ANCHOR REPORT

China power equipment

NOMURA
EQUITY RESEARCH

Best exposure to China's nuclear story

Rising nuclear equipment demand fuels growth for equipment plays

We remain optimistic on our 2020F 80GW (11GW in 2010) nuclear power capacity target despite the Fukushima incident.

Nuclear equipment demand underpins our forecast of 22% growth in the power equipment market to RMB800bn (11-15F vs 06-10).

We see upside on nuclear safety equipment demand and nuclear equipment ASP/kw post Fukushima.

Although power capacity growth follows the GDP trend in the long run, capacity build-out is non-cyclical in the near term.

Top BUY: Shanghai Electric given comprehensive nuclear capability, diversified portfolio and attractive valuation.

Key analysis in this Anchor Report includes:

- Risk analysis in case of delay/downsizing in nuclear development.
- Detailed comparative analysis of power equipment players.
- China nuclear development update.
- Technical analysis to support our fundamental views.
- We initiate Shanghai Electric (2727.HK) and Dongfang Electric (1072.HK) at BUY, and Harbin Electric (1133.HK) at NEUTRAL.

June 2, 2011

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China Power Equipment

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June 2, 2011

Powerful growth ahead

Rising nuclear equipment demand fuels growth for equipment plays

Action: Bullish boom fuels demand for equipment

We expect China's power equipment market to grow 22% to ~RMB800bn in 2011-15F (from RMB657bn 2006-10), driven by a product mix change to more expensive nuclear (RMB3,543/kw) power from thermal (RMB1,000/kw) power, despite total new installation remaining flat. Given nuclear is an affordable and scalable clean energy source, and with limited alternatives, we are bullish on nuclear power. This is supported by China's target to have non-fossil energy account for 15% of primary energy consumption and to reduce CO2 intensity by 45% over 2005 levels by 2020. In our view, China's 2020 80GW nuclear target remains intact despite near-term approval suspension. We expect nuclear equipment-related revenue to see robust growth in 2011F/12F for SEG and DFE.

Catalysts: Power equipment attractive now

- Concerns over China's slowing growth favour non-cyclical plays. Although power capacity growth in the long run generally follows economic trends, capacity build-out is immune to near-term slowdowns, as it takes 1-2 years to build capacity for future demand.
- Increasing safety requirements post Fukushima will lead to more redundant systems in nuclear plants, providing upside potential for nuclear equipment players' ASPs.
- The prevailing power shortage may trigger demand for thermal power equipment in 2012-14F, reversing the downward trend. Following the 2004 power shortage, thermal generating equipment shipments of the Big Three rose 44.2% in 2005 and 27.9% in 2006.
- Recent share price weaknesses following the Fukushima incident and concerns over China's nuclear development are overdone, in our view. Per our risk analysis, SEG and DFE have recovered somewhat from the worst-case scenario (ie, no more nuclear project approvals).

Stock picks: SEG is our top pick; DFE (BUY) and HEC (NEUTRAL)

SEG's comprehensive nuclear manufacturing capability, combined with its diversified portfolio and defensiveness against short-term nuclear development delay, underlines its appeal, we believe. We like DFE, as it is likely to capture opportunities from the government's energy goal, given its leading position in all the significant non-fossil equipment markets. Although well-placed to capture nuclear development, HEC was a late entrant and, hence, lacks near-term growth; this drives our NEUTRAL call.

Fig. 1: Coverage / ratings summary

Stock	Ticker	Rating	Price (HKD)	Price target (HKD)
Shanghai Electric	2727 HK	BUY*	4.09	4.90
Dongfang Electric	1072 HK	BUY*	29.75	34.40
Harbin Electric	1133 HK	NEUTRAL*	9.35	8.90

Note: pricing as of May 26, 2011, local currency. *Initiating coverage. Source: Nomura, Bloomberg

Rating: *See report end for details of Nomura's rating system.*

Anchor theme

Rising nuclear equipment demand to meet China's 2020 energy goal is giving rise to the power equipment sector in China. Strong export orders should offset slowing domestic thermal equipment demand.

Nomura vs consensus

Our forecast for nuclear capacity of 80GW by 2020F is at the high end of consensus.

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Powerful growth ahead

Executive summary

Power equipment looks appealing now

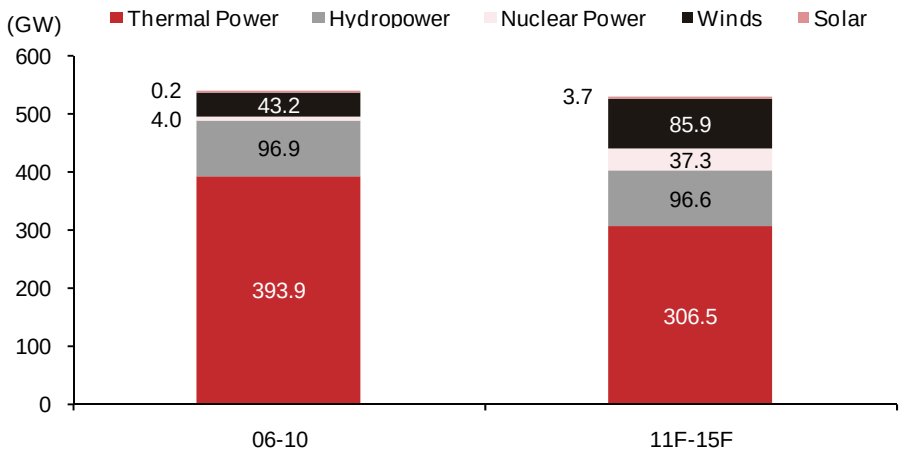
We believe current market dynamics make the power equipment sector very attractive, due to:

- Concerns over China's economic slowdown (on the back of 0.5 pct m-m drop on Apr's 52.9% PMI) favour non-cyclical plays.
- Improving nuclear safety standards provide upside to nuclear equipment demand.
- The power shortage, combined with the recent tariff hike, translates into upside for thermal power development, due to its short lead time, which is positive for power equipment plays. We have observed thermal generating equipment output from the Big 3 rose by 44.2% and 27.9% in 2005 and 2006, following the pronounced power shortage in 2004.
- Recent share price weakness, in light of the Fukushima incident and concerns over China's nuclear development, is overdone, in our view.

China's carbon / energy goal reshuffles domestic power equipment market

In light of China's target to make non-fossil energy contribute 15% of primary energy consumption and reduce CO2 intensity by 45% over 2005 levels by 2020, the power capacity fuel mix can be expected to be markedly different by 2020F. In our view, the mix of new power generating capacity in the coming years will be geared towards non-fossil fuel equipment, giving rise to wind and nuclear. We believe China's 2020 80GW nuclear capacity target remains intact, given: 1) China's limited choice / alternatives in achieving the carbon reduction and the energy mix target by 2020F; 2) new nuclear units in China are more advanced and safer than the Fukushima units; and 3) strong nuclear projects in the pipeline (35.5GW of approved projects and 54.2GW of firmly planned projects).

Fig. 2: New power capacity installed



Note: Accounting for non-grid connected wind capacity and small thermal closedown

Source: CEC, Nomura estimates

New capacity volume remains flat; market size to expand by 22% in the next 5 years, partly driven by nuclear

We forecast 530.0GW of new capacity will be installed during 2011F-15F, vs 538.2GW installed during 2006-10. Despite flattish new capacity growth, the size of the market in RMB terms is forecast to expand by 22%, as nuclear / wind power equipment are more expensive than traditional thermal power equipment. While the wind equipment market is scattered, major nuclear equipment is mostly provided by the Big Three power equipment players (SEG, DFE and HEC), presenting rising revenue opportunities for these names.

Fig. 3: Potential market size

Equipment cost assumption (RMB / kw)

(cost / kw)	2009 & before	2010	2011F	2012F & after
Thermal	1,000	1,000	1,000	1,000
Hydro	500	500	500	500
Nuclear	3,543	3,543	3,543	3,543
Wind	5,000	4,200	3,780	3,591

Capacity installed (GW)

	06-10	11F-15F	
Thermal	393.9	306.5	(incl. small thermal close-down)
Hydro	96.9	96.6	
Nuclear	4.0	37.3	
Wind	43.2	85.9	(with 5GW non-grid connected capacity in 11F-15F)
Solar	0.2	3.7	
Total	538.2	530.0	

Market opportunity (RMB bn)

	06-10	11F-15F	(%-chg)
Thermal	394	307	-22%
Hydro	48	48	0%
Nuclear	14	132	838%
Wind	201	312	55%
Total	657	799	22%

Note: Estimates for nuclear equipment denote major equipment related to the Big Three

Source: Nomura estimates, industry checks

On top of potential market size, the revenue recognition opportunity is also important for the power equipment players, given that revenue may come in before the power generating equipment commences operation. The table below illustrates our market size forecast and expectations of revenue opportunities for the power equipment market in China. We first project capacity to be installed between 2011F and 2020F, and then apply the estimated equipment cost / kw to forecast the equipment volume (measured in dollar values) delivered each year. Then we apply revenue recognition and delivery assumptions to come up with the revenue opportunity for the market during the year.

For wind turbines, we assume delivery and revenue recognition occur within the same year. For hydro and thermal equipment, we assume 60% of the equipment revenue is recognised in the year of capacity commencement and 40% the year before, given that some equipment is delivered earlier for installation and some large contracts use percentage-of-completion revenue recognition. For nuclear equipment, due to its long-cycle nature (4 years), early delivery of some equipment before plant commencement and use of percentage-of-completion revenue recognition, we come up with the following assumptions: 40% revenue booked in the year of plant commencement, 30% the year before, 20% two years before and 10% three years before.

Fig. 4: China: power equipment demand and revenue forecasts

New Capacity (including small thermal close down and non-grid connected wind equipment																
(GW)	2005	2006	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	**58.0**	**103.1**	**86.7**	**62.3**	**74.7**	**67.1**	**66.8**	**63.8**	**60.2**	**58.2**	**57.5**	**51.4**	**50.2**	**46.3**	**45.2**	**44.0**
New addition	*58.0*	*99.9*	*72.4*	*45.6*	*48.5*	*56.1*	*56.8*	*53.8*	*50.2*	*48.2*	*47.5*	*51.4*	*50.2*	*46.3*	*45.2*	*44.0*
Small thermal close down	*-*	*3.1*	*14.4*	*16.7*	*26.2*	*11.0*	*10.0*	*10.0*	*10.0*	*10.0*	*10.0*	*-*	*-*	*-*	*-*	*-*
Hydropower	**7.8**	**12.1**	**16.7**	**26.3**	**25.3**	**16.6**	**17.6**	**19.0**	**20.0**	**20.0**	**20.0**	**15.5**	**15.0**	**13.7**	**13.2**	**12.7**
Nuclear Power	**-**	**-**	**1.7**	**0.5**	**-**	**1.7**	**1.1**	**2.8**	**7.2**	**12.7**	**13.6**	**5.8**	**6.2**	**6.3**	**6.6**	**7.0**
Winds	**1.3**	**1.3**	**3.3**	**5.9**	**13.8**	**18.9**	**17.9**	**17.0**	**17.0**	**17.0**	**17.0**	**15.8**	**16.8**	**17.5**	**18.5**	**19.5**
Grid connected installation	*1.3*	*1.0*	*2.1*	*4.5*	*7.2*	*14.9*	*14.9*	*15.0*	*17.0*	*17.0*	*17.0*	*15.8*	*16.8*	*17.5*	*18.5*	*19.5*
Non-grid connected installation	*-*	*0.3*	*1.2*	*1.4*	*6.6*	*4.0*	*3.0*	*2.0*	*-*	*-*	*-*	*-*	*-*	*-*	*-*	*-*
Solar	**-**	**-**	**-**	**-**	**-**	**0.2**	**0.6**	**0.4**	**0.7**	**1.1**	**0.9**	**2.7**	**3.0**	**3.2**	**3.5**	**3.8**
Others (solar and others for data before 2010)	**7.2**	**(7.6)**	**3.8**	**(2.6)**	**0.1**	**(1.6)**	**-**	**-**	**-**	**-**	**-**	**0.8**	**0.9**	**1.0**	**1.1**	**1.2**
Total	**74.2**	**108.8**	**112.2**	**92.4**	**113.9**	**103.1**	**104.0**	**103.0**	**105.0**	**109.0**	**109.0**	**92.0**	**92.0**	**88.0**	**88.0**	**88.0**

Eqpuiment Cost Assumption																
Eqp. Cost / kw	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011F**	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
Thermal Power	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Hydropower	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
Nuclear Power	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543
Winds	5,000	5,000	5,000	5,000	5,000	4,200	3,780	3,591	3,591	3,591	3,591	3,591	3,591	3,591	3,591	3,591

Amount of equipment commenced (measured in RMB)																
(RMB bn)	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011F**	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
Thermal Power	58.0	103.1	86.7	62.3	74.7	67.1	66.8	63.8	60.2	58.2	57.5	51.4	50.2	46.3	45.2	44.0
Hydropower	3.9	6.0	8.3	13.1	12.6	8.3	8.8	9.5	10.0	10.0	10.0	7.8	7.5	6.8	6.6	6.3
Nuclear Power	-	-	6.2	1.7	-	6.2	3.8	10.0	25.3	44.8	48.2	20.6	21.8	22.4	23.5	24.7
Winds	6.3	6.6	16.3	29.7	69.0	79.4	67.8	61.0	61.0	61.0	61.0	56.7	60.4	62.8	66.3	69.9
Total	68.2	115.7	111.4	105.1	156.3	154.8	143.4	134.3	131.2	129.3	128.6	115.8	118.1	115.9	118.0	120.2

Revenue recognition schedule assumption				
(%)	Yr- com-menced	1-yr before	2-yr before	3-yr before
Thermal Power	60%	40%		
Hydropower	60%	40%		
Nuclear Power	40%	30%	20%	10%
Winds	100%			

Power equipments revenue opportunity																
(RMB bn)	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011F**	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
Thermal Power	**76.02**	**96.53**	**76.95**	**67.24**	**71.66**	**67.01**	**65.62**	**62.34**	**59.39**	**57.94**	**55.07**	**50.91**	**48.63**	**45.86**	**44.68**	**41.99**
(y-y %)		*27.0%*	*-20.3%*	*-12.6%*	*6.6%*	*-6.5%*	*-2.1%*	*-5.0%*	*-4.7%*	*-2.4%*	*-5.0%*	*-7.6%*	*-4.5%*	*-5.7%*	*-2.6%*	*-6.0%*
Hydropower	**4.76**	**6.95**	**10.26**	**12.93**	**10.90**	**8.50**	**9.08**	**9.70**	**10.00**	**10.00**	**9.10**	**7.66**	**7.23**	**6.73**	**6.48**	**5.99**
(y-y %)		*46.0%*	*47.5%*	*26.1%*	*-15.7%*	*-22.0%*	*6.8%*	*6.8%*	*3.1%*	*0.0%*	*-9.0%*	*-15.9%*	*-5.6%*	*-7.0%*	*-3.7%*	*-7.5%*
Nuclear Power	**1.41**	**2.20**	**3.61**	**2.31**	**3.61**	**8.14**	**14.07**	**25.36**	**35.27**	**38.68**	**32.05**	**21.63**	**22.62**	**23.44**	**24.36**	**25.18**
(y-y %)		*56.2%*	*64.0%*	*-35.9%*	*56.0%*	*125.4%*	*72.8%*	*80.3%*	*39.1%*	*9.7%*	*-17.1%*	*-32.5%*	*4.6%*	*3.6%*	*3.9%*	*3.3%*
Winds	**6.30**	**6.57**	**16.33**	**29.67**	**69.03**	**79.36**	**67.78**	**61.05**	**61.05**	**61.05**	**61.05**	**56.67**	**60.39**	**62.75**	**66.31**	**69.87**
(y-y %)		*4.2%*	*148.8%*	*81.6%*	*132.7%*	*15.0%*	*-14.6%*	*-9.9%*	*0.0%*	*0.0%*	*0.0%*	*-7.2%*	*6.6%*	*3.9%*	*5.7%*	*5.4%*
Total	**82.19**	**113.54**	**108.06**	**111.93**	**155.67**	**163.98**	**157.32**	**159.27**	**166.09**	**167.74**	**156.96**	**136.31**	**138.82**	**138.69**	**141.81**	**142.93**
(y-y %)		*38.1%*	*-4.8%*	*3.6%*	*39.1%*	*5.3%*	*-4.1%*	*1.2%*	*4.3%*	*1.0%*	*-6.4%*	*-13.2%*	*1.8%*	*-0.1%*	*2.2%*	*0.8%*

Source: Nomura estimates

Nuclear equipment - RMB245bn worth of equipment to be delivered before 2020F

According to our estimates, in order for China to achieve 80GW of nuclear generating capacity by 2020F, nuclear power equipment (major heavy nuclear equipments, relevant to the Big Three) worth RMB245bn will have to be delivered.

We expect all three major power equipment companies have exposure to nuclear and their respective market shares in the long term are deemed to be similar. Despite this, SEG and DFE engaged in the nuclear business earlier than HEC, and this is reflected in their market shares (measured in order backlog) and near-term revenue / delivery schedules. In our view, revenue and earnings for SEG and DFE are set to rise in FY11F / 12F.

Slowing domestic thermal equipment demand, but offset by exports

We believe the market opportunity (in RMBbn) for domestic thermal equipment will fall by 22% for the FY11F-15F period (in comparison with FY06-10). However, this is not bad per se for equipment players, since the domestic slowdown should be offset by increasing export demand. Growth prospects largely depend on individual companies' export visibility. According to our estimates on order backlog, SEG will have in hand the largest export orders for thermal-related equipment (largely in the form of EPC or services contracts) as at 1Q11 (~RMB91bn).

Wind equipment – flat demand growth ahead

We forecast installed on-grid wind capacity will reach 112GW by 2015F and 200GW by 2020F, from 31GW installed as at FY10. However, due to the currently high base and doubling of installed capacity over the past four years, we forecast new installed capacity will be flat at around 17-18GW per year. The wind turbine market remains very competitive due to: 1) flat demand growth; and 2) over-capacity in the market. In our view, off-shore development in China and export sales are two potential drivers for

growth. Overall, along the wind value chain, we prefer component makers with unique bargaining power and large market share with visibility on exports. In this context, we highlight China High Speed Transmission (658 HK, BUY).

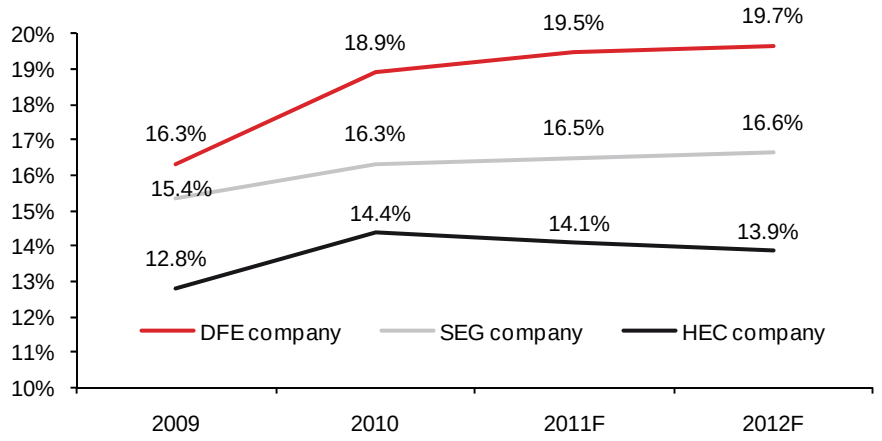
Material cost not a significant risk

Although raw material steel makes up >50% of the COS for power equipment, according to our checks, steel prices are not likely to be a significant risk, in our view.

We have seen an increase in steel prices since 2H09, with the HRC benchmark steel price rising 3.4% h-h in 2H09, 12.7% h-h in 1H10 and 1.6% h-h in 2H10. In our view, the slow-paced increase in material cost does not pose a significant rise to margins in the way that the material cost spike did in 2008. This reflects the following: 1) Unlike the material cost spike in 2008, the current increase in material price is moderately paced, such that equipment players are likely to be able to factor in higher material costs into their new contracts; 2) steel prices are still far from their peak (benchmark HRC price: RMB4,426/t at 2H10 vs RMB5,530/t at 1H08); 3) according to company management teams, equipment plays now include terms to factor in the risks of material cost fluctuations in some of the larger contracts, passing through additional costs to customers; 4) improvement in product mix (higher margins) at DFE and SEG counters material cost; and 5) companies are taking proactive measures to counter material costs (DFE is stockpiling more materials while HEC is relying on cost-reduction initiatives).

Margins on the rise at SEG and DFE due to product mix and production scale

Fig. 5: Gross margin forecasts for the Big Three



Source: Company data, Nomura estimates.

SEG management is guiding for margin improvement as its wind and nuclear island operations attain scale, with gross margin seen increasing (Wind: 11.0% in FY11F vs. 9.8% in FY10; Nuclear island: 17% in FY11F vs 15% in FY10). Moreover, according to the company, gross margin for modern services is set to improve to 8.5% in FY11F, from 7.1% in FY10, due to an improving product mix within the segment.

At DFE, gross margin is poised to improve, largely due to an improving product mix, in our view. On our estimates, nuclear island equipment will increase its revenue contribution from 5.0% in FY10 to 8.9% in FY11F (the segment has a gross margin of 30.2% in FY10 and we forecast a gross margin of 28.0% in FY11F, in line with management's guidance).

We forecast HEC's gross margin will decrease slightly in FY11F and 12F, as new business (nuclear equipment) ramps up to scale. As for nuclear equipment revenue, we factor in a 0% gross margin in FY11F on the back of limited scale. FY11F is the first year in which the company will recognise nuclear equipment revenue. For reference, DFE had a -0.2% gross margin in its first year of nuclear revenue recognition. HEC management guided for a flattish gross margin in Harbin Electric's traditional business, with cost-reduction initiatives (such as better management of raw material use) seen offsetting material price increases.

So, the winners are:

Shanghai Electric (SEG, 2727 HK, BUY): The most comprehensive play; defensive in case of short-term delays

We initiate coverage on Shanghai Electric with a BUY rating and a TP of HKD4.90, as we see growth catalysts that, in our view, have not been factored in. SEG's unique strength in nuclear equipment (reactor internals and forging components) makes it the most comprehensive of the Big Three, and this should let it capture rising demand, as evidenced by its strong order book (~RMB 36bn of nuclear equipment at 1Q11). According to our risk analysis, the short-term earnings (FY11F) and net present value/share of SEG stay largely intact in the case of nuclear projects delay, due to SEG's diversified portfolio. The shortened delivery schedule for the USD8.3bn Reliance orders gives rise to modern services' FY11F-13F revenue. We forecast gross margin will improve to 8.5% for FY11F from 7.1% in FY10 due to better product mix. On top of this, we estimate SEG to have RMB91bn of overseas contracts for this segment, fuelling mid- to long-term growth. As at 26 May, 2011, SEG was trading at HKD4.09, 13.1x FY11F P/E. This looks undemanding on the back of its 13.3% FY11F-13F earnings CAGR, on our estimates.

Dongfang Electric (DFE, 1072 HK, BUY): The #1 nuclear play; high exposure to non-fossil energy equipment

We initiate with a BUY rating and a target price of HKD34.40. We believe nuclear development will remain a focus in China, and market concerns over the Fukushima incident and China's temporary suspension of nuclear project approvals are overdone. Dongfang Electric is the largest domestic nuclear equipment provider by sales in China. We expect revenue contribution from nuclear to grow in FY11F /12F given its current nuclear development pipeline and order backlog. Despite slowing domestic thermal equipment demand in the mid/long term, we have no concerns on the high-efficiency segment (thermal + conventional island). We expect revenue for traditional thermal equipment to grow in FY11F on Dongfang Electric's strong delivery schedule. In our view, rising conventional island equipment sales will help offset slowing thermal demand. DFE has exposure to all significant new energy segments (nuclear, wind, hydro). We believe it is well positioned to capture opportunities driven by China's target to make non-fossil energy account for 15% of primary energy consumption and reduce CO2 intensity by 45% over 2005-levels by 2020. As at 26 May 2011, Dongfang Electric traded at 16.0x FY11F P/E vs. peers' 13.6x. We see the valuation premium as being justified in view of its significant exposure in the new energy sector amid China's energy / carbon reduction goals.

NEUTRAL-rated stock

Harbin Electric (HEC, 1133 HK, NEUTRAL): Lack of near-term catalysts

We initiate Harbin Electric with a NEUTRAL rating and a TP of HKD8.90, as we are concerned about near-term visibility in its new energy development and significant exposure to domestic thermal power equipment. Of the Big 3, Harbin Electric is most exposed to domestic thermal equipment sales. In FY10, thermal equipment sales made up 62% of its revenue. Despite recent upside catalysts on thermal development due to power shortages, we view high revenue growth like that experienced by SEG and DFE (driven by nuclear) as unlikely for Harbin Electric. No doubt, Harbin Electric has sizeable nuclear orders (RMB18bn as at FY10) and is exposed to nuclear opportunities. However, according to management, sizeable revenue (RMB 2bn) contribution is expected in 2013F, fuelling meaningful growth only by then. Despite Harbin Electric's recent JV with GE, we believe the opportunity is limited, as wind market demand is slowing, in our view. Despite our view that Harbin Electric is well positioned to capture nuclear equipment opportunities, its strong reliance on thermal has made us cautious on its earnings growth prospects for FY11F/12F. At 26 May, 2011, even though the stock was trading at an 11.6x FY11F P/E, a 15% discount vs peers, we believe the lack of a near-term catalyst justifies our NEUTRAL rating.

Quants feature — charting and short-selling analysis; market-timing reference on fundamental rating

Examination of share price trends, resistance and support levels and recent short patterns

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In this section, we apply charting and short-selling analysis to examine share price trends, resistance and support levels and look at the short implications for Dongfang Electric Corp, Harbin Electric Company and Shanghai Electric Group. In short, we see Shanghai Electric Group shares as most positive overall, since the stock has been trading within an upward channel. Meanwhile, shorts have been easing recently. Fundamentally, Shanghai Electric Group is the top pick among the power equipment-related companies. Given Nomura's fundamental BUY call, we see this as a good time to accumulate the shares now that an upward channel has developed. Still, we do highlight a need to monitor whether this upward channel holds (with higher tops and bottoms as consequence, technically speaking). Furthermore, we see breaking the HKD4.45 resistance from below that level as a positive signal for further accumulation.

As for Dongfang Electric Corp, also rated a BUY by our fundamental analysts, its current share price movement and shorts pattern are showing no great signs of momentum.

From a quantitative viewpoint, we would see a breakthrough past the HKD32.95 resistance from below as a better time to accumulate the shares.

Fig. 6: Summary on charting and short-selling analyses, market-timing reference on fundamental rating

loomberg code	Company name	Overall charting and short-selling view	Resistance reference (HKD)	Curr share price (HKD)	Support reference (HKD)	Fundamental research rating	Market-timing reference to go in line with fundamental rating
1072 HK	Dongfang Electric Corp	Neutral on charting and short-selling as no great sign of momentum at this point while recent shorts have been irregular.	32.95	29.75	27.90-28.50	BUY	Accumulate shares after breaking HKD32.95 resistance.
1133 HK	Harbin Power Equipment	Slightly positive on charting after rising above HKD9 level. Key and solid potentially resistance at HKD1.20. We note short-selling activities have increased slightly of late.	10.20	9.35	8.37	NEUTRAL	N/A
2727 HK	Shanghai Electric Group	Positive on charting as long as the upward channel remains intact (higher tops and bottoms, generally speaking). The shorts pattern looks positive as well, with recent activities easing.	4.45	4.09	3.96	BUY (top pick among power equipment)	Accumulate shares now, with need to monitor existence of current channel. Further accumulation after breaking HKD4.45 resistance.

Source: Nomura Research

Fig. 7: Charting analysis: Shanghai Electric Group (2727 HK)

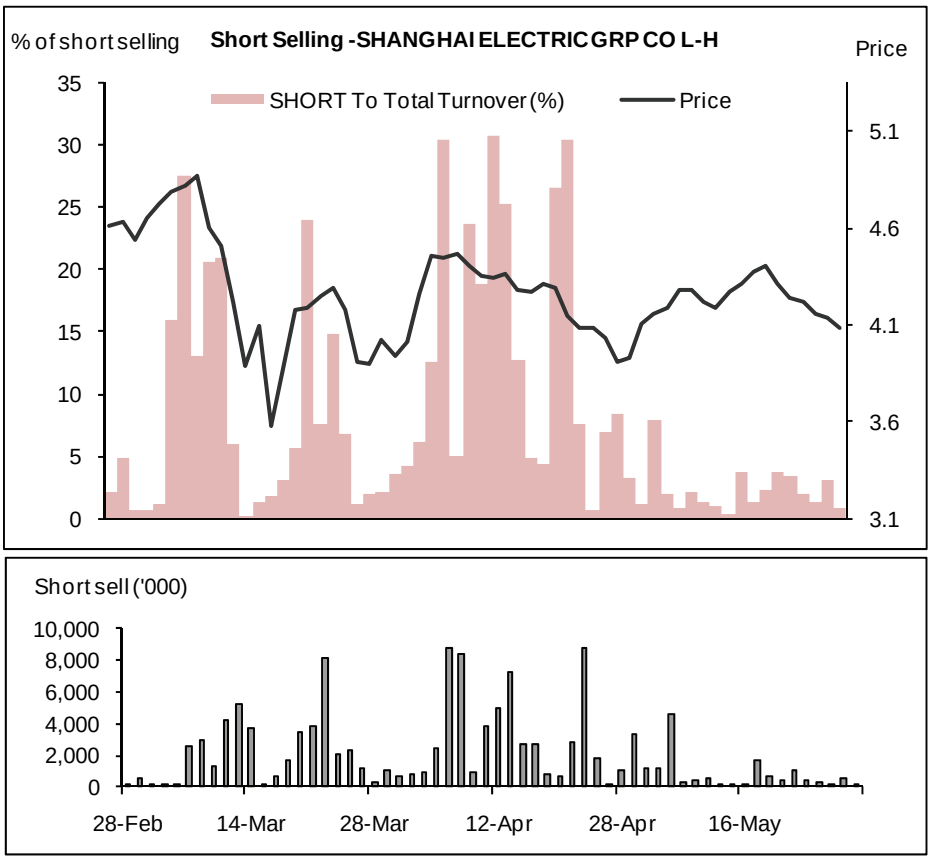
Source: Bloomberg, Nomura Quantitative Strategies

Overall view: positive as long as upward channel remains intact

Resistance: HKD4.45 / HKD4.78
Support: HKD3.96 / HKD3.77

Note:
(1) Upward channel has been seen for the past two-and-a-half months. This would be viewed as positive as long as the channel remains intact — for higher tops and bottoms in general
(2) We see primary resistance at HKD4.45 and a volume-backed breakout should present a good possibility for the share price to climb further towards the top band of the upward channel

Fig. 8: Short-selling analysis: Shanghai Electric Group (2727 HK)



Source: Bloomberg, Thomson Reuters Datastream, Nomura Quantitative Strategies

Overall view: positive — short-selling activities decreasing

Recent fall in prices accompanied by decreasing short-selling activities, suggesting that short-selling pressure continues to ease

Fig. 9: Charting analysis: Dongfang Electric Corp (1072 HK)

Source: Bloomberg, Nomura Quantitative Strategies

Overall view: neutral, with primary resistance and support levels at HKD32.95 and HKD27.90-28.50.

Resistance: HKD32.95 / HKD38.65

Support: HKD27.90-28.50

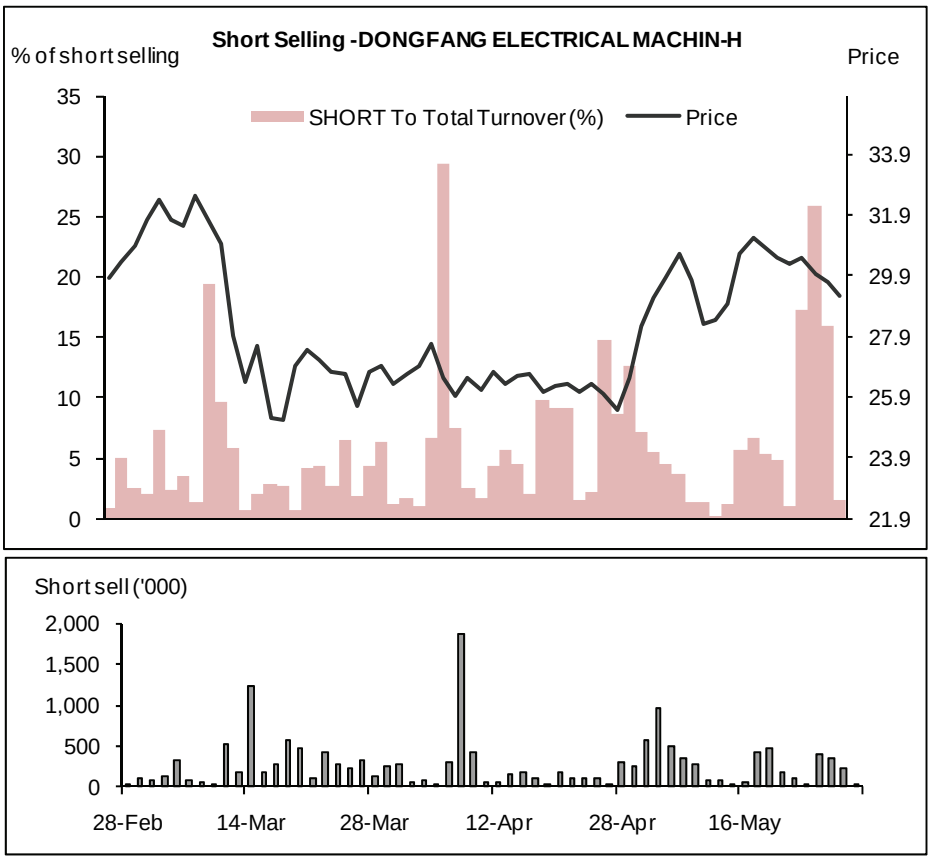
Note:

(1) Not showing great signs of momentum at this point

(2) We see primary resistance and support levels at HKD32.95 and HKD27.90-28.50

(3) Upward trendline has broken below previous (long-dashed upward sloping line), providing some resistance currently

Fig. 10: Short-selling analysis: Dongfang Electric Corp (1072 HK)



Source: Bloomberg, Thomson Reuters Datastream, Nomura Quantitative Strategies

Overall view: neutral — short-selling activities have been irregular

Short-selling activities in Dongfang Electric have been irregular, and thus no significant signal is noted at this point

Fig. 11: Charting analysis: Harbin Electric Company (1133 HK)

Source: Bloomberg, Nomura Quantitative Strategies

Overall view: slightly positive, with key resistance at HKD10.20

Resistance: HKD10.20 / HKD10.88

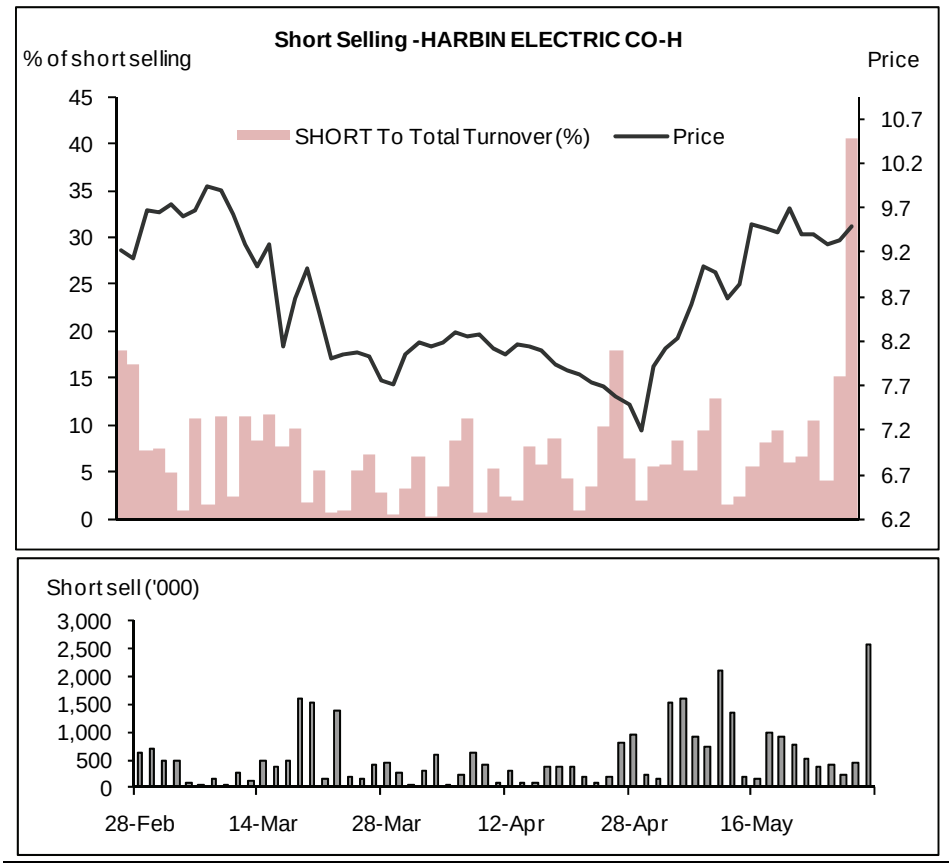
Support: HKD8.37 / HKD7.10

Note:

(1) Momentum turned slightly more positive after rising above the HKD9 level, as there was solid selling volume around that level back in March

(2) We see coming resistance at HKD10.20 as potentially solid and a key resistance. A volume-backed breakout of this level would be more positive

Fig. 12: Short-selling analysis: Harbin Electric Company (1133 HK)



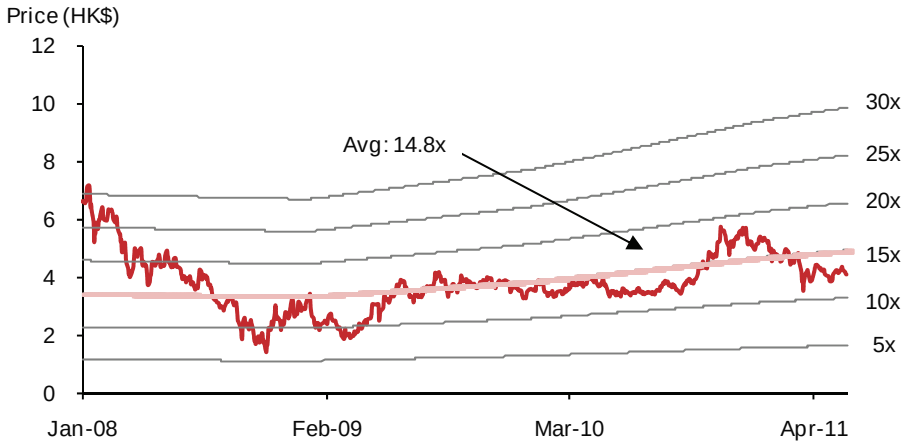
Source: Bloomberg, Thomson Reuters Datastream, Nomura Quantitative Strategies

Overall view: slightly negative — short-selling activities have been slightly increasing

Recent short-selling activities have increase along with a rising share price

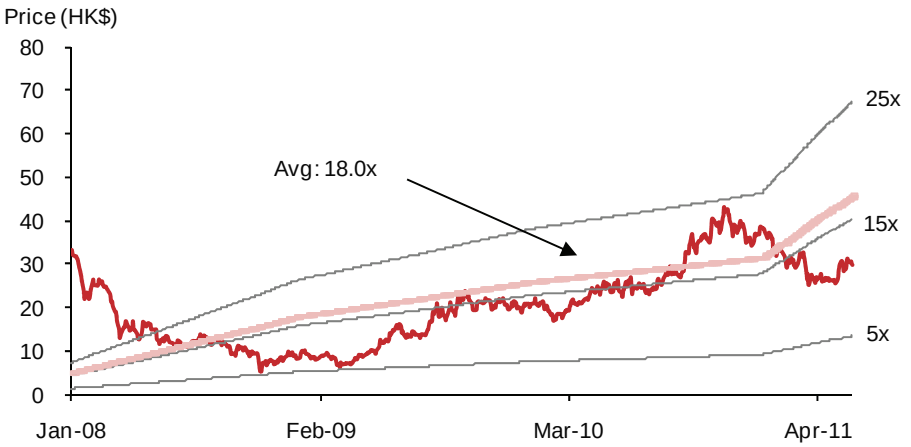
P/E band charts

Fig. 13: SEG P/E band chart: 12-month forward



Source: Bloomberg, Nomura estimates

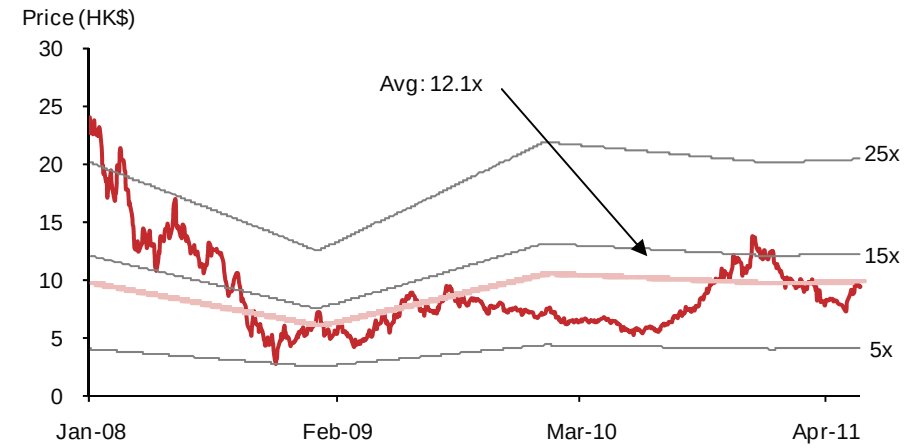
Fig. 14: DFE P/E band chart: 12-month forward



Note: Historical Stock price and EPS adjusted for stock split in 2010. Please note that earthquake in 2008 and the subsequent disappointing FY08 result has driven up the avg. P/E for DFE.

