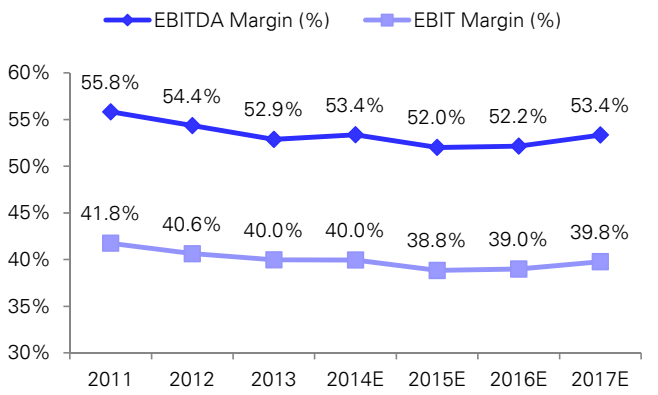
The slight increase in 2016-17E is attributable to the newly operative units, which are free from spent fuel disposal costs in their initial five years.

Figure 34: Revenue and yoy growth



Source: company data, Deutsche Bank estimates

Figure 35: Margin trend



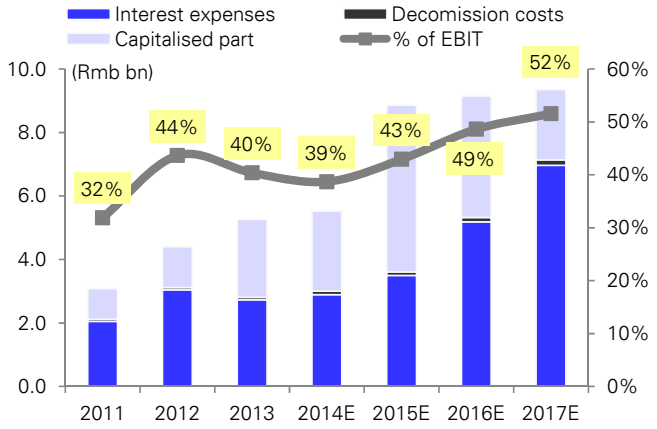
Source: company data, Deutsche Bank estimates

Interest expense to hike upon Taishan's operation

On the other hand, finance costs will see a major hike after the consolidation of Taishan, which has total borrowing of Rmb39.5bn as of 1H14 (55% of CGN's total borrowing). With gradually reduced capitalized interests upon the start-up of new units, we estimate finance costs will grow to c.Rmb7.0bn by 2017E (52% of EBIT), almost 2.5x of the amount in 2013 (40% of EBIT). Note that decommission costs are also reported under the interest expense line, though in the next few years the proportion will remain small (<3% of total finance costs).

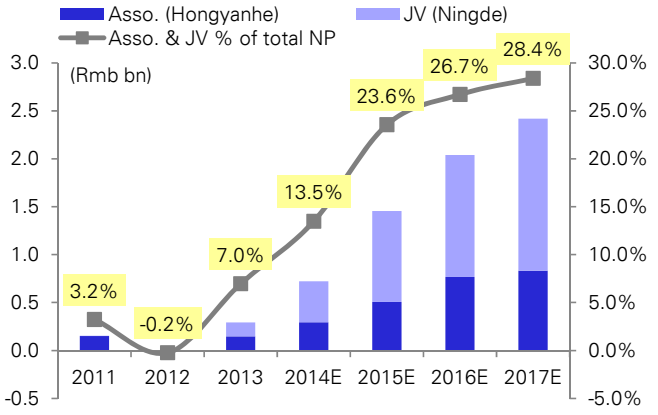
In addition to the 40bps cut in benchmark lending rate announced in November 2014, we have factored in the impact of another two rounds of 25bps cuts in 2Q15 and 3Q15 (assume effective loan re-pricing from the next year beginning), respectively, as forecasted by our economists.

Figure 36: Interest expense breakdown and % of EBIT



Source: company data, Deutsche Bank estimates

Figure 37: Associate and JV contribution



Source: company data, Deutsche Bank estimates

Increasing contribution from JV and associates

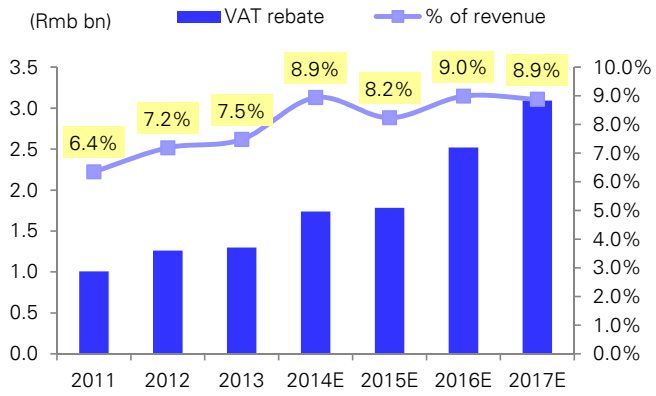
CGN's JV contribution will mainly come from Ningde Nuclear, while associates will come mainly from Hongyanhe Nuclear. As we expect Ningde 3-4 and Hongyanhe 3-4 to be commissioned by 2016, the total contribution from JV and associates will reach 28.4% by 2017E. Compared with Ningde (18.6%), the contribution from Hongyanhe will be less (9.8%) mainly due to its lower tariff and lower utilization hours.

Evolution of VAT rebate and effective tax rate

New projects enjoy both a higher percentage of VAT rebate and lower income tax rate. We expect a steady increase of VAT rebate to Rmb3.0bn in 2017E from Rmb1.3bn in 2013, representing c.9% of total revenue. In 2015E, the VAT rebate/revenue ratio will marginally decrease as the 100% rebate for Daya Bay's power sales to Guangdong will expire, and we assume a lower rebate rate of 50% from 2015E.

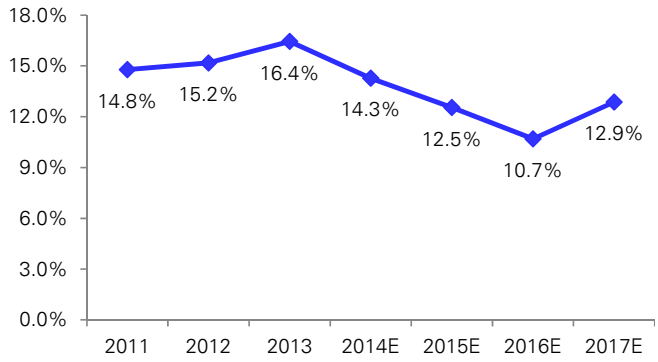
Similarly, the effective tax rate will keep falling during 2014-16E, before a slight rebound in 2017E due to 1) our assumption that Daya Bay's tax rate will return to 25% after the 15% preferential tax rate for high-tech enterprise expires in 2016E; and 2) the higher tax rate for Lingdong 2 and Yangjiang 1 as they enter the next stage of preferential tax treatment, which incurs a higher tax rate.

Figure 38: VAT rebate and % of revenue



Source: company data, Deutsche Bank estimates

Figure 39: Effective tax rate

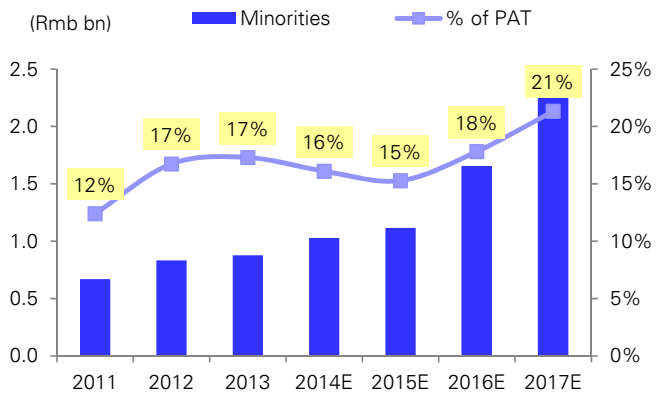


Source: company data, Deutsche Bank estimates

Minorities to increase upon Taishan's operation

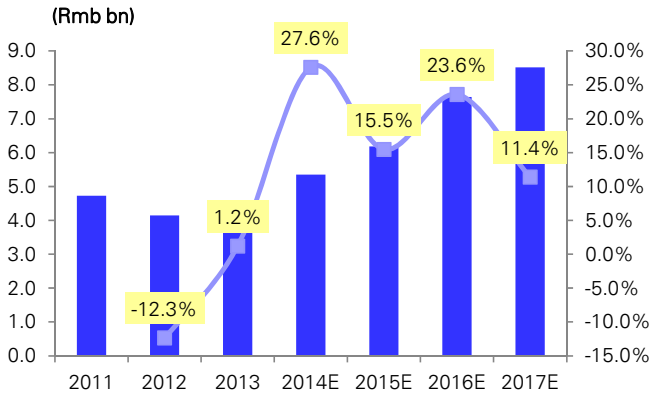
As CGN will hold a 51% stake of Taishan, the minority ratio will increase gradually in 2016-17E when Units 1-2 are commissioned, though this will be partly offset by the increasing contribution of Yangjiang (78.2% owned).