Source: Bloomberg, Nomura estimates

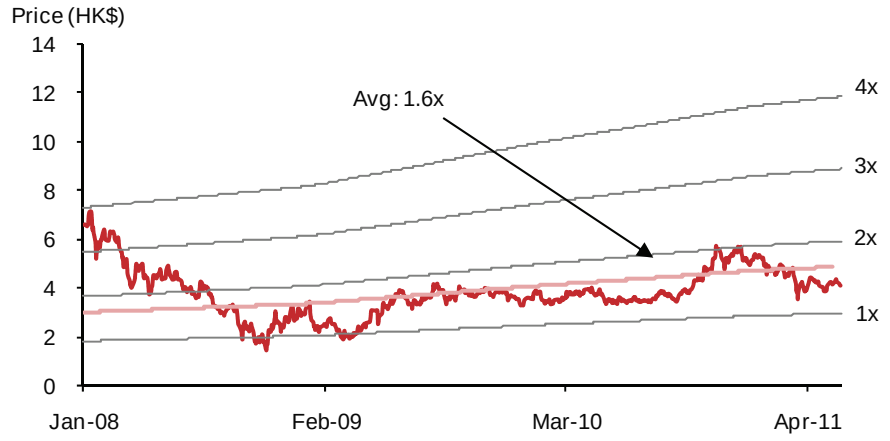
Fig. 15: HEC P/E band chart: 12-month forward



Source: Bloomberg, Nomura estimates

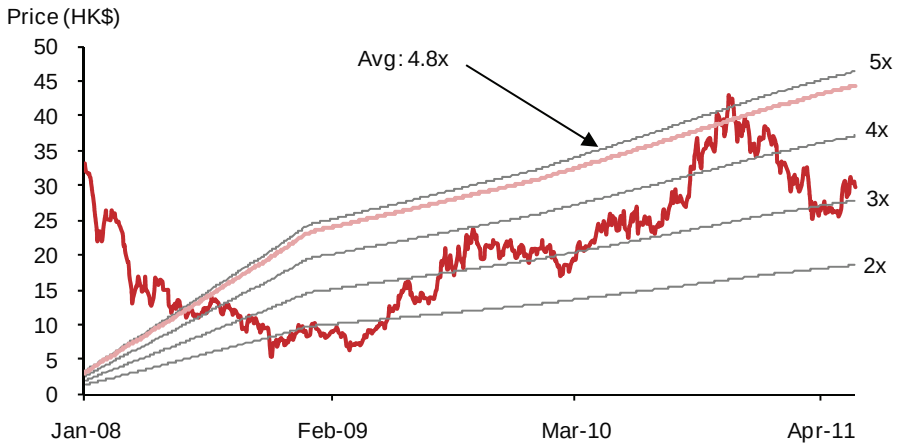
P/B band chart

Fig. 16: SEG P/B band chart: 12-month forward



Source: Bloomberg, Nomura estimates

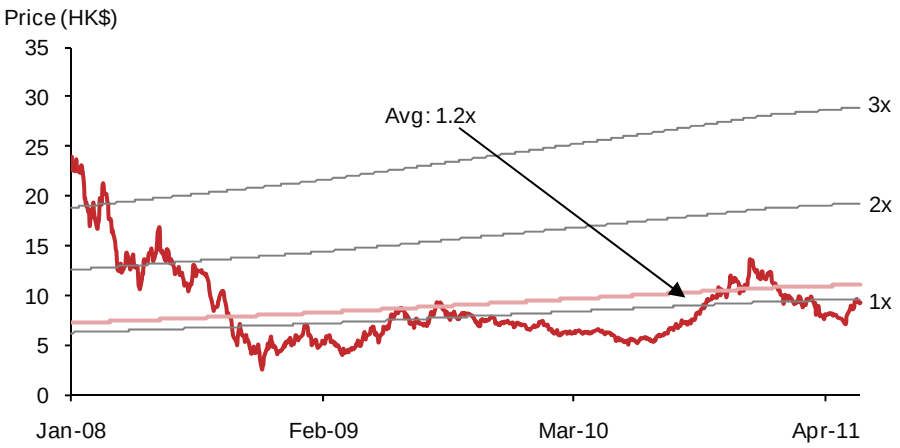
Fig. 17: DFE P/B band chart: 12-month forward



Note: Historical Stock price and BVPS adjusted for stock split in 2010. Please note that the earthquake in 2008 and subsequently disappointing FY08 results drive up the avg. P/B for DFE.

Source: Bloomberg, Nomura estimates

Fig. 18: HEC P/B band chart: 12-month forward



Source: Bloomberg, Nomura estimates

Operation metrics comparison

Fig. 19: Operation metrics comparison (1/4)

	2010	2011F	2012F	2013F
Revenue metrics				
Revenue (RMB mn)				
Shanghai Electric	62,957	70,433	78,451	84,400
Dongfang Electric	37,604	45,037	48,660	51,991
Harbin Electric	28,816	30,874	33,337	34,168
(y-y%)				
Shanghai Electric		*11.9%*	*11.4%*	*7.6%*
Dongfang Electric		*19.8%*	*8.0%*	*6.8%*
Harbin Electric		*7.1%*	*8.0%*	*2.5%*
Revenue contribution by high efficiency and clean energy (%) (incl. thermal & conv. nuclear island)				
Shanghai Electric	39.3%	37.7%	36.8%	35.6%
Dongfang Electric	54.2%	54.0%	52.3%	49.8%
Harbin Electric (Proxy by thermal equipment sales)	62.4%	58.8%	55.0%	49.7%
Revenue contribution by nuclear island sales (%)				
Shanghai Electric	3.7%	4.3%	5.4%	6.5%
Dongfang Electric	5.0%	8.9%	10.3%	13.1%
Harbin Electric (Proxy by nuclear eqp., incl. nuclear island and conv. island)	n.a.	1.9%	3.6%	5.9%
Revenue contribution by wind equipment sales (%)				
Shanghai Electric	4.8%	7.1%	8.0%	7.4%
Dongfang Electric	20.3%	17.8%	17.2%	16.1%
Harbin Electric	n.a.	1.0%	3.0%	5.9%
Revenue contribution by modern / eng. services (%)				
Shanghai Electric	19.8%	19.7%	19.6%	20.0%
Dongfang Electric	12.6%	12.1%	12.9%	13.2%
Harbin Electric	17.6%	18.0%	18.4%	18.8%
Revenue contribution by hydro (%)				
Shanghai Electric	n.a.	n.a.	n.a.	n.a.
Dongfang Electric	7.9%	7.2%	7.4%	7.7%
Harbin Electric	8.2%	9.2%	9.8%	9.8%
Gross profit metrics				
Overall gross margin (%)				
Shanghai Electric	16.3%	16.5%	16.6%	16.7%
Dongfang Electric	18.9%	19.5%	19.7%	20.0%
Harbin Electric	14.4%	14.0%	13.9%	13.9%
Gross margin for high efficiency and clean energy (%)				
Shanghai Electric	17.3%	17.4%	17.4%	17.4%
Dongfang Electric	17.7%	18.5%	18.7%	18.8%
Harbin Electric (Proxy by thermal equipment)	14.1%	14.1%	14.1%	14.1%
Gross margin for nuclear island equipment (%)				
Shanghai Electric	15.0%	17.0%	19.0%	19.5%
Dongfang Electric	30.2%	28.0%	28.0%	28.0%
Harbin Electric (Proxy by nuclear eqp., incl. nuclear island and conv. island)	n.a	0.0%	5.0%	10.0%

Notes: 1) SEG's orderbook only comprises major power equipment; 2) HEC has a different business grouping, proxy defined to make comparison with other companies; 3) customer deposits accounted as debt

Source: Company data, Nomura estimates

Fig. 20: Operation metrics comparison (2/4)

Gross profit metrics (cont'd)	2010	2011F	2012F	2013F
Gross margin for wind equipment (%)				
Shanghai Electric	9.8%	11.0%	12.0%	12.0%
Dongfang Electric	19.8%	18.5%	18.5%	18.5%
Harbin Electric	n.a	n.a	12.0%	14.0%
Gross margin by modern / engr. services (%)				
Shanghai Electric	7.1%	8.5%	8.5%	8.5%
Dongfang Electric	21.8%	21.0%	21.0%	21.0%
Harbin Electric	3.4%	3.6%	3.6%	3.6%
Gross margin by hydro (%)				
Shanghai Electric	n.a.	n.a.	n.a.	n.a.
Dongfang Electric	15.8%	15.8%	15.8%	15.8%
Harbin Electric	25.2%	25.0%	24.5%	24.0%
Profitability				
Net profit (RMB mn)				
Shanghai Electric	2,784	3,199	3,631	4,052
Dongfang Electric	2,601	2,966	3,249	3,705
Harbin Electric	1,024	884	922	1,013
(y-y%)				
Shanghai Electric		*14.9%*	*13.5%*	*11.6%*
Dongfang Electric		*14.0%*	*9.6%*	*14.0%*
Harbin Electric		*-13.7%*	*4.3%*	*9.9%*
EBITDA margin (%)				
Shanghai Electric	7.1%	8.3%	8.5%	9.0%
Dongfang Electric	10.1%	11.0%	11.1%	11.6%
Harbin Electric	6.1%	5.7%	5.6%	6.0%
Net profit margin (%)				
Shanghai Electric	4.4%	4.5%	4.6%	4.8%
Dongfang Electric	6.9%	6.6%	6.7%	7.1%
Harbin Electric	3.6%	2.9%	2.8%	3.0%
Key ratios				
ROE (%)				
Shanghai Electric	11.3%	11.4%	11.8%	12.1%
Dongfang Electric	26.4%	23.9%	21.3%	20.2%
Harbin Electric	11.2%	8.9%	8.6%	8.8%
ROA (%)				
Shanghai Electric	3.5%	3.7%	3.9%	4.0%
Dongfang Electric	4.0%	4.1%	4.1%	4.4%
Harbin Electric	2.5%	2.2%	2.1%	2.2%
ROIC (%)				
Shanghai Electric	10.4%	10.5%	11.0%	11.3%
Dongfang Electric	25.7%	23.5%	21.0%	19.9%
Harbin Electric	8.7%	7.0%	6.8%	7.0%

Notes: 1) SEG's orderbook only comprises major power equipment; 2) HEC has a different business grouping, proxy defined to make comparison with other companies; 3) customer deposits accounted as debt

Source: Company, Nomura estimates

Fig. 21: Operation metrics comparison (3/4)

Key ratios (cont'd)	2010	2011F	2012F	2013F
Net gearing (%)				
Shanghai Electric	65.7%	66.9%	63.6%	55.9%
Dongfang Electric	244.0%	197.3%	160.0%	127.5%
Harbin Electric	35.0%	35.7%	35.5%	30.6%
EBIT interest coverage (%)				
Shanghai Electric	62.2	105.7	111.7	117.8
Dongfang Electric	24.1	30.0	34.9	39.2
Harbin Electric	9.6	13.8	13.4	14.1
Current ratio				
Shanghai Electric	1.26	1.28	1.30	1.32
Dongfang Electric	1.00	1.04	1.07	1.11
Harbin Electric	1.53	1.53	1.53	1.54

Notes: 1) SEG's orderbook only comprises major power equipment; 2) HEC has a different business grouping, proxy defined to make comparison with other companies; 3) customer deposits accounted as debt

Source: Company data, Nomura estimates

Fig. 22: Operation metrics comparison (4/4)

Orders	2008	2009	2010
Order backlog			
Shanghai Electric (RMB bn)	177	214	242
Dongfang Electric (RMB bn)	120	130	140
Harbin Electric (RMB bn)	92	99	100
(y-y%)			
Shanghai Electric		*20.8%*	*13.0%*
Dongfang Electric		*8.3%*	*7.7%*
Harbin Electric		*7.8%*	*1.4%*
Sales to order ratio			
Shanghai Electric	3.0	3.7	3.8
Dongfang Electric	4.3	4.0	3.7
Harbin Electric	3.1	3.4	3.5
Production volume (turbine generators)			
Shanghai Electric (MW)	28,680	23,400	24,180
Dongfang Electric (MW)	26,230	22,280	26,673
Harbin Electric (MW)	29,367	20,793	17,940
Others (MW)	18,281	17,117	13,557
Total (MW)	102,558	83,590	82,350
Turbine generators M/S (by production volume)			
Shanghai Electric (%)	28.0%	28.0%	29.4%
Dongfang Electric (%)	25.6%	26.7%	32.4%
Harbin Electric (%)	28.6%	24.9%	21.8%
Others (%)	17.8%	20.5%	16.5%
Total (%)	100.0%	100.0%	100.0%
Production volume (hydro genrators)			
Shanghai Electric (MW)	n.a.	n.a.	n.a.
Dongfang Electric (MW)	6,605	4,950	5,441
Harbin Electric (MW)	5,734	5,313	3,617
Others (MW)	10,640	10,958	9,113
Total (MW)	22,979	21,220	18,170
Hydro generators M/S (by production volume)			
Shanghai Electric (%)	n.a.	n.a.	n.a.
Dongfang Electric (%)	28.7%	23.3%	29.9%
Harbin Electric (%)	25.0%	25.0%	19.9%
Others (%)	46.3%	51.6%	50.2%
Total (%)	100.0%	100.0%	100.0%
Production volume (wind turbine genrators)			
Shanghai Electric (MW)	178	362	630
Dongfang Electric (MW)	1,200	1,804	2,398
Harbin Electric (MW)	n.a.	n.a.	n.a.
Others (MW)	4569	8583.7	11273
Total (MW)	5947	10750	14300
Wind turbine M/S (by production volume)			
Shanghai Electric (MW)	3.0%	3.4%	4.4%
Dongfang Electric (MW)	20.2%	16.8%	16.8%
Harbin Electric (MW)	n.a	n.a	n.a
Others (MW)	76.8%	79.8%	78.8%
Total (MW)	100.0%	100.0%	100.0%

Notes: 1) SEG's orderbook only comprises major power equipment; 2) HEC has a different business grouping, proxy defined to make comparison with other companies; 3) customer deposits accounted as debt

Source: Company data, Nomura estimates

Valuation comparison

Fig. 23: Valuation comparison (1/3)

Company	Ticker	Rating	Price target L. Curr.	Price L. Curr.	Market cap (US$mn)	Free float (%)	Rept'g curr.	Fiscal Y/E	Net profit (Local $ m) 11F	12F	13F	Net earnings growth (%) 11F	12F	13F
China														
Power equipment manufacturer														
Shanghai Electric	2727 HK	Buy	4.9	4.09	12,523	37	CNY	Dec	3,199	3,631	4,052	15	14	12
Dongfang Electric	1072 HK	Buy	34.4	29.75	7,836	49	CNY	Dec	2,966	3,249	3,705	14	10	14
Harbin Electric	1133 HK	Neutral	8.9	9.35	1,654	49	CNY	Dec	884	922	1,013	(14)	4	10
Average												5	9	12
Heavy equipment player with exposure to forging parts for nuclear equipment														
China First Heavy	601106 CH	Not rated	n.a.	5.06	5,095	31	CNY	Dec	1,408	1,808	1,437	78	28	(21)
China Erzhong	601268 CH	Not rated	n.a.	10.12	2,634	18	CNY	Dec	497	772	1,054	78	55	37
Average												78	42	8
Wind turbine / components manufacturer														
China High Speed	658 HK	Buy	20	9.79	1,730	78	CNY	Dec	1,682	2,004	2,511	22	19	25
Xinjiang Goldwind	2208 HK	Not rated	n.a.	10.40	5,853	92	CNY	Dec	2,331	2,518	2,830	2	8	12
Sinovel	601558 CH	Not rated	n.a.	56.93	8,813	10	CNY	Dec	3,747	4,757	8,420	31	27	77
Ming Yang Wind	MY US	Not rated	n.a.	7.12	875	100	USD	Dec	170	188	227	64	11	21
Average												24	13	27
China Average												32	20	21
Non-China														
Power equipment player (incl. forging parts manufacturer)														
GE	GE US	Buy	24	19.22	205,958	99	USD	Dec	14,455	17,339	n.a.	17	20	n.a.
Mitsubishi Heavy	7011 JP	Buy	465	381.00	15,812	92	JPY	Mar	30,117	51,500	75,500	113	71	47
BHI Co. Ltd	083650 KS	Not rated	n.a.	16,000.00	192	29	KRW	Dec	27,931	n.a.	n.a.	27	n.a.	n.a.
Doosan	034020 KS	Not rated	n.a.	61,200.00	5,951	42	KRW	Dec	237,206	326,281	555,867	113	38	70
BHEL	BHEL IN	Reduce	1,850	1,916.65	20,778	22	INR	Mar	53,552	66,843	71,830	24	25	7
Japan Steel Works	5631 JP	Neutral	880	592.00	2,705	88	JPY	Mar	18,000	18,200	23,600	3	1	30
Toshiba Plant	1983 JP	Buy	1,350	806.00	968	37	JPY	Mar	8,300	9,200	10,200	6	11	11
Siemens	SIE GR	Neutral	100	90.48	58,452	87	EUR	Sep	7,471	8,567	6,606	92	15	(23)
Alstom	ALO FP	Buy	49	41.34	8,534	63	EUR	Mar	462	944	1,180	(62)	104	25
Areva SA	CEI FP	Not rated	n.a.	30.25	8,117	n.a.	EUR	Dec	525	756	797	(41)	44	5
Average												29	36	22
Wind turbine / components manufacturer														
Hansen Transmissions	HSN LN	Not rated	n.a.	42.50	201	70	EUR	Mar	(16)	(1)	13	n.a.	n.a.	n.a.
Gamesa	GAM SM	Suspended	n.a.	6.32	1,097	80	EUR	Dec	68	88	114	35	30	30
Vesta	VWS DC	Suspended	n.a.	148.70	21,375	n.a.	EUR	Dec	287	351	461	84	22	31
Repower	RPW GR	Not rated	n.a.	131.20	859	9	EUR	Mar	51	60	77	(13)	17	30
Suzlon	SUEL IN	Suspended	n.a.	50.05	1,963	38	INR	Mar	(11,034)	2,060	6,833	n.a.	n.a.	232
Average												35	23	81
Non-China Average												31	33	41
International Average												**31**	**27**	**32**

Note: pricing as of 26 May, 2011, FY11F figures are actual for companies reporting in March which have reported

Source: Bloomberg consensus for Not rated and Rating suspended securities, Nomura estimates

Fig. 24: Valuation comparison (2/3)

Company	EPS (Local $)			EPS growth (%)			P/E (x)			PEG	P/B (x)			Yield (%)		
	11F	12F	13F	11F	12F	13F	11F	12F	13F	11-13F	11F	12F	13F	11F	12F	13F
China																
Power equipment manufacturer																
Shanghai Electric	0.25	0.28	0.32	14	14	12	13.1	11.5	10.3	0.9	1.4	1.3	1.2	2.3	2.6	2.9
Dongfang Electric	1.48	1.62	1.85	14	10	14	16.0	14.6	12.8	1.2	3.5	2.8	2.4	0.6	0.7	0.8
Harbin Electric	0.64	0.67	0.74	(14)	4	10	11.6	11.1	10.1	n.a.	1.0	0.9	0.9	1.6	1.7	1.9
Average				5	9	12	13.6	12.4	11.1	1.0	2.0	1.7	1.5	1.5	1.7	1.8
Heavy equipment player with exposure to forging parts for nuclear equipment																
China First Heavy	0.22	0.29	0.22	72	28	(23)	22.6	17.6	23.0	0.9	1.8	1.7	1.7	0.5	0.6	0.4
China Erzhong	0.29	0.42	0.58	73	44	38	34.8	24.1	17.4	0.5	2.7	2.5	n.a.	0.6	0.9	0.7
Average				73	36	7	28.7	20.9	20.2	0.7	2.3	2.1	1.7	0.5	0.8	0.5
Wind turbine / components manufacturer																
China High Speed	1.31	1.56	1.96	22	19	25	6.5	5.5	4.4	14	1.2	1.0	0.9	4.9	5.9	7.3
Xinjiang Goldwind	0.87	0.92	1.01	(12)	6	9	10.0	9.4	8.6	15.6	1.5	1.3	1.3	2.5	2.6	3.4
Sinovel	3.71	4.71	8.38	17	27	78	15.4	12.1	6.8	0.3	3.2	2.6	n.a.	n.a.	n.a.	n.a.
Ming Yang Wind	1.28	1.48	1.79	31	16	21	5.6	4.8	4.0	0.2	1.3	1.0	0.8	n.a.	n.a.	0.6
Average				11	14	27	7.5	6.4	4.8	5.9	1.4	1.2	0.7	2.5	2.8	2.8
China Average				24	19	20	15.1	12.3	10.8	4.1	2.0	1.7	1.3	1.9	2.1	2.2
Non-China																
Power equipment player (incl. forging parts manufacturer)																
GE	1.36	1.65	n.a.	18	21	n.a.	14.1	11.6	n.a.	n.a	1.6	1.5	n.a.	2.8	3.4	n.a.
Mitsubishi Heavy	9.00	15.30	22.50	114	70	47	42.3	24.9	16.9	0.3	1.0	1.0	0.9	1.6	1.6	1.6
BHI Co. Ltd	2,152.17	n.a.	n.a.	28	n.a.	n.a.	7.4	n.a.	n.a.	n.a	1.9	n.a.	n.a.	1.2	1.2	1.3
Doosan	2,310.46	3,110.58	5,299.32	87	35	70	26.5	19.7	11.5	0.3	1.8	n.a.	n.a.	0.8	0.9	1.0
BHEL	109.40	136.55	146.74	24	25	7	17.5	14.0	13.1	42	4.7	3.8	3.2	1.9	2.2	2.4
Japan Steel Works	48.50	49.00	63.60	3	1	30	12.2	12.1	9.3	1.2	1.8	1.6	1.4	4.1	4.2	4.2
Toshiba Plant	85.20	94.40	104.70	6	11	11	9.5	8.5	7.7	0.9	0.9	0.8	0.8	1.9	1.9	1.9
Siemens	8.48	9.50	7.27	91	12	(23)	10.7	9.5	12.4	0.5	**2.3**	2.1	1.9	4.7	5.3	4.1
Alstom	1.56	3.18	3.98	(63)	104	25	26.5	13.0	10.4	n.a.	**3.0**	2.6	2.4	1.6	2.6	3.2
Areva SA	1.42	2.03	2.12	(43)	43	4	21.2	14.9	14.2	n.a.	1.3	1.2	1.1	0.8	1.5	1.4
Average				27	36	21	18.8	14.3	12.0	7.6	2.0	1.8	1.7	2.1	2.5	2.3
Wind turbine / components manufacturer																
Hansen Transmissions	(0.02)	(0.00)	0.02	n.a.	n.a.	n.a.	n.a.	n.a.	18.5	n.a	0.4	0.4	0.4	n.a.	n.a.	0.3
Gamesa	0.28	0.38	0.48	36	35	25	22.6	16.7	13.4	0.5	0.9	0.9	0.9	1.2	1.5	2.1
Vesta	1.46	1.77	2.26	89	21	28	27.4	22.7	17.7	0.5	2.7	2.4	2.1	n.a.	n.a.	0.1
Repower	5.75	7.03	8.09	(9)	22	15	22.8	18.7	16.2	2.2	2.4	2.2	2.0	1.1	1.2	1.6
Suzlon	(6.47)	1.27	4.09	n.a.	n.a.	222	n.a.	39.4	12.3	n.a	1.2	1.3	1.2	n.a.	0.1	0.1
Average				39	26	73	24.3	24.4	15.6	1.1	1.5	1.4	1.3	1.1	0.9	0.8
Non-China Average				29	33	38	20.1	17.4	13.4	5.4	1.9	1.7	1.5	2.0	2.1	1.8
International Average				**27**	**27**	**31**	**18.0**	**15.3**	**12.3**	**4.8**	**1.9**	**1.7**	**1.4**	**1.9**	**2.1**	**2**

Note: pricing as of 26 May, 2011. FY11F figures are actual for companies reporting in March which have reported

Source: Bloomberg consensus for Not rated and Rating suspended securities, Nomura estimates

Fig. 25: Valuation comparison (3/3)

	Net debt/equity (%)			RoE (%)			RoA (%)			EV/EBITDA (x)		
Company	**11F**	**12F**	**13F**	**11F**	**12F**	**13F**	**11F**	**12F**	**13F**	**11F**	**12F**	**13F**
China												
Power equipment manufacturer												
Shanghai Electric	66.9	63.6	55.9	11.4	11.8	12.1	3.7	3.9	4.0	9.3	8.3	7.3
Dongfang Electric	197.3	160.0	127.5	23.9	21.3	20.2	4.1	4.1	4.4	14.8	13.5	11.9
Harbin Electric	35.7	35.5	30.6	8.9	8.6	8.8	2.2	2.1	2.2	7.8	7.5	6.7
Average				14.7	13.9	13.7	3.3	3.4	3.6	10.6	9.8	8.6
Heavy equipment player with exposure to forging parts for nuclear equipment												
China First Heavy	8.5	15.3	21.2	8.1	9.2	7.5	3.3	3.7	4.0	17.3	13.7	15.8
China Erzhong	47.9	38.9	n.a.	6.3	8.7	n.a.	2.3	3.4	n.a.	15.7	12.3	8.6
Average				7.2	9.0	7.5	2.8	3.6	4.0	16.5	13.0	12.2
Wind turbine / components manufacturer												
China High Speed	36.4	43.4	34.5	21.0	21.3	22.6	10.7	11.0	11.8	6.0	5.5	4.4
Xinjiang Goldwind	net cash	net cash	net cash	17.9	15.6	16.0	9.2	8.8	9.5	12.7	11.4	10.9
Sinovel	n.a.	n.a.	n.a.	19.9	20.5	n.a.	9.0	9.0	n.a.	n.a.	n.a.	n.a.
Ming Yang Wind	net cash	net cash	net cash	22.9	20.3	n.a.	n.a.	n.a.	n.a.	2.5	2.1	1.8
Average				16.3	15.5	12.9	7.2	7.2	7.1	5.3	4.7	4.3
China Average				15.6	15.3	14.5	5.6	5.8	6.0	10.8	9.3	8.4
Non-China												
Power equipment player (incl. forging parts manufacturer)												
GE	net cash	net cash	n.a.	11.7	12.9	n.a.	6.6	7.7	n.a.	9.2	8.9	n.a.
Mitsubishi Heavy	80.0	70.0	70.0	2.3	3.9	5.5	2.5	2.9	3.7	9.9	9.4	8.1
BHI Co. Ltd	57.7	n.a.	n.a.	n.a.	n.a.	n.a.	9.7	n.a.	n.a.	n.a.	n.a.	n.a.
Doosan	59.1	n.a.	n.a.	n.a.	n.a.	n.a.	2.5	n.a.	n.a.	6.4	3.4	3.1
BHEL	n.a.	n.a.	n.a.	33.3	29.8	26.4	14.2	11.0	10.6	10.5	8.4	7.6
Japan Steel Works	30.0	net cash	net cash	14.4	13.2	15.1	9.2	9.2	10.9	4.8	4.7	4.2
Toshiba Plant	net cash	net cash	net cash	9.9	10.1	10.2	9.1	9.6	9.9	3.1	2.8	2.6
Siemens	net cash	net cash	net cash	19.2	16.7	17.1	8.6	9.6	7.2	8.9	7.8	7.3
Alstom	34.7	20.2	8.5	15.3	22.2	23.1	1.8	3.7	4.5	10.6	7.0	6.5
Areva SA	n.a	n.a	n.a	5.7	7.5	7.2	n.a.	n.a.	n.a.	12.1	10.0	8.3
Average				14.0	14.5	14.9	7.1	7.7	7.8	8.4	6.9	6.0
Wind turbine / components manufacturer												
Hansen Transmissions	3.3	0.6	net cash	(2.4)	(0.3)	2.2	(0.7)	1.0	3.5	7.2	6.0	4.6
Gamesa	32.0	34.9	36.1	4.2	5.4	6.9	2.1	2.5	4.4	6.4	5.4	4.7
Vesta	20.9	13.1	5.3	9.6	11.1	13.0	5.0	5.1	6.8	37.1	32.3	27.2
Repower	net cash	net cash	net cash	10.6	11.5	13.5	n.a.	n.a.	n.a.	10.0	8.5	6.7
Suzlon	130.6	136.5	119.9	(12.9)	3.0	9.4	(2.9)	1.7	4.0	23.9	10.0	7.3
Average				1.8	6.1	9.0	0.9	2.6	4.7	16.9	12.4	10.1
Non-China Average				9.3	11.3	12.5	5.2	5.8	6.6	11.4	8.9	7.6
International Average				**11.9**	**12.9**	**13.1**	**5.3**	**5.8**	**6.3**	**11.2**	**9.0**	**7.9**

Note: pricing as of 26 May, 2011. FY11F figures are actual for companies reporting in March which have reported

Source: Bloomberg consensus for Not rated and Rating suspended securities, Nomura estimates

Power equipment plays look attractive

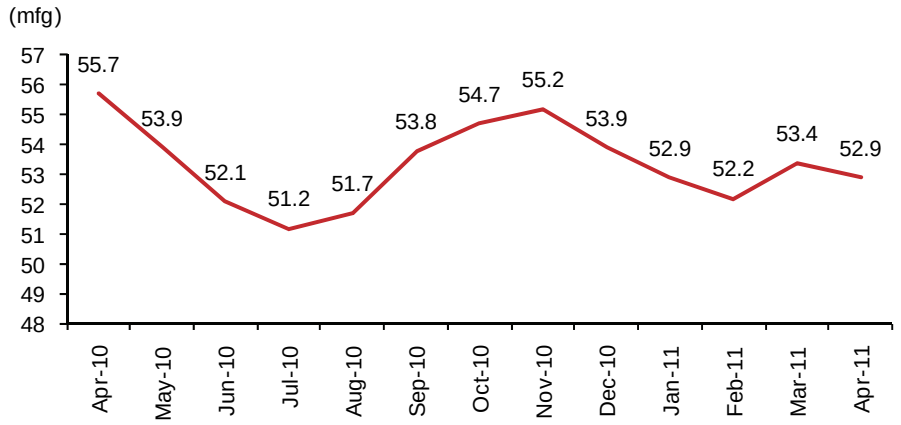
In light of the current market dynamics, we find Chinese power equipment companies even more attractive, given:

- Concerns on slower GDP growth favour non-cyclical plays.

  In light of concerns on slower growth due to slowing PMI (April's PMI dropped 0.5% m-m) in China, we believe the non-cyclical power equipment plays will become more appealing.
- Improving nuclear safety standards provide upside to nuclear equipment demand.
- Prevailing power shortage may push up power capacity growth.
- Recent share price weakness, in light of the Fukushima incident and concerns on China's nuclear development, appears overdone, in our view.

Current concerns on China's slower growth give rise to non-cyclical plays

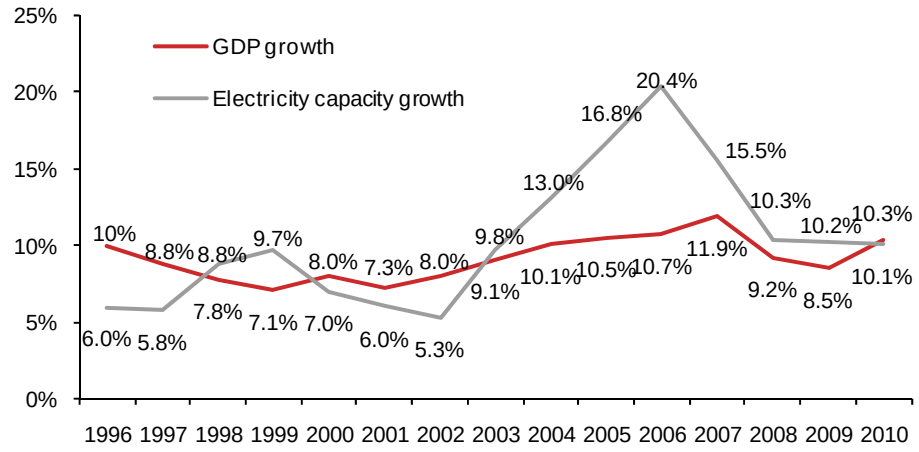
Fig. 26: China's PMI (Mfg.)



Source: CEIC

Power capacity growth should follow and relate to economical development within a geographical region in the long term. Power capacity growth is less likely to be influenced by a short-term GDP slow-down/spike, given it takes time to build-out power capacity for future electricity demand. The graph below shows China's GDP growth and power capacity growth between 1996 and 2010. In our view, even if there were a short-term slowdown in China in this coming quarter, FY11F earnings for power equipment plays would remain intact as capacity build out for FY11F should remain in order to satisfy future power demand.

Fig. 27: China's GDP and power capacity growth (1996-2010)



Source: CEC, CEIC, Nomura Research

Improving nuclear safety guideline implies upside to nuclear equipment demand

In light of the Fukushima incident, on 16 March, 2011, China suspended approval on new nuclear projects and called for safety assessments / reviews of existing nuclear projects. According to our checks with the management of power equipment companies and recent news flow, the government is likely to announce the results of the safety checks and post new safety guidelines for nuclear development in late-May to August. However, such safety checks results have not come out as yet. With the current information, we have yet to determine the extent of the improvement in safety requirements. However, in our view, additional requirements could involve more checks / monitoring / redundant systems to be in place in a nuclear plant, implying upside to the amount of nuclear equipment and our revenue / earnings estimates for the nuclear equipment market and the three companies under our coverage (SEG, DFE and HEC).

Prevailing power shortage implies upside to thermal capacity and thus thermal equipment demand

In our view, the current low returns and insufficient funding deter IPPs from making investments in new thermal power plants. From our reality check, all IPPs (including Shenhua's power arm) have cut capex on power assets by another 4.2% this year (2010 capex was already 9% lower than the 2009 level). According to CEC, new thermal power capacity launched down 22% y-y during 4M11. If this situation persists, a larger scale "structural" power shortage will likely resurface in 1-2 years, as happened in 2004.

Fig. 28: YTD new power capacity addition

YTD power generating capacity installed			
(GW)	**4M11**	**4M10**	***(y-y%)***
Total	18.85	22.24	*-15.3%*
Hydro	2.12	2.11	*0.6%*
Thermal	13.42	17.29	*-22.4%*
Wind	3.24	2.81	*15.2%*
Others	0.07	0.03	*105.3%*

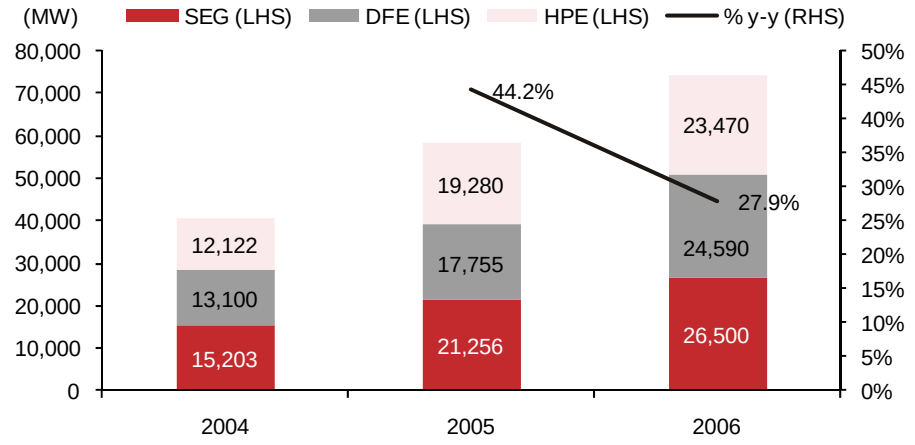
Source: CEC

According to recent news reports (sina.com, Bloomberg, China Business News, Xinhua News Agency), power shortages are already occurring across different regions in China, mainly in Eastern and Central China, which is earlier than the expected summer peak season of June-August. According to our checks with several industry names, the power shortages are largely attributed to: 1) decline in hydropower generation given low water levels; and 2) tightening coal supply, rising coal prices and insufficient power tariff in Central China. In the eastern part, the power shortage is driven by robust power demand growth from energy intensive industries and insufficient power capacity. Separately, in early April, the NDRC said it expected power supply to remain tight this year, especially for the eastern, southern and northern regions of China. The NDRC has also requested

each region to submit a power consumption plan to the NDRC by end-May for review. Despite such, the current shortage appears to be less severe than in 2004. The current power shortage is 30-35GW, mainly in the north, east and central regions, which is around 5% of the total capacity in China. This compares with a 30GW shortage in 2004, which represented 10% of the total capacity as of 2004. Thus, current shortage is not as severe as that of 2004. CEC forecasts show that thermal plant utilisation will reach around 5,300 hours this year and should not reach the 2004 level (5,455 hours), in our view.

We believe the government may push for a sharper increase in thermal capacity to avoid large scale power shortages in 2012F/13F as thermal power has a shorter construction lead-time than other base load capacity such as hydro and nuclear. IPPs are likely to follow suit given the two recent tariff hikes in April and May have helped thermal plants' profitability. We observe that thermal turbine generators' output increased 44.2% and 27.9% in 2005 and 2006, respectively, following the power shortage in 2004.