Figure 40: Minorities and % of PAT



Source: company data, Deutsche Bank estimates

Figure 41: Net profit and yoy growth

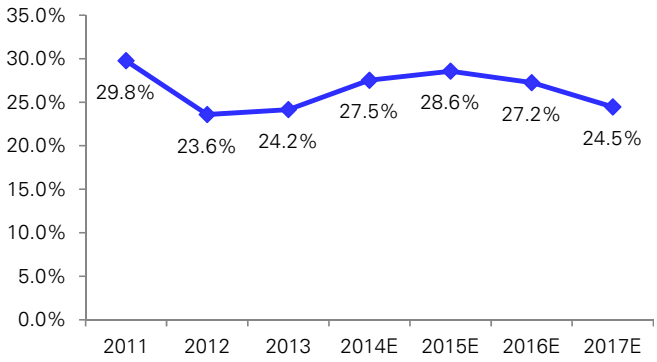


Source: company data, Deutsche Bank estimates

17% CAGR in net profit 2014-17E; margin contraction

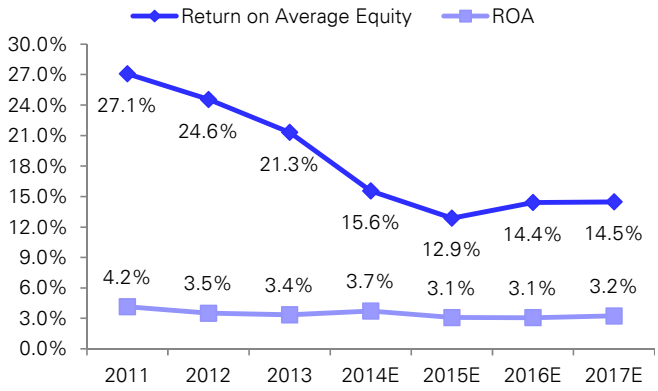
Overall, we expect CGN to deliver 17% earnings CAGR during 2014-17E, driven by the pipeline capacity. Nevertheless, net margins will slightly decrease due to the lower profitability of Taishan, as we assume the tariff is not sufficient to allow it to earn a comparable return to Dayabay and Lingao given significantly higher investment. ROE should normalize to the mid-teens upon completion of the IPO.

Figure 42: Net margin trend



Source: company data, Deutsche Bank estimates

Figure 43: ROE and ROA trend



Source: company data, Deutsche Bank estimates

Sensitivity analysis

We performed a sensitivity analysis for the major operating metrics and highlight a few factors to which CGN has higher sensitivity (Figure 44):

- **Capacity factor:** a 1% decrease in capacity factor (or 88-hour decrease in utilization) would reduce CGN's 2015E/2016E/2017E earnings by 3.3%/3.4%/3.4%, respectively.
- **Interest rate:** a 25bps higher effective interest rate should lead to a 1.9%/2.5%/2.8% decrease in 2015E/2016E/2017E earnings, respectively, on a full-year basis.
- **Start-up delay:** we expect three units to be commissioned in FY15 including Yangjiang Unit 3, Ningde Unit 3 (JV), and Hongyanhe Unit 3 (associate). A three-month delay for these units should result in a 3.7%/1.5%/0.7% decrease, respectively, in CGN's FY15E earnings.
- **Capex overspend:** CGN's 2016E/2017E earnings should decline by 0.8%/3.2% if Taishan Nuclear incurs 10% more investment.
- **Fuel cost:** a 5% increase in fuel cost should result in a 2.7%/2.8%/3.2% decrease in 2015E/2016E/2017E earnings, respectively.
- **Labor cost:** a 5% increase in labor cost should lead to 1.8% earnings decline for each year.

Figure 44: FY15E/16E earnings sensitivity

Earnings sensitivity	FY15E	FY16E	FY17E
Capacity factor (1% decrease)	-3.3%	-3.4%	-3.4%
Effective interest rate (25bps higher)	-1.9%	-2.5%	-2.8%
Capex overspend (10% for Taishan)	-	-2.6%	
Commissioning delay (3M for Yangjiang)	-3.7%	-	
Commissioning delay (3M for Ningde)	-1.5%	-	
Commissioning delay (3M for Hongyanhe)	-0.7%	-	
Rmb25/MWh change for Taishan Nuclear	-	-0.8%	-3.2%
VAT rebate expiration for Daya Bay Nuclear	-0.9%	-0.8%	-0.7%
5% increase in fuel cost	-2.7%	-2.8%	-3.2%
5% increase in labor cost	-1.8%	-1.8%	-1.8%

Source: Deutsche Bank estimates

Balance sheet and cash flow analysis

Capital expenditure to peak in 2015E

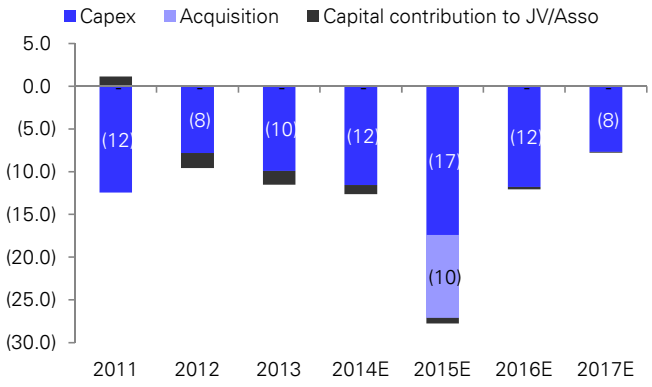
CGN has outlined a detailed capital expenditure plan for each of its constructing units (Figure 45). Based on the plan, capex will peak in 2015E with the highest number of units under construction at the time, in addition to the Rmb9.7bn reserved for Taishan's acquisition.

Figure 45: Capex breakdown by project

(Rmbm)	Total capex	Incurred up to 1H14	% capex spent	2H14E	2015E
Yangjiang - 1	12,814	12,173	95%	-	641
Yangjiang - 2	12,814	10,621	89%	755	797
Yangjiang - 3	13,064	9,933	85%	1,151	829
Yangjiang - 4	13,064	6,893	64%	1,490	1,735
Yangjiang - 5	13,539	4,072	40%	1,280	2,843
Yangjiang - 6	13,539	2,219	24%	1,079	2,285
Ningde - 1	13,275	13,275	100%	-	-
Ningde - 2	13,275	12,612	97%	266	398
Ningde - 3	13,275	11,080	89%	711	1,153
Ningde - 4	13,275	8,725	77%	1,469	1,447
Hongyanhe - 1	13,635	13,635	100%	-	-
Hongyanhe - 2	13,635	13,635	100%	-	-
Hongyanhe - 3	13,635	12,471	95%	500	300
Hongyanhe - 4	13,635	11,223	90%	1,000	800
Taishan - 1	36,590	31,804	93%	2,086	2,457
Taishan - 2	36,590	26,021	78%	2,434	5,647

Source: company data, Deutsche Bank

Figure 46: Overall capex trend



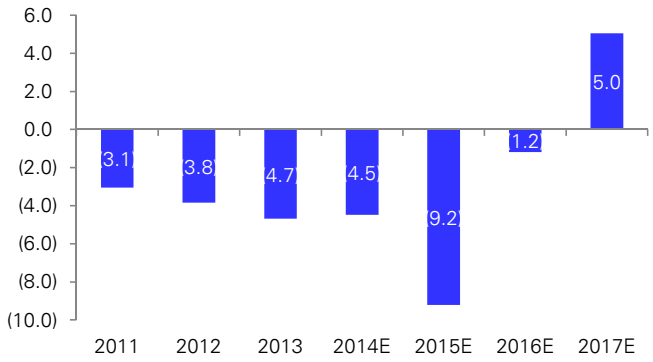
Source: company data, Deutsche Bank estimates

Free cash flow to turn positive from 2017E; net gearing

Due to the substantial capex requirement, FCF will remain negative in 2015-16E, before turning positive from 2017E under a higher operating/constructing capacity mix. We believe 2016-17E will be a good time for CGN to acquire Fangchenggang Nuclear from parentco because the project is planned to start operation by 2016 and because of the improving cash flow trend. We note that we have not deducted the acquisition capex from our FCF calculation.

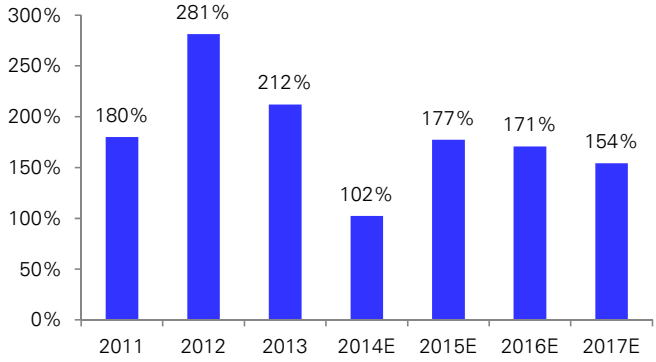
Meanwhile, despite the visible drop in net gearing ratio to 102% upon IPO, it will quickly rebound to 177% in 2015E due to the debt brought along by Taishan acquisition.