Fig. 29: Thermal turbine generators: output volume by the big 3 (2004-06)

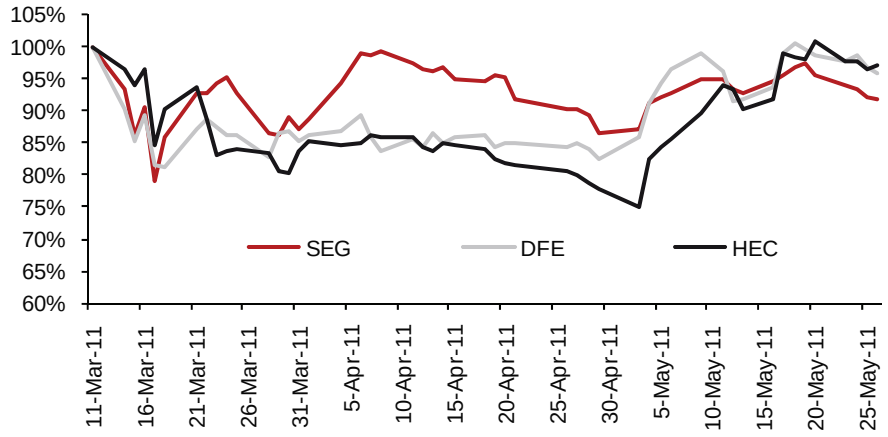


Source: Company, Nomura Research

Recent share price weaknesses overdone, in our view

Following the Fukushima incident and the subsequent nuclear project approval suspension in China, the three power equipment plays have seen their share prices fall by 20.9% (SEG), 18.7% (DFE) and 25.1% (HEC). According to our risk analysis, the market has factored in the worst case scenario (we estimate the net present value of SEG and DFE could fall by 6.4% and 22.3% if no further nuclear projects are approved in China). In our view, the market concern is overdone, as we believe China will still rely on nuclear power in order to meet its power demand while reducing its reliance on coal. The stock price performance of SEG and DFE (our BUY calls) have recovered a bit in the recent past. As at 26 May, 2011, they are still trading at 6.5% (SEG) and 1.5% (DFE) discounts vs their 11 March, 2011 levels.

Fig. 30: Stock price performance since Mar 11 earthquake



Note: Index to Mar 11 closing price

Source: Bloomberg

In early May, news flow suggested that the new safety guideline on nuclear development will likely emerge in June-August and project approval will resume shortly thereafter. However, on 12 May, 2011, according to Feng Yi, Deputy Secretary-General of the China Nuclear Energy Association, the result of the nuclear safety assessment is likely due out by end-May but there is currently no set time-line for new nuclear project approval. (Source: chinapower.com.cn)

While there is uncertainty on when the resumption on nuclear projects approval in China is going to be and there is volatility for power equipment shares, we think:

- The amount of approved nuclear projects in China stood at 35.5GW (representing more than half of our projected 69.2GW of new nuclear capacity to be installed before 2020F).
- Construction / development progress for approved projects are largely intact (according to checks with power equipment's management).
- China is likely to remain intact on its mid to long-term nuclear development and targets to have at least 70GW of nuclear capacity by 2020F, according to officials from China Nuclear Energy Association. (Source: hexun, 16 May 2011)

In our view, given the strong pipeline for approved and under construction nuclear projects, earnings and delivery schedule for nuclear power equipment should remain strong and intact in the next two years. We are not concerned about a slight delay in the resumption of nuclear project approvals.

China needs to power its growth

In light of expected economic growth, we see high power demand in China, implying firm demand for new power generation capacity. We forecast the amount of power generating capacity to be installed in 2011F-15F to be 530.0GW, largely in-line with the 538.2GW installed over the last five years. However, the mix of new capacities is set to be different, given China's energy and carbon goal.

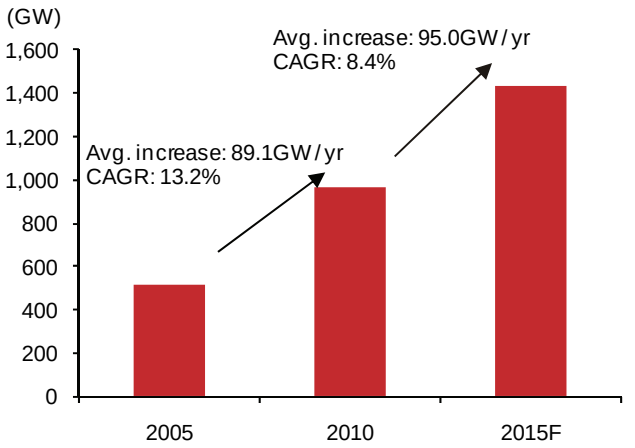
Such dynamics give rise to new energy, namely nuclear. Wind demand is deemed to be stable in the next few years, due to its high-base and grid bottleneck. Given the current ASP pressure in wind turbine and over-capacity in the industry, we see limited opportunity in the wind market. For the Big Three equipment plays, being adaptive to get exposed in nuclear equipment sales facilitates revenue growth. We like Shanghai Electric and Dongfang Electric since both have laid solid ground work and recorded meaningful revenues from the nuclear segment in FY10. We expected revenue from nuclear to rise in 2011F and 2012F. We like SEG more, as it is exposed to nuclear and appears defensive in the case of any short-term earnings delay in nuclear development, given its size and diversified portfolio. Moreover, its capability in reactor internals and heavy forging makes it the most comprehensive play, we think. In our view, SEG's competitive advantage in nuclear is likely to continue in the near to mid-term until other players catch up. As at 1Q11F, we estimate SEG to have RMB90.56bn of overseas EPC orders at hand, another catalyst in providing sustainable growth to SEG in the visible term.

For DFE, we forecast the company to capture upside from expected nuclear development. However, according to our risk analysis, a ½ year delay in nuclear development / delivery would cut the company's 2011F earnings by 11%. Long-term fundamentals for the company remain largely unchanged. For HEC, despite its recent aggressive move, meaningful revenue from new energy (nuclear and wind) is not likely until 2013F, so we believe the lack of a near-term catalyst justifies our NEUTRAL rating.

Generating capacity to reach 1,437GW by 2015F; net increase of 95.0GW / year

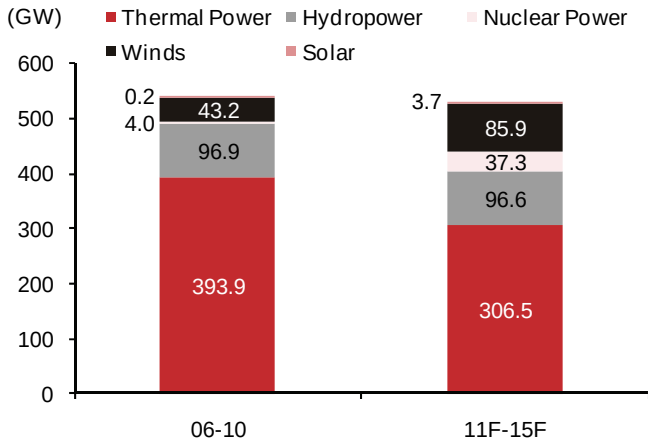
Power generating capacity is projected to reach 1,437GW by 2015F, representing a CAGR of 8.4% over the 2010 level, according to the Chinese Electricity Council's (CEC) forecast. At first glance, demand for power generation capacity is slowing down from a 13.2% CAGR (2006-10) to an 8.4% CAGR (2011F-15F). Indeed, the lowered CAGR indicates a higher base, in our view. In absolute terms, the net capacity addition per year averages 89.1GW (2006-10) vs. 95.0 GW (2010-15F). (Capacity installed is higher than net capacity addition due to small thermal closures and non-grid connected wind capacity).

Fig. 31: Generating capacity forecast



Source: CEC, Nomura estimates Note: Year end figure, avg. increase are net increase figures, not accounting for small thermal closedown nor non-grid connected wind capacity

Fig. 32: New power capacity installed



Source: CEC, Nomura estimates Note: Accounting for small thermal close-down and non-grid connected wind capacity

With a different mix, giving rise to clean energy

We project 530.0GW of new generating capacity will start in the next 5 years (2011F-15F) on the back of the capacity target and with the assumption of 50GW of small thermal to be closed during the period (vs. 71.2GW small thermal closed in the 11-FYP) and 5GW of non-grid connected capacity in the 11F-15F period (vs. 12GW in the 2006-10 period). Overall, this is largely in-line with the 538.2GW installed in the past 5 years (06-10).

In our view, the mix of new capacity in the next few years will be different and geared towards non-fossil fuels, given:

- China's target to reduce carbon intensity by 40-45% from 2005-level by 2020F
- China's target to make non-fossil energy contribute 15% to primary energy consumption
- China's 12-FYP target of 16% energy intensity reduction and 17% carbon intensity reduction by 2015F

For thermal power generating capacity, we expect a slowdown from the 393.9GW installed in the 2006-10 timeframe to 306.5GW in the FY11F-15F. Meanwhile, we project a substantial increase in contribution by nuclear and wind generating capacity in the 2011F-15F timeframe. We project nuclear capacity to make up 37.3GW of the new generating capacity vs. 4.0GW during the 2006-10 period.

Fig. 33: China's power generation capacity forecast

(GW)	2006	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	484	556	602	650	707	763	817	867	916	963	1,015	1,065	1,111	1,156	1,200
Coal	*437*	*511*	*565*	*621*	*678*	*734*	*787*	*836*	*883*	*930*	*977*	*1,023*	*1,065*	*1,105*	*1,144*
Gas	*10*	*13*	*13*	*13*	*13*	*15*	*17*	*19*	*20*	*22*	*27*	*32*	*38*	*44*	*50*
Oil	*37*	*32*	*24*	*17*	*15*	*14*	*13*	*12*	*11*	*10*	*9*	*8*	*7*	*6*	*5*
Thermal - Others	*0*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Hydropower	129	145	172	197	213	231	250	270	290	310	326	341	354	367	380
Nuclear Power	7	9	9	9	11	12	15	22	35	48	54	60	66	73	80
Winds*	2	4	9	16	31	46	61	78	95	112	128	145	162	181	200
Solar	-	-	-	-	0	1	1	2	3	4	7	10	13	16	20
Others (solar and others for data before 2010)	0	4	1	2	0	0	0	0	0	0	1	2	3	4	5
Total	**622**	**719**	**793**	**874**	**962**	**1,053**	**1,144**	**1,239**	**1,338**	**1,437**	**1,529**	**1,621**	**1,709**	**1,797**	**1,885**
(y-y %)		*15.5%*	*10.3%*	*10.2%*	*10.1%*	*9.5%*	*8.6%*	*8.3%*	*8.0%*	*7.4%*	*6.4%*	*6.0%*	*5.4%*	*5.1%*	*4.9%*

Note: * Only wind power capacity in operation and connected to the power grids (since 2007)

Source: CEC, Nomura estimates

Fig. 34: New generation capacity addition

(GW)	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	**87**	**62**	**75**	**67**	**67**	**64**	**60**	**58**	**58**	**51**	**50**	**46**	**45**	**44**
(y-y %)		*-28%*	*20%*	*-10%*	*0%*	*-5%*	*-6%*	*-3%*	*-1%*	*-11%*	*-2%*	*-8%*	*-3%*	*-3%*
Hydropower	**17**	**26**	**25**	**17**	**18**	**19**	**20**	**20**	**20**	**16**	**15**	**14**	**13**	**13**
(y-y %)		*57%*	*-4%*	*-34%*	*6%*	*8%*	*5%*	*0%*	*0%*	*-22%*	*-3%*	*-9%*	*-4%*	*-4%*
Nuclear Power	**2**	**0**	**0**	**2**	**1**	**3**	**7**	**13**	**14**	**6**	**6**	**6**	**7**	**7**
(y-y %)		*n.a.*	*n.a.*	*n.a.*	*-38%*	*160%*	*154%*	*77%*	*7%*	*-57%*	*6%*	*3%*	*5%*	*5%*
Winds*	**3**	**6**	**14**	**19**	**18**	**17**	**17**	**17**	**17**	**16**	**17**	**17**	**18**	**19**
(y-y %)		*82%*	*133%*	*37%*	*-5%*	*-5%*	*0%*	*0%*	*0%*	*-7%*	*7%*	*4%*	*6%*	*5%*
Solar	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**3**	**3**	**3**	**3**	**4**
Others (solar and others for data before 2010)	**4**	**-3**	**0**	**-2**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**1**
Total	**112**	**92**	**114**	**103**	**104**	**103**	**105**	**109**	**109**	**92**	**92**	**88**	**88**	**88**
(y-y %)		*-18%*	*23%*	*-10%*	*1%*	*-1%*	*2%*	*4%*	*0%*	*-16%*	*0%*	*-4%*	*0%*	*0%*

Note: Accounts for small thermal shut-down and non-grid connected wind capacity in historical; assumed 50GW small thermal shut-down in FY11F-15F and non grid-connected wind capacity installed in 2011F (3GW) and 12F (2GW)

Source: CEC, Nomura estimates

Despite similar amount of capacity installed, market potential is up by 22%

In spite of a similar level of capacity installed, market size (measured in dollar values for power equipment delivered) is up by 22% for 2011F-15F period (vs. 2006-2010), according to our estimates below. This is due to some non-fossil fuel power equipment (nuclear and wind) being more costly than traditional thermal equipment.

Fig. 35: Potential market size estimate

Equipment revenue assumption according industry checks (RMB / kw)

	cost / kw
Thermal	1,000
Hydro	500
Nuclear	3,543

	2009 & before	2010	2011F	2012F & after
Wind	5,000	4,200	3,780	3,591

Capacity installed (GW)

	06-10	11F-15F	
Thermal	393.9	306.5	(incl. small thermal close-down)
Hydro	96.9	96.6	
Nuclear	4.0	37.3	
Wind	43.2	85.9	(with 5GW non-grid connected capacity in 11F-15F)
Solar	0.2	3.7	
Total	538.2	530.0	

Market opportunity (RMB bn)

	06-10	11F-15F	(%-chg)
Thermal	394	307	-22%
Hydro	48	48	0%
Nuclear	14	132	838%
Wind	201	312	55%
Total	657	799	22%

Source: Nomura estimates, Industry checks Note: Est. for nuclear equipments denote major equipments related to the Big Three

According to our estimates, the market potential for nuclear equipment will increase by more than 8x in the next 5 years while that of wind equipment will rise by 55% (vs. 2006-10).

Nuclear capacity up 8x by 2020F, creating a RMB245bn market for nuclear equipment delivery

The increase in nuclear capacity will likely help power equipment companies. According to our estimates, RMB245bn of major nuclear equipment will be delivered before 2020F in order for China to have 80GW of nuclear capacity, impacting Shanghai Electric, Dongfang Electric and Harbin Electric.

We expect Shanghai Electric and Dongfang Electric's revenue to grow significantly in 2011F-12F, due to increases in revenue from nuclear-related equipment, on the back of:

• The vintages of the nuclear orders on their books; and

• Our forecast delivery timeline for nuclear equipment.

However, the revenue impact on Harbin Electric may come later due to its late start in the game; this is in-line with management's guidance.

On top of the above potential market size, the potential revenue recognition opportunity is another important measure for the power equipment plays, given that revenue may come in earlier than the commencement of this power generating equipment. The table below illustrates our estimates of forecast potential market size and revenue opportunities for the power equipment market in China. We first project capacity to be installed between 2011F-2020F, and then we apply the estimated equipment cost / kw to the forecast of the volume of equipment (measured in dollar values) to be delivered for each year. Then we apply our revenue recognition and delivery assumptions to come up with revenue opportunity for the market during the year. For **wind turbine**, we assume delivery and revenue are recognised to be the same year. For **hydro** and **thermal equipment**, we assume 60% of the equipment revenue is recognised in the year of capacity commencement and 40% the year before, since some equipment may be delivered earlier for installation and the percentage of completion revenue recognition for some of the large contracts. For **nuclear equipment**, due to its long-cycle nature (4 years) and some of the equipments are delivered years before plant commencement and the use of percentage completion revenue recognition, we make the following assumptions: 40% revenue booked in the year of plant commencement, 30% the year before, 20% 2 years before and 10% 3 years before.

Fig. 36: China's equipment demand and revenue potential forecast

New Capacity (including small thermal close down and non-grid connected wind equipment

(GW)	2005	2006	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	**58.0**	**103.1**	**86.7**	**62.3**	**74.7**	**67.1**	**66.8**	**63.8**	**60.2**	**58.2**	**57.5**	**51.4**	**50.2**	**46.3**	**45.2**	**44.0**
New addition	*58.0*	*99.9*	*72.4*	*45.6*	*48.5*	*56.1*	*56.8*	*53.8*	*50.2*	*48.2*	*47.5*	*51.4*	*50.2*	*46.3*	*45.2*	*44.0*
Small thermal close down	-	*3.1*	*14.4*	*16.7*	*26.2*	*11.0*	*10.0*	*10.0*	*10.0*	*10.0*	*10.0*	-	-	-	-	-
Hydropower	**7.8**	**12.1**	**16.7**	**26.3**	**25.3**	**16.6**	**17.6**	**19.0**	**20.0**	**20.0**	**20.0**	**15.5**	**15.0**	**13.7**	**13.2**	**12.7**
Nuclear Power	**-**	**-**	**1.7**	**0.5**	**-**	**1.7**	**1.1**	**2.8**	**7.2**	**12.7**	**13.6**	**5.8**	**6.2**	**6.3**	**6.6**	**7.0**
Winds	**1.3**	**1.3**	**3.3**	**5.9**	**13.8**	**18.9**	**17.9**	**17.0**	**17.0**	**17.0**	**17.0**	**15.8**	**16.8**	**17.5**	**18.5**	**19.5**
Grid connected installation	*1.3*	*1.0*	*2.1*	*4.5*	*7.2*	*14.9*	*14.9*	*15.0*	*17.0*	*17.0*	*17.0*	*15.8*	*16.8*	*17.5*	*18.5*	*19.5*
Non-grid connected installation	-	*0.3*	*1.2*	*1.4*	*6.6*	*4.0*	*3.0*	*2.0*	-	-	-	-	-	-	-	-
Solar	**-**	**-**	**-**	**-**	**-**	**0.2**	**0.6**	**0.4**	**0.7**	**1.1**	**0.9**	**2.7**	**3.0**	**3.2**	**3.5**	**3.8**
Others (solar and others for data before 2010)	**7.2**	**(7.6)**	**3.8**	**(2.6)**	**0.1**	**(1.6)**	**-**	**-**	**-**	**-**	**-**	**0.8**	**0.9**	**1.0**	**1.1**	**1.2**
Total	**74.2**	**108.8**	**112.2**	**92.4**	**113.9**	**103.1**	**104.0**	**103.0**	**105.0**	**109.0**	**109.0**	**92.0**	**92.0**	**88.0**	**88.0**	**88.0**

Eqpuiment Cost Assumption

Eqp. Cost / kw	2005	2006	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Hydropower	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
Nuclear Power	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543	3,543
Winds	5,000	5,000	5,000	5,000	5,000	4,200	3,780	3,591	3,591	3,591	3,591	3,591	3,591	3,591	3,591	3,591

Amount of equipment commenced (measured in RMB)

(RMB bn)	2005	2006	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	58.0	103.1	86.7	62.3	74.7	67.1	66.8	63.8	60.2	58.2	57.5	51.4	50.2	46.3	45.2	44.0
Hydropower	3.9	6.0	8.3	13.1	12.6	8.3	8.8	9.5	10.0	10.0	10.0	7.8	7.5	6.8	6.6	6.3
Nuclear Power	-	-	6.2	1.7	-	6.2	3.8	10.0	25.3	44.8	48.2	20.6	21.8	22.4	23.5	24.7
Winds	6.3	6.6	16.3	29.7	69.0	79.4	67.8	61.0	61.0	61.0	61.0	56.7	60.4	62.8	66.3	69.9
Total	68.2	115.7	111.4	105.1	156.3	154.8	143.4	134.3	131.2	129.3	128.6	115.8	118.1	115.9	118.0	120.2

Revenue recognition schedule assumption

(%)	Yr- com-menced	1-yr before	2-yr before	3-yr before
Thermal Power	60%	40%		
Hydropower	60%	40%		
Nuclear Power	40%	30%	20%	10%
Winds	100%			

Power equipments revenue opportunity

(RMB bn)	2005	2006	2007	2008	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Thermal Power	**76.02**	**96.53**	**76.95**	**67.24**	**71.66**	**67.01**	**65.62**	**62.34**	**59.39**	**57.94**	**55.07**	**50.91**	**48.63**	**45.86**	**44.68**	**41.99**
(y-y %)		*27.0%*	*-20.3%*	*-12.6%*	*6.6%*	*-6.5%*	*-2.1%*	*-5.0%*	*-4.7%*	*-2.4%*	*-5.0%*	*-7.6%*	*-4.5%*	*-5.7%*	*-2.6%*	*-6.0%*
Hydropower	**4.76**	**6.95**	**10.26**	**12.93**	**10.90**	**8.50**	**9.08**	**9.70**	**10.00**	**10.00**	**9.10**	**7.66**	**7.23**	**6.73**	**6.48**	**5.99**
(y-y %)		*46.0%*	*47.5%*	*26.1%*	*-15.7%*	*-22.0%*	*6.8%*	*6.8%*	*3.1%*	*0.0%*	*-9.0%*	*-15.9%*	*-5.6%*	*-7.0%*	*-3.7%*	*-7.5%*
Nuclear Power	**1.41**	**2.20**	**3.61**	**2.31**	**3.61**	**8.14**	**14.07**	**25.36**	**35.27**	**38.68**	**32.05**	**21.63**	**22.62**	**23.44**	**24.36**	**25.18**
(y-y %)		*56.2%*	*64.0%*	*-35.9%*	*56.0%*	*125.4%*	*72.8%*	*80.3%*	*39.1%*	*9.7%*	*-17.1%*	*-32.5%*	*4.6%*	*3.6%*	*3.9%*	*3.3%*
Winds	**6.30**	**6.57**	**16.33**	**29.67**	**69.03**	**79.36**	**67.78**	**61.05**	**61.05**	**61.05**	**61.05**	**56.67**	**60.39**	**62.75**	**66.31**	**69.87**
(y-y %)		*4.2%*	*148.8%*	*81.6%*	*132.7%*	*15.0%*	*-14.6%*	*-9.9%*	*0.0%*	*0.0%*	*0.0%*	*-7.2%*	*6.6%*	*3.9%*	*5.7%*	*5.4%*
Total	**82.19**	**113.54**	**108.06**	**111.93**	**155.67**	**163.98**	**157.32**	**159.27**	**166.09**	**167.74**	**156.96**	**136.31**	**138.82**	**138.69**	**141.81**	**142.93**
(y-y %)		*38.1%*	*-4.8%*	*3.6%*	*39.1%*	*5.3%*	*-4.1%*	*1.2%*	*4.3%*	*1.0%*	*-6.4%*	*-13.2%*	*1.8%*	*-0.1%*	*2.2%*	*0.8%*

Source: Nomura estimates, Industry checks

New dynamics will reward companies that can adapt

Domestic demand for thermal equipment should be stable in the near term and eventually drop as China moves away from coal. For equipment providers, this is not so bad, given rising overseas orders. However, meaningful growth for companies driven by thermal equipment businesses alone is unlikely, in our view.

Given the dynamics in the power equipment game, we foresee growth opportunities in the new energy area. Being adaptive and gaining exposure in these areas, especially nuclear, together with an appropriate export strategy for thermal equipment, is the formula to attain growth, in our view.

For the companies under coverage, we like both Shanghai Electric and Dongfang Electric, given both of them have a solid grounding in the nuclear sector and this should drive their revenue growth in FY11F and 12F, in our view. SEG is our top BUY, given that it is exposed to the nuclear opportunity and it still seems defensive against any potential delay in nuclear development, due to its size and diversification. Moreover, as at 1Q11F, we estimate Shanghai Electric to have RMB90.56bn of overseas EPC orders in hand, another catalyst in providing sustainable development for the company in the visible term.

We like Dongfang Electric, too. However, Dongfang Electric's near-term earnings could be significantly impacted if there is delay in nuclear development. We initiate with a BUY rating. Harbin Electric is building a foundation in nuclear and wind equipment. However, we see no significant nuclear equipment revenues until 2013F and no near-term growth catalyst in FY11F/12F, due to its late entry to the new energy game. NEUTRAL.

12th Five Year Plan – policy outline for the power sector

Target to reduce carbon intensity by 40-45% by 2020 (vs 2005 level) and energy intensity by another 16% during 2011-2015F

To realise a "low carbon" economy, China has three major targets for energy and the environment:

- To increase the use of non-fossil energy to 11.4%/15% of primary energy consumption by 2015/2020, and to reduce carbon emissions by 40-45% from the 2005 level by 2020;
- To reduce carbon intensity (CO2 emission per unit of GDP) by 17% during 2011-15; and
- To reduce energy intensity (total energy consumption per GDP) by 16% and pollution by 8-10% during 2011-2015.

In the five years to 2010, China achieved a 19.1% decrease in energy consumption per unit of GDP, declared by Premier Wen Jiabao. This is close to the target of a 20% cut.

Based on recent research on the 12th FYP for the electricity sector, published by the China Electricity Council, the nation's total installed power generation capacity is expected to increase at a CAGR of 8.4% to 1,437GW in 2015, with the non-fossil fuel power capacity accounting for 33% (up 6.6% from 26.5% in 2010).

Fig. 37: China Electricity Council forecasted installed capacity by 2015F

	2010 (GW)	% as of total capacity	2015 Target (GW)	% as of total capacity	Growth (%)
Thermal	707	73.4	964	67	36.4
Hydro (a)	213	22.2	324	22.5	51.8
Nuclear (b)	11	1.1	45	3.1	313.1
Wind (c)	31	3.2	101	7	225.1
Solar (d)	0	0	4	0.3	1525
Others (e)	0	0	0	0	0
Total	962	100	1,437	100	49.4
Total non-fossil fuel (a)+(b)+(c)+(d)+(e)	255	26.5	474	32.9	85.3

Source: CEC

Under the above targets, the government expects to spend RMB5.3tn for the power sector (52% for power generation and the rest for power grids) under the 12th FYP, a 68% increase from power sector spending during the 11th FYP period. Across the fuel mix, non-fossil fuels (including solar, nuclear and wind) will likely account for the highest growth, due to the lower base. Despite thermal only experiencing 36.4% capacity growth, it is still likely to contribute the largest portion of the fuel mix, down 6.4% to 67% in 2015. The CEC estimates (above) are largely in-line with our forecasted outlook on power generating capacity mix by 2015F.

Fig. 38: China power demand and supply forecast

	2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Supply												
Installed capacity (GW)	874	962	1,053	1,144	1,239	1,338	1,437	1,529	1,621	1,709	1,797	1,885
Capacity launched (GW)	81	88	91	91	95	99	99	92	92	88	88	88
Capacity growth	10.2%	10.1%	9.5%	8.6%	8.3%	8.0%	7.4%	6.4%	6.0%	5.4%	5.1%	4.9%
Capacity breakdown												
Thermal	74.4%	73.4%	72.5%	71.4%	70.0%	68.4%	67.0%	66.3%	65.7%	65.0%	64.3%	63.7%
Hydro	22.5%	22.2%	21.9%	21.8%	21.8%	21.7%	21.6%	21.3%	21.0%	20.7%	20.4%	20.2%
Nuclear	1.0%	1.1%	1.1%	1.3%	1.8%	2.6%	3.3%	3.5%	3.7%	3.9%	4.1%	4.2%
Winds	1.8%	3.2%	4.4%	5.3%	6.3%	7.1%	7.8%	8.4%	8.9%	9.5%	10.0%	10.6%
Others	0.2%	0.0%	0.1%	0.1%	0.2%	0.2%	0.3%	0.5%	0.7%	0.9%	1.1%	1.3%
Demand												
Electricity generation (bn KWh)	3,681	4,228	4,642	5,083	5,541	6,012	6,445	6,851	7,282	7,632	7,998	8,382
Generation growth	6.2%	14.9%	9.8%	9.5%	9.0%	8.5%	7.2%	6.3%	6.3%	4.8%	4.8%	4.8%
Real GDP growth	8.5%	10.3%	9.4%	9.2%	9.0%	8.5%	8.0%	7.0%	7.0%	6.0%	6.0%	6.0%
Demand growth/ Real GDP growth (i.e. beta)	0.73	1.44	1.04	1.03	1.00	1.00	0.90	0.90	0.90	0.80	0.80	0.80
Utilisation												
Plant utilisation												
National average	51.9%	53.2%	54.0%	54.1%	54.3%	54.4%	54.1%	53.7%	53.7%	53.1%	52.8%	52.7%
Thermal	55.5%	57.4%	58.8%	59.0%	59.4%	60.0%	60.2%	60.4%	60.6%	60.2%	60.1%	60.1%
Hydro	38.0%	39.1%	41.1%	42.9%	43.6%	42.8%	41.1%	39.7%	40.1%	40.0%	40.2%	40.5%
Equivalent utilisation hours												
National average	4,546	4,660	4,726	4,737	4,756	4,768	4,739	4,701	4,700	4,652	4,627	4,614
Thermal	4,865	5,031	5,149	5,165	5,204	5,258	5,275	5,293	5,309	5,272	5,261	5,264
Hydro	3,328	3,429	3,598	3,758	3,818	3,750	3,598	3,475	3,515	3,507	3,522	3,550
Others												
Peak demand (GW)	828	951	1,045	1,144	1,247	1,353	1,450	1,541	1,638	1,717	1,800	1,886
Shortage (pent-up demand, GW)	46	11	9	0	(7)	(14)	(13)	(12)	(17)	(8)	(2)	(1)
Reserve margins (%)	**5%**	**1%**	**1%**	**0%**	**-1%**	**-1%**	**-1%**	**-1%**	**-1%**	**0%**	**0%**	**0%**
Market equilibrium	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance

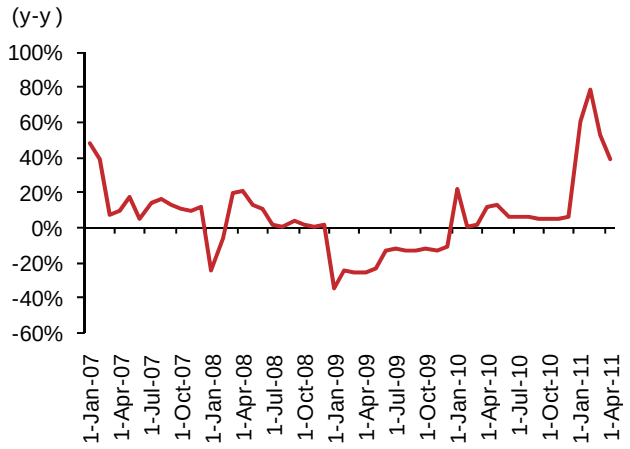
Source: CEC, Nomura estimates

Fig. 39: Power equipment production, power consumption / production

	Apr-11		4M11		3M11	
		y-y change		y-y change		y-y change
Power Demand	(mn MWh)	(%)	(mn MWh)	(%)	(mn MWh)	(%)
Primary	8	2.8	28	3.2	19	3.2
Secondary	287	11.3	1,090	12.1	802	12.3
-Light industries	49	11.4	177	11.4	128	11.4
-Heavy industries	233	11.0	895	12.1	662	12.3
Tertiary	38	12.9	162	15.0	124	15.5
Residential	44	11.1	189	13.2	146	14.1
Total	377	11.2	1,468	12.4	1,091	12.7
Power Generation	(mn MWh)	(%)	(mn MWh)	(%)	(mn MWh)	(%)
Thermal	307	10.9	1,210	10.4	901	10.6
Hydro	42	8.3	156	25.0	114	32.9
Others	17	40.4	65	30.0	51	29.0
Total	366	11.7	1,431	12.6	1,065	13.4
Plant Utilisations			(hours)	(%)	(hours)	(%)
Thermal			1,734	1.2	1,292	0.4
Hydro			806	11.3	583	18.0
Total			1,530	1.4	1,135	1.0
Power eqp. production volume	(MW)	(%)	(MW)	(%)	(MW)	(%)
Thermal	8,366	-0.3%	31,480	33.9%	23,114	53.0%
Hydro	1,749	54.5%	5,651	10.5%	3,902	-2.0%
Wind	1,307	49.2%	5,618	87.7%	4,311	103.7%
Others	561	67.1%	2,387	179.3%	1,826	252.0%
Total	11,983	11.6%	45,135	39.0%	33,152	52.6%

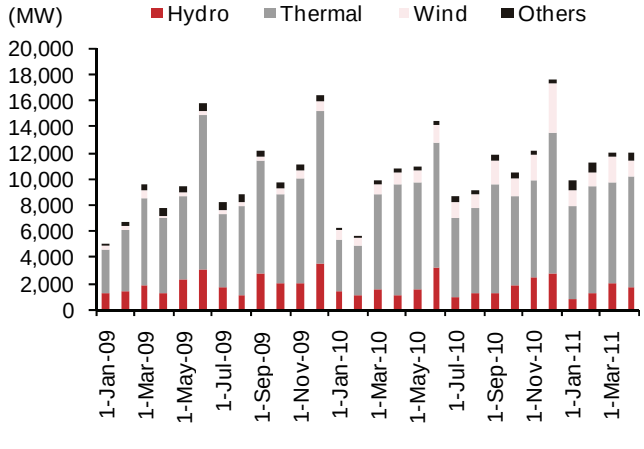
Source: CEIC, CEC

Fig. 40: YTD power equipment production y-y% in China



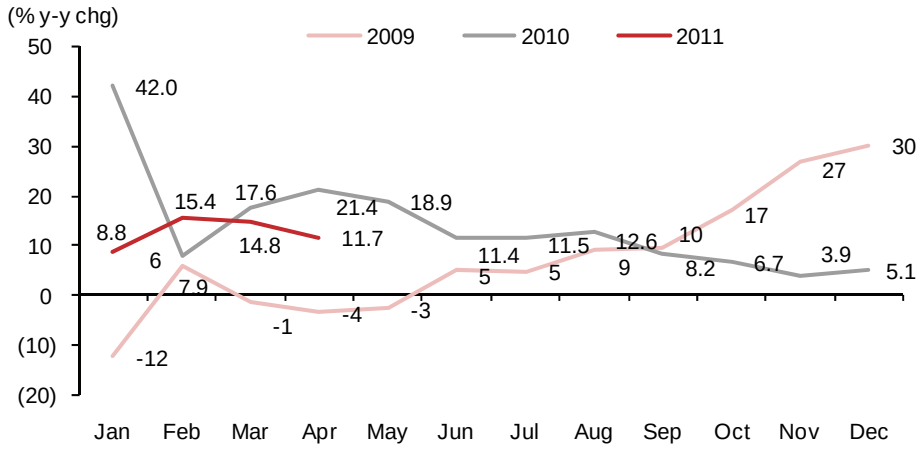
Source: EIC

Fig. 41: Power equipment production volume in China



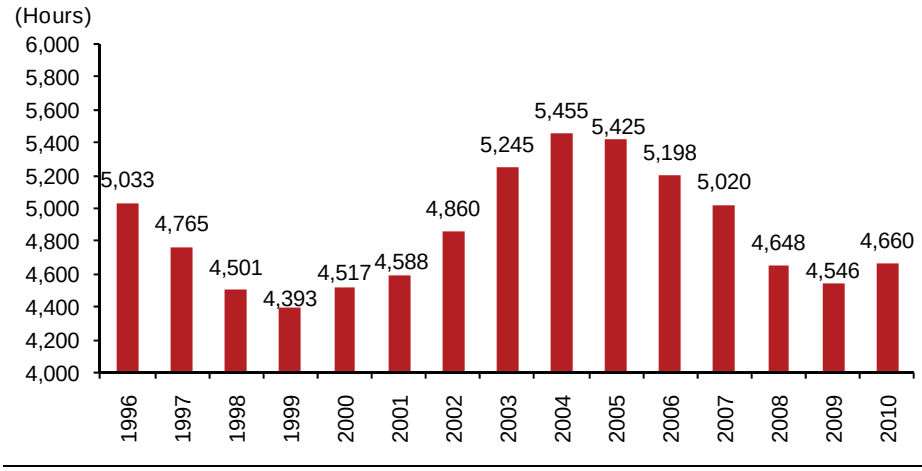
Source: CEIC

Fig. 42: Monthly power generation growth (% y-y)



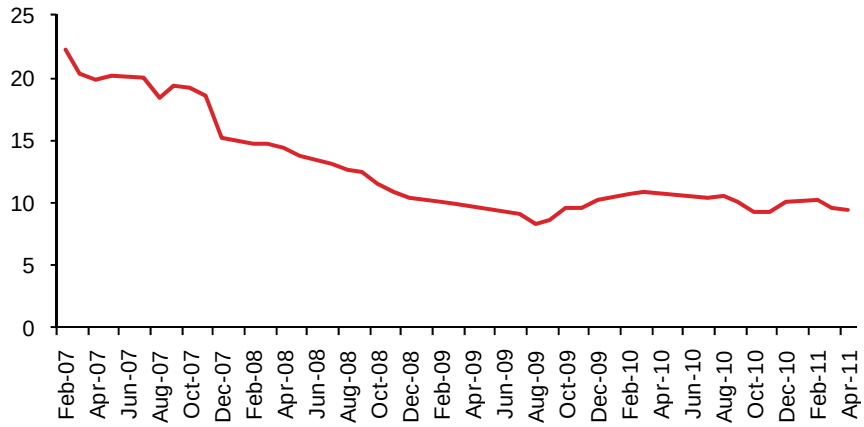
Source: CEC

Fig. 43: Power plant utilisation in China (hours)



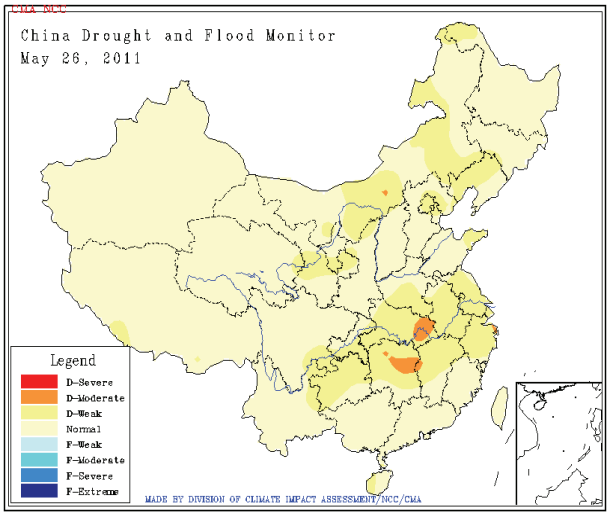
Source: CEIC

Fig. 44: China power capacity growth (% y-y)



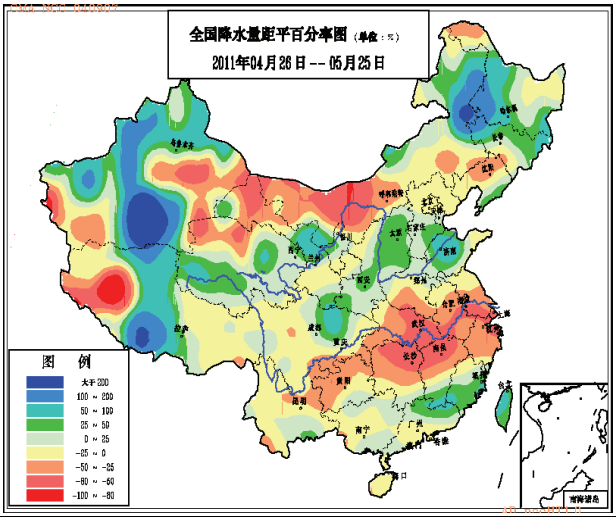
Source: CEIC

Fig. 45: China drought and flood monitor (26-May-11)