Figure 47: FCF trend



Source: company data, Deutsche Bank estimates

Figure 48: Net gearing trend



Source: company data, Deutsche Bank estimates

1H14 results recap

In 1H14, CGN's reported net profit slightly declined by 3% yoy despite a 19% increase in revenue mainly due to:

- 25% decline in other income, which we believe is more of a timing issue, as over 90% of VAT refund was recognized in 1H13
- Losses attributable from associates and JV due to low capacity factor of Ningde Unit 1 (19.6%) and Hongyanhe Unit 1 (54.0%) in 1H14 due to outage repair. However, we expect a turnaround in full-year 2014 as both the units will resume normal operation in 2H, in addition to the extra contribution from Ningde Unit 2 and Hongyanhe Unit 2, both of which started operation in May 2014.
- Non-recurring items including: 1) loss from fair value change in derivatives and 2) other gains and losses, mainly foreign exchange losses and disposal gain/losses. Recurring net profit would be up 5% yoy if we exclude the impact from these two lines.

Figure 49: 1H14 results overview

Financials	1H13	1H14	yoy %	Deutsche Bank comments
Total revenue	**8,171**	**9,754**	**19%**	Driven by 19% increase in net output
Tax surcharges	(103)	(121)	17%	
Cost of sales	**(3,991)**	**(4,496)**	**13%**	
Fuel cost	(1,236)	(1,350)	9%	Unit fuel cost (per kWh) declined by 8% yoy
Depreciation	(1,004)	(1,189)	18%	
Staff cost	(734)	(931)	27%	
Operating maintenance fee	(523)	(382)	-27%	
Spent fuel disposal	(358)	(395)	10%	Growth is lower than net generation growth as newly operative units (within five years) are exempted from the charge
Others	(138)	(249)	81%	Costs related to services/equipment sales and R&D
Gross profit	**4,076**	**5,137**	**26%**	
Other income	1,317	989	-25%	Mainly VAT refund; In 2013, >90% proportion is recognized in 1H
Fair value chg. of derivatives	(48)	(109)	127%	Currency/interest rate forward/swap contracts
Selling expense	(2)	(2)	-24%	
Other expenses	(83)	(38)	-54%	
Administrative expenses	(446)	(584)	31%	
Other gains and losses	161	(57)	-136%	Foreign exchange losses and one-off disposals
Share of results from associates	23	(39)	-272%	Low capacity factor for Hongyanhe-1 (54.0%) on fuel re-load
Share of results from JV	95	(155)	-263%	Low capacity factor for Ningde -1 (19.6%) due to fuel-reload and additional overhaul
Finance costs	(1,414)	(1,515)	7%	
PBT	**3,679**	**3,626**	**-1%**	
Tax	(532)	(537)	1%	
PAT	3,147	3,090	-2%	
Minority interest	(495)	(518)	1%	
Net profit	**2,653**	**2,572**	**-3%**	Recurring earnings is up by 5% yoy to Rmb2.7bn

Source: Company data, Deutsche Bank

Operating metrics and key financials

Figure 50: CGN – operating metrics (2011-20E)

Operating metrics	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Operating capacity, controlled (year-end, MW)	**6,122**	**6,122**	**6,122**	**7,208**	**8,294**	**11,130**	**13,966**	**15,052**	**16,138**	**16,138**
yoy growth (%)		0.0%	0.0%	17.7%	15.1%	34.2%	25.5%	7.8%	7.2%	0.0%
yoy growth (MW)		0	0	1,086	1,086	2,836	2,836	1,086	1,086	0
Operating capacity, attributable (year-end, MW)	**5,482**	**5,482**	**6,272**	**7,910**	**9,549**	**12,080**	**13,822**	**14,671**	**15,520**	**15,520**
yoy growth (%)		0.0%	14.4%	26.1%	20.7%	26.5%	14.4%	6.1%	5.8%	0.0%
yoy growth (MW)		0	789	1,639	1,639	2,531	1,742	849	849	0
Operating capacity, total (year-end, MW)	**6,122**	**6,122**	**8,330**	**11,624**	**14,918**	**19,962**	**22,798**	**23,884**	**24,970**	**24,970**
yoy growth (%)		0.0%	36.1%	39.5%	28.3%	33.8%	14.2%	4.8%	4.5%	0.0%
yoy growth (MW)		0	2,208	3,294	3,294	5,044	2,836	1,086	1,086	0
Constructing capacity, controlled (year-end, MW)	3,258	4,344	6,516	5,430	7,844	5,008	2,172	1,086	0	0
Constructing capacity, attributable (year-end, MW)	7,490	8,340	9,249	7,610	5,971	3,440	1,699	849	0	0
Constructing capacity, total (year-end, MW)	15,590	16,676	16,640	13,346	10,052	5,008	2,172	1,086	0	0
Operating units (controlled)	6	6	6	7	8	10	12	13	14	14
Operating units (total)	6	6	8	11	14	18	20	21	22	22
Market share, controlled	49%	49%	42%	38%	29%	28%	32%	32%	32%	30%
Market share, total	49%	49%	57%	61%	52%	51%	52%	50%	49%	46%
Net generation (m MWh)	**40,519**	**45,113**	**44,157**	**49,402**	**54,909**	**70,083**	**85,024**	**99,024**	**110,436**	**113,913**
yoy growth (%)		11.3%	-2.1%	11.9%	11.1%	27.6%	21.3%	16.5%	11.5%	3.1%
Average on-grid tariff (incl. VAT)	**418**	**428**	**431**	**431**	**432**	**439**	**449**	**451**	**448**	**448**
yoy growth (%)		2.6%	0.6%	0.1%	0.1%	1.5%	2.3%	0.5%	-0.5%	-0.1%
Average capacity factor	90.6	89.6	87.2	86.0	85.8	85.6	85.5	85.4	85.4	85.4
Average utilization hours	**7,773**	**7,750**	**7,586**	**7,533**	**7,513**	**7,519**	**7,489**	**7,483**	**7,479**	**7,499**

Source: Company data, Deutsche Bank estimates

Figure 51: CGN – key ratios (2011-20E)

Key Company Metrics	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Growth										
Sales growth (%)		10.7%	-1.2%	12.0%	11.3%	29.6%	24.1%	17.1%	10.9%	3.0%
Net earnings growth (%)		-12.3%	1.2%	27.6%	15.5%	23.6%	11.4%	18.7%	10.7%	3.8%
DB EPS growth (%)		-41.4%	-11.8%	25.8%	-27.9%	23.6%	11.4%	18.7%	10.7%	3.8%
EBITDA growth (%)		7.8%	-3.9%	13.1%	8.4%	29.9%	26.9%	18.3%	10.3%	2.4%
Margin										
EBITDA Margin (%)	55.8%	54.4%	52.9%	53.4%	52.0%	52.2%	53.4%	53.9%	53.6%	53.3%
EBIT Margin (%)	41.8%	40.6%	40.0%	40.0%	38.8%	39.0%	39.8%	40.3%	40.2%	40.0%
Net Margin (%)	29.8%	23.6%	24.2%	27.5%	28.6%	27.2%	24.5%	24.8%	24.8%	25.0%
Return										
Return on Average Equity	27.1%	24.6%	21.3%	15.6%	12.9%	14.4%	14.5%	15.4%	15.3%	14.4%
ROA	4.2%	3.5%	3.4%	3.7%	3.1%	3.1%	3.2%	3.7%	4.0%	4.1%
ROIC	7.5%	5.4%	4.4%	5.0%	3.1%	3.6%	3.9%	4.5%	5.0%	5.2%
Capitlization										
Payout ratio (%)	0.0%	0.0%	0.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
Capex/sales (%)	78.3%	44.4%	57.2%	59.4%	80.4%	42.0%	22.1%	12.9%	6.0%	3.5%
Capex/depreciation (x)	4.7	2.9	4.0	4.4	6.1	3.2	1.6	0.9	0.4	0.3
EBITDA / Interest	4.2	3.1	3.3	3.5	3.1	2.8	2.6	2.8	2.9	3.1
Net Gearing %	180.0%	281.4%	212.0%	102.2%	177.5%	170.8%	154.3%	131.5%	107.3%	85.7%
Debt to Asset	79.3%	80.2%	75.2%	65.3%	69.6%	68.6%	67.1%	64.0%	60.9%	56.8%
Working capital										
Inventory days		300	324	321	315	297	307	318	326	336
Receivable days		36	36	32	33	30	31	32	33	34
Payable days		47	51	61	73	71	70	68	67	70

Source: Company data, Deutsche Bank estimates

Figure 52: CGN – income statement (2011-17E)

Income Statement (Rmb million)	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019	2020
Operating Revenue, Net	**15,881**	**17,575**	**17,365**	**19,448**	**21,642**	**28,043**	**34,798**	**40,736**	**45,183**	**46,552**
Power sales	14,972	16,514	16,268	18,219	20,274	26,271	32,599	38,162	42,328	43,610
Services	755	796	843	945	1,051	1,362	1,690	1,979	2,194	2,261
Others	154	265	254	284	316	410	509	595	660	680
Tax surcharges	(221)	(250)	(255)	(286)	(318)	(412)	(512)	(599)	(664)	(685)
Operating Expenses	**(9,259)**	**(10,292)**	**(10,343)**	**(11,611)**	**(13,162)**	**(17,012)**	**(20,836)**	**(24,169)**	**(26,854)**	**(27,791)**
Fuel cost	(2,099)	(2,785)	(2,658)	(2,915)	(3,305)	(4,282)	(5,314)	(6,220)	(6,899)	(7,109)
Depreciation	(2,234)	(2,413)	(2,240)	(2,612)	(2,854)	(3,695)	(4,725)	(5,537)	(6,054)	(6,213)
Staff cost	(1,260)	(1,311)	(1,455)	(1,735)	(1,992)	(2,619)	(3,191)	(3,720)	(4,152)	(4,271)
Operating maintenance fee	(1,050)	(1,118)	(1,204)	(1,258)	(1,444)	(1,898)	(2,313)	(2,697)	(3,010)	(3,097)
Spent fuel disposal	(797)	(790)	(732)	(728)	(935)	(1,134)	(1,131)	(1,131)	(1,329)	(1,530)
Others	(777)	(849)	(849)	(973)	(1,082)	(1,403)	(1,741)	(2,038)	(2,260)	(2,328)
SG & A	(1,042)	(1,027)	(1,207)	(1,390)	(1,549)	(1,982)	(2,422)	(2,826)	(3,150)	(3,242)
Profit from Operations	**6,631**	**7,141**	**6,942**	**7,770**	**8,404**	**10,933**	**13,841**	**16,427**	**18,172**	**18,600**
Operating margin	41.8%	40.6%	40.0%	40.0%	38.8%	39.0%	39.8%	40.3%	40.2%	40.0%
Fair value chg. of derivatives	(8)	42	157	0	0	0	0	0	0	0
Finance costs	(2,114)	(3,118)	(2,804)	(3,006)	(3,609)	(5,318)	(7,136)	(7,809)	(8,408)	(8,066)
Non-operating income, gain & losses	1,671	1,812	1,482	1,956	2,091	2,751	3,293	3,753	4,330	4,459
VAT rebate	1,009	1,263	1,299	1,739	1,783	2,521	3,090	3,561	4,116	4,182
Others	662	549	183	217	308	230	203	192	214	277
Share of results from associates	151	(5)	149	295	508	767	832	820	788	771
Share of results from JV	2	(4)	144	427	948	1,274	1,585	1,540	1,461	1,418
Profit Before Tax	**6,332**	**5,867**	**6,070**	**7,442**	**8,342**	**10,407**	**12,415**	**14,730**	**16,344**	**17,182**
Tax	(936)	(890)	(998)	(1,062)	(1,047)	(1,112)	(1,597)	(1,734)	(1,947)	(2,240)
Effective tax rate	14.8%	15.2%	16.4%	14.3%	12.5%	10.7%	12.9%	11.8%	11.9%	13.0%
Profit Before Minority Interest	**5,396**	**4,977**	**5,071**	**6,379**	**7,296**	**9,295**	**10,818**	**12,996**	**14,398**	**14,942**
Minority interest	(669)	(833)	(877)	(1,027)	(1,114)	(1,655)	(2,307)	(2,896)	(3,212)	(3,326)
Net Profit	**4,727**	**4,144**	**4,195**	**5,352**	**6,181**	**7,640**	**8,511**	**10,100**	**11,185**	**11,616**
Net profit margin	30%	23.6%	24.2%	27.5%	28.6%	27.2%	24.5%	24.8%	24.8%	25.0%
Recurring net profit	**4,392**	**3,902**	**4,213**	**5,352**	**6,181**	**7,640**	**8,511**	**10,100**	**11,185**	**11,616**
growth yoy %		-11.2%	8.0%	27.1%	15.5%	23.6%	11.4%	18.7%	10.7%	3.8%
EPS (Rmb)	0.29	0.17	0.15	0.19	0.14	0.17	0.19	0.22	0.25	0.26
growth yoy %	NM	-41.4%	-11.8%	25.8%	-27.9%	23.6%	11.4%	18.7%	10.7%	3.8%
DPS (Rmb)	-	-	-	0.06	0.04	0.06	0.06	0.07	0.08	0.08
growth yoy %	NM	NM	NM	NM	-28%	24%	11%	19%	11%	4%
Dividend payout ratio	0%	0.0%	0.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%

Source: Company data, Deutsche Bank estimates

Figure 53: CGN – balance sheet (2011-20E)

Balance Sheet (Rmb million)	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Non-current assets	**87,421**	**95,167**	**105,914**	**119,797**	**212,377**	**227,201**	**235,165**	**238,648**	**237,980**	**235,570**
Property, plant and equipment	70,068	79,185	87,042	99,129	188,859	201,377	206,851	207,974	205,055	200,456
Intangible assets	511	629	765	765	714	714	714	714	714	714
Interests in associates	11,211	5,872	6,730	7,599	8,496	9,347	10,253	11,073	11,861	12,632
Interests in JV	2,769	3,325	4,364	5,290	6,514	7,969	9,554	11,094	12,556	13,974
Available-for-sale investment	110	2,090	2,475	2,475	0	0	0	0	0	0
Deferred tax assets	74	84	98	98	98	98	98	98	98	98
VAT recoverable	1,369	2,141	2,385	2,385	4,716	4,716	4,716	4,716	4,716	4,716
Prepaid lease payments	548	1,068	1,007	1,007	1,799	1,799	1,799	1,799	1,799	1,799
Deposits for PPE	451	449	682	682	780	780	780	780	780	780
Others	309	325	368	368	402	402	402	402	402	402
Current Assets	**26,287**	**27,096**	**21,761**	**39,903**	**28,451**	**28,384**	**34,540**	**35,621**	**43,109**	**44,829**
Inventories	7,531	7,514	8,384	9,197	10,430	13,510	16,764	19,625	21,767	22,426
Trade/bill receivables	1,659	1,837	1,629	1,825	2,031	2,631	3,265	3,822	4,240	4,368
Prepayment & other receivables	988	1,175	1,143	1,280	1,428	1,846	2,290	2,681	2,974	3,064
Amounts due from related parties	3,084	8,009	286	286	464	464	464	464	464	464
Cash and cash equivalents	10,453	5,434	6,640	23,637	10,390	6,225	8,049	5,321	9,956	10,798
Other deposits over 3 months	1,894	2,300	2,760	2,760	2,760	2,760	2,760	2,760	2,760	2,760
Other current assets	677	827	918	918	948	948	948	948	948	948
Total assets	**113,708**	**122,263**	**127,675**	**159,700**	**240,828**	**255,585**	**269,706**	**274,270**	**281,088**	**280,399**
Shareholders' equity	**17,452**	**16,304**	**23,052**	**45,787**	**50,202**	**55,802**	**61,792**	**69,084**	**76,936**	**84,861**
Share capital	15,709	18,280	19,768	45,449	45,449	45,449	45,449	45,449	45,449	45,449
Reserves	1,743	(1,976)	3,284	339	4,754	10,354	16,344	23,635	31,488	39,412
Minorities interests	**6,091**	**7,845**	**8,640**	**9,667**	**22,914**	**24,569**	**26,876**	**29,772**	**32,984**	**36,310**
Non-current liabilities	**49,619**	**58,226**	**69,521**	**76,298**	**133,599**	**140,600**	**139,852**	**130,757**	**123,942**	**111,346**
Bank borrowings	30,044	37,861	48,722	54,741	109,590	115,845	114,630	109,172	101,975	89,126
Bond payables	8,500	8,500	8,500	8,500	8,500	8,500	8,500	4,500	4,500	4,500
Payables to ultimate holding co.	5,530	5,530	5,530	5,530	5,530	5,530	5,530	5,530	5,530	5,530
Loans from subsidiary/ultimate holding co.	3,168	3,441	3,500	3,500	4,704	4,704	4,704	4,704	4,704	4,704
Provision	1,135	1,217	1,286	2,044	2,497	3,243	3,710	4,073	4,455	4,708
Other liabilities	1,242	1,677	1,983	1,983	2,178	2,178	2,178	2,178	2,178	2,178
Current liabilities	**40,546**	**39,887**	**26,462**	**27,948**	**34,112**	**34,614**	**41,186**	**44,656**	**47,225**	**47,882**
Trade/Bills payables	8,398	11,183	10,350	11,353	13,463	16,677	20,695	24,226	26,870	27,685
Amounts due to related parties	18,831	3,687	1,825	1,825	1,907	1,907	1,907	1,907	1,907	1,907
Loans from ultimate holding and fellow companies	8,079	20,880	10,697	10,697	11,447	10,697	10,697	10,697	10,697	10,697
Taxes payables	273	175	356	356	356	356	356	356	356	356
Provisions	1,820	1,153	737	733	940	1,139	1,136	1,136	1,334	1,535
Bank borrowings due in one year	3,046	2,709	2,401	2,888	5,908	3,746	6,304	6,243	5,970	5,610
Derivative financial instruments	98	100	96	96	96	96	96	96	96	96
Total shareholder equity and liabilities	**113,708**	**122,263**	**127,675**	**159,700**	**240,828**	**255,585**	**269,706**	**274,270**	**281,088**	**280,399**

Source: Company data, Deutsche Bank estimates

Figure 54: CGN – cash flow statement (2011-20E)