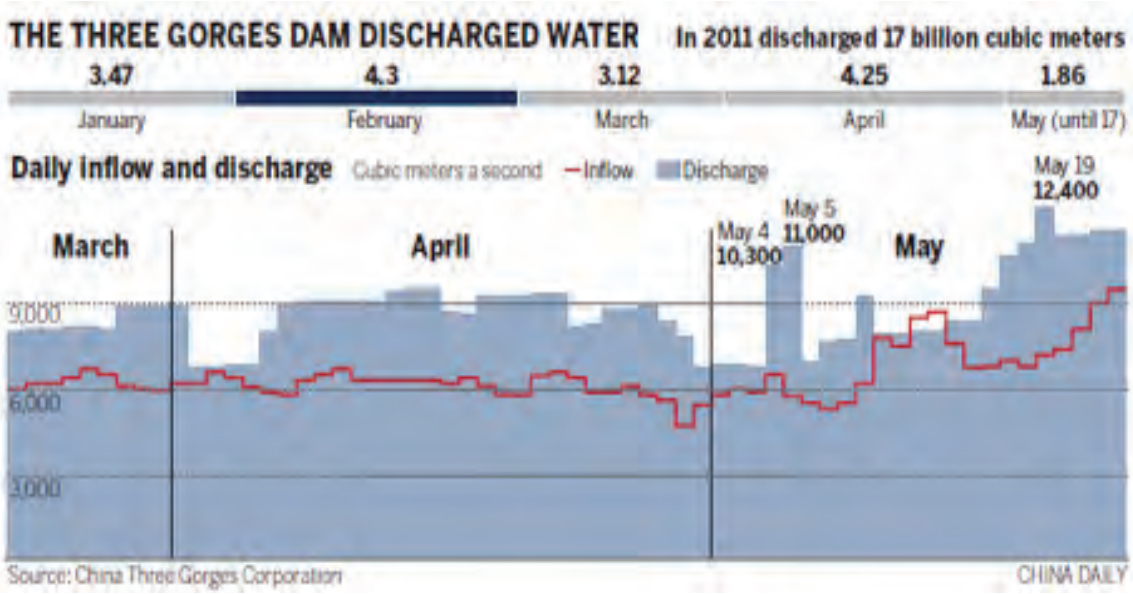
Source: Beijing Climate Centre, Nomura Research

Fig. 46: China rainfall anomaly (%): last 30 days



Source: Beijing Climate Centre, Nomura Research

Fig. 47: Three Gorges Dam: water discharged



Source: China daily, Nomura Research

Fig. 48: Primary energy consumption forecast

	2008	2009	2010F	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Total Energy Consumption (Million TOCE)	**2,914**	**3,060**	**3,250**	**3,495**	**3,740**	**3,985**	**4,230**	**4,475**	**4,720**	**4,965**	**5,210**	**5,455**	**5,700**
Energy Composition (%)													
Oil	18.8	18.6	18.4	18.1	17.7	17.4	17.0	16.7	16.4	16.0	15.7	15.3	15.0
Natural gas	3.6	3.7	3.6	4.2	4.9	5.5	6.2	6.8	7.4	8.1	8.7	9.4	10.0
Coal	70.2	70.6	70.4	66.6	65.5	64.4	63.4	62.4	61.7	60.9	60.4	59.7	59.1
Hydro	6.6	6.4	6.2	7.8	8.3	8.5	8.5	8.3	8.1	8.1	8.1	8.1	8.1
Nuclear	0.8	0.7	0.9	0.9	1.0	1.3	1.8	2.5	3.0	3.2	3.3	3.5	3.7
Others [incl. Wind, solar, etc] (doesn't account for 03-09 due to immateriality)	N/A	N/A	0.5	2.4	2.6	2.9	3.1	3.3	3.5	3.7	3.8	4.0	4.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Power Consumption (excluding oil, natural gas, ethanol, biodiesel, biogas)													
Small hydro (MW) - <50MW/unit	51,000	52,000	55,120	57,108	59,096	61,084	63,072	65,060	67,048	69,036	71,024	73,012	75,000
Utilisation hour	3,506	3,328	3,429	3,598	3,758	3,818	3,750	3,598	3,475	3,515	3,507	3,522	3,550
Generation (million kWh)	160,000	171,392	183,657	201,885	218,320	229,416	232,816	230,532	229,527	239,185	245,618	253,659	262,750
Million TOCE	56	60	64	71	76	80	81	81	80	84	86	89	92
Wind Energy (MW)	11,846	16,130	31,070	46,000	61,000	78,000	95,000	112,000	127,782	144,600	162,076	180,542	200,000
Utilisation hour	1,467	1,500	1,612	1,758	1,647	1,600	1,586	1,592	1,580	1,590	1,583	1,583	1,585
Generation (million kWh)	12,800	25,980	50,097	67,736	88,110	111,234	137,174	164,722	189,376	216,483	242,778	271,099	301,579
Million TOCE	4	9	18	24	31	39	48	58	66	76	85	95	106
Biomass Energy (MW)	3,000	3,200	5,500	6950	8400	9850	11300	12750	14200	15650	17100	18550	20,000
Utilisation hour	2,600	2,600	2,600	2620	2640	2660	2680	2700	2720	2740	2760	2780	2,800
Generation (million kWh)	7,150	9,200	12,675	18,209	22,176	26,201	30,284	34,425	38,624	42,881	47,196	51,569	56,000
Million TOCE	3	3	4	6	8	9	11	12	14	15	17	18	20
Landfill Gas (billion cubic metre)	12	15	19	22	24	27	29	32	34	37	39	42	44
Million TOCE	7	9	11	12	14	15	17	18	20	21	23	24	25
Solar water heating (thousand sq m)	125,000	135,000	145,000	160,500	176,000	191,500	207,000	222,500	238,000	253,500	269,000	284,500	300,000
Million TOCE	22	24	26	29	32	34	37	40	43	45	48	51	54
Solar Photovoltaic (MW)	122	150	240	800	1,200	1,880	3,000	3,900	6,564	9,519	12,735	16,229	20,000
Utilisation hour	1,000	1,000	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Generation (million kWh)	102	136	215	572	1,100	1,694	2,684	3,795	5,755	8,846	12,240	15,930	19,926
Million TOCE	0.04	0.05	0.08	0.20	0.39	0.59	0.94	1.33	2.01	3.10	4.28	5.58	6.97
Geothermal, tidal, biomass gasification	0	0	0	0	0	0	0	0	0	0	0	0	0
Others (Million TOCE)	15	15	12	13	15	16	17	19	20	21	22	24	25
(A) Renewable Energy (Million TOCE)													
[Excl. Large Hydro & nuclear]	**107**	**120**	**135**	**155**	**175**	**195**	**212**	**228**	**244**	**265**	**285**	**306**	**328**
% of total energy consumption	**3.7%**	**3.9%**	**4.2%**	**4.4%**	**4.7%**	**4.9%**	**5.0%**	**5.1%**	**5.2%**	**5.3%**	**5.5%**	**5.6%**	**5.8%**
Large hydro (MW) - >50MW/unit	120,520	144,790	158,280	173,892	190,904	208,916	226,928	244,940	258,476	271,491	283,158	294,328	305,000
Utilisation hour	3,577	3,018	3,317	3,491	3,648	3,711	3,654	3,513	3,415	3,460	3,459	3,477	3,508
Generation (million kWh)	403,300	400,290	502,650	579,807	665,376	741,850	796,286	828,823	859,540	916,715	959,259	1,004,023	1,051,339
Million TOCE	141	140	176	203	233	260	279	290	301	321	336	351	368
(B) = (A) + Large hydro (Million TOCE)	**249**	**260**	**311**	**358**	**408**	**454**	**491**	**518**	**545**	**586**	**621**	**657**	**696**
	8.5%	**8.5%**	**9.6%**	**10.3%**	**10.9%**	**11.4%**	**11.6%**	**11.6%**	**11.5%**	**11.8%**	**11.9%**	**12.1%**	**12.2%**
Nuclear (MW)	8,850	9,080	10,820	11,900	14,710	21,860	34,510	48,100	53,922	60,074	66,400	73,042	80,000
Utilisation hour	7,729	7,814	7,720	7,748	7,775	7,803	7,831	7,858	7,852	7,845	7,839	7,832	7,826
Generation (million kWh)	68,400	70,050	76,817	88,016	103,452	142,678	220,704	324,580	400,522	447,161	495,701	546,081	598,848
Million TOCE	24	25	27	31	36	50	77	114	140	157	173	191	210
(C) = (B) + Nuclear (Million TOCE)	**272**	**285**	**338**	**389**	**445**	**504**	**568**	**632**	**685**	**743**	**794**	**849**	**906**
% of total energy consumption	**9.4%**	**9.3%**	**10.4%**	**11.1%**	**11.9%**	**12.7%**	**13.4%**	**14.1%**	**14.5%**	**15.0%**	**15.2%**	**15.6%**	**15.9%**
Thermal (MW)	601,320	650,499	706,630	763,470	817,260	867,430	915,660	963,170	1,014,570	1,064,736	1,111,068	1,156,219	1,200,190
Utilisation hour	4,810	4,812	5,032	5,038	5,067	5,117	5,179	5,201	5,216	5,237	5,209	5,202	5,209
Generation (million kWh)	2,779,300	3,011,687	3,414,524	3,703,163	4,004,611	4,310,143	4,616,956	4,885,541	5,157,825	5,445,026	5,666,834	5,897,390	6,137,023
Million TOCE	973	1,054	1,195	1,296	1,402	1,509	1,616	1,710	1,805	1,906	1,983	2,064	2,148
Total energy consumption by power generation (Million TOCE)	**1,245**	**1,339**	**1,533**	**1,685**	**1,846**	**2,013**	**2,184**	**2,342**	**2,491**	**2,648**	**2,778**	**2,913**	**3,054**

Source: National Development and Reform Commission, China Electricity Council, BP Statistical Review, Nomura research Note: 1kWh = 350g standard coal

China is still bullish on nuclear

Despite current headwinds, we believe China's mid- to long-term nuclear development plan remains intact, given: 1) its limited choice in achieving carbon reduction and the 15% non-fossil energy target by 2020F; 2) new nuclear units in China seem more advanced and safer than the Fukushima units; and 3) the large amount of nuclear projects in the construction pipeline.

Our latest checks with the management of power equipment companies revealed that China may announce the new safety guideline on nuclear development in June-August. We note uncertainty about when nuclear project approval may resume. However, with 35.5GW of approved projects pipeline, we are not concerned about slight delays.

We forecast China to increase its nuclear power capacity to 80GW in 2020F from 10.8GW in 2010. Such an aggressive target would help industries / manufacturers across the nuclear power plants' value chain by creating a RMB245bn nuclear equipment market (equipments delivery by 2020F), per our estimates.

We estimate revenue from major nuclear equipment sales to rise to ~RMB14bn for FY11F and to ~RMB25bn in FY12F for major nuclear equipment relevant to the Big Three, based on our knowledge of the nuclear project pipeline and our estimated delivery / revenue recognition schedule. Out of this projected market revenue, we see a substantial portion (over 75-85%) going to the companies under our coverage, namely SEG, DFE and HEC, while the smaller portion could go to players such as First Heavy, Erzhong and some other smaller equipment plays supplying auxiliary equipment, pumps and the balance of plant work.

Given the vintage of orders on-hand and the nuclear equipment manufacturing capability, we forecast Shanghai Electric and Dongfang Electric's revenue from nuclear equipment sales to rise significantly in 2011F and 2012F. Indeed, this is in-line with managements' revenue guidance on a combined ~RMB18-20bn for nuclear equipment for 11F and 12F (Dongfang) and ~RMB4 and RMB7bn for 11F and 12F, respectively (Shanghai Electric).

China remains reliant on nuclear

Despite the nuclear incident in Fukushima, and the subsequent suspension of new nuclear project approval in China, we think China's mid-to-long term nuclear development progress is largely intact while at worst only a short-term delay is likely, due to:

- China's carbon reduction and 15% renewable energy target by 2020F
- In spite of the current mishap, new units in China seem more advanced and safer than the one in Fukushima .
- Strong project pipeline on approved projects

China has limited choice in reaching its 2020F energy target

In light of China's carbon reduction target (carbon intensity to decrease by 40-45% by 2020F over 2005-level) and its 15% non-fossil energy target by 2020F, we forecast nuclear capacity to reach 80GW, from the 10.8GW level in FY10. Such forecast is in line with industry experts' viewpoint at the Asia Energy Forum (Source: Takungpao Dec 15, 2010).

In our view, China has limited choice in substituting this 70GW of nuclear generating capacity by other non-fossil energy source. In comparison with wind / solar and hydro, nuclear power has much higher utilisation. If we take utilisation hours into account, the 70GW of nuclear generating capacity can be replaced by 173GW of hydro, 346GW of wind or 503GW of solar generating capacity, respectively.

Fig. 49: Equivalent capacity to replace the 70GW nuclear capacity

	Nuclear power		
(GW)	70		
Utilisation hours assumption	7,900		
	Hydro power	**Wind power**	**Solar Power**
Utilisation hours assumption	3,200	1,600	1,100
Equivalent capacity (GW)	173	346	503

Source: Nomura estimates

China has the potential to develop a total of 540GW of hydro power (source: Xinhua), out of which 402GW is deemed economical to develop. As at FY10, China has 213GW of hydro generating capacity and we forecast hydro generating capacity to reach 380GW by 2020F. To increase another 173GW of hydro capacity by then is unrealistic, given 380GW +173GW > 540 GW and 402GW threshold. Moreover, with a long lead time and environmental impact, any upside to the current 380GW forecast is unlikely, in our view.

As at FY10, China has only 0.2GW of solar power; given the high price and the current low base, a substantial increase (in the magnitude of over 100s of GW) in solar power capacity is unlikely.

We forecast wind power capacity to reach 200GW by 2020F, with the assumption of appropriate grid development. Using wind to replace the 70GW nuclear is very difficult, given this means increasing wind capacity by 346GW over our 200GW forecast, giving substantial pressure to the grid.

Some may argue that China may choose to substitute nuclear by a mixture of clean energy sources. Nuclear power, unlike other clean energy sources, such as solar and wind, provides stable power output and is optimal for base-load, which makes it even harder to be filled-in.

Nuclear safety is improving, in our view

CPR1000 (GII+, PWR) and AP1000 (GIII, PWR) largely dominate China's nuclear development pipeline. In view of the current nuclear incidents in Japan, we have looked at the technology being used, in comparison with the units at Fukushima Daiichi (GII, BWR).

According to our checks, the CPR1000 and the AP1000 reactors seem much safer than the Fukushima units built in the 1970s. First, the CPR1000 and the AP1000 units are GII+ and GIII, respectively, deemed more advanced and modern than the Fukushima units. Both CPR1000 and AP1000 have higher earthquake protection, given CPR1000 and AP1000 are designed to withstand 0.2g and 0.3g of peak ground acceleration, respectively, vs. 0.18g for the Fukushima units. Also, both CPR1000 and AP1000 are PWR vs. Fukushima (BWR). Even though both PWR and BWR are deemed technically mature and safe, in this specific case, loss of emergency cooling, PWR has the advantage in having a second loop with no exposure to radioactive substances which can be used to reduce inside pressure with minimal contamination risk, according to NEA's former head Mr Zhang (source: eastday.com).

Another feature for China's upcoming GIII AP-1000 is the adoption of "passive safety system", virtually eliminating the possibility of safety equipment failure (source: Dr. Gene Clark, principal and CEO of TradeTech, a US firm providing market information and consulting services to the nuclear fuel industry). In our view, China's temporary suspension of nuclear project approval for safety checks and the revision on its safety guidelines is the responsible thing to do. However, safety concerns will not have a material impact on China's long-term nuclear development, in our view. [Please refer to section Appendix I for detailed comparison and technical know-how for nuclear reactors.]

China's nuclear capacity to reach 48GW in 15F; 80GW in 20F

Fig. 50: Nuclear units commencement timeline (2011F-15F)

	Newly completed projects	New capacity by year (MW)	Installed capacity Y/E (MW)
2011	Ling Ao Phase II unit 2	1,080	11,900
2012	Hongyanhe units 1, Qinshan Phase II unit 4, Ningde unit 1	2,810	14,710
2013	Fangjiashan unit 1, Fuqing unit 1, Hongyanhe units 2, Taishan unit 1, Yangjiang unit 1, Ningde unit 2	7,150	21,860
2014	Changjiang units 1, Fangjiashan unit 2, Fuqing unit 2, Haiyang unit 1, Hongyanhe units 3-4, Taishan unit 2 Ningde unit 3, Sanmen unit 1-2, Yangjiang unit 2	12,650	34,510
2015	Changjiang units 2, Fangchenggang unit 1, Fuqing unit 3, Hongyanhe unit 5-6, Ningde unit 4, Pengze units 1&2, Shandong Shidaowan, Haiyang unit 2, Xianning (Dafan) units 1&2, Yangjiang unit 3	13,590	48,100

Note: Accounting for units under construction / firmly planned

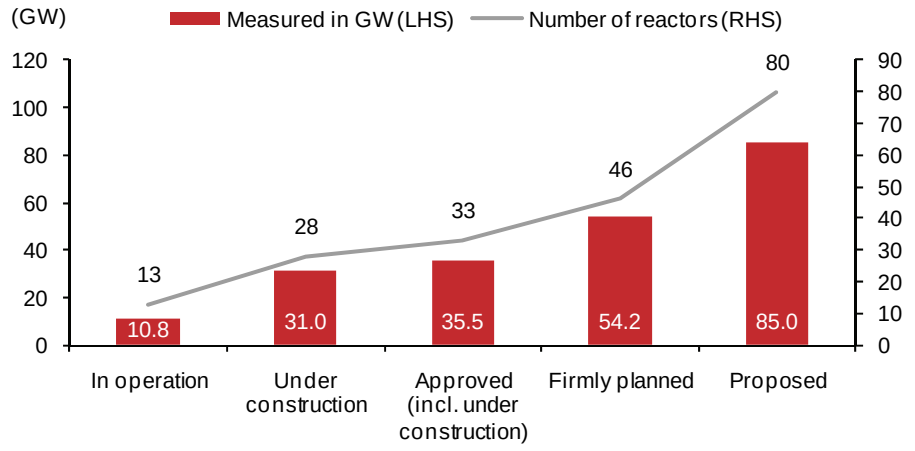
Source: WNA, CNEA

China is the world's largest emitter of carbon dioxide, accounting for 20% of the world's carbon emissions in 2006, according to data from World Nuclear Association. China announced its target to reduce carbon dioxide emission / GDP by 40-45% from the 2005 level. President Hu Jintao reinforced China's commitment to tackle climate change in his address to the United Nations General Assembly in 2009.

According to the nuclear energy mid-to long-term plan published in 2007, China targets nuclear power installed capacity of 40GW by 2020F. However, such a target has been widely seen as being over-conservative in the industry. By summing up the data on the nuclear reactors "under construction and planned" and their relevant expected operation date, published by the World Nuclear Association, we conclude that nuclear capacity may reach 48GW by 2015F (details in the table above). For 2020F, we forecast nuclear capacity at 80GW and we believe such a forecast is conservative, given the strong project pipeline of projects proposed.

According to WNA, CNEA, as at April 2011, China has 31GW of nuclear capacity under construction, 4.5GW of nuclear capacity approved but pending for construction and 54.2GW of firmly planned nuclear capacity pending approval, adding up to a 89.7GW of nuclear pipeline. In our view, it is likely that most of these capacities will become operating capacity by 2020F, making our 80GW capacity forecast seem achievable. It is important to note that there is another 85GW of proposed nuclear projects as well, providing additional upside potential to our forecast.

Fig. 51: Nuclear projects pipeline

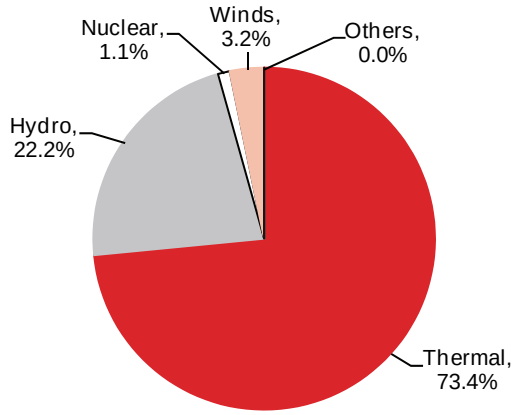


Source: WNA, SNPTC, CNEA

Nuclear currently accounts for 1.1% of total installed power generation capacity in China, and we estimate the percentage to reach 4.2% by 2020F. All nuclear reactors in

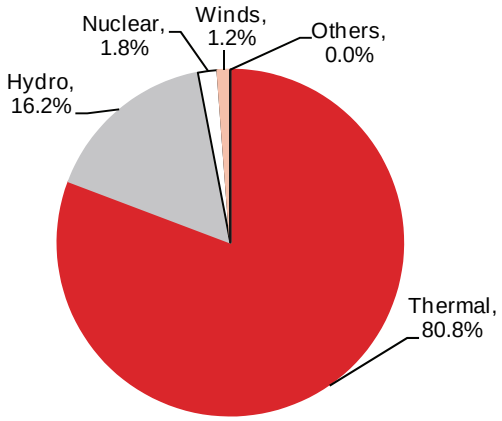
operation / under construction are in the coastal area. However, we expect to see some inland nuclear plants being constructed as well.

Fig. 52: Fuel mix by installed capacity (2010)



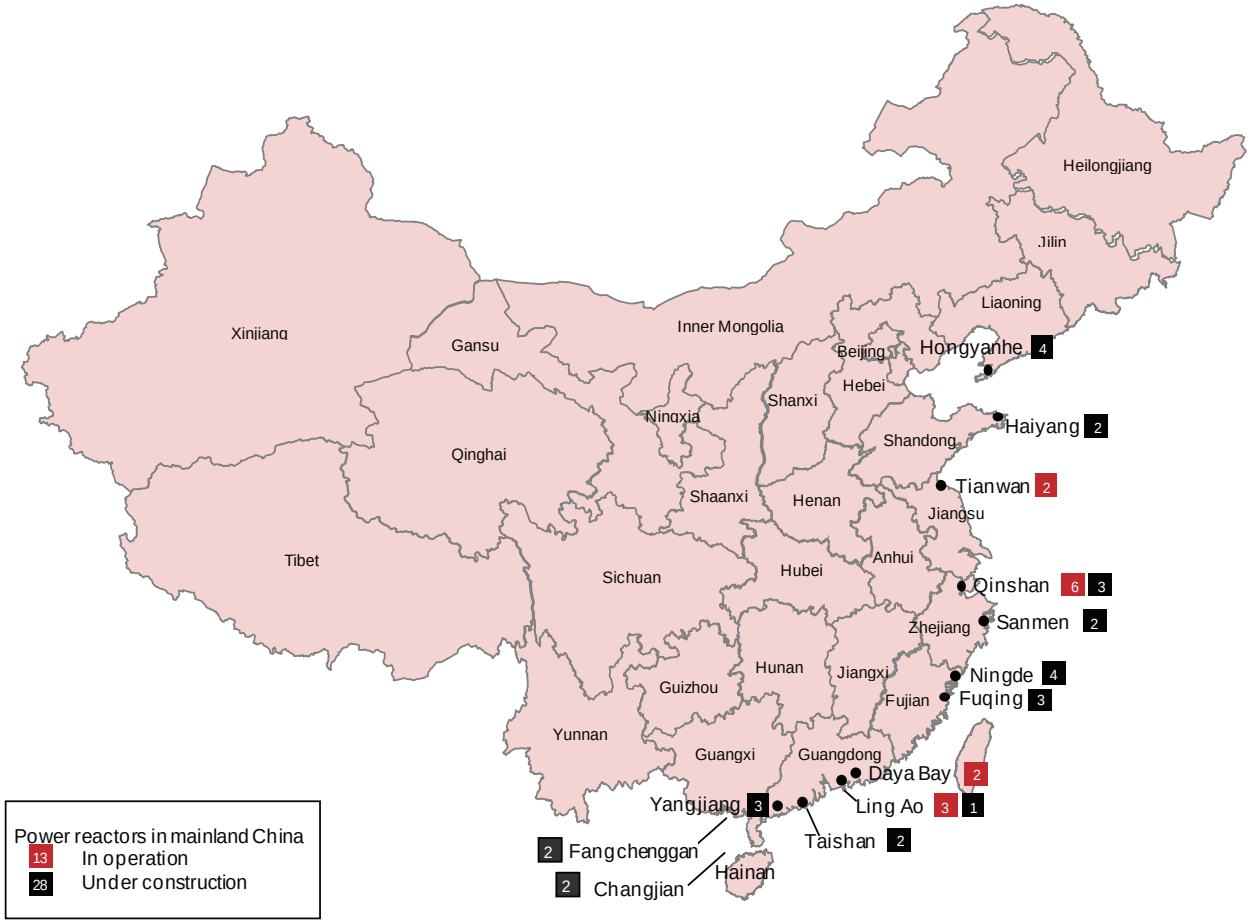
Source: CEC

Fig. 53: Fuel mix by installed capacity (2020F)



Source: News flow, Nomura estimates

Fig. 54: Reactors in operation and under construction in China



Source: WNA, CNEA

RMB245bn for equipment vendors before 2020F

Assuming China has 80GW of nuclear capacity by 2020F, up from the current capacity of 10.8GW, representing an increase of 69.2GW and an estimated investment cost of RMB 11,299/kw, we estimate investment in nuclear plant development at RMB782bn. According to our checks, approximately 64% of this investment amounts to equipment

but only 70% of which is relevant to the Big Three (including steam generator, reactor pressure vessel, pressuriser, control rod/nuclear reactor internals/reactor coolant pump, steam turbines, generators and half of equipment from the balance of plant). We further assume a 70% localisation rate and estimate a potential market size of RMB245bn worth of equipment to be delivered before 2020F.

Fig. 55: Investment cost estimated for nuclear power plants in China

Technology	Investment cost (RMB / kw)	Note	(% mix in the construction / planned pipeline)
3G (AP1000)	12,000	(1)	45.7%
2.5G (CPR1000)	10,500	(2)	40.7%
Others	11,250	(3)	13.7%
Avg. cost (RMB / kw)	11,299		

Note: (1) SNPTC est., assuming localised equipments for AP1000, current development cost with imported equipments at RMB16,000 (2) SNPTC, current development cost for CPR1000 with localized equipments (3) Est. to cost between the other two

Source: SNPTC, Nomura estimates

Fig. 56: Investment budget for nuclear plants

Modules	% to total cost	Major suppliers
Pre-construction preparation	**1.7**	
Nuclear Island (a)	**36.6**	
Steam generator	8.0	SEG, DFE, HEC
Reactor pressure vessel	10.0	SEG, DFE, First Heavy
Pressuriser	2.0	SEG, DFE, HEC
Control Rod / Nuclear Reactor Internals	4.0	SEG
Reactor Coolant Pump	5.0	SEG, DFE, HEC & others
Valves	5.0	
Others	2.6	
Conventional island (b)	**16.6**	
Steam turbines	*6.0*	SEG, DFE, HEC
Generator	*6.0*	SEG, DFE, HEC
Others	*4.6*	
Balance of plant (c)	10.9	SEG, DFE, HEC & others
Nuclear fuel	4.9	
Others	29.3	
Total	100	
Equipment (a)+(b)+(c)	**64.1**	

Note: This is a typical budget for 2.5G CPR1000, 3G-AP1000 projects are est. to have similar mix, according to industry checks

Source: CNNC, Nomura estimates

Fig. 57: Market size for the equipment players before 2020F

Installed nuclear capacity by 2020F(GW) (a)	80.0
Current installed nuclear capacity FY10 (GW) (b)	10.8
Capacity to be installed between 2011 and 20 (GW) (c)	69.2
Investment (RMB/kw) (d)	11,299
Total Inv. Amount (RMB mn) (e)	781,648
Nuclear Eqp as a % of investment	64%
Eqp localization rate	70%
% orders related to the 3	70% (1)
Potential market size for the big three (RMB mn)	245,125
Potential market size / kw of nuclear capacity (RMB / kw)	3,543

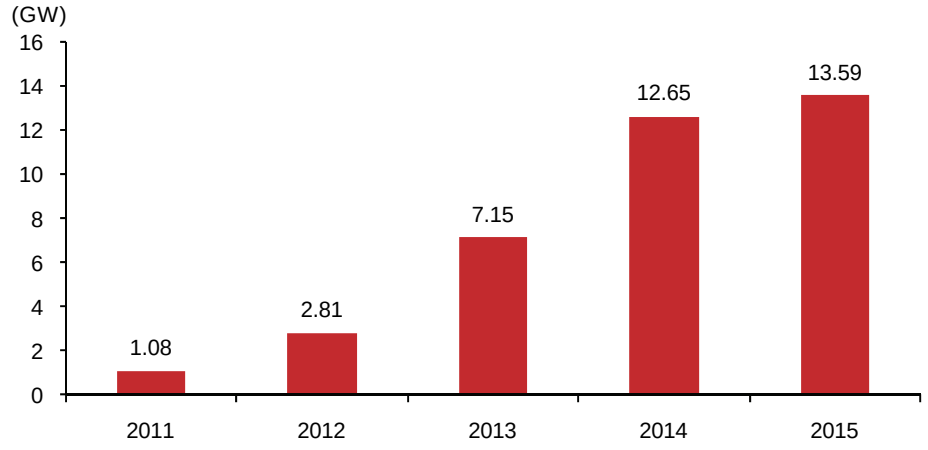
Note: (c)=(a)-(b) / (e)=(c)*(d)

Source: Nomura estimates, (1) Channel checks

Revenue for nuclear equipment to pick up significantly starting in FY11F

According to the original commencement schedule on the nuclear projects planned / under construction, we estimate 7.15GW, 12.65GW and 13.59GW of nuclear capacity will go on-line in 2013F, 2014F and 2015F, respectively.

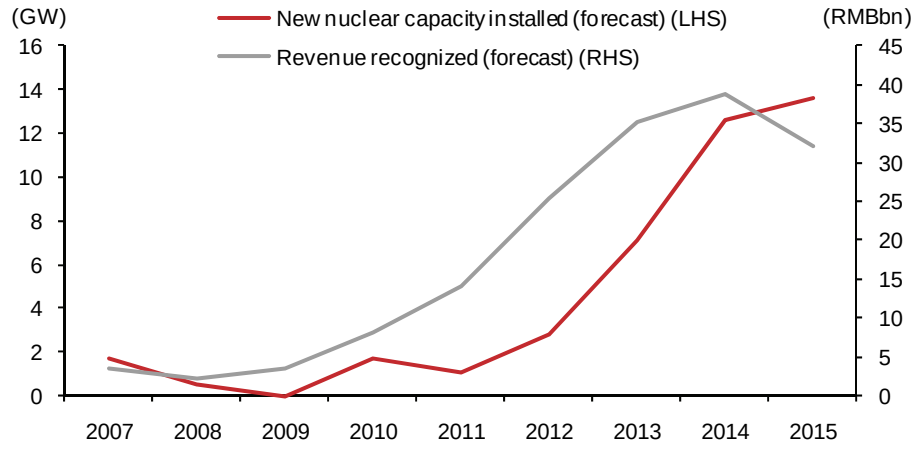
Fig. 58: New nuclear capacity commencement pipeline



Source: WNA, Nomura estimates

Given nuclear equipment is a long cycle product (4 years), some components may be delivered earlier than others. As well as the use of the percentage completion method for revenue recognition for long production contracts, we estimate revenue from nuclear equipment for a nuclear project could be recognised at 10% 3 years before commencement of operation (grid connected nuclear power plant in operation), 20% 2 years before commencement of operation, 30% a year before commencement of operation, and 40% in the year of commencement of operations. As such, we estimate revenue recognised for nuclear equipment will rise substantially in FY11F and peak in 2014F (according to the current nuclear project pipeline, as above).

Fig. 59: Revenue forecast for nuclear equipment market



Source: WNA, Nomura estimates

Fig. 60: Revenue opportunity from nuclear equipment sales

Installed cumulative nuclear generating capacity (GW)											
2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
9.1	10.8	11.9	14.7	21.9	34.5	48.1	53.9	60.1	66.4	73.0	80.0

New capacity commencement (GW)										
2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
1.7	1.1	2.8	7.2	12.7	13.6	5.8	6.2	6.3	6.6	7.0

Revenue opportunity assumption					
Years before reactors operation	3	2	1	0	
% of revenue recognized	10%	20%	30%	40%	
Revenue opportunity for the Big Three per kw of nuclear capacity installed				3,543	(RMB/kw)

Revenue opportunity for major nuclear equipments for the domestic market(RMB bn)									
2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
14.1	25.4	35.3	38.7	32.1	21.6	22.6	23.4	24.4	25.2

Source: Nomura estimates, Industry checks

SEG and DFE to capture substantial revenue growth in 2011F-12F

We believe Shanghai Electric and Dongfang Electric will recognise substantial revenues given:

- Our estimates as mentioned; and
- The vintage of their nuclear backlogs and respective nuclear capability development.

Indeed, this is in-line with management's revenue guidance for a combined ~RMB18-20bn for nuclear equipment for 2011F and 2012F (Dongfang Electric) and ~RMB4 and RMB7bn for 2011F and 2012F, respectively (Shanghai Electric).

We forecast the future earnings for our equipment plays using the above forecast. We aim to be conservative in assuming the Big Three capture 80% of the major nuclear equipment market as calculated above, given there are other players such as China First Heavy and other players providing auxiliary equipment and pumps. There is potential upside to our forecasts and estimates. We expect the Big Three to have the following shares among them by 2014F (based on FY10 market share — order backlog):

SEG: 38.9%, DFE: 42.1%, HEC: 18.9%

In year 2020F, we assume the Big Three to have similar shares in nuclear equipment.

Despite a temporary suspension for new project approvals, there are already 35.5GW of approved projects

On 16 March, 2011, the State Council of China suspended new nuclear project approval and no new projects will be approved until the new safety guideline is in place. We see this as a responsible action and in-line with international reaction to the Japan nuclear incident.

However, the directive only called for safety checks on existing projects under construction. According to SNPTC, China has 33 nuclear reactors, with a total capacity of 35.5GW, approved as at February, 2011 (before the suspension announcement), out of which 31GW is under construction. In terms of expected operation by 2015F, 30.1GW of these approved projects are expected to commence before 2015F. Even if there were no more nuclear project approvals, nuclear capacity could potentially hit 40.9GW by the 2015F benchmark year. In our view, mid-term nuclear development in China is secured by these reactors under construction, while in the longer term nuclear development may rely more on GIII AP1000 technology, in light of greater safety concerns.

Fig. 61: Nuclear reactors under construction in China

Approved projects under construction					
Plant	**Location**	**Gross capacity (MW)**	**Reactor**	**Project control**	**Operation**
Ling Ao Phase II unit 2	Guangdong	1080	CPR1000	CGNPC	8/11
Qinshan Phase II unit 4	Zhejiang	650	CNP-600	CNNC	2012
Hongyanhe units 1-4	Liaoning	4x1080	CPR1000	CGNPC	10/12, 2013, 2014
Ningde unit 1-4	Fujian	4x1080	CPR1000	CGNPC & Datang	2012, 2013, 2014, 2015
Fuqing unit 1-2	Fujian	2x1080	CPR1000	CNNC	2013, 2014
Yangjiang units 1-3	Guangdong	3x1080	CPR1000	CGNPC	2013,2014,2015
Fangjiashan units 1-2	Zhejiang	2x1080	CPR1000	CNNC	2013, 2014
Sanmen unit 1-2	Zhejiang	2x1250	AP1000	CNNC	2013, 2014
Haiyang units 1-2	Shandong	1250	AP1000	CPI	2014-2015
Taishan units 1-2	Guangdong	2x1750	EPR	CGNPC	2013,2014
Fangchenggang unit 1	Guangxi	1080	CPR1000	CGNPC	2015
Fuqing unit 3	Fujian	1080	CPR1000	CNNC	2015
Changjiang units 1-2	Hainan	2x650	CNP-600	CNNC & Huaneng	2014,2015
Fangchenggang unit 2	Guangxi	1080	CPR1000	CGNPC	2016
Reactors: 28		30,970			
Approved projects pending construction					
Plant	**Location**	**Gross capacity (MW)**	**Reactor**	**Project control**	**Operation**
Yangjiang unit 4	Guangdong	1080	CPR1000	CGNPC	2016
Shandong Shidaowan	Shandong	210	HTR-PM	Huaneng	2015
Fuqing unit 4	Fujian	1080	CPR1000	CNNC	2016
Yangjiang units 5&6	Fujian	2x1080	CPR1000	CGNPC	2017
Reactors: 5		4,530			
Grand Total for all approved projects					
Reactors: 33		35,500			

Source: WNA, SNPTC Note: As at Feb, 11

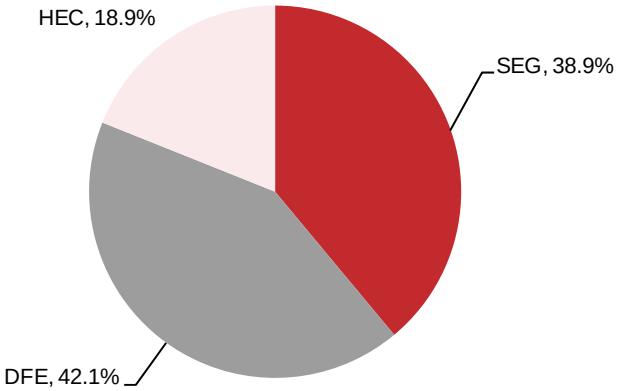
For major components, the Big Three monopolize the market

According to our checks, the Big Three power equipment players dominate the heavy duty equipment market in both the nuclear island and conventional island space, namely the steam generators, pressurisers, control rod drive mechanism / reactor internals, steam turbines and turbine generators. For pressure vessels, the market is dominated by First Heavy (FH) and DFE and SEG are catching up. In terms of market share (accounting for major components, excluding forging components and FH's contribution to pressure vessels), DFE leads by having an estimated market share of 42.1% as at FY10, followed by SEG (38.9%) and HEC (18.9%).

As DFE has engaged in nuclear equipment earlier than others, it dominates the 2.5G, CPR-1000 market in terms of orders and backlog. According to our checks, HPE has limited 2.5G orders thus far, due to its late entry. As for 3G, DFE has worked with its partner Altsom to develop EPR equipment; please note out of the construction, project planned pipeline, there are only 2 reactors, Taishan unit 1 and unit 2, leveraging EPR technology. Throughout China, AP-1000 technology was adopted by SNPTC (State Nuclear Power Technology Corporation). SNPTC signed contracts with Westinghouse to develop AP1000 nuclear reactors and transfer technology to local players through 2 supporting projects (Sanmen unit 1-2 and Haiyang unit 1-2). It is important to note that SEG and HPE have actively engaged in these technology transfer projects and gained a head-start in AP-1000 development. In detail, SEG has participated in supplying pressure vessels, steam generators and pressurisers from the two projects and HEC has engaged in steam generators, reactor coolant pumps and squib pumps from this project. On the other hand, DFE is only engaged in pressurisers out of these initial projects.

However, as the technology is actually owned by SNPTC, DFE is not out of the game. Recently, DFE has been catching up by acquiring technology from SNPTC and we have seen DFE winning AP1000 equipment orders. For example, DFE has got the supply contracts for pressure vessels and steam generators for the Taohuajiang project (AP1000 reactors).