Cash Flow (Rmb million)	2011	2012	2013	2014E	2015E	2016E	2017E	2018E	2019E	2020E
PBT	**6,332**	**5,867**	**6,070**	**7,442**	**8,342**	**10,407**	**12,415**	**14,730**	**16,344**	**17,182**
Provisions for nuclear power operation	811	798	746	742	949	1,148	1,145	1,145	1,343	1,544
Depreciation & Amortization	2,633	2,704	2,490	2,612	2,854	3,695	4,725	5,537	6,054	6,213
Net interst expenses	1,946	2,946	2,642	2,828	3,340	5,128	6,972	7,657	8,233	7,829
Share of results of JV/associates	(153)	9	(292)	(722)	(1,456)	(2,041)	(2,417)	(2,360)	(2,249)	(2,190)
Loss (gain) on disposal of PPE/investments	64	(408)	39	0	0	0	0	0	0	0
Other adjustments	(272)	9	(452)	0	0	0	0	0	0	0
Net changes in working capital	39	(2,540)	(1,168)	(874)	(790)	(1,234)	(1,449)	(1,408)	(1,339)	(1,392)
Taxes paid	(1,182)	(726)	(580)	(1,062)	(1,047)	(1,112)	(1,597)	(1,734)	(1,947)	(2,240)
Total Operating Cashflow	**10,218**	**8,660**	**9,493**	**10,966**	**12,193**	**15,991**	**19,794**	**23,566**	**26,439**	**26,946**
Purchase of PP&E	**(12,436)**	**(7,805)**	**(9,932)**	**(11,546)**	**(17,409)**	**(11,785)**	**(7,698)**	**(5,247)**	**(2,705)**	**(1,614)**
Dividends received	27	0	22	0	0	0	0	0	0	0
Interest received	168	172	162	178	269	190	163	153	175	237
Proceeds from disposal of PPE	308	31	9	0	0	0	0	0	0	0
Capital Contribution to JV/associate	1,111	(1,754)	(1,604)	(1,074)	(665)	(265)	(74)	0	0	0
Others	(997)	(5,623)	6,862	0	1,112	0	0	0	0	0
Total Investment Cashflow	**(11,818)**	**(14,979)**	**(4,482)**	**(12,442)**	**(26,393)**	**(11,860)**	**(7,609)**	**(5,094)**	**(2,530)**	**(1,376)**
Capital injections	7,510	2,823	1,832	21,558	0	0	0	0	0	0
Proceeds from bank borrowings	20,485	10,739	13,548	9,723	13,358	6,678	8,331	3,875	1,756	850
Loans from related parties	27,835	27,424	18,336	0	0	0	0	0	0	0
Repayments of loans	(12,240)	(3,259)	(2,996)	(3,217)	(1,901)	(2,584)	(6,988)	(13,393)	(9,226)	(14,059)
Interest/dividend paid	(5,799)	(14,172)	(6,834)	(9,590)	(10,505)	(11,054)	(11,704)	(11,682)	(11,803)	(11,519)
Others	(32,099)	(22,254)	(27,823)	0	0	0	0	0	0	0
Total Financing Cashflow	**5,692**	**1,301**	**(3,937)**	**18,474**	**952**	**(8,295)**	**(10,361)**	**(21,200)**	**(19,273)**	**(24,728)**
FX changes	165	(0)	131	0	0	0	0	0	0	0
Beginning cash and cash equivalent	6,195	10,453	5,434	6,640	23,637	10,390	6,225	8,049	5,321	9,956
Net cash increase/(decrease) for the year	4,092	(5,018)	1,075	16,997	(13,248)	(4,165)	1,824	(2,728)	4,635	842
Ending cash and cash equivalent	10,453	5,434	6,640	23,637	10,390	6,225	8,049	5,321	9,956	10,798

Source: Company data, Deutsche Bank estimates

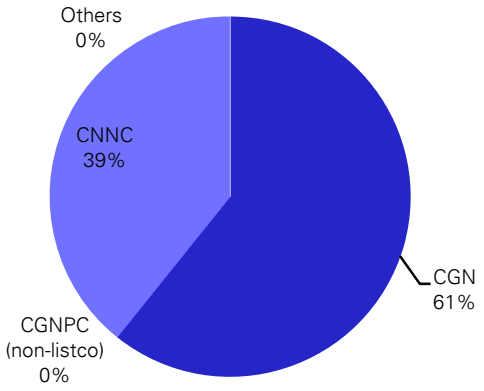
Company background

Company overview

A nuclear pure-play with dominant market share in China

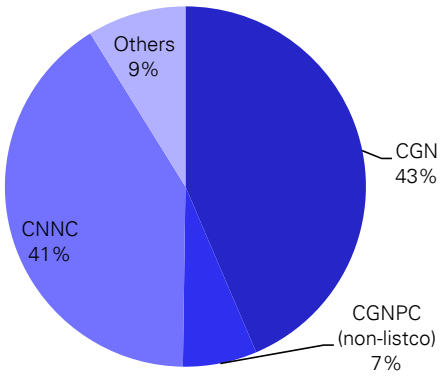
CGN operated and managed 11 nuclear generating units in Guangdong, Fujian and Liaoning provinces as of June 2014. It has a total (assuming 100% in Associates/JCE) and attributable capacity of 11.6GW and 8.1GW, respectively, which accounts for 61% and 45% of China's total operating nuclear capacity, making it the dominant nuclear play in China. In addition, CGN has a strong pipeline capacity of 13.3GW under construction (total), which accounts for 43% of China's total.

Figure 55: CGN's market share in China by total capacity in operation (end-2014)



Source: Company data, Deutsche Bank;

Figure 56: CGN's market share in China by total capacity under construction (end-2014)



Source: Company data, Deutsche Bank; CGNPC non-listco capacity is Fangchenggang Nuclear;

Company history

China General Nuclear Power Corporation (CGNPC), formerly known as China Guangdong Nuclear Power Corporation Limited, was founded in 1994 to lead the centralized construction and operation of nuclear power stations in Guangdong.

On 25 March 2014, CGN Power was established by CGNPC, Hengjian Investment (an SOE owned by Guangdong Provincial Government), and CNNC with an 85.1%, 10.0% and 4.9% interest split. Upon the Hong Kong listing, CGNPC will remain the controlling shareholder with a 66.8% stake.

Figure 57: Key company milestones

Year	Key events
1979	China and Hong Kong decided to establish a JV to build and operate Daya Bay Nuclear Power Station (Daya Bay Nuclear), which is located close to Hong Kong.
1982	Construction of Daya Bay Nuclear was approved by the State Council on 13 December 1982.
1985	Guangdong Nuclear Power Joint Venture Vo., Ltd. (GNPJVC) Was established jointly by GNIC (a wholly-owned subsidiary of CGN) and HKNIC with 75%:25% stake split on 26 January 1985.
1987	First concrete date (FCD) of Daya Bay Nuclear Power Station was 7 August 1987. Its two nuclear units started commercial operation on 1 February and 6 May 1994, respectively, and was the first large commercial nuclear power station in China.
1994	On 5 February 1994, State Council decided to establish China Guangdong Nuclear Power Corporation Limited (now known as China General Nuclear Power Corporation, CGNPC), which will be responsible for the centralized construction and operation of nuclear power stations in Guangdong. CGNPC was established on 29 September 1994.
1997	Ling'ao Nuclear Power Station (Ling'ao Nuclear) commenced construction in May 1997. Its two nuclear power generating units began commercial operation on 28 May 2002 and 8 January 2003, which were 48 days and 66 days ahead of schedule.
2003	Daya Bay Nuclear Power Operations and Management (DNMC) was established on 12 March 2003 by GNIC and CLP Nuclear Power Operations & Management with a 87.5%:12.5% interest split. DNMC is the first specialized nuclear power operating company in China and is in charge of operations and management for six GW-level nuclear power generating units including Daya Bay Nuclear, Ling'ao Nuclear, and Lingdong Nuclear.
2005	Lingdong Nuclear Power Station (Lingdong Nuclear) commenced construction in December 2005. Its two units began operation on 20 September 20 2010 and 7 August 2011, respectively.
2009	On 29 September 2009, GNIC and HKNIC entered the contract to extend the Joint Venture term of Daya Bay Nuclear Power Station for another 20 years to 5 May 2034.
2013	Construction of Yangjiang Nuclear Unit 6 commenced on 23 December 2013 and became the largest nuclear power site by total capacity in China.
2014	CGN Power Co. Ltd. was incorporated in PRC on 26 March 2014.

Source: Company data, Deutsche Bank

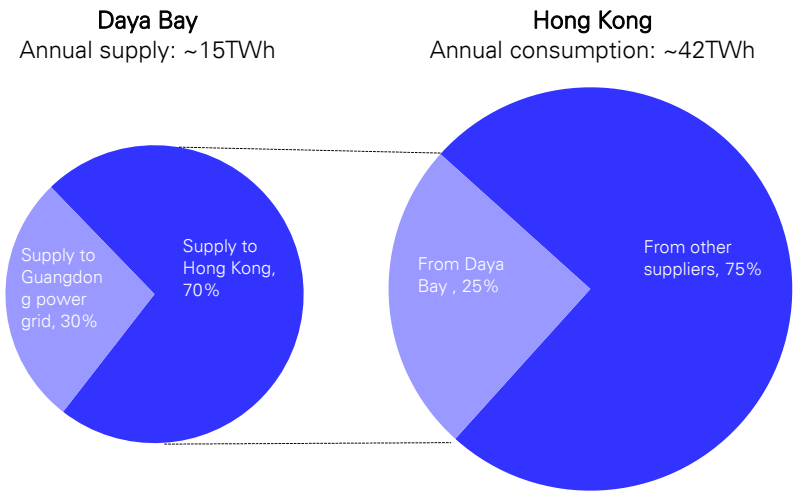
A key power supplier to Hong Kong

According to the agreement signed between GNIC and HKNIC on 19 January 1985, Daya Bay agrees to sell 70% electricity generated to Hong Kong while the remaining 30% will be sold to Guangdong power grid. As of 30 April 2014, Daya Bay has transmitted a total of 192.7bn kWh power to Hong Kong.

On 31 December 2013, GNPJVC, GNIC, and HKNIC reached another agreement that Daya Bay will send additional 10% power to Hong Kong in 4Q14. While the original supply term expired on 6 May, 2014, on 29 September 2009 GNIC and HKNIC extended the term to 6 May 2034.

Daya Bay will supply c.80% of power generation to Hong Kong during 2015-2034

Figure 58: Daya Bay sells 70% of its generation to Hong Kong



Source: Company data, Deutsche Bank

Demonstrated operating performance and safety record

CGN has achieved outstanding operating performances historically as compared to global peers, winning competitive scores from both WANO and EDF. According to World Association of Nuclear Operators (WANO), in 2013, for CGN's six nuclear units at the Daya Bay base, 36 out of the 54 of the WANO's performance indicators (67%) ranked in the top quartile (or at an "advanced" level) and 28 out of the 54 (52%) ranked in the top decile (or at an "excellent" level). In 2013, the average capacity factor (one of the major WANO indicators) of CGN's six nuclear units in the Daya Bay base was 87.2%, compared to WANO's reported global average of 83.4% for PWR nuclear power generating units in operation.

During 1999-1H14, CGN's nuclear units at Daya Bay Nuclear and Ling'ao Nuclear received a total of 31 first prizes in a number of categories at EDF safety challenge contests, competing with more than 60 similar generating units from countries including France, China, Germany and South Africa.

As of 30 June 2014, Daya Bay Unit 1 had recorded 4,203 consecutive days of safe operations without unplanned reactor shutdowns, the longest among nuclear power generating units in China.

Besides, CGN has not recorded any incidents at or above level 2 on the INES (i.e., incidents involving significant failure in safety provisions but with sufficient defense-in-depth to cope with additional failures) up to November 2014.

Introduction to CGNPC

As of June 2014, CGNPC had total assets of Rmb344.6bn, with substantial power assets in both nuclear and non-nuclear clean energy (9.7GW in wind/hydro/solar). CGNPC is also engaged in uranium-related business, finance-related services, the application of nuclear technology, general services (e.g., landscaping and transportation), and investment holding businesses. As of November 2014, CGNPC's interest in other listco includes:

- **CGN Meiya Power** (1811.HK, non-rated, 72.29% equity interest), which is primarily engaged in gas-fired, coal-fired, oil-fired, hydro, co-gen and fuel cell power generation projects, as well as a steam project in China and Korea. The company may acquire CGNPC's wind and solar projects in China in coming years.

- **CGN Mining** (1164.HK, non-rated, 50.11% equity interest), which is primarily engaged in selling, distributing, and manufacturing pharmaceutical and food products, property investment and trading of natural uranium.

- **Energy Metals** (EME.AX, non-rated, 66.45% equity interest), which is primarily engaged in Australian uranium exploration with a portfolio of mid- and high-advanced projects located in the Northern Territory and Western Australia.

SWOT analysis

Figure 59: CGN – SWOT analysis

Strengths	Weakness
• Dominant market share (61% by total capacity, end-2014E) • High entry barrier: one of only three licensed nuclear operators in China • Outstanding track record in the construction and operation of GII/II+ units • Strong parentco back-up	• Inexperienced in the construction/operation in GIII units, leading to potential start-up delay, capex overrun, and low capacity factor • Profitability highly dependent on policy changes (VAT refund, preferential tax rate, tariff setting) • Highly geared; substantial capex requirement, and negative FCF
Opportunities	**Threats**
• Parentco asset injection of Fangchenggang Units 1-2 • Project approval for Hongyanhe Units 5-6 • Long-term opportunity in acquiring CGNPC's nuclear project investment overseas • Parent asset injection of other nuclear projects such as Lufeng and Wuhu once approved or in operation	• Failing to start up GIII units due to construction difficulties • Shifting from base-load to peak shaving due to power oversupply • Plant breakdown or prolonged overhaul due to the likely shortfall in experienced staff and rapid increase in localization rate • Tariff cut/discount as a result of power sector reform (rolling out of DPS) or regional profit-sharing mechanism • Higher decommission provision requirement set by government vs. current company practice • Significant single business risk in case of any industry-wide events (nuclear incident, policy changes, etc.)

Source: Deutsche Bank

Use of proceeds and shareholding structure

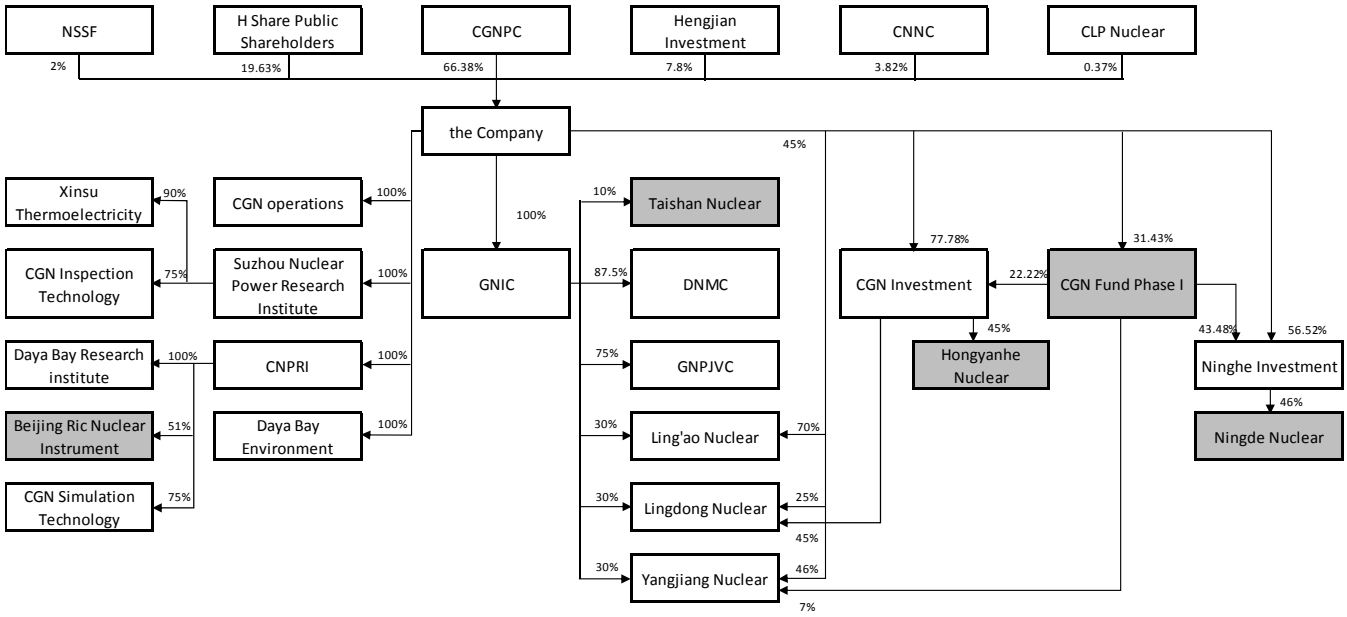
After the green-shoe implementation, CGR received total IPO proceeds of HK$27,389m (Rmb21,558m). Under the assumption of a HK$22,456m net proceeds, the company plans to use 54.6% of the proceeds to acquired additional 41% equity interest (10% currently) in Taishan Nuclear; 27.5% of the proceeds will be used for nuclear power station related capital expenditures, such as the construction of Yangjiang and Ningde Nuclear Power Station; 17.9% of the net proceeds will be used for research and development, repayment of corporation bonds, and oversea business expansion, among other activities. The additional amount will be used to supplement the capex requirement for nuclear projects under construction.

Figure 60: Use of IPO proceeds assuming net proceeds of HK$22.5bn

Proceeds (HK$m)	% of total	Use of Proceeds
12,252	54.6%	Acquire an additional 41% equity interest in Taishan Nuclear.
6,175	27.5%	Capital investments in the under-construction nuclear power stations, including under-construction nuclear power generating units at Yangjiang Nuclear Power Station and Ningde Nuclear Power Station.
1,123	5.0%	R&D activities to promote the development and commercial use of nuclear power technology.
1,684	7.5%	Repay a portion of the corporate bond.
1,221	5.4%	Expand business into overseas markets. No specific targets for overseas expansion have been identified yet.