Fig. 62: Market shares for China's major nuclear component players in FY10



Note: Not accounting for pressure vessels of FH, accounting for major nuclear equipments relevant to the Big Three
Source: Company data, Nomura estimates

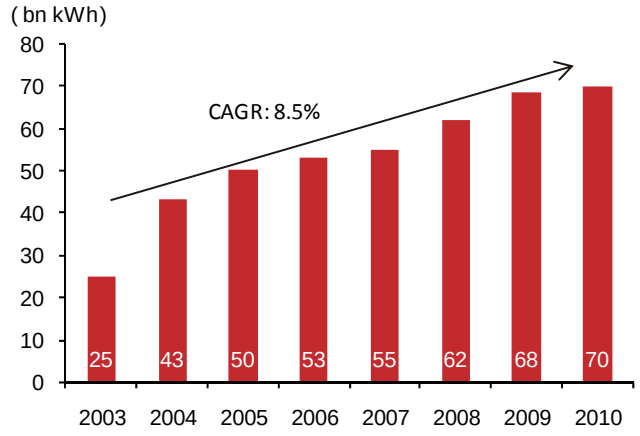
Background on nuclear development in China

China's third-largest power source but much smaller than thermal and hydro
Although nuclear power is the third-largest source of power, it still accounts for a small proportion of overall power supply in China. China started research on nuclear reactors in 1955, but only had its first nuclear power plant (Qinshan Phase I) in 1991. The government became more aggressive on nuclear power development during the 9th Five-Year (1996-2000) plan, which resulted in a more rapid increase in nuclear capacity during 2001-2004. China currently has 13 nuclear reactors in operation, representing an installed capacity of approximately 10.8GW, per SNPTC.

At end-2010, nuclear power accounted for 1.1% of total installed power capacity in China, against 73.5% for thermal power and 22% for hydro power, according to the CEC. In terms of electricity generation, nuclear power accounted for 1.8% of total power generation in China, also much lower than the contributions from thermal power (80.8%) and hydro power (16.2%). Moreover, the scale of China's nuclear industry is relatively small compared with others in the region, especially when considering that it has the largest overall power capacity among Asian countries.

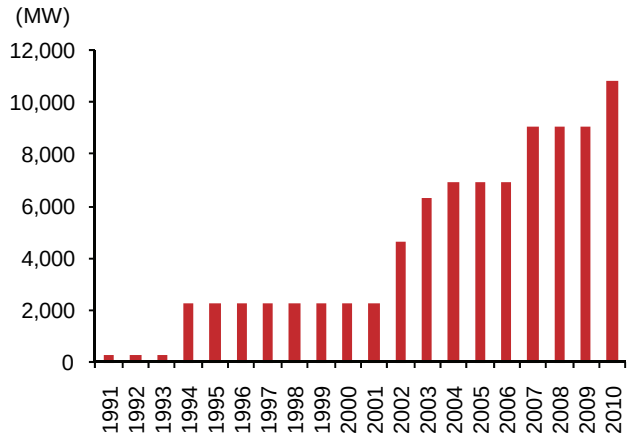
Both China's nuclear power installed capacity and generation have been growing rapidly since 1991. Installed capacity grew from 279 MW in 1991 to 10.8 GW in 2010, which is equivalent to a CAGR of more than 21%. Meanwhile, nuclear generation grew from 0.5bn KWh in 1992 to 76.8bn KWh in 2010, representing a CAGR of more than 32%. The share of nuclear power in the generation mix also grew from 0.1% to 1.8% in 2010.

Fig. 63: China: nuclear generation



Source: CEC, Nomura research

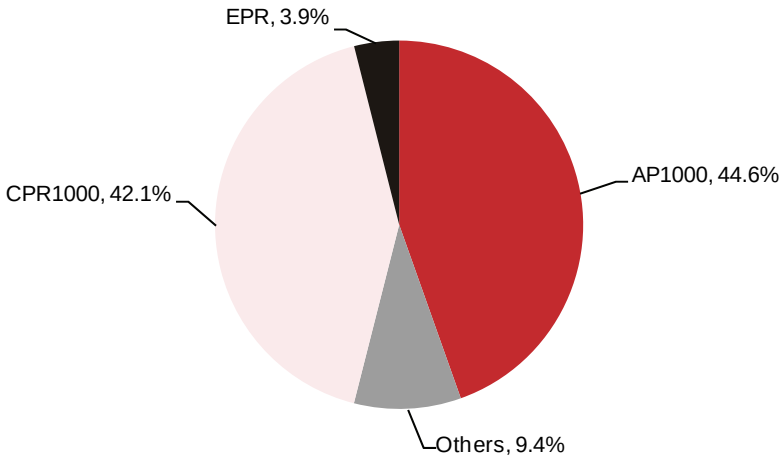
Fig. 64: China: nuclear capacity



Source: NDRC, CEC, Nomura research

AP1000 likely to be the choice

Fig. 65: Reactor choice for projects under construction / planned [2011]



Source: WNA

AP1000 (GIII, Pressurised water reactor) and CPR1000 (GII+, Pressurised water reactor) dominates the nuclear reactors under construction / planned (in terms of generating capacity) with a contribution mix of 44.6% and 42.1%.
, respectively. (For details on different technology and comparison between reactors being built in China and the ones in Fukushima Daiichi, refer to Appendix I in this report.) As China moves towards 3G technology, which has a higher safety standard, we foresee AP-1000 to be the technology of choice, given 1) the already strong planned project pipeline, 2) well established localisation effort managed by the State Nuclear Power Technology Corporation (SNPTC), and 3) most importantly, its advantage in using advanced passive safety mechanisms and a higher safety margin (a maximum core damage frequency of 5.09 x 10E-7 / year vs. 1 x 10E-5 / year for the 2G reactors).

Maximising equipment localisation

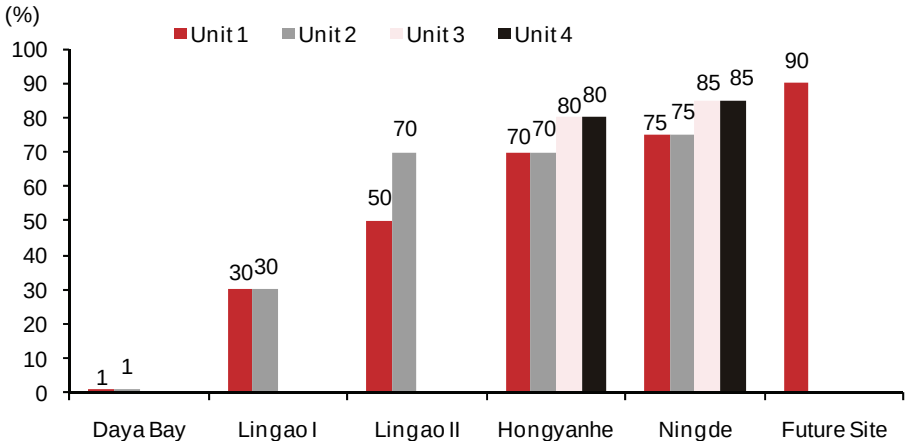
It is widely believed that China will try to maximise domestic manufacturing of plants and equipment, with self-reliance in design and project management. Thus far, China has made aggressive plans in localising CPR-1000 and AP-1000 technology (the two dominating reactor choices). In our potential market size studies, we assume 70% equipment localisation and deem this as conservative due to:

- A 90%-localisation for CPR-1000 is in progress (Source: CGNPC)
- Current localisation plan for AP-1000 is at least ~70%

CPR-1000 localisation progress taking shape

According to World Nuclear Association (WNA) and the China Guangdong Nuclear Power Corporation (CGNPC), which led the development of the CPR-1000, localisation rate is expected to reach 85% for Ningde Unit III and IV nuclear reactors, one of the latest CPR-1000 projects. Future CPR-1000 projects are expected to reach a localisation rate of ~90%, according to CGNPC.

Fig. 66: Progressive localisation of CPR-1000



Note: Daya Bay imported French 3-loop technology which CPR-1000 upgrades upon

Source: WNA, CGNPC

Aggressive plan for AP-1000 localisation is on-going

The Chinese government has established the State Nuclear Power Technology Corporation (SNPTC) to manage 3G (specifically AP1000)'s localisation and transfer on the engineering design and project management through 2 supporting projects to build 4 AP1000 nuclear reactors (namely Sanmen unit1-2 and Haiyang unit 1-2).

The China government has also introduced a three-stage localisation process to allow Chinese equipment suppliers to possess the necessary technology to produce AP1000 reactors locally. In Stage 1, for the first four AP1000 reactors (Sanmen and Haiyang plants), Westinghouse would take the lead in the design process, while the Chinese party would assist with design and construction. Localisation content for the four reactors will be 30%, 50%, 60%-70% and 70%-80%, respectively.

Fig. 67: AP1000 localisation plan

	AP-1000 Equipment				
Parts	#1	#2	#3	#4	Function
Steam Generator (蒸汽发生器)	0%	0%	100%	100%	The equipment which allows water in the first loop to transfer heat to the water in the second loop to generate steam.
Pressure vessels (反应堆压力容器)	0%	0%	100%	100%	Container for nuclear fission to take place which can withstand high pressure
Reactor Internals (反应堆内件)	0%	0%	100%	100%	Major equipment which allows nuclear fission
Control Rod Drive Mechanism (控制棒驱动机构)	0%	0%	100%	100%	Major equipment which allows nuclear fission
Squib Valve (爆破阀)	0%	0%	0%	50%	Major safety part of AP1000
Reactor coolant pumps (反应堆冷却剂泵)	0%	0%	0%	50%	Major safety part by pumping coolant into the reactor
Safety container (安全壳)	0%	100%	100%	100%	Enhance safety and durability of the reactor
Fuel manipulator crane (燃料装卸料设备)	0%	100%	100%	100%	Loading fuel to specific location of the reactor and transfer empty parts away from reactor
Main Pipe (主管道)	100%	100%	100%	100%	Connection of major equipments in the nuclear plant
Pressuriser (稳压器)	100%	100%	100%	100%	
Other Pumps (其他核级泵)	100%	100%	100%	100%	
Other Valves (其他核级阀门)	0%	0%	100%	100%	Safety function

Source: SNPTC

In Stage 2, starting from the fifth nuclear power reactor, Chinese parties will be responsible for the design of the nuclear island, while the foreign supplier will provide technical support. In Stage 3, there will be complete localisation of the design and construction process.

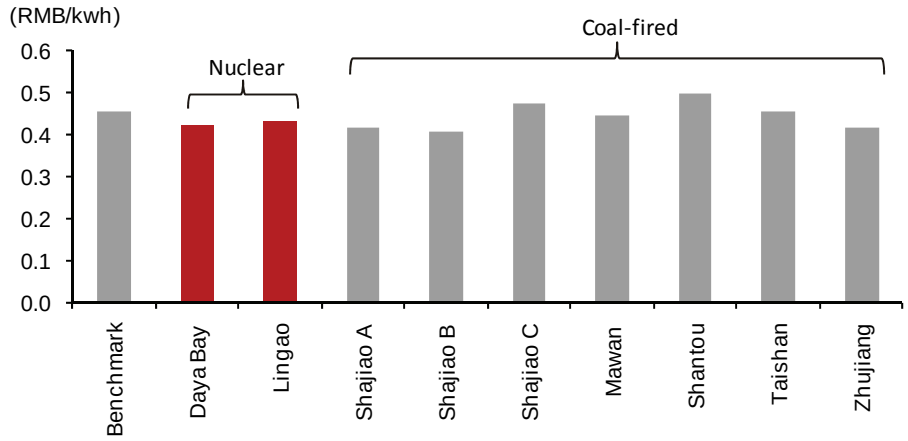
Our industry checks confirm progress is happening and a lot of AP1000 components should be localised in the near term as local equipment providers have already captured certain technologies through the construction of previous versions of nuclear reactors. Certain parts including reactor coolant pumps, squib valves, container steel structures and main pipes are specific to the AP1000 design and may take more time.

Financial incentives for operators

The government provides tax benefits to local equipment manufacturers and nuclear power plant operators. To encourage technology improvement and production localisation, Chinese power equipment producers are exempt from tariffs and VAT when importing high-end components, machinery, and raw materials for nuclear power equipment production.

Nuclear power plant operators in China are also granted VAT rebates. Plant owners can get 75% VAT rebates during the first five years of operation, 70% VAT rebates during the 6th to 10th years of operation, and 55% VAT rebates during the 11th to 15th years of operation. Nuclear power plant operators also enjoy "special" tariffs from the grid-line. The government approves nuclear power tariffs on a project-by-project basis, and the tariffs granted normally provide a guaranteed return (ROE) of 9% (excluding benefits from VAT rebates; 15% if VAT rebates are included).

Fig. 68: Guangdong: on-grid power tariff



Source: CGNPC

Major nuclear players in China

Major players within the China nuclear industry include:

- Upstream advanced technology and equipment suppliers such as Areva, Westinghouse, and Toshiba;
- Local equipment suppliers such as Dongfang Electric, Shanghai Electric, and Harbin Electric; and
- Nuclear power operators such as China National Nuclear Corporation (CNNC), China Guangdong Nuclear Power Holding (CGNPC), China Power Investment Corporation (CPI), and other coal-fired IPPs.

Traditionally, only CNNC, CGNPC and CPI are allowed to hold dominant stakes in nuclear projects in China, while the other Chinese IPPs and foreign investors can only hold minority interests. Yet Huaneng holds a dominant stake in the 210MW Shidaowan demonstration project as an exception. Parent companies of the China IPPs have been making investments in nuclear power plants.

Nuclear power operators

- China Guangdong Nuclear Power Holding (CGNPC).

  CGNPC is the second-largest nuclear power plant operator in China, with a 28% capacity share at end-2010. Traditionally, there are only three companies with the licence to hold dominant stakes in nuclear power plants: CNNC (72% capacity share), CGNPC, and China Power Investment Corporation (CPIC) (only has one project under construction).

  While the government uses a 9% ROE as a benchmark when granting nuclear power tariffs, CGNPC commented that it has achieved an ROE of 16.5-17% from its projects currently in operation, mainly owing to government VAT subsidies and better operating efficiency. The government currently grants nuclear power plant operators a VAT rebate of 75% for the first years in operation, 70% for the 6th to 10th years in operation, and 55% for the 11th to 15th years in operation.

  CGNPC also is involved in other alternative (renewable) energy projects, such as wind, hydro and solar power. According to CGNPC, as at May 2010, it owns 1.5GW of wind farm capacity, with 1.7GW under construction. The company also operates 1.5GW of hydro power capacity in China. CGNPC also recently won the bid for a 10MW solar PV project in Dunhuan.

  Since its establishment in 1994, CGNPC has grown its net assets by 1,566% from RMB3.24bn to RMB54bn at end-May, 2010. CGNPC's pipeline accounts for 61.5% of the approved nuclear projects in China (Source: SNPTC, WNA)

  Consequently, it is very positive about the growth outlook and believes it could be among the biggest beneficiaries of the government's aggressive promotion of nuclear power in China.

- China National Nuclear Corporation (CNNC).

  Founded in 1988 with the approval of the State Council, CNNC oversees all aspects of China's civilian and military nuclear programmes under its 100-plus subsidiary companies and institutes. It is also the largest nuclear power operator in China.

  CNNC plans to construct reactors in Sanmen, Zhejiang province, Tianwan, Jiangsu province and Fuqing, Fujian province. CNNC has been actively securing uranium supplies overseas to fuel the planned increase in nuclear power capacity. The company started work on developing uranium resources last year in countries including Niger, Kazakhstan, Mongolia and Namibia.

  In November 2008, it established CNNC International (2302 HK) through a backdoor listing, with a main goal to gain control of uranium supplies overseas. As at FY10, CNNC owns 62.07% of the listed company.

  CNNC International is one of two companies in China allowed to import uranium and is the only company allowed to trade uranium in China. In 2009, it bought 69.5% of Canadian company Western Prospector, which has a uranium mine in Mongolia with an 8,000 tonne reserve and estimated annual production of 1,000-2,000 tonnes. And in 1H2010, CNNC obtained 37.2% of a uranium project in Niger, Africa with an est. resources of 7,316 – 11,227 tonnes of uranium and estimated annual production of around 700 tonnes.

Control systems

- Hollysys (HOLI US)

  Hollysys is a leading provider of automation and control technologies and applications in China, with diversified end-markets, including industrial automation, high-speed rail control, and power plant (thermal and nuclear) control.

  According to Hollysys, it accounts for a 10.6% market share of industrial automation and 70% of high-speed rail in China. More importantly, it is the only certified domestic company to supply control systems to the nuclear power automation market in China, according to management.

  The company has formed a joint venture with CGNPC, and expects to become the sole supplier of automation and control systems for CGNPC's future nuclear power projects. Given that CGNPC presently accounts for 61.5% of the announced nuclear project

pipelines in China, Hollysys is confident that it holds a solid position in the China nuclear power market.

Other major equipment suppliers other than the Big Three

Despite the Big Three (SEG, DFE and HEC) having dominant positions in the nuclear equipment space, there are other players, especially in forging components and equipment modules.

- China First Heavy Industries (601106 CH)

  CHIF is a major nuclear equipment component supplier in China, with a wide product offering, ranging from pressure vessels to reactor forgings. The company is also one of the major transferees in the AP1000 technology transfer regime, specialising in pressure vessel technology. The company was recently selected to provide pressure vessel forgings for the first AP1000 units for the Sanmen and Haiyang projects. The company has also co-operated with the China Institute of Atomic Energy to undertake research for China's generation IV nuclear power technologies. As at FY10, the company has a back-log of nuclear orders of RMB6-7bn, mostly for forging components and some pressure vessels. It is important to note that the company has plans to engage in completed nuclear equipments other than pressure vessels but we have yet to see the order flows and production.

- Shandong Nuclear Power Equipment (SNPEM)

  SNPEM is a subsidiary of the State Nuclear Power Technology Corp (SNPTC) and has been involved in the fabrication of nuclear equipment modules for AP1000 projects. The company participated in the Sanmen AP1000 project and recently received American Society Mechanical Engineers (ASME) standard recognition, which reflects the high standard and quality of the Sanmen plant's equipment components and equipment installation work.

Major overseas players

Despite China's efforts to localise nuclear power equipment, certain sophisticated products, especially the newly introduced 3G+ equipment, still have to be imported as local equipment players are catching up. Below are some of the major overseas equipment suppliers, which have been involved in China's recent nuclear power projects.

Fig. 69: Major overseas nuclear equipment suppliers

Supplier	Country	Bloomberg code	Major products to China	China projects
Areva	France	CEI FP	Steam generators, reactor pressure vessels, coolant pumps, and other nuclear island equipments, digital control system	**Lingao II, Tianwan** – digital control systems **Ningde I, Yangjiang I –** coolant pumps
Doosan Heavy Industries	S.Korea	034020 KS	Pressure vessels (AP1000), steam generators (AP1000)	**Sanmen, Haiyang –** pressure vessels, steam generators (AP1000)
Alstom	France	ALO FP	Engineering and procurement of turbine island (EPR)	**Taishan –** emergency diesel generators, turbine generators, EPC of turbine island (EPR)
			Turbine generators (EPR / CPR1000)	**Hongyanhe –** 4 steam turbine generators (CPR1000)
			Emergency diesel generators (EPR)	
Mitsubishi Heavy Industries	Japan	7011 JT	Steam turbine generators (AP1000)	**Sanmen, Haiyang –** steam turbine generators (AP1000)
Japan Steel Works	Japan	5631 JT	Forgings and special nuclear plant components	**Taishan** – large ring forgings (EPR)
				Sanmen, Haiyang – RPV heads and steam generator parts (AP1000)
SPX Corp	U.S.	SPW US	Squib valves (AP1000)	**Sanmen, Haiyang –** squib valves (AP1000)
AnsaldoEnergia	Italy	FNC IM	Containment, Innovative components on AP1000 reactors	**Sanmen** – innovative components (AP1000)
ENSA	Spain	Unlisted	Reactor pressure vessels, pressurisers, piping and steam generators	**Qinshan II** – steam generators and tube support plates

Source: Company data, Nomura research

- Areva

  Areva is a major global nuclear energy solution provider. Its equipment business unit is a worldwide leader in nuclear island component manufacturing, both in new nuclear island construction and the components replacement market. Since 1986, Areva has played an important role in the construction of 11 of China's 17 nuclear power plants in operation or under construction, and has provided nuclear island equipment for Daya Bay, Lingao, and the latest EPR project in Taishan. In 2005, Areva formed a JV with Dongfang Electric Group, specialising in the localised production of reactor coolant pumps.

- Westinghouse

  Westinghouse, together with its parent company Toshiba, is one of the world's largest nuclear power solution providers. The company is less involved in nuclear power equipment manufacturing, but has been focusing on nuclear plant design, procurement and construction. The company has assisted Korea in developing the country's own nuclear power technology. In China, the company has formed a consortium with the Shaw Group, which owns 20% of Westinghouse, to construct the first four units of AP1000 nuclear reactors in Sanmen and Haiyang and to assist in the transfer of AP1000 technologies to local equipment suppliers.

- Doosan Heavy Industries

  Doosan is the leading nuclear plant construction company in Korea. It has worked closely with Westinghouse, supplying nuclear power equipment for nuclear projects around the world. For China's nuclear power projects, the company is supplying pressure vessels and steam generators for the country's first series of AP1000 nuclear reactors. The company has also replaced Mitsubishi Heavy Industries as Westinghouse's major electrical component strategic partner for the AP1000 power plants in China.

- Alstom

  Alstom has a strong track record as the leading global supplier for nuclear power equipment. The company provides conventional island equipment (e.g., steam generator sets) for several EPR nuclear power plants around the world. In China, Alstom has signed contracts with DFE and CGNPC for engineering and procurement of the turbine island for the 3G+ Taishan project. Alstom has also secured delivery of eight emergency diesel generators for the same project.

- Mitsubishi Heavy Industry (MHI)

  MHI has been investing heavily in nuclear power technology and aims to double sales from its nuclear business in the next 10 years by selling an average of two nuclear reactors pa up to 2030F, according to the company's recent announcement. In China, MHI is focusing on supplying steam turbine generators for AP1000 projects and has secured a contract to supply the Sanmen and Haiyang AP1000 plants with steam turbine generators.

- Japan Steel Works (JSW)

  JSW is a dominant player in the large ring forging business, with about an 80% global market share for large forging components for nuclear plants in 2008, according to our estimates. JSW was the first one to have forge components from ingots up to 450 tonnes, as needed in EPR and AP1000 reactors. Due to its distinctive positioning in the 3G nuclear supply chain, JSW has been the exclusive provider of large ring forgings for Taishan's EPR plant, and of some key components for the Haiyang and Sanmen AP1000 plants (eg, RPV heads and three complicated steam generator parts). However, it's important to note that Doosan and domestic players (First Heavy, SEG) have been catching up fast in these capabilities.

- SPX Corp

  SPX is one of the world's leading nuclear power component suppliers. The company has been working closely with Westinghouse to design and engineer specialty valves for its AP1000 power plant. In China, SPX is the sole supplier of specialised squib valves, which are a new key safety component for AP1000.

- Ansaldo Energia

Ansaldo is one of Italy's leading nuclear companies. In China, the company has signed a contract with SNPTC for the training of Chinese personnel and to facilitate AP1000 technology transfer. It has also signed an agreement with Westinghouse to supply innovative components for the Sanmen AP1000 power plant.

- ENSA

  Spain's ENSA is a supplier to Westinghouse, Areva, and GE-Hitachi, for components such as reactor pressure vessels, pressurisers, piping and steam generators. In China, ENSA has partnered with SEG to produce steam generator and tube support plates for the Qinshan Phase II Project. In 2008, ENSA formed a JV called Spanish Nuclear Group of China with three other Spanish nuclear components producers, focusing on China's nuclear market.

Thermal equipments: slowdown in China, offset by exports

We estimate domestic demand for thermal equipment will slow slightly in the next three years, due to the government's initiative to reduce its carbon footprint and focus on clean energy. However, the slowdown should be manageable, given China still needs to rely on thermal in the near term. We estimate the amount of new thermal generating capacity to be 190.8GW for the next 3 years (2011F-13F), down 6.5% from the 204.1GW for the previous 3 years (2008-2010). However, the drop for domestic thermal equipment revenue for these companies would be offset by overseas revenue (mostly in the form of EPC / engineering services) on the back of:

- Rising contribution from export orders for the three companies (export orders are largely thermal equipment).
- Strong orders of export thermal orders in-hand (as at FY10, SEG has RMB80bn EPC orders which are largely related to thermal equipment for overseas customers. DFE has RMB22.4bn of export orders, mostly for thermal equipment and HEC has RMB35bn export orders, again largely thermal equipment.

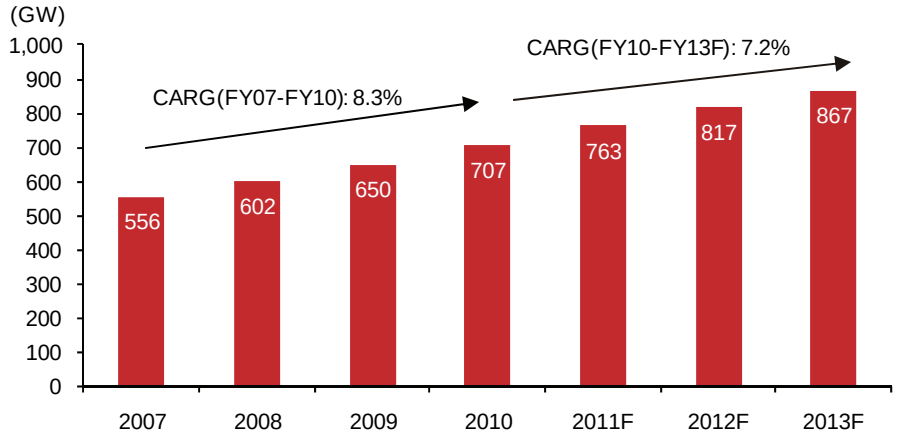
Growth prospects for the domestic thermal equipment market seem confined. However, individual companies, such as SEG, will have higher potential through its modern services segment, due to its strong export order backlog, in our view.

We believe that if China ever had to reduce its nuclear target or delay its nuclear development, the capacity short-fall would be replaced by thermal. In our view, wind and solar are unlikely to replace the shortfall due to wind/solar's low utilization hours (wind: ~1,600 hours, solar: ~1,100 hours, while nuclear can have 7,900 hours, source: SGERI). We believe the likelihood of hydro replacing nuclear is low; other than the resources and environmental issues, a lot of the potential hydro resources are in the west and would require significant capex on the power grid for such development. In our view, in order to satisfy power demand in the event of nuclear delay / reduction, thermal (coal and gas fired) power is the only choice. Thus, we see upside on coal-fired plant build out.

Slower domestic growth at 7.2% (2010-13F) vs. 8.3% (2007-10)

Despite China's plan to reduce its reliance on thermal power in the 12-FYP, China still needs to build new thermal capacity in order to fulfil China's power demand. We estimate thermal generating capacity to reach 818GW by 2015F. According to our estimates, thermal power capacity growth may be 7.2% in FY10-13F, a slight slowdown from the 8.3% CAGR growth between FY07-10.

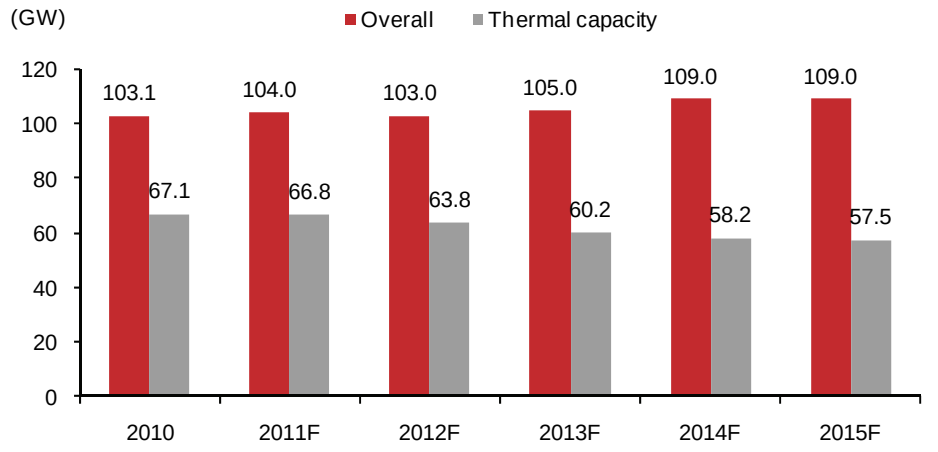
Fig. 70: Thermal power generating capacity



Source: CEC; Nomura estimates Note: Net generation capacity

In terms of newly installed capacity (considering the small thermal close-down), we estimate there will be 190.8GW of thermal capacity to be installed in 2011F-13F, down 6.5% from the 204.1GW installed in 2008-10.

Fig. 71: Forecast of new generation capacity installed



Note: Incl. small thermal closedown assumption of (10GW/yr) in FY11F-15F and 3GW and 2GW of non-grid connected wind capacity in 2012/13F, respectively

Source: CEC, Nomura estimates

Fig. 72: Market opportunity size for domestic thermal equipments market

Installed cumulative thermal generating capacity (GW)											
2009	**2010**	**2011F**	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
650.5	706.6	763.5	817.3	867.4	915.7	963.2	1014.6	1064.7	1111.1	1156.2	1200.2

New capacity commencement (GW)											
	2010	**2011F**	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
Capacity Addition	56.1	56.8	53.8	50.2	48.2	47.5	51.4	50.2	46.3	45.2	44.0
Small thermal closedown	11.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0
	67.1	66.8	63.8	60.2	58.2	57.5	51.4	50.2	46.3	45.2	44.0

Equipment cost assumption (RMB / kw)										
2010	**2011F**	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Revenue opportunity assumption		
Years before capacity commenced	**1**	**0**
% of revenue recognized	40%	60%

Revenue opportunity for thermal equipments installed in China (RMB bn)									
2011F	**2012F**	**2013F**	**2014F**	**2015F**	**2016F**	**2017F**	**2018F**	**2019F**	**2020F**
65.6	62.3	59.4	57.9	55.1	50.9	48.6	45.9	44.7	42.0

Source: Nomura estimates, Industry Checks

What if capacity growth is slower than our forecast

Despite the need for China to sustain its power capacity growth, we think downside risk to our base-case assumption exists, due to:

- Guidance of a 4.2% y-y decline in FY11F combined capex for IPPs and Shenhua (power sector).

  According to our checks, capex guidance for the five major listed IPPs (Huaneng, Huadian, CPID, CRP and Datang) and the power sector of Shenhua for FY11F came in at ~RMB82.7bn, down 4.2% y-y.

Fig. 73: Capex guidance

(RMB bn)	2010	2011F
CPID	5.2	5.9
Huaneng	20.7	18.7
Huadian	13.5	15.5
CRP	15.9	18.0
Datang	22.7	20.0
Shenhua - power sector	8.4	4.6
Total	86.4	82.7
(y-y %)		*-4.2%*

Source: Company, Nomura estimates

FY11F 4M11 new generating capacity growth is down 15.3% y-y. According to data released by the China Electricity Council, new power capacity during 4M11 came in at 18.85GW, implying a decrease of 15.3% over the same period last year.

Fig. 74: Generating capacity installed YTD

(GW)	4M11	4M10	*(y-y%)*
Total	18.85	22.24	*-15.3%*
Hydro	2.12	2.11	*0.6%*
Thermal	13.42	17.29	*-22.4%*
Wind	3.24	2.81	*15.2%*
Others	0.07	0.03	*105.3%*

Source: CEC

According to our checks, the shortfall of thermal capacity in 4M11 was partly due to difficulty in finding small thermal projects to close down as part of the 'Replacing small units with large ones' scheme. The Chinese government has been promoting the replacement of inefficient small thermal capacity by larger ones since the 11-FYP. In an effort to promote this, the government would prioritize approval of new thermal projects that corresponded with the shutdown of small thermal capacity. According to our checks, as getting approval for traditional thermal projects has become more difficult due to environmental concerns, IPPs have been leveraging the 'replacing small units with large ones' policy as a way to gain new projects. However, as the eastern, demand-heavy, provinces are running out of small thermal capacities, the approved thermal projects pipeline has been slow, partly contributing to the current capacity short-fall in 4M11.

- CEC's latest forecast of new net capacity addition in FY11F is 78GW

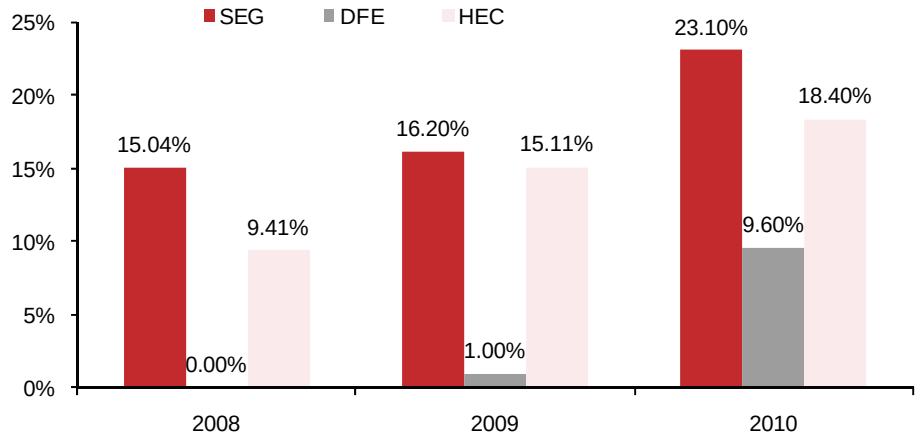
  CEC forecasts new net capacity addition for FY11F to come in at 78GW in its "Power demand and supply analysis and projection for 1Q11" published on 28 April, 2011.

In light of the thermal equipment demand concerns for FY11F, we have conducted a risk analysis (scenario 4 and 5 in the Risk Analysis section) to study the impact on potential thermal capacity shortfall in 2011F and 2012F.

Overseas market opportunities

In view of slowing demand for thermal power equipment in China, the Big Three companies have explored the overseas market in recent years. As at FY10, overseas revenue contributed 23.1%, 9.6% and 18.4% to SEG's, DFE's and HEC's revenue, respectively.

Fig. 75: Export revenue contribution



Source: Company

According to our checks, all three companies have explored opportunities in the overseas market and have achieved solid results. Strong overseas orders for thermal and services contract confirms this. As at FY10, Shanghai Electric had RMB80bn of EPC orders that were largely overseas orders for thermal power plants. As at 1Q11, we estimate Shanghai Electric's overseas EPC backlog has grown to RMB90.56bn. As at FY10, Dongfang Electric has RMB22.4bn of overseas orders in-hand, largely related to thermal equipment and Harbin Electric has got approximately RMB35bn of overseas orders, out of which the majority relates to thermal equipment, according to our industry checks.

India's generation capacity to reach 272GW by 2015F

According to Nomura's India Industrials team, thermal power generation presents the largest investment opportunity in India Infrastructure and this is already evident in the significant interest from private players. More than 175GW plan has been announced for the XII plan with 73% (~130GW) from private players. Realistically, we estimate private participation in the XII plan at 80-85GW+ compared with 24GW in the XI plan. Over the next five years, we estimate the sector presents an investment opportunity of INR6.5tn with INR4tn from private players. According to our India team's estimates, India's installed generation capacity may reach 272GW by 2015F, up from 159GW as at FY10; thermal generating capacity may reach 191GW.

Fig. 76: India power generation capacity forecast (2010-15F)

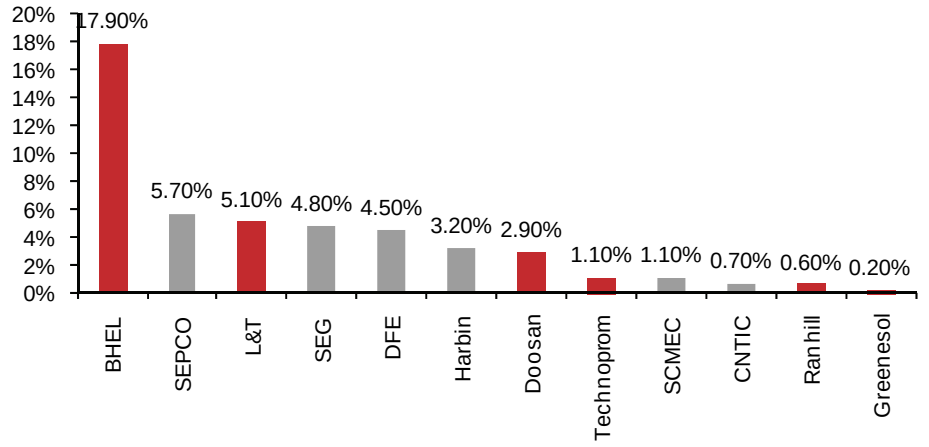
	2010	2011F	2012F	2013F	2014F	2015F
Thermal (GW)	102	115	132	145	166	191
(y-y%)		*12.4%*	*14.9%*	*9.4%*	*14.5%*	*15.4%*
Hydro (GW)	37	37	39	40	44	48
(y-y%)		*1.3%*	*3.2%*	*4.8%*	*10.0%*	*7.1%*
Nuclear (GW)	5	5	6	6	6	6
(y-y%)		*13.4%*	*14.5%*	*0.0%*	*0.0%*	*0.0%*
Others (GW)	16	18	20	22	25	27
(y-y%)		*12.9%*	*11.4%*	*12.8%*	*11.4%*	*10.2%*
Total (GW)	159	175	196	213	241	272
(y-y%)		*9.9%*	*12.1%*	*8.5%*	*12.9%*	*12.9%*

Source: CEA, Nomura estimates

Chinese equipment players have 42% market share in India market

Currently, Chinese companies (including contracts awarded to Chinese EPC players) have 42% of the awarded contracts for India's XII plan.

Fig. 77: Market shares (defined as contracts secured in India's XII plan)



Source: CEA, Industry data, Nomura estimates

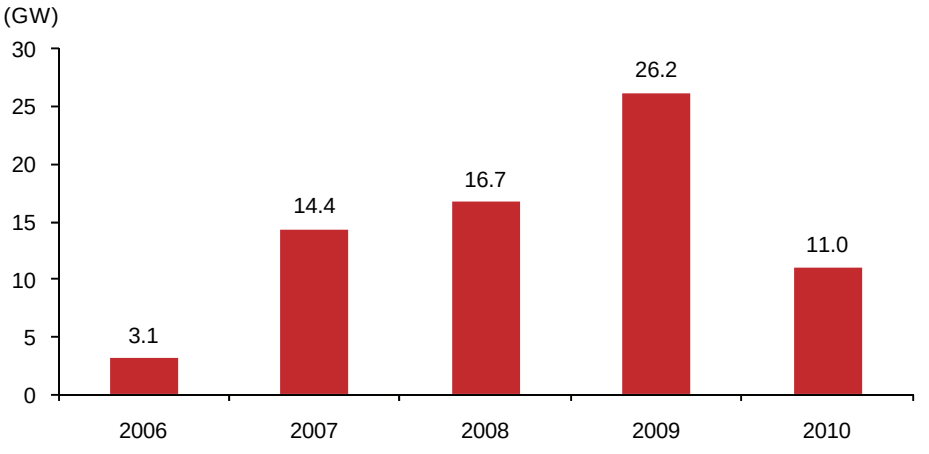
Background on thermal development in China

Small thermal close-down (Replacing small units with large ones)

In an effort to reduce pollution, energy intensity and to raise efficiency across thermal power generation, China set out policy / guideline to close down small thermal power generation plants and replace them with new-built efficient ones in the 11-Five Year Plan. To promote such, the government would prioritize new thermal projects approval that have corresponding small thermal capacity shutdown and the threshold for 'replacing small units with large ones' are: (1) for 300MW new thermal projects, a corresponding small thermal close down of 50% of the new capacity to be built; (2) for 1GW project, a corresponding small thermal closedown of 60% of the new capacity to be built and; and (3) for 600mw project, a corresponding small thermal closedown of 70% of the new capacity to be built. (Source: Henan Development & Reform Commission). According to our checks, as traditional projects are becoming more difficult to get approval for due to environmental concerns, IPPs have been leveraging the 'replacing small units with large ones' policy as a way to gain new projects.

China closed down 71.4GW of small thermal power plants during 2006-2010, above the original target of 50GW set in the beginning of the 11-FYP. We have seen the largest amount of small thermal close down in 2009 with 26.2GW capacity being shut down.

Fig. 78: Small thermal closedown (2006-2010)



Source: CEC

As at 1H10, according to china5e.com, China still has a 26.8GW of thermal generating capacity under 100MW / unit (pure condensing unit) and 140GW of thermal capacity under 200MW / unit in size. In our view, China will continue to close down inefficient

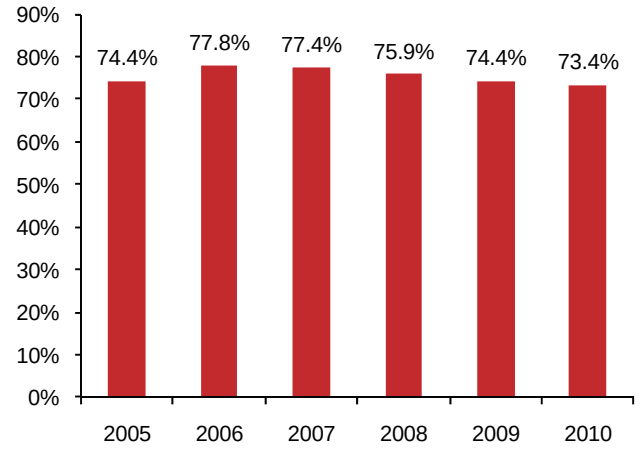
small thermal plants in the 12-Five Year Plan period, being part of the effort to reduce energy intensity by 16% and carbon emission by 17% in the 12th-Five Year Plan. However, the effort is not likely to be as aggressive as it was in the 11th-Five Year Plan, given the most inefficient plants should have been closed down by now.

According to Mr. Lu Qizhou, General Manager of China Power Investment Corporation, it is estimated that at least 50GW of small thermal can be closed down during the 12th-FYP, averaging 10GW of capacity / year. (Source: chinapower.com.cn)

Reducing its reliance on thermal power

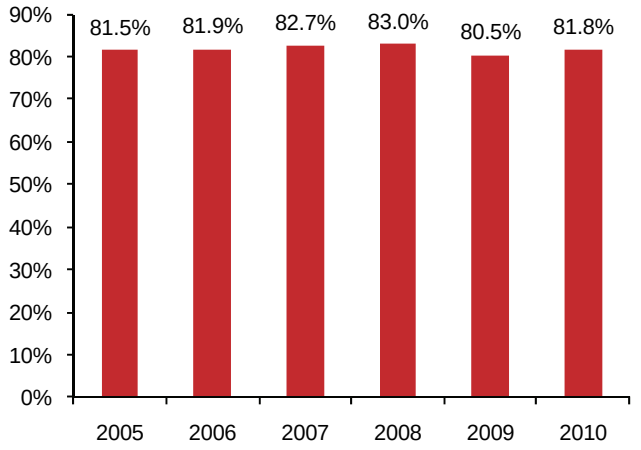
According to the BP Statistical Review 2010, China has 114.5bn tons of proved coal reserves as at FY09, representing 13.9% of the world's proved coal reserves. Due to its abundance of coal as a fossil fuel resource, China has been reliance on coal for its power generation. Thermal power generation (largely coal) has contributed consistently over 70% of the power generating capacity and over 80% of the power generated in China throughout 2005-2010.

Fig. 79: Contribution of thermal (generating capacity)



Source: CEC, Nomura estimates

Fig. 80: Contribution by thermal (power generation)

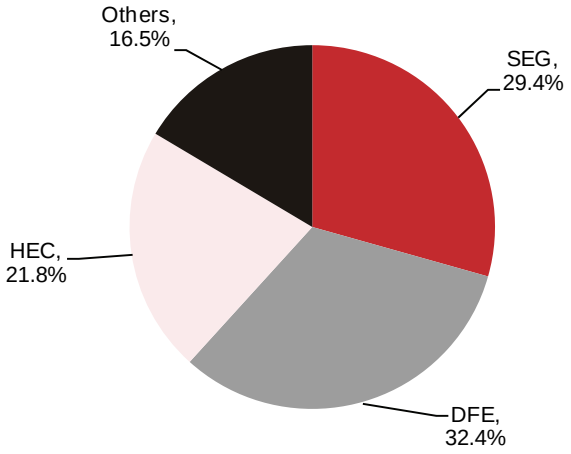


Source: CEC, Nomura estimates

Market share of the Big Three in the domestic thermal market space

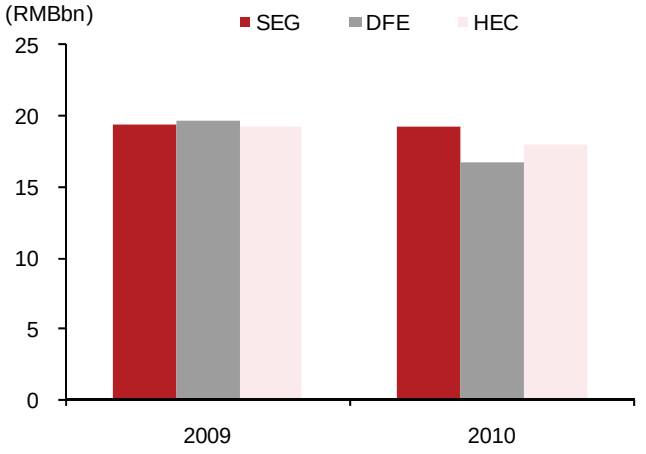
As at FY10, China has produced 82.35GW of thermal power generators (cnsb.com), out of which the Big Three have a combined market share of 84%. Although HEC only has a 21.8% market share in the thermal power generator space as at FY10 (measured by thermal generators output), the company has comparable thermal equipment revenue as SEG and DFE, due to the fact that HEC has produced more boilers (26GW) and turbines (21GW) over generators (18GW) for the year. Despite the FY10 data, we believe our channel checks suggest a more realistic picture of the market share situation in China, the Big Three consistently dominate the thermal generating equipment market (including boilers, generators and turbines, as well as auxiliary equipment) with ~80-90% market share combined over the years. The Big Three have similar market share, as evidenced by the amount of similar thermal equipment revenue shown below in both 2009 and 2010.

Fig. 81: Market share – turbine generators (FY10)



Source: cnsb.com, Company data

Fig. 82: Revenue from thermal equipment sales



Source: Company data

Wind: market consolidation gives rise to new opportunities, but competition fierce

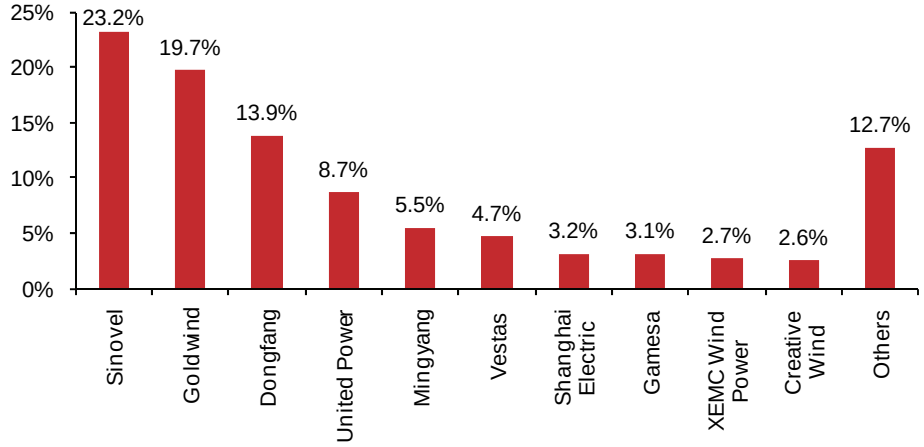
We expect domestic demand growth for wind power equipment to slow down and forecast annual on-grid wind capacity to be around 15GW / year in the near term until the grid bottleneck issue is resolved. With an assumption of 3GW and 2GW of non grid-connected new capacity in FY11F and FY12F (vs. 4.0GW in FY10), we forecast installed wind capacity to be 17.9GW and 17GW for the year 2011F and FY12F, down from the 18.9GW in 2010. In our view, ASP decline in 2010, indicating a price-war, is evidence of the industry's over-capacity and competition, in our view.

The following highlights the key themes for current market dynamics for the wind equipments market:

- Industry consolidation (continual ASP pressure, we forecast ASP for wind turbine to drop 10% and 5% in 2011F and 12F, respectively);
- China's off-shore development gives rise to high capacity / premium turbine; and
- Turbine manufacturers with export potential will likely have better prospects

Of our covered companies, we like Shanghai Electric's wind play, given its current low-base, being early in off-shore development and with meaningful export contracts in hand. Amid the current competitive environment and unfavourable market dynamics, meaningful growth for Shanghai Electric's wind business looks likely, as indicated by management's ambitious guidance and strong 1Q11 new orders of RMB2bn for wind equipment. For Dongfang Electric's wind business, we think it is now in a defensive position, given its sizable market share, and this should provide the company with upside when grid bottleneck is resolved. Despite Harbin Electric's ambitious JV plan with GE, being late in the game means that Harbin Electric needs time to catch up to gain market share; meaningful revenue from wind is unlikely until 2013F, in our view.

Fig. 83: Major wind turbine manufacturers in China (FY10)



Note: Market shares defined as new wind generating capacity installed over the year

Source: CWEA

Fig. 84: Market opportunity sizing for domestic wind turbines market

Installed cumulative wind generating capacity (GW)											
2009	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
16.1	31.1	46.0	61.0	78.0	95.0	112.0	127.8	144.6	162.1	180.5	200.0

New capacity commencement (GW)											
	2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Capacity Addition	14.9	14.9	15.0	17.0	17.0	17.0	15.8	16.8	17.5	18.5	19.5
Small thermal closedown	4.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18.9	17.9	17.0	17.0	17.0	17.0	15.8	16.8	17.5	18.5	19.5

Equipment cost assumption (RMB / kw)										
2010	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
4,200	3,780	3,591	3,591	3,591	3,591	3,591	3,591	3,591	3,591	3,591

Revenue opportunity assumption	
Years before capacity commenced	0
% of revenue recognized	100%

Revenue opportunity for thermal equipments installed in China (RMB bn)									
2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
67.8	61.0	61.0	61.0	61.0	56.7	60.4	62.8	66.3	69.9

Source: Nomura estimates, Industry checks

Industry consolidation is likely in the next two years

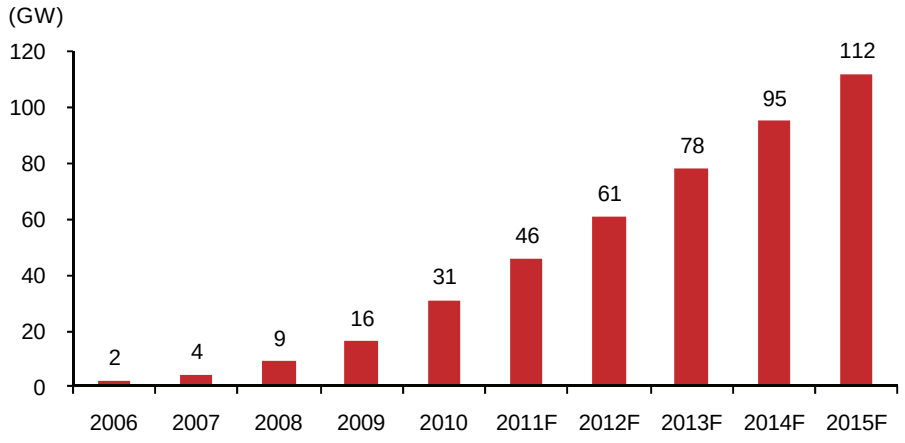
In our view, the wind turbine makers will likely consolidate with large players taking up market shares from smaller, inefficient player, due to:

New wind capacity demand stays flat at ~17.9GW and 17GW in 2011F and 2012F

Although wind power has the advantages of scalability, low costs relative to other clean energy sources and short development time, its development in China can be hindered by grid connection bottleneck issues. As at FY10, CEC stated that grid-connected wind power generation was 31GW, while the CWEA reported the cumulate amount of turbine installed at 44.73GW, indicating ~31% of wind turbine installed but not grid-connected.

After China doubled its wind capacity annually for the past four years, demand growth for wind equipment demand is likely to slow. Per our industry checks, installed capacity for 2011F and 2012F is likely to be around ~17.9GW and 17.0GW in 2011F and 2012F, respectively (vs. 18.9GW installed in 2010).

Fig. 85: China wind capacity forecast (2006-2015F)



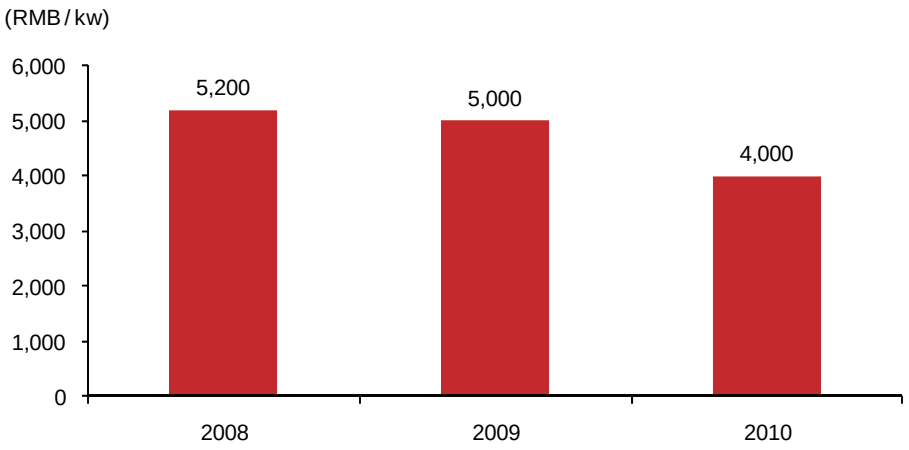
Source: CEC, NDRC, Nomura estimates Note: Excluding non grid-connected capacity

Over-capacity in the industry, especially for the 1.5MW turbine

According to our industry checks, ASP for wind turbine in China saw a big price drop in 2010. ASP dropped from the RMB5,000/kW level at the end of FY09 to around RMB4,000/kW level at end-FY10 for 1.5MW wind turbine (source: industry checks, ASP for contract signed). While manufacturers reaching production scale can be a factor, the price drop is a visible indicator that there is over-capacity in the industry, in our view.

Given the technological requirement for manufacturing 1.5MW turbines is not high, the competition in the commodity-like 1.5MW wind-turbine is fierce.

Fig. 86: ASP trend for wind turbine



Note: ASP at the end of the year for contract signed. Variance across different manufacturers is possible, these are approximate figures according to management of wind turbine companies

Source: Industry check

Off-shore development gives rise to premium, high capacity wind turbines

The industry sees off-shore wind farm in the coastal area to be the next key development in China. Installed off-shore wind capacity may reach as high as 5GW by 2015F, according to china5e.com. In our view, this development is in-line with the dynamics in China, due to:

• Abundant wind resources along the coastal area

According to the Chinese Renewable Energy Industries Association (CREIA), the 10-km broad zones in the coastal regions of Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Guangxi and Hainan has an annual wind power density above 200 W / m2, which is deemed abundant and rich.

• Proximity to major electricity demand centre

The above-mentioned area is close to major coastal cities, where electricity demand is high. Wind-farm development close to load centre eliminates transmission loss and reduces grid curtailment issues.

Thus, we believe major players are developing high-capacity turbines to capture the opportunities. Unlike on-shore wind farm, installation and maintenance cost can be substantial over the life of an off-shore wind farm due to the logistical difficulties. Reduction in the number of wind turbines installed by up-sizing capacity is deemed economical for off-shore wind-farms.

Unlike low-capacity wind turbines, high-capacity models are regarded as premium products in the market, charging higher prices for quality and given limited supply. Such evolution should bolster manufacturers with advanced R&D capability, quality manufacturing process and a good reputation in the industry. For the companies under our coverage, we see Shanghai Electric and Dongfang Electric gaining exposure in this high-end market in the near term. Such a development could provide meaningful growth to Shanghai Electric's wind business, given its current low exposure to the weakening on-shore wind turbines market.

Fig. 87: High capacity turbine development

Company	High-capacity turbine development
Dongfang Electric	3MW model expected to commence production in FY11F, development on 5MW turbine progressing well, according to management.
Shanghai Electric	Shanghai Electric has started 3.6MW wind-turbine development since July, 2008. In Aug, 2010, the first 3.6MW turbine has passed operation test and connected to grid in trail run. Shanghai Electric is now ready for 3.6MW turbine mass-production in 2011.
Xinjiang Goldwind	Goldwind manufactured Asia's first offshore MW-level DDPM MTG in 2007. The company is planning to being commercial production for its 2.5MW and 3.0MW WTG this year. 6MW WTG is currently under development.

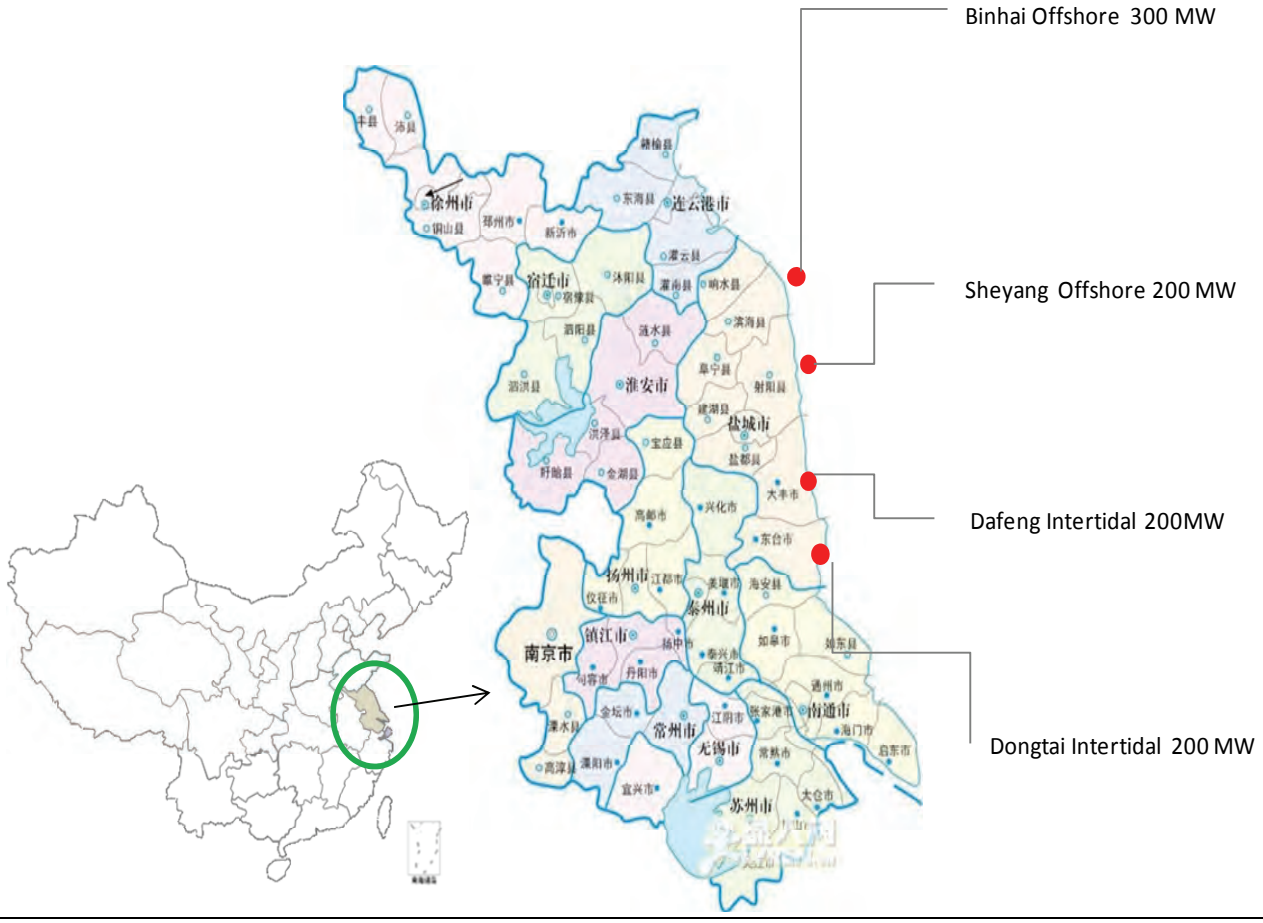
Source: Company

Fig. 88: Results of the first round of off-shore concession projects

Windfarm	Capacity	Operators	Equipment providers	Tariff (RMB / kwh)
Binhai Offshore	300 MW	Datang	Sinovel	0.7370
Sheyang Offshore	300MW	CPI	Sinovel	0.7047
Dafeng Intertidal	200MW	Longyuan	Goldwind	0.6396
Dongtai Intertidal	200MW	Luneng	Shanghai Electric	0.6235

Source: CWEA

Fig. 89: Location of the 4 off-shore concession projects

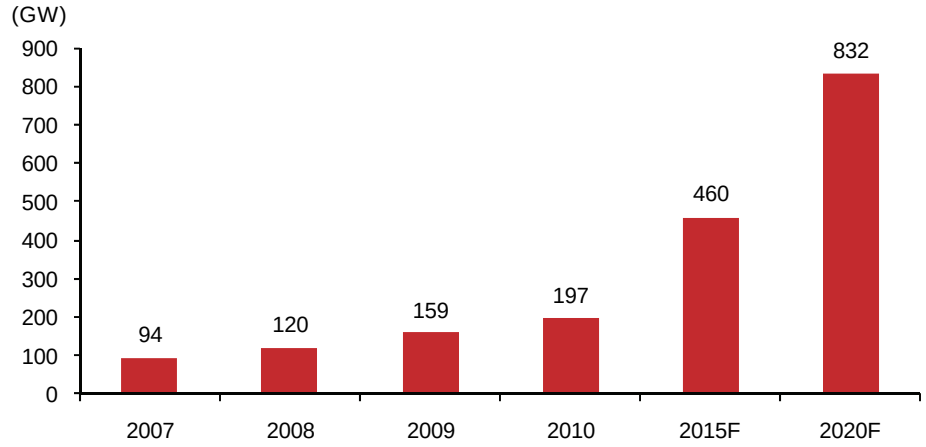


Source: CWEA

Exports provide potential upside

The USD203mn contract (166 units of 1.5MW turbine) between Dongfang Electric and India's KSK Energy, as well as the recent 125 x 2MW contracts between Shanghai Electric and KSK, have shed light on the export potential for Chinese wind turbine manufacturers, in our view. Both sizable wind turbine export contracts provided a lot of business for the Big Three power equipment companies. To us, brand recognition through previous thermal equipment exports can be a factor and we expect such brand equity to continue in the wind turbine export arena in the near term.

Fig. 90: Global wind capacity forecasts



Source: GWEC, Global wind energy outlook (moderate scenario)

According Global Wind Energy Council (GWEC), global wind power capacity is projected to reach 832GW by 2020F, indicating a 15.4% CAGR from the 2010F's level (moderate scenario). In our view, GWEC's forecast is achievable, given:

- On-going global effort in carbon reduction
- Wind is still one of the most economical new energy sources

Global demand, together with the cost advantages Chinese wind turbine manufacturers offer over international players, underpin export potential for quality Chinese players with a reputable brand name.

Fig. 91: Export of Chinese wind turbines (2009)

Company	Model	Number of sets	Capacity	Exporting countries
Sinovel	SL1500 / 82	10	15	India
Goldwind	GW77 / 1500	3	4.5	USA
Sewind	W1250 / 64	5	6.25	Britain (3 sets) Thailand (2 sets)
New United	SD77 / 1500	2	3	USA (1 set) Thailand (1 set)
Total		20	28.75	

Source: China Wind Power Outlook 2010

Recent government directive reconfirms our view

On 3 March, 2011, following a guideline issued last year to prevent overcapacity in the wind power equipment industry, the National Intellectual-Property Strategy Office issued a directive for the municipal government to follow in controlling the crowded market.

According to the directive, the state wants to have 3-5 competitive turbine manufacturers with R&D capability for new product development in the wind equipment industry in the long term. We see the policy tightening on new entrants as government action, pushing

forward industry consolidation in forming these 3-5 leading players. In our view, such policy development is yet another catalyst for industry consolidation, giving rise to qualified players in the market.

Fig. 92: Key restrictions outlined in the directive

1	New projects for components (such as blades, gearbox, system controls, etc) manufacturing with a capacity of <2MW are barred.
2	Promote the development of high capacity (>3MW) off-shore turbine
3	New wind turbine manufacturing projects are restricted, other than capacity expansion for existing facilities

Source: News flow, gov.cn

Under the 2011 edition of the Guideline Catalogue for Industrial Structuring published by the National Development and Reform Commission (NDRC) published on 26 April, 2011, China will not extend the preferential policies to companies that produce wind turbines of less than <2.5MW capacity or wind turbine components / gearbox of 2MW of lower. This is yet another effort by the government to push for higher capacity turbine development and industry consolidation. According Shen Dechang, Deputy Secretary-General of the wind power equipment branch of the China Association of Agricultural Machinery Manufacturers (CAAMM), “In the next 3 to 5 years, about 80% of China’s wind turbine makers will disappear through mergers and acquisitions”.

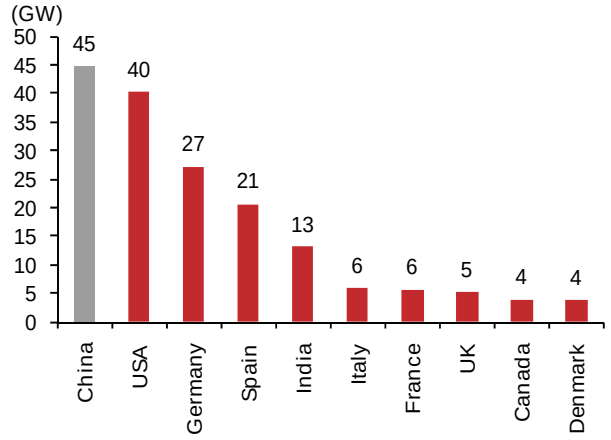
Background on wind development in China

China is the world’s fastest-growing wind power market

The Chinese government unveiled its “Renewable Energy Mid-to-Long-Term Development Plan” in September 2007, where the government has set a target for cumulative wind power capacity to grow from 1.26GW at end-2005 to 5GW by end-2010F and 30GW by end-2020F. However, the pace of wind power capacity installation has, so far, significantly surpassed the goal set by the government.

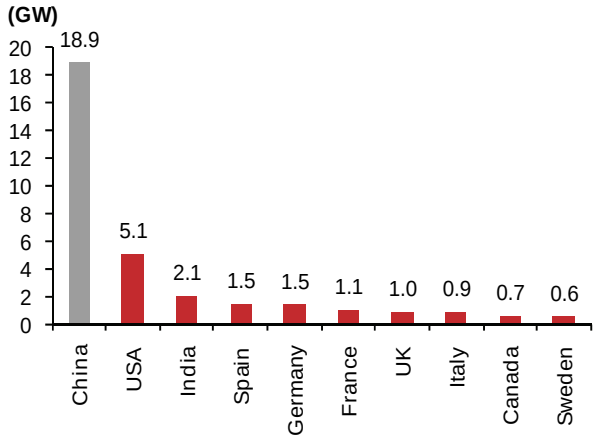
There has been speculation for the announcement of the “12th 5-year Plan for Energy Industry Development(”十二五” 能源发展规划”) and “New Energy Development Plan” (“新兴能源产业发展规划”) since 2010. According to the latest news flow, these policies are likely to be announced this year. According to news flow, comments by officials and industry checks, the capacity target for 2020F is likely to be at least 150GW. Our current forecast is 200GW by 2020F (vs. 230GW forecast by the China Association of Resource Comprehensive Utilisation). According to the Global Wind Energy Council (GWEC), China installed 18.9GW of wind power capacity in 2010, taking cumulative wind power capacity to 44.73GW at end-2010.

Fig. 93: Global top 10: cumulative capacity (2010)



Source: GWEC, Nomura research

Fig. 94: Global top 10: annual installation (2010)



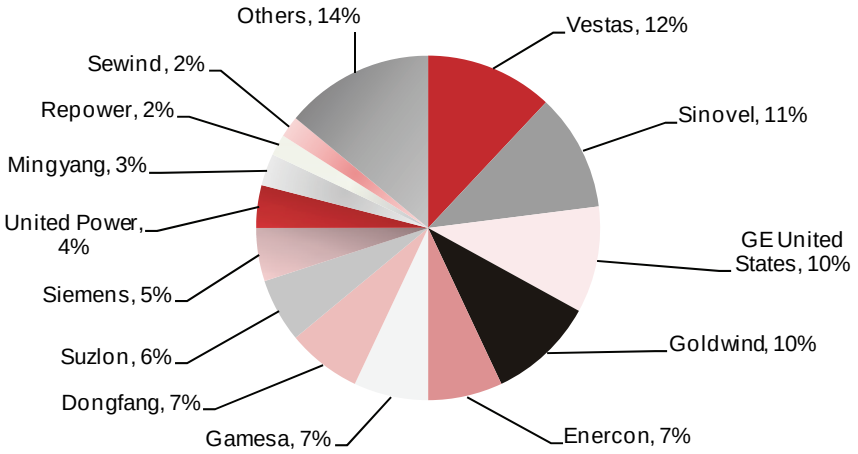
Source: GWEC, Nomura research

High visibility but growth to slow down to ~17.9GW in 2011F

With 18.9GW of new capacity installed in FY10, China has become the largest wind power market in the world in 2010. Cumulative wind power capacity in China grew by 73% y-y in 2010, owing to favourable government policies and easier availability of project financing. China's Sinovel, Goldwind, Dongfang and United Power are now in the top-10 of global wind turbine generator (WTG) suppliers by capacity, reflecting the growing prominence of China in the global wind energy sector.

However, in our view, wind capacity growth for 2011F is set to slow to ~17.9GW (grid-connected capacity at 15GW, similar as last year, and a 3GW of non-grid connected capacity vs. 4GW in FY10), due to high base and grid connection bottleneck.

Fig. 95: Global WTG market shares (2010)

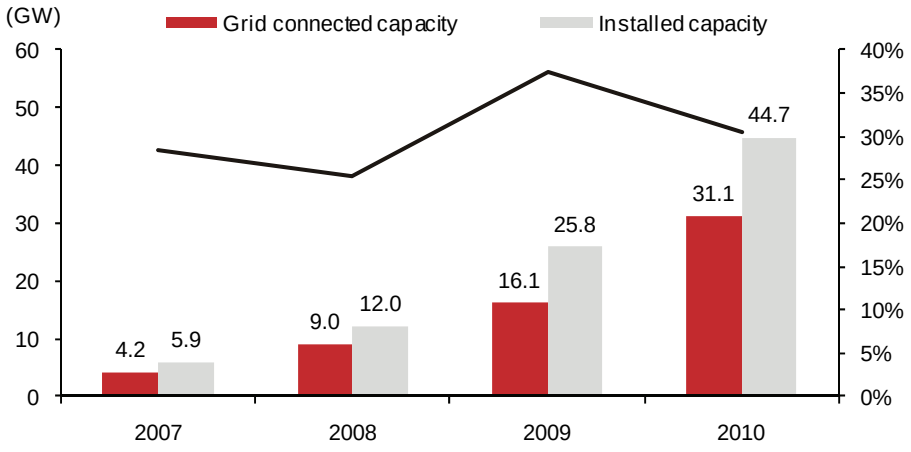


Source: Greenworld Investor

Grid connection bottlenecks remain a serious challenge

Based on cumulative wind capacity data from the China Electricity Council (CEC) and China Wind Energy Association (CWEA), we estimate around 31% installed wind turbine generators were not connected as at end-2010, vs. 37% in end-2009 and 26% in end-2008. Although this gap has slightly trended downward, we believe grid connection bottlenecks remain a serious challenge for wind power companies in China. While the central government started to grapple with such issues in 2009 and is expected to adopt measures to improve grid connection and wind power generation conditions, we only expect the grid issue to be resolved gradually may be in 2013F / 14F.

Fig. 96: China: % of WTG lacking grid connection



Source: CEC, CWEA, Nomura estimates

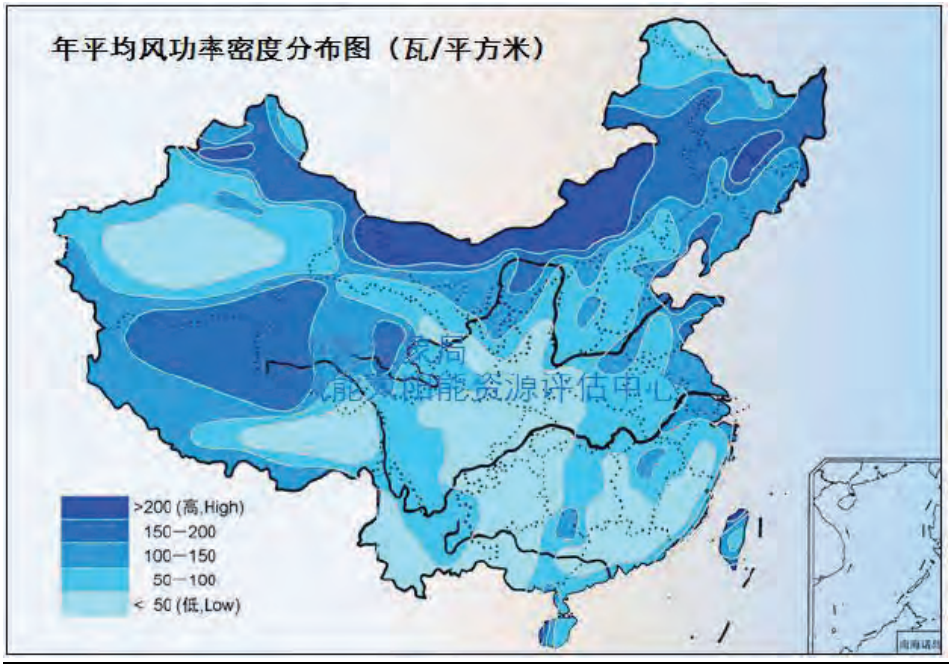
Mismatch between locations of wind resource and power consumption

China's onshore wind resources are concentrated in the north, north-western and north-eastern regions, while power consumption is higher in the south-eastern coastal areas. According to the CWEA, by end-2010, the top-five provinces with the highest cumulative wind capacity were Inner Mongolia, Gansu, Hebei, Hebei, Liaoning and Jilin. These five provinces comprised some 69% of China's cumulative wind capacity at end-2010.

On the other hand, power consumption was the highest in Guangdong, Shandong, Jiangsu, Zhejiang and Hebei provinces in 2010, according to the CEC. These five provinces accounted for nearly 40% of China's overall power consumption in 2010.

To resolve this issue, the Chinese government has been exploring the possibility of establishing or relocating high energy consumption industry bases to provinces with rich wind resources. Moreover, the government has plans for the construction of ultra-high-voltage grid lines to transmit power from north, north-western and north-eastern China to Beijing, Tianjin and Tanggu to the middle of China.

Fig. 97: China wind resource distribution



Source: Center for wind and solar energy resources assessment

Lack of centralised planning for construction of grid network and wind farms

Due to poor economics, grid operators normally have less incentive to construct networks in remote provinces, where wind resources tend to be richer. The difference between construction lead time of grid operators and wind farm operators (more than two years and one year, respectively) intensifies the mismatch between construction of grid network and wind farms, in our view.

To resolve this issue, the Chinese government has stated in the updated Renewable Energy Law (revised in 2H09 and coming into effect in April 2010) that the nation ought to have centralised planning for construction of grid network and wind farms. While at the provincial level, each province will have near-term and medium-term planning, the central government will provide long-term, bigger picture guidance and ensure consistency between plans of different provinces.

Immature grid quality and operating technology to handle wind power effectively.

The intermittence of wind power generation has increased the difficulty for grid operators to manage and utilise wind power effectively. As major grid operators lack adequate experience handling wind power, and the quality of grid networks in remote areas (with

their richer wind resources) tends to be weaker; at times wind farm operators will be told by grid operators to halt feeding power into the grid for the sake of “grid network safety”.

To resolve this issue, the Chinese government has stated in the updated Renewable Energy Law that grid operators are responsible for enhancing grid quality and establishing a smart grid network to better utilise power generated by renewable energy projects.

More importantly, in the updated Renewable Energy Law, the Chinese government specified that relevant government agencies will soon announce minimum requirements on renewable energy purchase (in terms of percentage of overall power purchase) for grid operators to ensure there is no waste in renewable power generation.

Standardised tariff for on-shore wind projects

China has established standardised tariff for on-shore wind farm development. The tariff is inversely proportional to wind resources in the region.

Fig. 98: Benchmark grid tariff in China on-shore wind projects

Resource area	Tariff (RMB/kWh)	Regions included in each resource area
Category I (Strongest)	0.51	Inner Mongolia Autonomous Region apart from Chifeng City, Tongliao City, Xingan League and Hulunbeier City; Urumqi Municipality, Yili Kazak Autonomous Prefecture, Changji Hui Autonomous Prefecture, Karamay City and Shihezi City of Xinjiang Uygur Autonomous Region
Category II	0.54	Zhangjiakou City, Chengde City of Hebei Province; Chifeng City, Tongliao City, Xing’an League, Hulunbeir City of Inner Mongolia Autonomous Region; Zhangye City, Jiayuguan City, Jiuquan City of Gansu Province
Category III	0.58	Baicheng City and Songyuan City of Jilin Province; Jixi City, Shuangyashan City, Qitaihe City, Suihua City, Yichun City and Daxing'anling Prefecture of Heilongiang Province; Gansu Province apart from Zhangye City, Jiayuguan City, Jiuquan City; Xinjiang Uygur Autonomous Region apart from Urumqi Municipality, Yili Kazak Autonomous Prefecture, Changji Hui Autonomous Prefecture, Karamay City and Shihezi City; Ningxia Hui Autonomous Region
Category IV (Weakest)	0.61	All other regions

Source: CREIA

Favourable government policy

Initiation of national-level concession projects

Before the announcement of the Renewable Energy Law, which provides fundamental guidelines for the development of renewable energies in China, the government conducted concession projects annually at the national level to promote the development of wind power since 2003. Through public tendering, the government granted exclusive rights to successful bidders to develop large-scale (above 50MW) wind projects. The government will ensure grid connections, as well as guarantee that power companies purchase electricity generated from wind projects at predetermined rates. Other government support initiatives include wind resource evaluations and feasibility studies. While we do not expect the government to be aggressive in launching onshore concession projects, we note that there are currently four offshore concession projects open for public bidding. We believe that the Chinese government will again adopt national-level concession projects as a tool to boost development of offshore wind farms in China.

Grid operators must provide grid connection to renewable energy.

According to the Renewable Energy Law, power grid operators must provide grid connection services and take up all the electricity resources available.

Incremental renewable energy cost must be shared among electricity users

According to the Provisional Administrative Measures on Pricing and Cost Sharing for Renewable Energy Power Generation and the Provisional Regulation on Renewable

Energy Surcharge, the difference resulting from higher on-grid tariffs of renewable energy over average on-grid tariffs of conventional thermal electricity, should be shared equally by all electricity users across the nation. The Chinese government has a Renewable Energy Development Fund through collecting Renewable Energy Surcharges of RMB0.2/kwh, RMB0.2/kwh, and RMB0.1/kwh from secondary, tertiary, and residential electricity users (primary users are exempted), respectively, along with their electricity bills. So far, this fund has subsidised various types of renewable energy projects including wind, biomass, concentrated solar and solar PV, while wind power received the majority of the subsidies given that it has the most robust development in China.

Renewable energies R&D subsidies

The Ministry of Finance has set up the Renewable Energy Development Fund to support R&D and demonstrative projects of renewable energy, as well as encourage the localisation of equipment production. In addition, renewable energy companies can apply for R&D subsidies from: 1) the National Natural Science Foundation of China; and 2) the Ministry of Science and Technology's 'High-Tech Research and Development Program of China' ('863 Program') and the 'National Basic Research Program of China' ('973 Program').