Source: Deutsche Bank, Company data;

Figure 61: Shareholding structure upon IPO listing



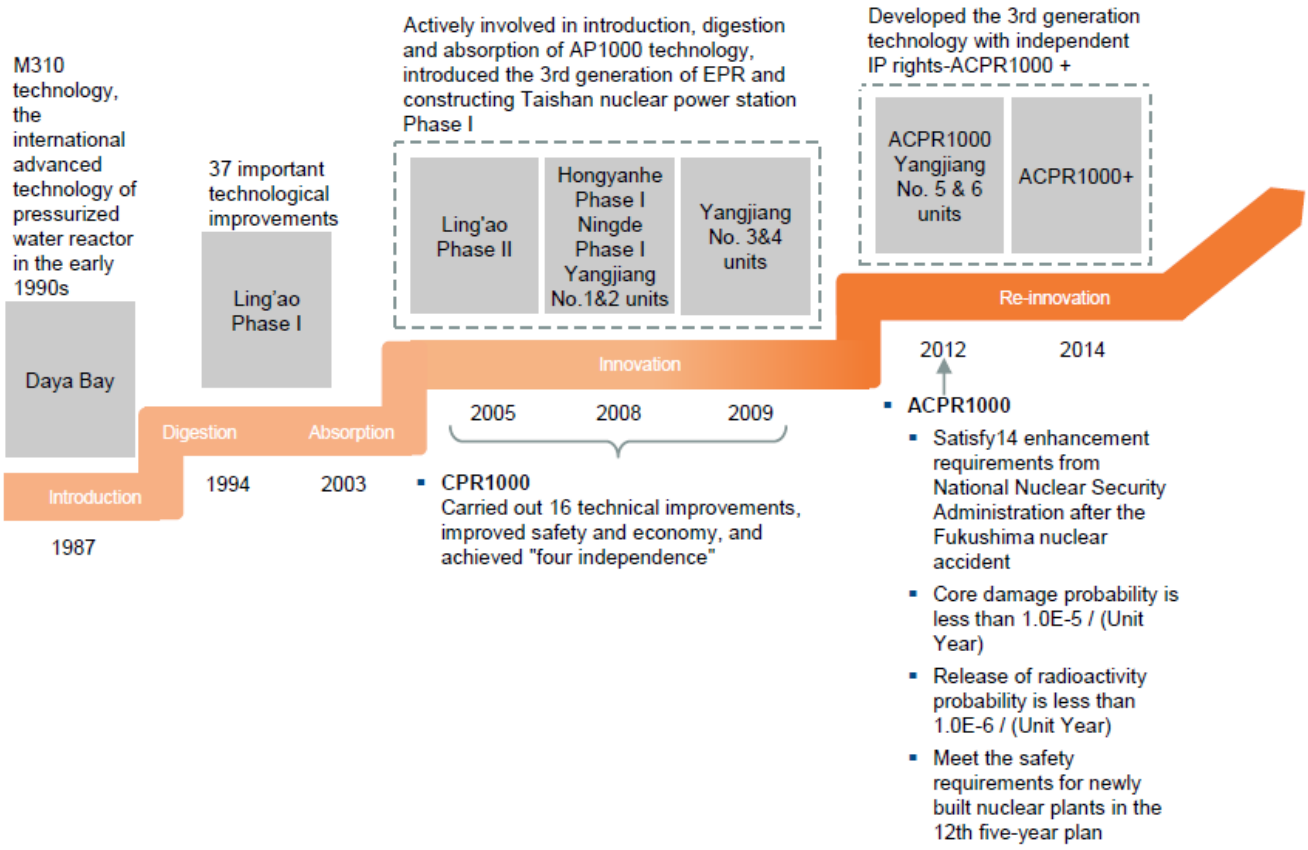
Source: Company Data, Deutsche Bank

Figure 62: Management profile

Name	Age	Position	Experience & Qualifications
Mr. Zhang Shanming	50	Chairman of the Board, Non-Executive Director, President of CGNPC	• Appointed Chairman and non-executive Director 24 March 2014 • More than 30 years of experience in nuclear power industry • Joined GNPJVC in August 1984 • Served as the chief economist, senior vice president and president at CGNPC since 2003 • Doctor of economics in finance from Wuhan University in June 2012 • Training experience on operations management and safety supervision in EDF in France and in GE from April 1989 to December 1990 • Professorship-level senior engineer by CGNPC in December 2001
Mr. Gao Ligang	49	Executive Director and President of CGNPC	• More than 26 years of experience in the nuclear power industry. • Joined GNPJVC in March 1988 • Chairman of the board of directors of Taishan Nuclear since December 2007 • Master of engineering in power system and automation from North China Institute of Electric Power in January 1988 • Professorship-level senior engineer by CGNPC in December 2001
Mr. Zhang Weiqing	59	Non-Executive Director, Vice Chairman of the Board of Directors at CGNPC	• More than 13 years of experience in the nuclear power industry • Joined CGNPC in May 2001 • Worked as deputy director of the general office, board secretary, assistant general manager, senior vice president of CGNPC from November 2001 to March 2014 • Bachelor of engineering in computer hardware from University of National Defense Technologies in March 1982 • Accredited as a senior engineer in December 1994
Mr. Yue Linkang	58	Chief Financial Officer	• Appointed as CFO 24 March 2014 • Joined GNPJVC in December 1991 • Served as deputy CFO, CFO and chief economist from January 2003 to May 2014 • Master of engineering in industrial management from Tsinghua University • Accredited as senior economist and senior account and the third Assessment Committee of Senior Accountant Qualification
Mr. Shi Bing	47	Non-Executive Director, Senior Vice President, Chief Financial Officer.	• Appointed as non-executive director 24 March 2014 • More than 18 years of experience in finance, accounting, auditing, and management of large nuclear power enterprises • Joined CGNPC in April 1996 • Served as deputy CFO, senior vice president, senior vice president and CFO since January 2008 to now • Master of economics in accounting from Central university of Finance and Economics • Accredited as a senior accountant in December 2003
Mr. Li Yourong	50	Chairman of the Supervisory Committee, Head of Disciplinary Inspection group of CGNPC	• Appointed as supervisor 24 March, 2014 • Joined CGNPC in March 2013 • Served as chairman of the trade union of CGNPC from August 2013 to June 2014 and served as the director representing ordinary employees from April 2014 to June 2014 • Doctor of economics in industrial economics from Renmin University of China

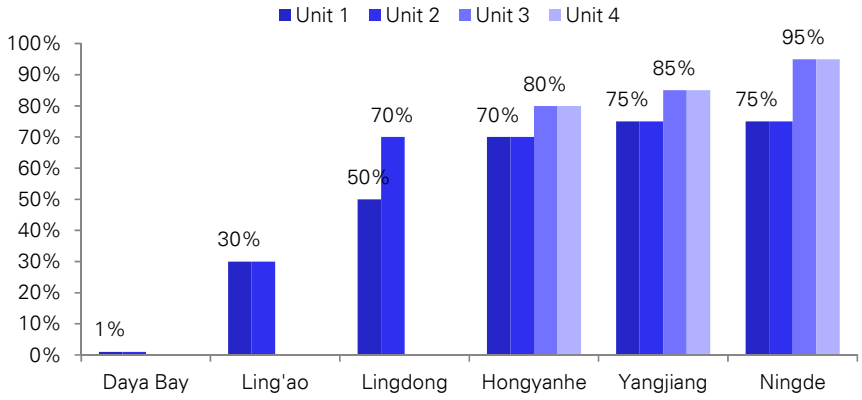
Source: Deutsche Bank, Company Data;

Figure 63: CGN – technology evolution



Source: Company data, Deutsche Bank

Figure 64: CGN – progressive localization rate for its nuclear units



Source: WNA, company data, Deutsche Bank

Appendix A: comparison with CNNC

Introduction to CNNC

China National Nuclear Corporation (CNNC Group), a central SOE, is founded in 1999 as the successor of the Ministry of Nuclear Industry. It is one of the only three licensed nuclear developers in China, along with CGNPC and CPI Group. CNNC covers a full range of nuclear business including R&D, engineering design, uranium exploration and mining, enrichment, fuel fabrication, reprocessing and waste disposal. As of end-2013, CNNC has total assets of Rmb330bn and shareholder equity of Rmb61.8bn. In 2013, its net profit amounts to Rmb3.2bn.

CNNC takes 39% of market share in China by installed nuclear capacity as of end-2014

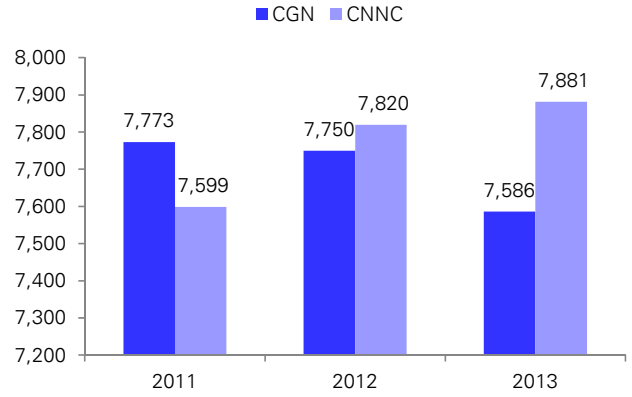
In December 2011, as part of the restructuring plan for listing, China National Nuclear Power Co., Ltd. (CNNC) was established jointly by CNNC Group (97%), China Three Gorges Corporation (1%), China Ocean Shipping Group Company (COSCO, 1%), and Aerospace Capital (1%). CNNC will be responsible for the development, investment, construction, operation, and management of nuclear projects owned by CNNC Group. It has 12 nuclear power project companies including Qinshan I, Qinshan II, Qinshan III, Jiangsu Nuclear, Sanmen Nuclear, Fuqing Nuclear, Hainan Nuclear, Liaoning Nuclear, Sanming Nuclear, Taohuajiang Nuclear, Henan Nuclear and Zhangzhou Nuclear. As of end-2014, CNNC has controlled nuclear capacity of 7.5GW, representing 39% of China's total operating capacity. It also has another 11.5GW under construction.