Preferential tax treatment

Wind project operators enjoy a preferential value added tax of 8.5% (compared with 17% originally). Import tariffs on wind turbines have been halved to 6%; the import tariff on wind components is 3%. The government recently raised export VAT rebates on wind gearboxes and related components to 15%.

Compulsory renewable energy capacity share

According to the Renewable Energy Mid-and-Long-Term Plan, any power producer with capacity of more than 5GW must increase actual ownership of power capacity from non-hydro renewable energies to 3% and 8% of its total capacity by end-2010 and 2020, respectively. Given that wind power is currently the cheapest and most scalable among non-hydro renewable energies, we believe that it will be the likely choice for power producers to meet their renewable energy requirements.

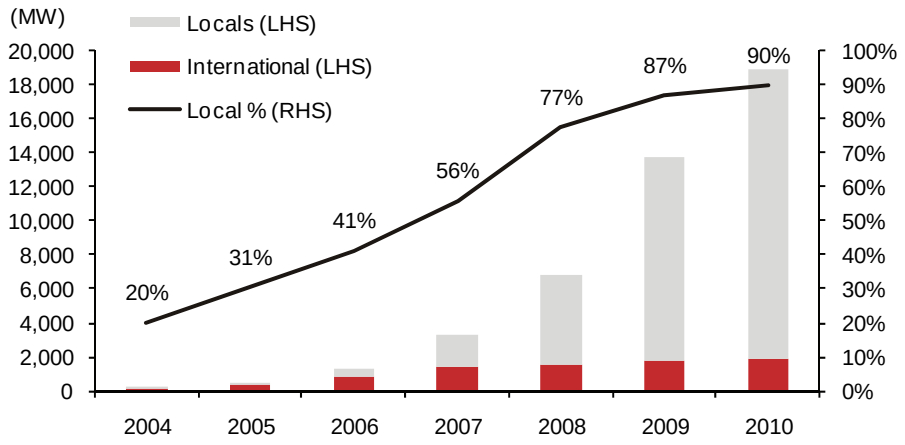
Chinese wind companies should continue to dominate the market

We observe that Chinese wind turbine producers have increased their share in the China wind market from 20% in 2004 to 90% in 2010. We expect Chinese wind turbine and component manufacturers to sustain their dominant market share in China over the next few years, given their close ties with local wind farm operators (mainly state-owned power producers) and cost leadership.

We note that the wind farm operators in China are generally cost sensitive, owing to the low wind power tariffs in China. Based on our checks, foreign turbine manufacturers have recently seen improving order flow. We take this as a sign of market opening, as well as change in customer mentality from pure cost per MW to cost per MWh.

In our view, even though the Chinese government lifted the 70% local content requirement in December 2009, the impact on Chinese manufacturers will be minimal as a majority of the leading foreign wind turbine manufacturers such as Vestas, GE, Gamesa and Suzlon, have had production facilities set up in China for more than three years — and have lost market share to their Chinese peers.

Fig. 99: Chinese wind turbine makers gaining share in China



Source: CWEA, Nomura research

Recently, the Chinese government started to encourage development of offshore wind farms. While the majority of the Chinese wind turbine manufacturers do not have a track record in offshore applications, the feedback we received from wind farm operators suggests that they might still prefer Chinese wind turbines, since they are more cost competitive.

We prefer component/equipment makers with a unique market position

Based on our expectation of flattish wind power tariffs and slowing growth in China this year, as well as uncertainty on CDM outlook, we continue to prefer wind component/equipment makers that are capable of starting exporting out of China as well as having strong bargaining power in the value chain, such as CHST (658 HK, BUY).

Material cost not likely a significant risk

Power equipment manufacturers' earnings are sensitive to steel prices, given raw materials (largely different kind of steels, such as cast iron and forged steel) make up approximately more than 50% of the cost, followed by forging components, subcontracted parts make up another 20-30% (these components and subcontracted parts are made of steel as well). Across industry checks, there is an approximately 1.5-2 years delay in raw material price impact on earnings due to the nature of long-delivery cycle. We have observed a meaningfully increase in benchmark HRC price at 1H10, which may put slight pressure on gross margin towards 12F/13F. However, substantial impact is unlikely for the industry, given:

1) Unlike the material cost spike in 2008, the current increase in material price is moderately paced, equipment players are likely to be able to factor in higher material cost in their new contracts;

2) Steel price is still far from its peak (benchmark HRC price: RMB 4,426/t at 2H10 vs. RMB 5,530/t at 1H08);

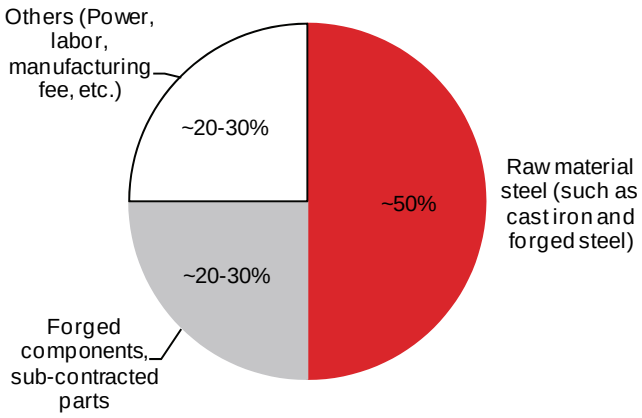
3) According to management, equipment plays have included terms to factor in risks of material cost fluctuation in major contracts nowadays, passing through additional cost to customers;

4) Improvement on higher margin product mix for DFE and SEG counters material cost; and

5) Companies are taking proactive measures to counter material cost fluctuations. For reference, DFE is piling up on materials while HEC is relying on cost reduction initiatives.

It is worthwhile to note that, material cost increases, if not passed through, pose a risk to gross margin. For reference, Dongfang Electric's management estimated that a 20% increase in steel price may hinder gross margin by 1.5-2.0 ppt.

Fig. 100: Cost breakdown on power generating equipments



Note: Detailed cost breakdown not disclosed by companies. Est. above from management of the companies under coverage, subject to y-y variance due to product mix and material cost fluctuation

Source: Industry checks

Sensitive to steel price

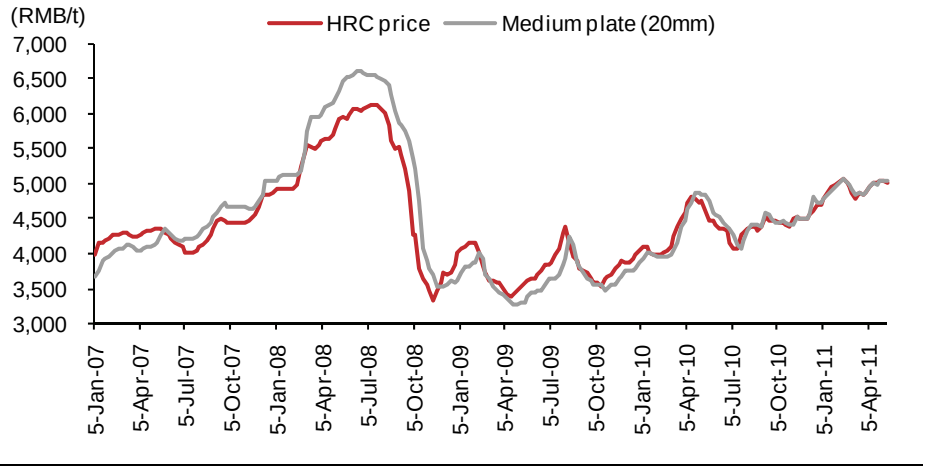
Raw material steel (such as cast iron and forged steel) makes up more than 50% of the cost to manufacture power equipments, followed by forged components and subcontracted parts (20-30%). Out of these raw materials, they mostly consist of different kind of steel and steel-based products. Thus, gross margin for the industry is sensitive to the steel price.

1.5-2.0 years delay in material cost impact

Due to the nature of long delivery cycle of the power equipment business, there is delay in the fluctuation in raw material cost to the earnings of these companies. Across our

industry checks, the delay is likely to be 1.5-2.0 years, depending on the exact orders and the delivery-cycle of the orders in hand of the individual company. Gross margin expansion in FY10 across the industry, largely due to the drop in material cost throughout 2H08 and 1H09, was consistent with this phenomenon, in our view.

Fig. 101: Benchmark HRC price (RMB / t)



Source: Mysteel

Fig. 102: Benchmark HRC price and h-h%

	1H07	2H07	1H08	2H08	1H09	2H09	1H10	2H10
(RMB / t)	4,247	4,415	5,530	4,731	3,738	3,866	4,356	4,426
(h-h%)		4.0%	25.2%	-14.4%	-21.0%	3.4%	12.7%	1.6%

Source: Mysteel

Different dynamics to counter material cost fluctuations

Following the decrease in material cost in 2H08 and 1H09, we have observed pricing increase in benchmark domestic HRC. Average price for HRC has increased 12.7% and 1.6% h-h for the 1H10 and 2H10, respectively. However, in our view, the current material increase is not likely to impact the power equipment industry like 2008, due to:

- Unlike the steel cost price hike in 2008, the pace of the current raw material price increase has been slow. Thus, equipment players are more likely to factor in raw material price in the newly signed contract.
- Steel price is still far from its peak (benchmark HRC price: RMB4,426/t at 2H10 vs. RMB5,530/t at 1H08);
- Newly signed major contracts have terms to factor in the case of raw material price fluctuation. We have learnt that players like Shanghai Electric have contract terms to adjust the final sales price in reference to fluctuation in exchange rate or raw material cost for some of its key contracts, helping these equipment plays to pass-on material cost pressure to customers.
- Improving margins on the back of better product mix. Both SEG and DFE are expecting gross margin improvement on the back of improving product mix towards higher gross margin products, which helps to counter material cost pressure.
- Companies are taking proactive measures to defend against steel cost increases, according to management. For example, DFE is piling up more inventory (primarily raw material steel), which makes up more than half of its COS. On the other hand, HEC is relying on cost reduction by better control of the amount of material used to counter cost pressures.

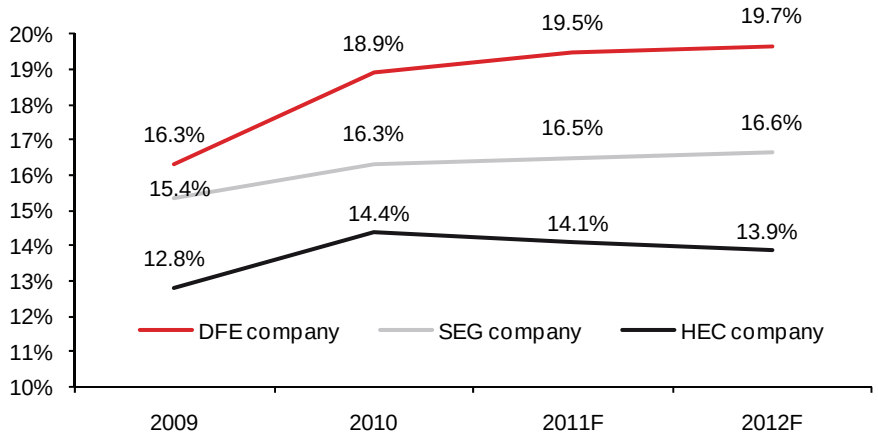
However, we also note that if increases in material cost are not passed through, there is a possible impact on gross margin for 2012F and 2013F, potentially hindering the degree of margin expansion. For reference, according to Dongfang Electric's management, a 20% hike in steel price may lead to a 1.5-2.0 ppt reduction in the company's gross margin.

Gross margin outlook

Slightly positive in light of improving product mix

In our view, gross margin for SEG and DFE should improve in 2011F and 2012F, in light of improving product mix and production volume scaling up for a couple of segments. On the other hand, we forecast HEC's gross margin to slightly decrease as nuclear equipment production ramps up (2011F is the first year HEC is going to see nuclear revenue and we forecast a 0% gross margin in light of limited scale; for comparison, DFE saw -0.2% gross margin in the first year it recognised nuclear revenue in 2008.)

Fig. 103: Gross margin forecast for the Big Three



Source: Company data, Nomura estimates

SEG: Margin improvement as production scales

Fig. 104: SEG gross margin forecast

	2009	2010	2011F	2012F
SEG company	**15.4%**	**16.3%**	**16.5%**	**16.6%**
High efficiency and clean energy	15.7%	17.3%	17.4%	17.4%
Nuclear Island	10.7%	15.0%	17.0%	19.0%
Wind	13.8%	9.8%	11.0%	12.0%
Modern / engineeering services	5.4%	7.1%	8.5%	8.5%
Industrials (elevators)	19.0%	19.1%	19.0%	19.0%

Source: Company data, Nomura estimates

Across SEG's business lines, management guided improvement in gross margin on nuclear island and wind equipment, due to production scaling up. For the wind segment, management guided to RMB5bn in revenue in 2011F, up 66% y-y from FY10, and for the nuclear island segment, management guided to a 30% y-y increase in revenue to RMB3bn as well. Gross margin for modern services segment is set to improve due to product mix and more equipment supply contracts over EPC contracts, according to management. Overall, we forecast a slight improvement in margins over 2011F/12F, in line with management's guidance.

DFE: Improving gross margin due to product mix

Fig. 105: DFE: Gross margin forecast

	2009	2010	2011F	2012F
DFE	**16.3%**	**18.9%**	**19.5%**	**19.7%**
High efficiency and clean energy	15.9%	17.7%	18.5%	18.7%
Nuclear Island		30.2%	28.0%	28.0%
Wind		19.8%	18.5%	18.5%
Hydro	10.6%	15.8%	15.8%	15.8%
Modern services / engineering services	77.2%	21.8%	21.0%	21.0%

Source: Company data, Nomura estimates

Management provided less bullish guidance on individual line of business' gross margin, as most of DFE's business lines have achieved scale and improvement due to scale is unlikely while there is some negative sentiment toward individual businesses (e.g. ASP pressure on the wind segment). However, DFE's overall gross margin is likely to improve, largely driven by increasing revenue mix by the high margin nuclear island equipment business. Nuclear island equipment is expected to contribute 8.9% of DFE's revenue in FY11F vs. 5.0% in FY10. Management also guided improvement on high efficiency and clean energy's gross margin on the back of conventional nuclear equipment (a subsegment of the high-efficiency segment) reaching production scale.

HEC: Decreasing margin until production for new segment scales up

Fig. 106: HEC: Gross margin forecast

	2009	2010	2011F	2012F
HEC	**12.8%**	**14.4%**	**14.1%**	**13.9%**
Thermal	13.4%	14.1%	14.1%	14.1%
Nuclear			0.0%	5.0%
Wind			n.a	12.0%
Hydro	23.1%	25.2%	25.0%	24.5%
Engineering services	-1.4%	3.4%	3.6%	3.6%
Other (incl. ancillary equipment)	22.3%	24.9%	24.9%	24.9%

Source: Company data, Nomura estimates

Management guided flattish gross margin for most of its business lines on the back of its cost-reduction initiatives (including better use of raw materials), offsetting rising material cost. However, we forecast HEC's gross margin to slightly decrease on the back of nuclear equipment revenue. Management has not provided guidance on nuclear equipment gross margin, as this is going to be the first year the nuclear segment will make a contribution to revenue. We thus forecast a 0% gross margin for 2011F (for comparison purpose, DFE achieved a -0.2% gross margin in the first year of recognising nuclear equipment revenue, due to limited scale).

Risk analysis

What if…

Events:
The magnitude 9.0 earthquake on 11 March, 2011 in Japan caused failure to the emergency core cooling systems in the Fukushima Daiichi units, causing the nuclear plant to shut down and two explosions, followed by leakage of some radioactivity materials. As of today, Japanese authorities are still working on the containment and proper handling of the site. Following the Japanese incidents, on 16 March, 2011, China's State Council called for safety inspections and a temporary suspension on the approval of new nuclear projects until further notice; details of the guidelines / announcement are below:

1) Require relevant departments to perform safety checks on all existing plants immediately to ensure nuclear safety.
2) Reinforce operating management / safety processes in all existing nuclear facilities and monitor to ensure these procedures / processes are in place.
3) Perform safety / risk assessments on all nuclear plants under construction and halt the construction process should a plant fail assessment.
4) Suspend approval of new nuclear projects including projects that have proceeded with pre-construction work until new nuclear safety procedures are set up.

In light of the above events and market concerns on the potential delay / cancellation in nuclear development in China, we have run three scenarios to study the impact on SEG, DFE and HEC, in terms of near-term earnings (FY11F) and the net present values in the case of nuclear development delay / reduction. On top of the three scenario analyses, we have run two more in which study the impact on thermal capacity coming in below our forecast.

Scenarios:

On nuclear development in China:

- Scenario 1: Delay for all projects for one-half year, 80GW of nuclear capacity is achieved by 1H 2021F.
- Scenario 2: Delay for all nuclear projects for one year, 80GW target is achieved by 2021F.
- Scenario 3: No delay on approved projects, but no new project will be approved at all. Total effective market size for the nuclear equipment space is down to the 35.5GW (The amount of approved projects currently).

On thermal equipment demand lower than our forecast:

- Scenario 4: Instead of our current assumption of an addition of 91GW of net power generating capacity for 2011F/12F, we assume the net gain to be 85GW for the two years, with the shortfall impacting thermal power generating capacity alone. Thus, the additional thermal capacity for 2011F and 2012F would be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base case. We revise our estimate of revenue generated from domestic thermal power equipments down for the three companies by the same amount, 9.9% and 10.4% for FY11F and 2012F, respectively.
- Scenario 5: Similar to scenario 4, but in this case, we assume the net gain of power generating capacity in China to be 78GW for 2011F and 2012F (as per latest CEC FY11F forecast), respectively. Again, we assume the shortfall is going to be from thermal power generating capacity. In this scenario, we revise the revenue generated from thermal power equipments (as well as the amount of thermal power capacity installed) down 24.2% and 25.6%.

Conclusion

According to our risk analysis, the net present value / share for the companies under our coverage remains largely intact in the case of projects delay. In the case of a one-year delay in nuclear development in China, and thus, a delay in revenues and deliveries, the net present value of SEG goes down by only 0.6%, DFE by 1.0% and HEC by 3.3%. However, short-term earnings (2011F earnings) would be impacted. SEG would be down 3% due to its diversified portfolio. DFE would be down 21%, while HEC would experience a positive impact due to our assumption of a 0% gross margin (loss making in earnings due to administration and delivery expenses forecasted) for 2011F's nuclear revenue. 2011F is the first year of nuclear revenue recognition for the company (For comparison, DFE had a -0.2% gross margin during the its first year of nuclear revenue recognition in 2008). Overall, we believe the net present value for these equipment plays should be largely intact in light of a delay in projects.

On the other hand, these names would be impacted by China's long-term nuclear development. If China does not approve any future nuclear projects, exhausting nuclear equipment revenue in the future, the net present value of SEG would go down by 6.5%. DFE would go down by 22.3% while HEC would go down by 41.3%, due to its limited exposure to nuclear as of today in light of our assumption of HEC having one-third of the major nuclear equipment market in the long term.

In the case of a thermal demand shortfall, this would impact our companies' short-term earnings but would have a limited impact on the net present value / share.

Fig. 107: SEG: risk analysis results

Shanghai Electric

Earnings forecast (RMB mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Base Case	3,199	3,631	4,052	4,152	4,069	3,905	3,899	3,890	3,900	3,891
Scenario 1	3,152	3,567	3,975	4,130	4,109	3,972	3,895	3,887	3,897	3,890
(% diff)	*-1%*	*-2%*	*-2%*	*-1%*	*1%*	*2%*	*0%*	*0%*	*0%*	*0%*
Scenario 2	3,106	3,502	3,899	4,108	4,149	4,040	3,892	3,885	3,894	3,888
(% diff)	*-3%*	*-4%*	*-4%*	*-1%*	*2%*	*3%*	*0%*	*0%*	*0%*	*0%*
Scenario 3	3,199	3,631	3,976	4,017	3,850	3,733	3,679	3,635	3,643	3,635
(% diff)	*0%*	*0%*	*-2%*	*-3%*	*-5%*	*-4%*	*-6%*	*-7%*	*-7%*	*-7%*
Scenario 4	3,129	3,554	4,051	4,152	4,068	3,904	3,898	3,889	3,899	3,891
(% diff)	*-2%*	*-2%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Scenario 5	3,028	3,440	4,050	4,151	4,068	3,903	3,897	3,888	3,898	3,889
(% diff)	*-5%*	*-5%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

DCF valuation	
Base Case	4.90
Scenario 1	4.89
(% diff)	*-0.2%*
Scenario 2	4.87
(% diff)	*-0.6%*
Scenario 3	4.58
(% diff)	*-6.5%*
Scenario 4	4.88
(% diff)	*-0.4%*
Scenario 5	4.85
(% diff)	*-1.0%*

Note: Est. on the impact of reduced revenue, assume debt to be intact in all scenarios

Source: Nomura estimates

Fig. 108: DFE: risk analysis results

Dongfang Electric

Earnings forecast (RMB mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Base Case	2,966	3,249	3,705	3,999	3,706	3,209	3,211	3,195	3,225	3,219
Scenario 1	2,648	3,154	3,534	3,928	3,893	3,392	3,207	3,190	3,220	3,216
(% diff)	*-11%*	*-3%*	*-5%*	*-2%*	*5%*	*6%*	*0%*	*0%*	*0%*	*0%*
Scenario 2	2,331	3,058	3,363	3,858	4,081	3,575	3,203	3,185	3,214	3,213
(% diff)	*-21%*	*-6%*	*-9%*	*-4%*	*10%*	*11%*	*0%*	*0%*	*0%*	*0%*
Scenario 3	2,966	3,249	3,493	3,601	3,121	2,752	2,637	2,534	2,563	2,562
(% diff)	*0%*	*0%*	*-6%*	*-10%*	*-16%*	*-14%*	*-18%*	*-21%*	*-21%*	*-20%*
Scenario 4	2,838	3,112	3,699	3,996	3,702	3,205	3,207	3,191	3,221	3,215
(% diff)	*-4%*	*-4%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Scenario 5	2,653	2,911	3,689	3,992	3,698	3,199	3,201	3,185	3,215	3,209
(% diff)	*-11%*	*-10%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

DCF valuation	
Base Case	34.39
Scenario 1	34.21
(% diff)	*-0.5%*
Scenario 2	34.04
(% diff)	*-1.0%*
Scenario 3	26.73
(% diff)	*-22.3%*
Scenario 4	34.19
(% diff)	*-0.6%*
Scenario 5	33.91
(% diff)	*-1.4%*

Note: Est. on the impact of reduced revenue, assume debt to be intact in all scenarios

Source: Nomura estimates

Fig. 109: HEC: Risk analysis results

Harbin Electric

Earnings forecast (RMB mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Base Case	884	922	1,013	1,224	1,269	1,202	1,187	1,164	1,165	1,149
Scenario 1	908	934	1,015	1,187	1,249	1,218	1,178	1,153	1,153	1,138
(% diff)	*3%*	*1%*	*0%*	*-3%*	*-2%*	*1%*	*-1%*	*-1%*	*-1%*	*-1%*
Scenario 2	932	947	1,017	1,150	1,230	1,234	1,170	1,143	1,142	1,126
(% diff)	*5%*	*3%*	*0%*	*-6%*	*-3%*	*3%*	*-1%*	*-2%*	*-2%*	*-2%*
Scenario 3	884	922	1,013	1,182	1,161	1,091	1,031	963	940	902
(% diff)	*0.0%*	*0.0%*	*0.0%*	*-3.4%*	*-8.5%*	*-9.2%*	*-13.1%*	*-17.3%*	*-19.3%*	*-21.5%*
Scenario 4	841	916	1,012	1,224	1,268	1,201	1,186	1,163	1,164	1,149
(% diff)	*-5%*	*-1%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Scenario 5	779	908	1,011	1,223	1,267	1,200	1,185	1,162	1,163	1,148
(% diff)	*-12%*	*-2%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

DCF valuation	
Base Case	8.87
Scenario 1	8.72
(% diff)	*-1.7%*
Scenario 2	8.58
(% diff)	*-3.3%*
Scenario 3	5.21
(% diff)	*-41.3%*
Scenario 4	8.78
(% diff)	*-1.0%*
Scenario 5	8.67
(% diff)	*-2.3%*

Note: Est. on the impact of reduced revenue, assume debt to be intact in all scenarios

Source: Nomura estimates

Detailed scenario study

- Scenario 1: Delay for all projects for one-half year, 80GW of nuclear capacity is achieved by 1H 2021F
- Near-term earnings:
- DFE's FY11F earnings would be down 11% in this scenario, given the expected spike of its nuclear revenue as in the base-case forecast. There is only a -1% drop in earnings for SEG for FY11F. For HEC, our model showed this scenario as making a positive contribution to FY11F earnings due to the forecasted 0% gross profit margin on the first year of nuclear equipment revenue contribution (loss making in earnings due to administrative and delivery expenses forecast).
- In terms of net present value /share of these companies, the impact is minimal, given delayed revenue will eventually catch up:
- SEG: Down 0.2% to HKD4.89 from HKD4.90
- DFE: Down 0.5% to HKD34.21 from HKD34.39
- HEC: Down 1.7% to HKD8.72 from HKD8.87

- Scenario 2: Delay for all nuclear projects for one year, 80GW target is achieved by 2021F
- The impact on the companies is largely in line with Scenario 1, on a more severe magnitude. In terms of short-term earnings, DFE's FY11F earnings is projected to go down 21% to RMB2,331mn. SEG would see a 3% downward impact on its FY11F earnings, bringing it down to RMB3,106mn. And again, a positive contribution is modelled for HEC, due to 0% gross margin for nuclear equipment revenue for FY11F.
- For net present value / share, the impacts are as follows:

- SEG: Down 0.6% to HKD4.87 from HKD4.90
- DFE: Down 1.0% to HKD34.04 from HKD34.39
- HEC: Down 3.3% to HKD8.58 from HKD8.87

- Scenario 3: There is no delay on approved projects, but no new project will be approved at all. Thus, the total effective market size for the nuclear equipment space is down to the 35.5GW (the amount of approved projects currently).
- In this case, short-term earnings for these companies remain intact, given 30.1GW of the 35.5GW (approved projects) are to commence before 2015F. However, there are substantial impacts on longer-term earnings, particularly for DFE and HEC. For SEG, the impact is less, due to SEG's massive size and exposure to other businesses, such as industrial and heavy machinery. For HEC, the impact is huge, due to its limited nuclear revenue in the near term, while we expect HEC to pick up nuclear market share toward 2020F.
- Net present value / share for these companies are as follows:
- SEG: Down 6.5% to HKD 4.58 from HKD 4.90
- DFE: Down 22.3% to HKD 26.73 from HKD 34.39
- HEC: Down 41.3% to HKD 5.21 from HKD 8.87

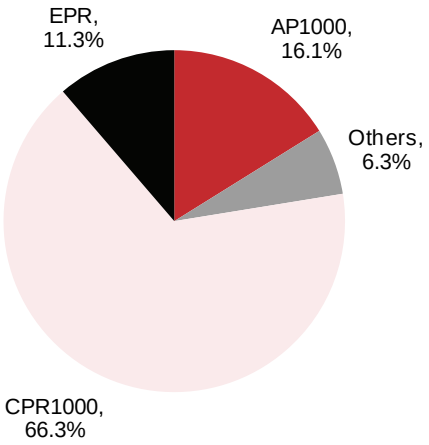
- Scenario 4: Instead of our current assumption of an addition of 91GW of net power generating capacity for 2011F/12F, we assume the net gain to be 85GW for the two years, down 5% as in the y-y percentage drop in capex for five IPPs and Shenhua's power sector in FY10, while the shortfall is going to impact thermal power generating capacity alone. Thus, the additional thermal capacity for 2011F and 2012F would be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base case. We revise revenue generated from domestic thermal power equipments down for the three companies by the same amount, 9.9% and 10.4% for FY11F and 1212F.
- This scenario impacts DFE's and HEC's FY11F earnings by 4% and 5%, respectively. For SEG, FY11F earnings would be down 2%, due to SEG's diversification away from domestic thermal business. Despite both HEC and DFE seeing a similar impact on FY11F earnings, the impact on net present value / shares is more severe on HEC, given the expected higher growth of DFE in the next few years and thus, diluting itself away from the short-term negatives.
- Net present value / share for these companies are as follows:
- SEG: Down 0.4% to HKD4.88 from HKD4.90
- DFE: Down 0.6% to HKD34.19 from HKD34.39
- HEC: Down 1.0% to HKD8.78 from HKD8.87

- Scenario 5: This is similar to scenario 4, but in this case, we assume the net gain of power generating capacity in China to be 78GW for 2011F and 2012F (as per latest CEC FY11F forecast). Again, we assume the shortfall is going to be from thermal power generating capacity. In this scenario, we revise the revenue generated from thermal power equipments (as well as the amount of thermal power capacity installed) down 24.2% and 25.6%.
- The impact on FY11F earnings is at only -5% for SEG. For DFE and HEC, FY11F earnings are forecasted to be down 11% and 12%, respectively.
- Net present value / share for these companies are as follows:
- SEG: Down 1.0% to HKD4.85 from HKD4.90
- DFE: Down 1.4% to HKD33.91 from HKD34.39
- HEC: Down 2.3% to HKD8.67 from HKD8.87

Appendix I: Technology and safety

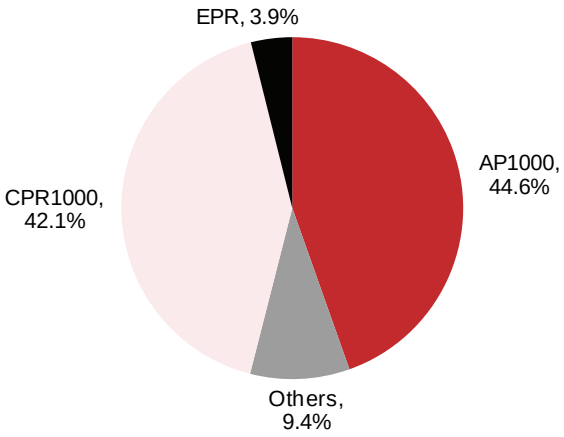
Despite the nuclear incident in Japan, we believe that the nuclear development story in China should be intact over the long term. One reason is the need for China to satisfy its power demand under its pollution-reduction constraints. But more important is that the technology employed by the new Chinese plants is more advanced and safer than the previous generations.

Fig. 110: Reactor mix for projects under construction



Source: WNA, Nomura Research

Fig. 111: Reactors mix for projects under construction / plan



Source: WNA, Nomura Research

Out of the 28 reactors under construction, 19 are of type CPR1000 and 4 are of type AP1000. In a longer horizon, of the 79 reactors under construction / planned in China (source: NWA), CPR1000 and AP1000 technology dominates, with 35 and 32 reactors, respectively.

AP1000/CPR1000 are of later generation than the Fukushima Daiichi units

Fig. 112: Technology comparison

Generation (Later generation should indicate safety improvement)	Reactor type: PWR (Pressurised water reactors)	Reactor type: BWR (Boiling water reactors)
Generation II		**Fukushima Daiichi units**
Generation II+	**CPR1000**	
Generation III	**AP1000**	

Source: WNA, Nomura Research

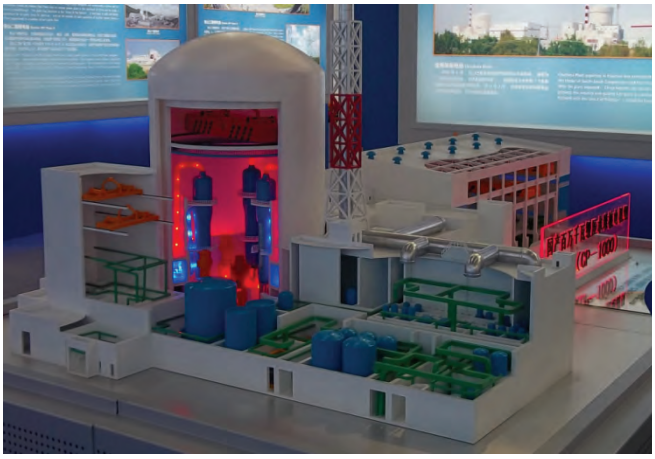
The table above summarises the differences between the technology employed in the Chinese units and the Fukushima units. In short, both CPR1000 and AP1000 are later-generation technology and incorporate more safety features. The Fukushima Daiichi units are BWR (boiling water reactors), compared with the CPR1000 and AP1000, which are PWR (pressurised water reactors).

Fig. 113: Technical specification of the AP1000, CPR1000 and the Fukushima Daiichi units

	Fukushima Daiichi units (2G BWR)	CPR1000 (2.5G)	AP1000 (3G+)
Safety system	Active safety design	Active safety design	Passive safety design
Core damage frequency	1x10^-5	1x10^-5	2.41x10^-7
Power output	460MW - 1100MW	1080MW	1250MW
Service life	~30 years	60 years	60 years
Peak ground acceleration	0.18g	0.2g	0.3g

Source: NWA, SNPTC

Fig. 114: Model of CPR-1000 NPP



Source: Nomura Research, CNNC

Fig. 115: Model of AP-1000 NPP

Source: Nomura Research, SNPTC

Generations (II / II+ / III)

Generation III reactors are advanced nuclear reactors that further develop existing Generation II reactor design, incorporating substantial improvements.

Technology differences between Generation II and III reactors include: (1) simpler design, with fewer pumps, wires, concrete, pipes, etc; (2) improved safety by using more backup / redundancy system or at times, passive safety system; and (3) higher fuel burn-up rate.

Generation II+ reactors refer to those modernized Generation II reactors that have incorporated significant improvement on safety and efficiency. In the case of CPR1000, the dominant technology of choice for nuclear plants under construction in China, there have been 37 main technology improvements, including 21 safety-related items over the original Framatome's M310 design.

AP1000 is an example of a Generation III reactor. It is a pressurized water reactor (PWR) with a groundbreaking "passive core cooling system."

In general, later-generation units have higher design specifications. For example, AP1000 (GIII) and CPR1000 (GII+) have peak ground acceleration specifications of 0.3g and 0.2g, respectively, vs. 0.18g for the Fukushima's GII unit.

Reactor types

Different types of nuclear power plants in commercial operation can be generally categorised as pressurised water reactor (PWR), boiling water reactor (BWR), pressurised heavy water reactor (PHWR), gas-cooled reactor (AGR), light-water graphite reactor (RBMK) and fast neutron reactor (FBR). They feature different fuel, coolants and moderators.

According to WNA, as at February 2011, there are 439 nuclear reactors in the world, of which PWR and BWR dominates the technology mix, with 359 working reactors.

Fig. 116: Reactor types for nuclear reactors in operation in the world

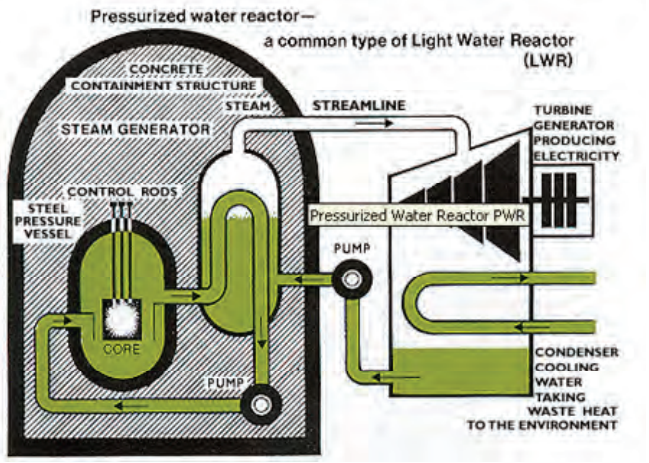
Reactor type	Main Countries	No.	GWe	Fuel	Coolant	Moderator
Pressurised Water Reactor (PWR)	US, France, Japan, Russia, China	265	251.6	enriched UO_2	water	water
Boiling Water Reactor (BWR)	US, Japan, Sweden	94	86.4	enriched UO_2	water	water
Pressurised Heavy Water Reactor 'CANDU' (PHWR)	Canada	44	24.3	natural UO_2	heavy water	heavy water
Gas-cooled Reactor (AGR & Magnox)	UK	18	10.8	natural U (metal), enriched UO_2	CO_2	graphite
Light Water Graphite Reactor (RBMK)	Russia	12	12.3	enriched UO_2	water	graphite
Fast Neutron Reactor (FBR)	Japan, Russia	2	1	PuO_2 and UO_2	liquid sodium	none
Other	Russia	4	0.05	enriched UO_2	water	graphite
Total		439	386.5			

Source: WNA, Nuclear Engineering International Handbook 2010

Technically, a BWR design reactor would have the nuclear fuel heat and boil water in the reactor core, and the resulting steam is fed to a turbine-generator in one single loop. A PWR differs in that water is heated under pressure in the reactor core (never forming steam) and then circulated to a “heat exchanger / steam generator” to provide heat to create steam to feed to a turbine-generator in the secondary loop.

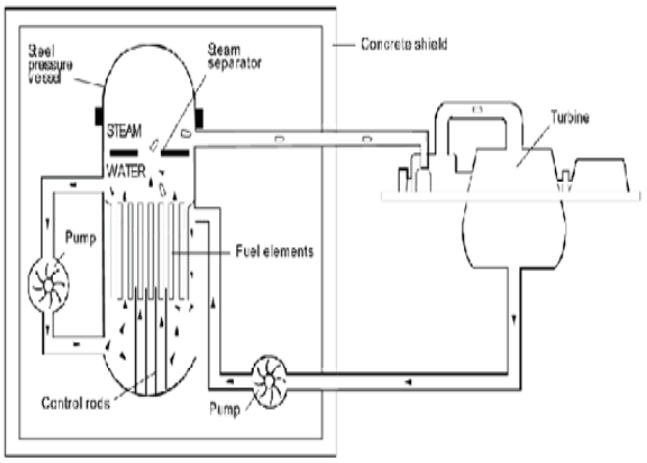
Both PWR and BWR designs are deemed technically mature and safe. However, in the particular incident Fukushima Daiichi is facing (safety system failure to dissipate residual heat after nuclear reaction shutdown), PWRs such as CPR1000 (the units constructed in China) have the advantage of having a second loop with no exposure to radioactive substances which can be used to reduce inside pressure with minimal contamination risk, according to the National Energy Administration’s former head, Zhang Guobao (source: eastday.com). According to Zhang, the CPR1000 system also features devices to turn hydrogen into water, minimizing the possibility of hydrogen blasts like those at the Fukushima plant.

Fig. 117: Pressurised water reactor



Source: WNA

Fig. 118: Boiling water reactor



Source: WNA

Passive safety system vs. active safety system

In the case of an emergency, nuclear reactors are designed to immediate “scram” (stop operation). Once the plant is shut down, the residual radioactive decay of the fission products in the fuel continue to generate heat – initially about 6% of the power level of the plant before shutdown. Thus, some kind of cooling system has to be kept running to dissipate the residual heat. In earlier reactor designs, such emergency cooling systems might leverage diesel generators and batteries to keep the cooling pumps running in the case of an accident; these are known as “active safety systems”.

On the other hand, a “passive safety system” relies on the laws of physics to maintain safety; in the case of the AP1000, the passive safety system takes advantages of the law of gravity and requires no operator intervention for a significant period of time, which reduces the likelihood of human error or system failure. Dr. Gene Clark (principal and CEO of TradeTech, a US firm providing market information and consulting services to the nuclear fuel industry) commented that passive safety systems have no problem in the event of safety equipment failure, since there is no equipment to fail.