Comparison in key metrics

Below we compare the key operating/financial metrics of the two listco in 2011-13. Generally, CGN demonstrated better operating efficiency by achieving better net margin, higher ROE with a lower gearing.

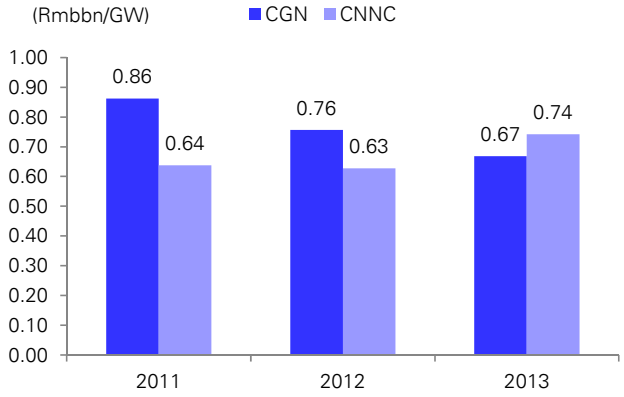
- **Similar utilization hours**: both companies achieved high utilization hours of above 7,500 hours during 2011-13, with slight fluctuations from refueling cycles.
- **CGN has higher profit margin**: as CNNC has a high minority proportion, we have compared the after-tax profit margin to avoid distortion. During 2011-2013, CGN's profit margin is higher at 20-23% vs. the 16-20% achieved by CNNC. By unit, profitability (net profit/year-end attributable capacity), CGN also achieved higher level at Rmb760-860m/GW, though the figure is slightly lower in 2013 due to partial contribution from Ningde Unit 1 and Yangjiang Unit 1.
- **CGN has higher ROA and ROE:** CGN also recorded better ROA at 4.1-4.7% in 2011-13 (CNNC: 2.9-3.0%). Note we have adjusted the calculation by using post-tax profit instead of net profit. Besides, ROE is much higher at 21-27% (CNNC: 13-15%).
- **CGN has lower net gearing** at 180-281% (CNNC: 316-382%).

Figure 65: Utilization hours



Source: Company data, Deutsche Bank

Figure 66: Net profit/MW (attributable capacity)



Source: Company data, Deutsche Bank

Figure 67: Financial comparison – CGN vs. CNNC (2011-13)

	CGN 2011	CGN 2012	CGN 2013	CNNC 2011	CNNC 2012	CNNC 2013	Comment
Operating Metrics							
Controlled capacity (year-end, MW)	**6,122**	**6,122**	**6,122**	**6,506**	**6,506**	**6,506**	Similar controlled capacity, but CGN has higher attributable capacity with 2013 increase contributed by Ningde
yoy growth (%)		0%	0%		0%	0%	
Attributable capacity (year-end, MW)	**5,482**	**5,482**	**6,272**	**3,336**	**3,336**	**3,336**	
yoy growth (%)		0%	14%		0%	0%	
Net generation (m MWh)	**40,519**	**45,113**	**44,157**	**41,679**	**47,012**	**47,968**	
yoy growth (%)		11%	-2%		13%	2%	
Average on-grid tariff (excl. VAT)	**357**	**366**	**368**	**372**	**372**	**378**	
yoy growth (%)		3%	1%		0%	2%	
Average utilization hours	**7,773**	**7,750**	**7,586**	**7,599**	**7,820**	**7,881**	
Financials							
Operating revenue	**15,881**	**17,575**	**17,365**	**15,617**	**17,750**	**18,081**	
Fuel cost	(2,099)	(2,785)	(2,658)	(2,914)	(3,284)	(3,534)	
Depreciation	(2,234)	(2,413)	(2,240)	(1,979)	(2,102)	(2,102)	CGN's tax rebate is lower as Daya Bay only have rebate on its mainland sales (c.30%)
Waste disposal	(796)	(789)	(736)	(507)	(699)	(930)	
SG&A	(812)	(918)	(1,031)	(1,073)	(1,151)	(1,043)	
Finance costs	(2,114)	(3,118)	(2,804)	(1,154)	(2,551)	(1,993)	
VAT rebate	1,009	1,263	1,299	1,692	1,810	1,933	
Share of results from associates/JV	2	(4)	144	-	-	-	
PBT	**4,357**	**4,607**	**4,355**	**5,434**	**5,243**	**6,092**	
Tax	(936)	(890)	(998)	(1,025)	(688)	(969)	Similar effective tax rate at c.15% under preferential policy; CNNC has higher minority %
Effective tax rate	*14.8%*	*15.2%*	*16.4%*	*18.9%*	*13.1%*	*15.9%*	
Minorities	(669)	(833)	(877)	(2,283)	(2,462)	(2,646)	
Minority %	*15.4%*	*18.1%*	*20.1%*	*42.0%*	*47.0%*	*43.4%*	
Net Profit	**4,727**	**4,147**	**4,195**	**2,126**	**2,094**	**2,477**	
Profitability							We have adjusted the net margin and ROA calculation using profit after tax given the difference in minority %
Net Margin (%, adjusted)	23.2%	21.5%	20.0%	20.2%	15.7%	19.1%	
Net profit / attributable capacity (Rmb m/MW)	0.86	0.76	0.67	0.64	0.63	0.74	
Return on Average Equity	27.1%	24.6%	21.3%	15.3%	13.0%	12.9%	
ROA (adjusted)	4.7%	4.2%	4.1%	3.0%	2.9%	2.9%	
Cashflow and leverage							
Operating cashflow (net int. exp.)	8,273	5,714	6,852	10,393	11,428	9,329	CGN has better cashflow and lower gearning
Capex	(12,436)	(12,436)	(12,436)	(26,915)	(22,742)	(23,704)	
Free cashflow	(4,164)	(6,722)	(5,585)	(17,676)	(13,865)	(16,368)	
Net Gearing %	180%	281%	212%	382%	323%	316%	

Source: Deutsche Bank, company data

Appendix 1

Important Disclosures

Additional information available upon request

Disclosure checklist

Company	Ticker	Recent price*	Disclosure
CGN Power	1816.HK	3.40 (HKD) 6 Jan 15	NA

*Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors . Data is sourced from Deutsche Bank and subject companies.

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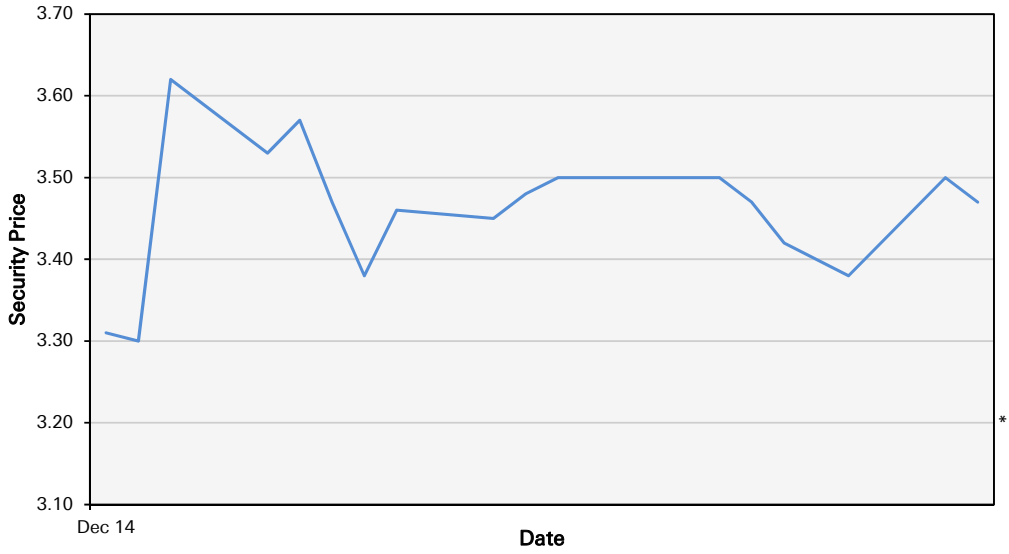
Historical recommendations and target price: CGN Power (1816.HK)
(as of 1/6/2015)



Previous Recommendations

Strong Buy
Buy
Market Perform
Underperform
Not Rated
Suspended Rating

Current Recommendations

Buy
Hold
Sell
Not Rated
Suspended Rating

*New Recommendation Structure as of September 9,2002

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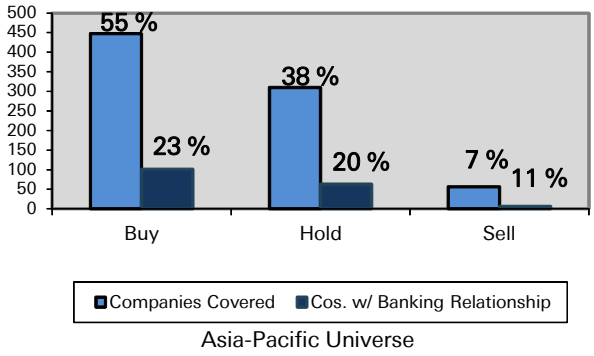

Asia-Pacific Universe

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