AP1000: U.S. approval held-up due to concerns on extreme event

Despite the fact that the AP1000 is perceived to be safe by the industry through its leading safety development on:

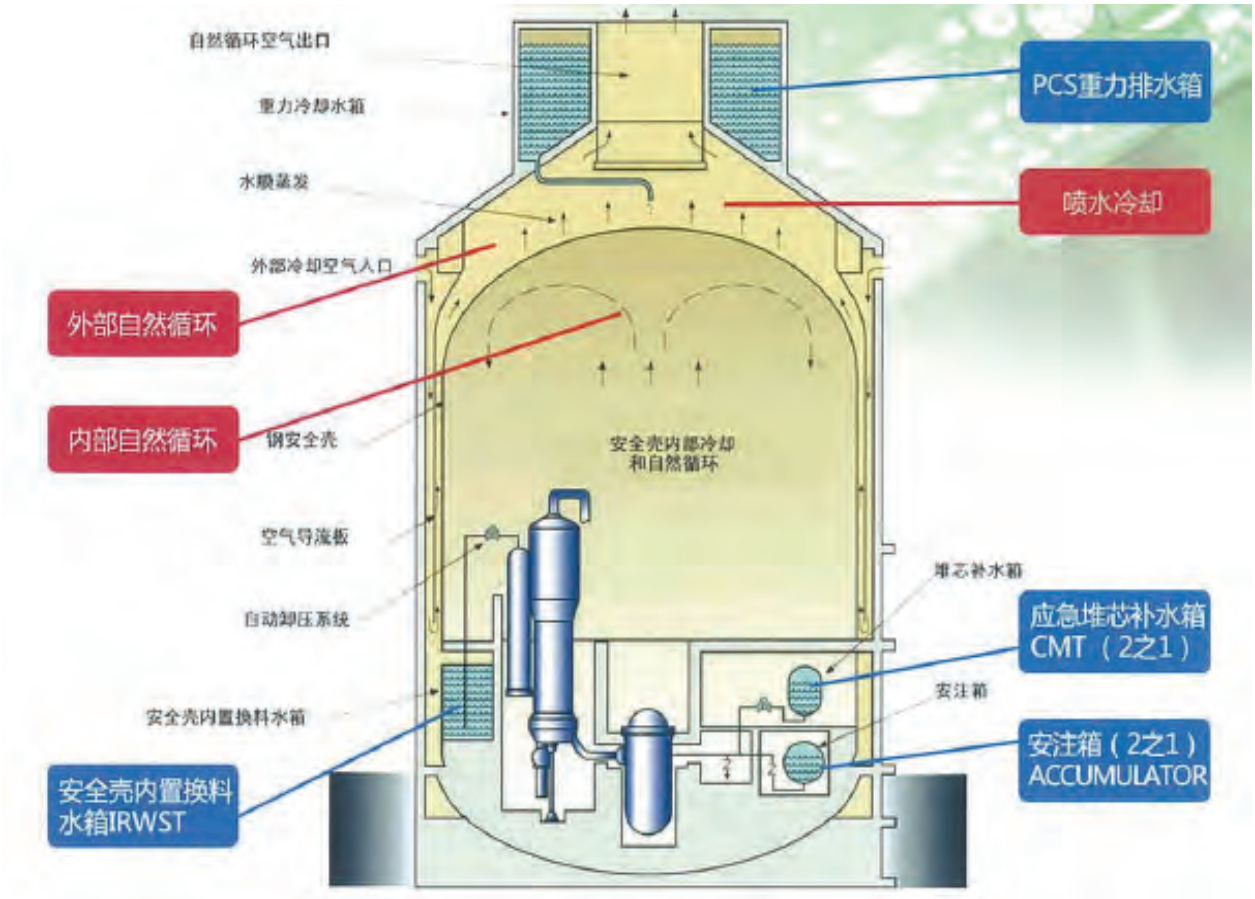
- Advanced passive system
- 20 times reduction on core damage frequency to 2.41x10^-7 over the Generation II reactors.
- Improved earthquake resistance, with a peak ground acceleration of 0.3g in the design consideration (vs. 0.18g for second-generation technology), the approval process has been held up in the US, primarily due to safety concerns on extreme events, such as an airplane impact (such as that seen on 9-11).

Fig. 119: AP-1000 approval development in the U.S.

Timeframe	Details
Early 2002	Westinghouse first submitted the AP1000 design
2006	NRC approved and certified the design
2007	Safety concern arouse regarding the durability of the reactor’s shield against external events, such as earthquake, hurricanes, tornado-generated projectiles and to the extreme, airplane collision like 9-11.
Rejection	The original design used the same reinforced concrete used for decades, the altered design used a more prefab approach, where concrete would be sandwiched between steel plates. After long talks, NRC said the sandwich module approach would not stand up to severe external events.
2010-May	Westinghouse submitted a more robust shield building design that adds steel reinforcement between the walls and fortifies the connection joints.
Current status	Expecting the overall design certification review to complete in Sep 2011

Source: Company data, news flow

Fig. 120: Illustration of the AP-1000 passive safety system

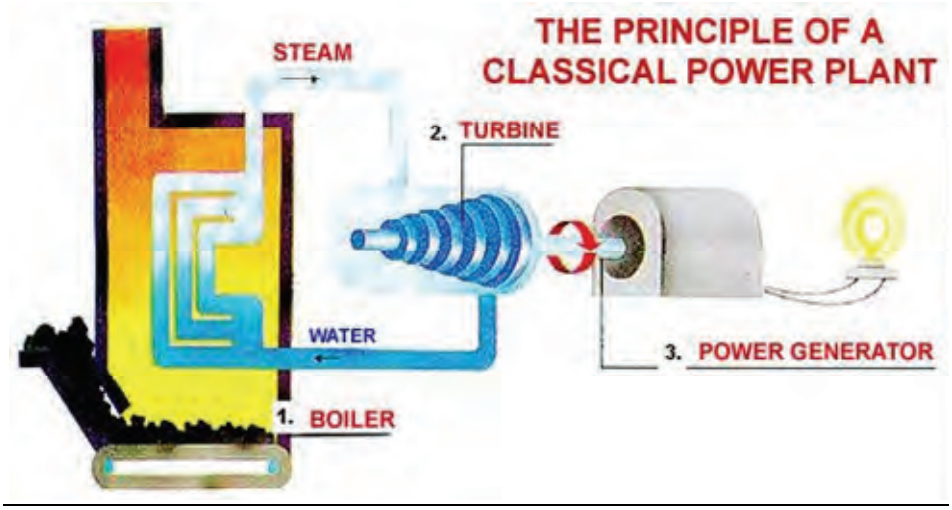


Source: SNPTC

Appendix II: What are the major pieces of power equipment?

Major thermal power equipment

Fig. 121: Thermal power plants



Source: Slovenske elektrarne

Key equipment includes:

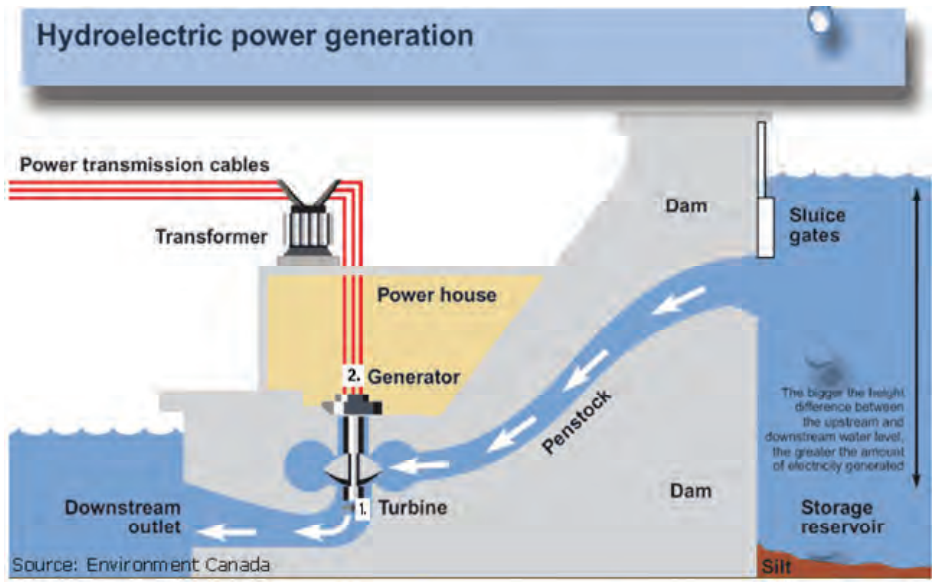
1. Boiler –this is where water is heated up to generate steam

2. Turbine – the steam generated would pass through the turbine, turning the rotors connected to the turbine generator

3. Turbine generator – the device that turns mechanical energy (rotation of the rotors) is transferred into electrical energy (power generation)

Major hydro power equipment

Fig. 122: Hydro power plant



Source: Environment Canada

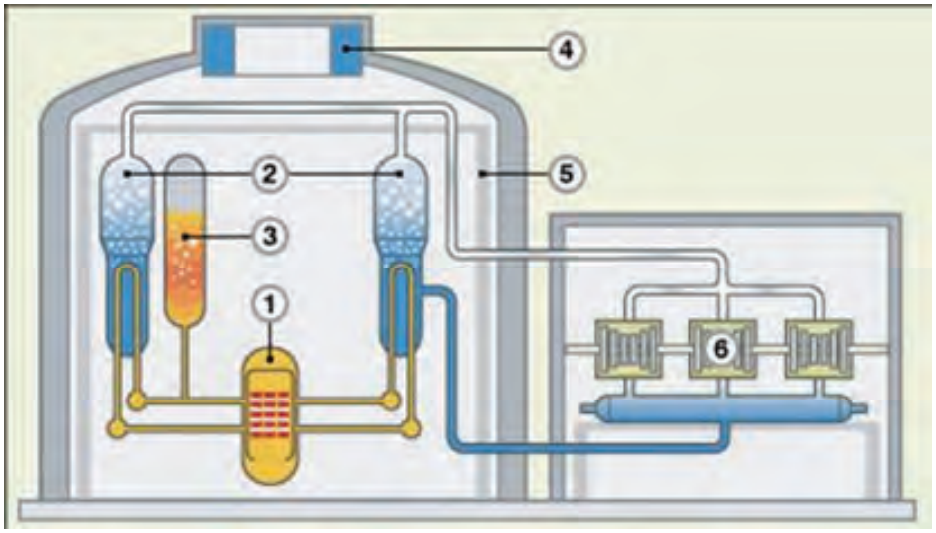
Key equipment includes:

1. Hydro turbine – captures the water flow into mechanical rotation force that drives the hydro generator

2. Hydro generator – turns mechanical energy to electricity energy (power generation)

Major nuclear power equipment

Fig. 123: AP-1000



Source: BBC, Nomura research

Key equipment includes:

1. Reactor core – is where nuclear reaction takes place. Pressure vessel contains the reactor core, which has reactor internals and rods control mechanism

2. Steam generator – transfers heat energy produced in the nuclear island to the conventional island by turning water into steam

3. Pressuriser – water is heated inside the pressuriser to produce steam, thus controlling the primary system pressure within the close-loop

4. Passive cooling water tank (only applies to AP1000 system)

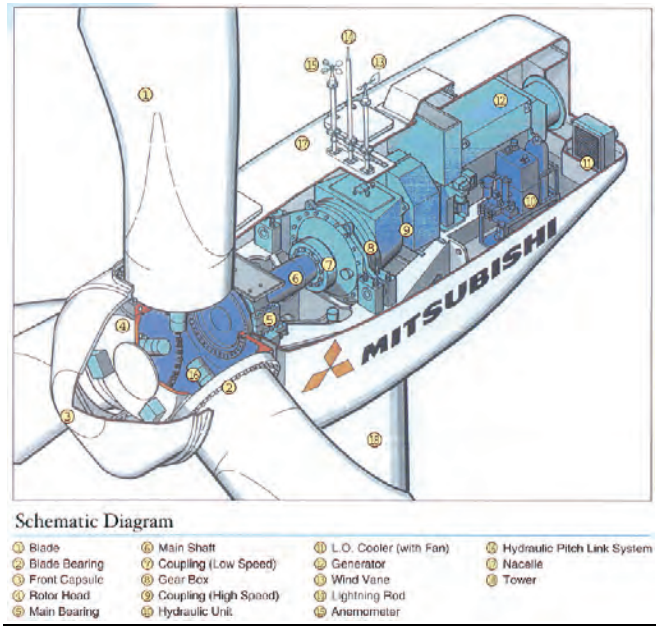
5. Steel containment shell

6. Turbines – capture the flow of steam into rotational forces to turn the generators

Other major equipment not indicated in the picture above includes turbine generators and main pumps.

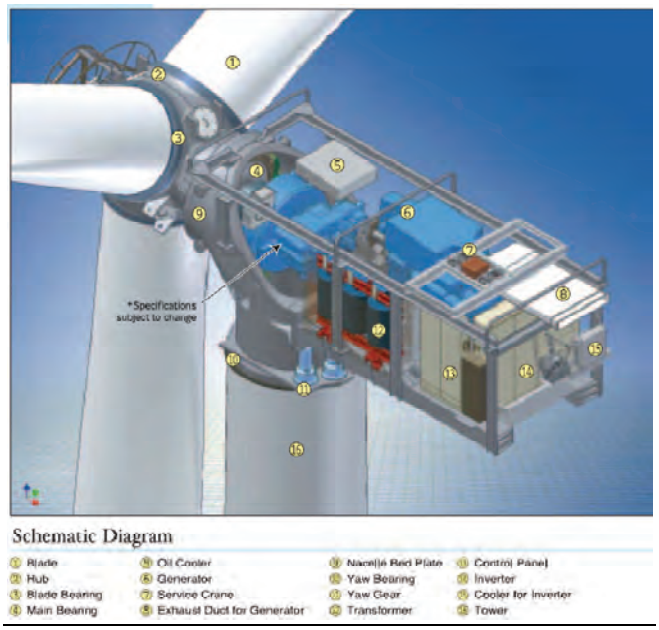
Wind power equipment

Fig. 124: Conventional gearbox wind turbine



Source: Mitsubishi Heavy Industries

Fig. 125: Direct-drive gearbox wind turbine



Source: Mitsubishi Heavy Industries

Key equipment involved:

Blade – The most visible component of a wind turbine, capturing wind energy into a rotational force to drive a generator.

Gearbox – For traditional geared solutions and some newer hybrid-drive solutions, this is the component that increases the rotational speed to drive the generator. Direct-drive turbines do not have a gearbox.

Generator – This is the device that transforms kinetic energy into electrical energy.

Control – The electrical component that regulates pitch/yaw control, as well as regulating the electrical output of a wind turbine

Key technology discussion (direct-drive vs. traditional geared solution):

Mainstream wind turbines contain gearboxes that drive generators by converting slow-speed (18-50rpm) and high-torque power generated from the rotor into high-speed (1,500rpm) and low-torque power. As gearboxes have been one of the major causes of wind turbine failure, a newer concept of direct-drive (gearless) wind turbines has emerged.

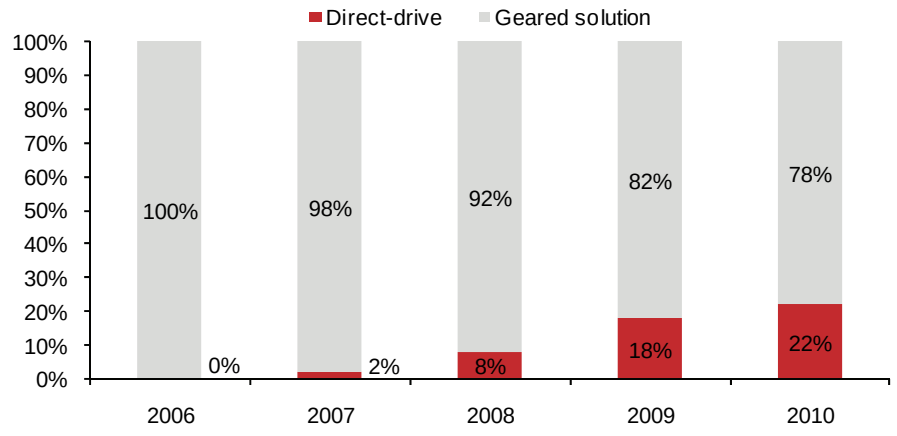
In a direct-drive wind turbine, the gearbox is removed and the aerodynamic rotor drives the generator directly. Since there is no gearbox or drive train, there are fewer rotating components in a direct-drive turbine, thus reducing mechanical stress and increasing equipment reliability and service life. Other advantages of direct-drive wind turbines include lower noise emission and higher energy conversion efficiency.

Until recently, direct-drive wind turbines were a lot heavier and larger in size than conventional gearbox solution. Nevertheless, the use of permanent magnets in the direct drive turbine has helped reduce the weight of direct-drive turbines.

Despite the claimed advantages of today's direct drive units on 1) high efficiency, 2) lower maintenance cost and 3) improved grid friendliness, we don't see the direct-drive becoming the mainstream turbines due to their limited track record. Given wind farms are capacity intensive and the major equipment, wind turbines, have an expected life of 20-25 years, we don't see wind farm operators solely relying on direct drive in order to diversify their technological and operational risk.

Direct-drive turbines gained market share very quickly in 2008, 2009. However, their pace of growth has been slowing down in 2010, reconfirming our view.

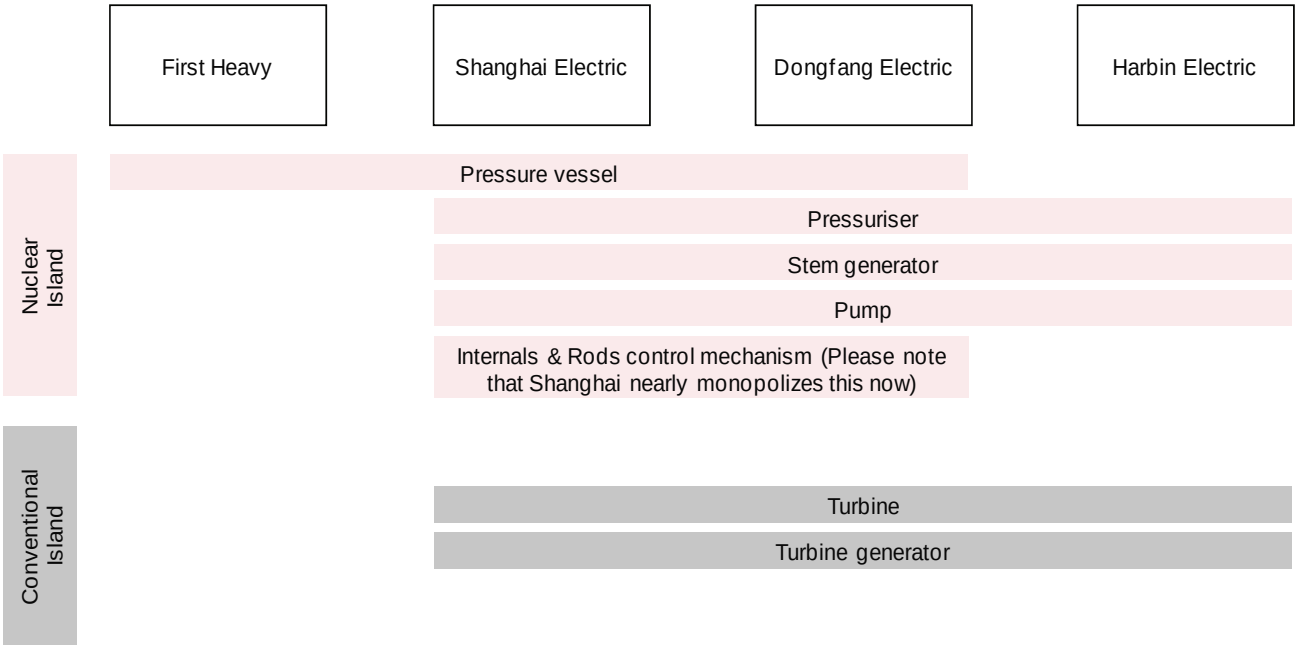
Fig. 126: Market shares of different drive-train in China



Source: CWEA

Appendix III: Who produces what in the nuclear space?

Fig. 127: Nuclear equipment space – major players and components



Note: According to contract awarded and dialogue with management as at FY10. Only major players shown

Source: Company data

Appendix IV: Major wind players in China

Fig. 128: Wind supply chain in China

Note: Activities grouped as major engagements which may be subjective. Does not include minor activities in value chain integration; e.g. Turbine manufacturers such as Goldwind, DFE, SEG have engaged in some components manufacturing through its subsidiary / associates. Only major players listed above.

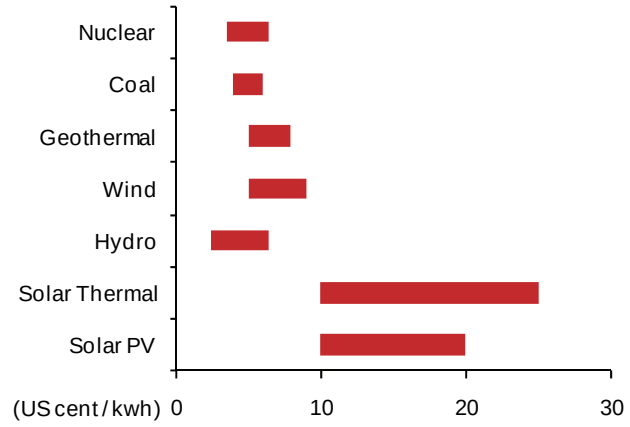
Source: Nomura research

Appendix V: Economics of different types of power generation

Nuclear generation cost on-par with coal plants…

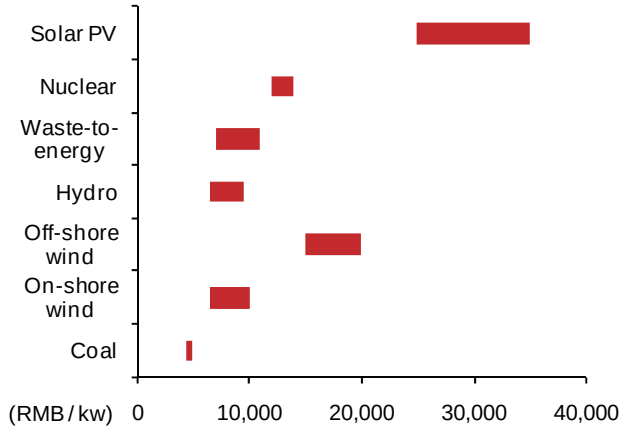
We estimate that the generation costs for nuclear power are among the lowest of the various energy sources in China, although we note that generation costs for nuclear power in China differ substantially depending on the type of technology the reactors use and the degree of equipment localisation. According to research conducted by Mr. Zhang Senru, the former head of the Nuclear Power Institute of China, the generation costs of nuclear power generally fall in the range of RMB0.20-0.35/kwh, on par with or lower than the costs for coal-fired power of around RMB0.30-0.35/kwh.

Fig. 129: Generation cost comparison



Source: Nomura estimates

Fig. 130: Investment cost comparison



Source: Nomura estimates

…But with a different cost mix

The costs of generating electricity can be separated into three categories:

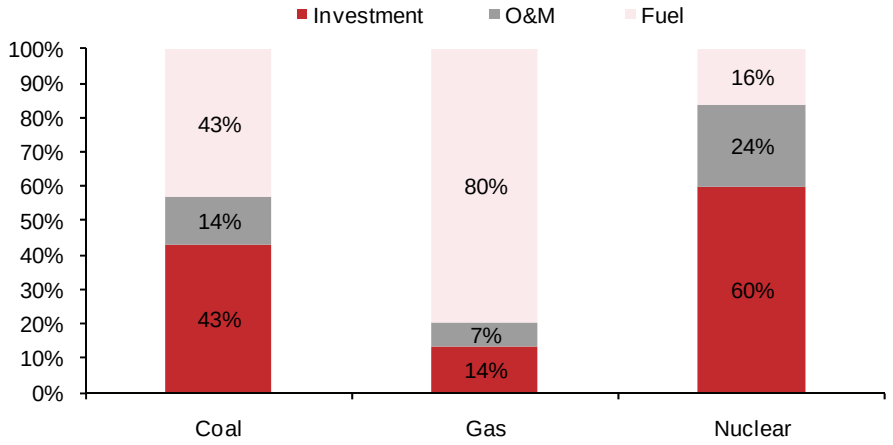
- Capital cost;
- Management & operating cost;
- Fuel cost.

Capital cost refers to capital expenditure when the generation plant is under construction. This part of the cost involves expenditure on necessary equipment and engineering. Capital cost also includes plant-specific pre-construction costs, such as costs associated with R&D, licensing, public hearings, plant specific safety studies, site investigation and preparation. Considering the construction period, accrued interest cost should be taken into account. After the generation plant is constructed and connected to the grid, operating and maintenance expenditures occur to ensure the operation of the plant.

Because significant costs and revenues occur at different times across the operating lives of electricity generation, a discount rate was chosen in the NEA/IEA study to bring these expenditures to a common basis. The discount rate is effectively the cost of capital required by financial markets. The levelised cost of electricity (LCOE) reflects the overall cost of generating electricity. It can be considered to be a benchmark for comparing different kinds of generation plants and analysing their cost structures. In contrast with other fossil fuel generation plants, nuclear power plants require more capital expenditure when under construction. The relatively high proportion of capital cost for nuclear plants can be attributed to two factors. First, nuclear power plants need more rigorous design, engineering and safety control facilities. Second, decommissioning cost is taken into consideration when measuring capital cost. In the case of nuclear power, fuel costs include all the costs related to the upstream and downstream steps of the cycle, and the costs of transportation between each step. This includes the costs of uranium (yellow-

cake), conversion, enrichment, fabrication, spent fuel conditioning and disposal or reprocessing and reprocessing waste disposal, as applicable.

Fig. 131: Cost structure comparison



Source: IEA, NEA 2010 Note: 5% discount scenario and assume no carbon cost

Fuel cost consists of 43% of the generating cost of electricity for coal generation, while only 16% for nuclear. On the other hand, 43% of the generation cost for coal plants comes from investment / capital cost, compared to 60% for nuclear plants.

Appendix VI: Nuclear projects in China

Fig. 132: List of nuclear reactors under construction / planned in China

Plant	Location	Gross cap. (MW)	Reactor	Project control	Construction start	Operation	Project approved
Ling Ao Phase II unit 2	Guangdong	1080	CPR1000	CGNPC	5/06	8/11	Yes
Qinshan Phase II unit 4	Zhejiang	650	CNP-600	CNNC	1/07	2012	Yes
Hongyanhe unit 1-4	Liaoning	4x1080	CPR1000	CGNPC	8/07, 4/08, 3/09, 8/09	10/12, 2013, 2014	Yes
Ningde unit 1-4	Fujian	4x1080	CPR1000	CGNPC & Datang	2/08, 11/08, 1/10, 9/10	12/12, 2013, 2014, 2015	Yes
Fuqing unit 1-2	Fujian	2x1080	CPR1000	CNNC	11/08, 6/09	10/13, 8/14	Yes
Yangjiang unit 1-4	Guangdong	4x1080	CPR1000	CGNPC	12/08, 8/09, 11/10, 3/11	8/13, 2014, 2015, 2016	Yes
Fangjiashang unit 1-2	Zhejiang	2x1080	CPR1000	CNNC	12/08, 7/09	12/13, 10/14	Yes
Sanmen unit 1-2	Zhejiang	2x1250	AP1000	CNNC	3/09, 12/09	11/13, 9/14	Yes
Haiyang unit 1-2	Shandong	2x1250	AP1000	CPI	9/09, 6/10	5/14, 3/15	Yes
Taishan unit 1-2	Guangdong	2x1750	EPR	CGNPC	10/09, 4/10	12/13, 11/14	Yes
Hongyanhe unit 5-6	Liaoning	2x1080	CPR1000	CGNPC	2011	2015	
Shandong Shidaowan	Shandong	210	HTR-PM	Huaneng	12/10	2015	Yes
Fangchenggang unit 1-2	Guangxi	2x1080	CPR1000	CGNPC	7/10, 2011	2015, 2016	Yes
Fuqing unit 3-4	Fujian	2x1080	CPR1000	CNNC	7/10 2011	7/15, 5/16	Yes
Fuqing unit 5-6	Fujian	2x1080	CPR1000 / CNP1000	CNNC			No
Changjiang unit 1-2	Hainan	2x650	CNP-600	CNNC & Huaneng	4/10, 11/10	2014, 2015	Yes
Hongshiding (Rushan) unit 1-2	Shandong	2x1080	CPR1000	CNEC/CNNC		2015	No
Yangjiang units 5-6	Fujian	2x1080	CPR 1000	CGNPC	2011	2017	Yes
Ningde units 5-6	Fujian	2x1080	CPR1000	CGNPC			
Xianning (Dafan) unit 1-2	Hubei	2x1250	AP1000	CGNPC	2011	2015	No
Taohuajiang unit 1-4	Hunan	4x1250	AP1000	CNNC	Late 2010	2015-2018	No
Pengze units 1-2	Jaingxi	2x1250	AP1000	CPI	Early 2010	2015	No
Xudabao / Xudapu unit 1-2	Liaoning	2x1250	AP1000	CNNC & Datang			No
Sanmen unit 3-4	Zhejiang	2x1250	AP1000	CNNC			No
Haiyang unit 3-4	Shandong	2x1250	AP1000	CPI			No
Xiaomoshan unit 1-2	Hunan	2x1250	AP1000	CPI			No
Longyou (Zhexi) unit 1-2	Zhejiang	2x1250	AP1000	CNNC			No
Sanming unit 1-2	Fujian	2x880	BN800	CNNC	8/2011	2018, 19	No
Zhanghou unit 1-2	Fujian	2x1250	AP1000	CNNC & Guodian	2011		No
Yanjiashan/Wanan/Ji'an	Jiangxi	2x1250	AP1000	CNNC			No
Shaoguan unit 1-4	Guangdong	4x1250	AP1000	CGNPC			No
Tianwan unit 3-4	Jiangsu	2x1060	VVER1000	CNNC	12/12, 8/13		No
Tianwan unit 5-6	Jiangsu	2x1200	VVER1200	CNNC			No
Wuhu unit 1-2	Anhui	2x1250	AP1000	CGNPC	12/2011	8/2016	No
Lainyungang unit 1-2	Jiangsu	2x1080	CPR1000	CGNPC			No
Shanwei (Lufeng) unit 1-2	Guangdong	2x1080	CPR1000	CGNPC			No
Total: 77 reactors		**89,740**					

Source: WNA, CNEA, SNPTC, as at April 2011

Fig. 133: The 13 operating nuclear reactors in China

	Type	Operator	Gross capacity (MW)	Location	Operation
Daya Bay 1&2	PWR	CGNPC	1,968	Guangdong	1994
Qinshan Phase 1	PWR (CNP-300)	CNNC	300	Zhejiang	Apr, 1994
Qinshan Phase II, 1-3	PWR (CNP-600)	CNNC	1,950	Zhejiang	2002, 2004, 2010
Qinshan Phase III, 1&2	PHWR (Candu 6)	CNNC	1,400	Zhejiang	2002, 2003
Ling Ao Phase I, 1&2	PWR (VVER-1000)	CNNC	1,980	Guangdong	2002, 2003
Tianwan 1&2	PWR (VVER-1000)	CNNC	2,120	Jiangsu	2007, 2007
Ling Ao Phase II, 1	PWR (CPR-1000)	CGNPC	1,080	Guangdong	Sep, 2010
	13 Reactors		10,798		

Source: WNA, as at FY10, Nomura estimates

Appendix VII: News flow on nuclear development in China

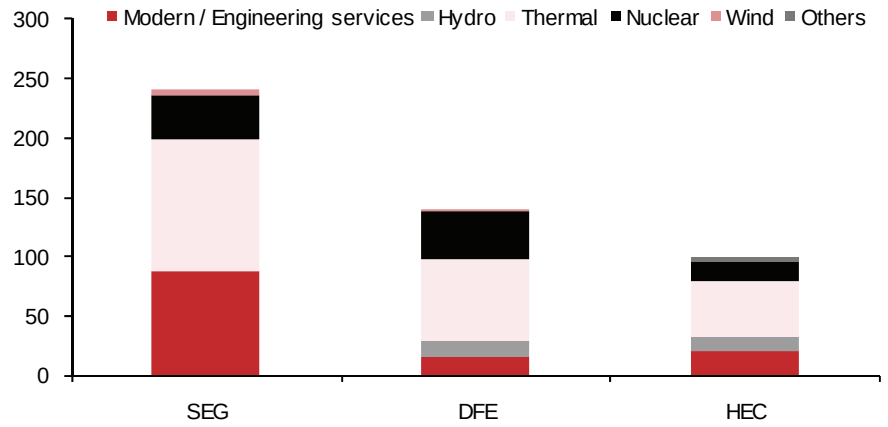
Fig. 134: News flow on nuclear targets after the Japan incident

Date	Event
12-Mar-11	Zhang, Lijun, Deputy Director of the Ministry of Environmental Protection of the People's Republic of China (MEP), said that China's nuclear development plan should not be affected by the Japan's nuclear incident.
13-Mar-11	Xie Zhenhua, Vice Chairman of the NDRC, said that China is to put emphasis on nuclear safety assessment and take nuclear risk into consideration as it finalizes its energy plans.
16-Mar-11	State Council called for immediate suspension on new nuclear project approval. Details of the new guidelines include: 1) Require relevant departments to perform safety checks on all existing plants immediately to ensure nuclear safety 2) Reinforce operating management / safety processes in all existing nuclear facilities and monitor to ensure these procedures / processes are in place 3) Perform safety / risk assessment on all nuclear plants under construction and halt construction process should the plants failed the assessment 4) Suspend approval on new nuclear projects including projects which have proceeded with pre-construction work until new nuclear safety procedures are set-up.
28-Mar-11	Officials from the China Electricity Council, as an influential organization throughout the industry, have publicly revised down its nuclear capacity forecast at 2020 by at least 10GW from the previous forecast of 90GW.
31-Mar-11	Ren Dongmin, the head of the NDRC's renewable said in a news conference nuclear capacity in China by 2020 may be revised down from the 80s GW-level

Source: chinapower.com.cn, sina, gov.cn, Bloomberg

Appendix VIII: Order backlog comparison (FY10)

Fig. 135: Order backlog as at FY10



Source: Company data, Nomura estimates

Fig. 136: Order backlog as at FY10

	SEG	DFE	HEC
Modern / Engineering services	88.0	15.4	20.0
Hydro	0.0	14.0	13.0
Thermal	111.3	68.2	46.0
Nuclear	37.0	40.0	18.0
Wind	4.0	2.4	0.0
Others	0.0	0.0	3.0

Source: Company data, Nomura estimates

Appendix IX: Major global equipment plays

Major players in the global power-equipment market include GE (GE US, BUY), Siemens (SI US, NEUTRAL), and Alstom (ALO FP, BUY). Their combined market share by revenue was more than 71% of the global power-equipment market in 2010, according to company reports and our estimates. GE and Siemens are the two largest power-generation equipment manufacturers worldwide, and they focus on thermal and wind power equipment, especially turbines. Alstom provides power equipment for all fuel types, including thermal, hydro, wind and nuclear.

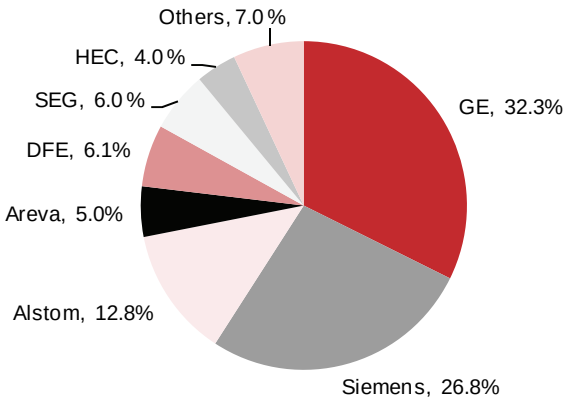
The bulk of the remaining market was from China and was dominated by the DFE (6.1% of global market share, by revenue), SEG (6.0%) and HEC (4.0%) and also from Areva SA (5.0%) (CEI FP, NOT RATED), where Areva specialises in nuclear power and nuclear power-related businesses.

Fig. 137: Information summary of major global power-generation equipment vendors

Company	Ex rate	Market cap. (US$bn)	PG equipment revenue in 2010 (US$bn)	Market share of 2008 (by revenue) (%)	Main product type
GE		203.8	30.9	32.3	Thermal, Wind
Siemens		58.1	25.5	26.8	Thermal, Wind
Alstom		8.6	12.2	12.8	All fuel types
Areva	1.406	8.1	4.8	5.0	Nuclear
DFE	6.505	1.7	5.8	6.1	Thermal, Hydro
SEG	6.505	12.5	5.7	6.0	Thermal, nuclear, wind
HEC	6.505	7.8	3.8	4.0	All fuel types
Others		n/a	6.7	7.0	n/a

Source: Company reports, Nomura research Note: Including power equipment related revenue such as E.P.C. / engineering projects

Fig. 138: Market shares of major global power-generation equipment vendors (by revenue)



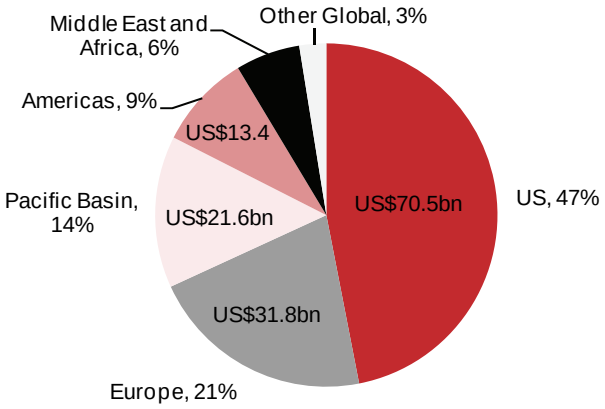
Note: Including power equipment related revenue such as E.P.C. / engineering projects

Source: Company reports, Nomura research

General Electric (GE)

General Electric is a US$200bn+ diversified industrial and financial company that is split into six main business segments: Energy Infrastructure, Aviation, Healthcare, Transportation, Home & Business Solutions, and GE Capital.

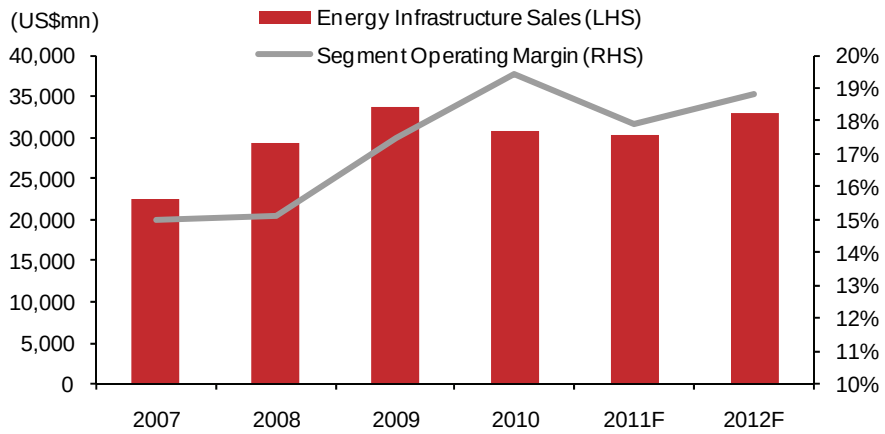
Fig. 139: GE- revenue breakdown by region in FY10



Source: Company reports, Nomura research

GE's energy infrastructure segment (25% of 2010 sales; 37% of 2010 operating profit) provides power generation equipment and services. Products include gas, steam, wind, and aero-derivative turbines, generators, and integrated gasification combined cycle (IGCC) technology design and development. In 1Q11, equipment was 27% of backlog and 47% of new orders. Major business categories include Thermal (~US$11bn in 2009), which is primarily gas turbines, Services (~US$10bn), and Wind (~US$6bn). Management has noted that it is most leveraged natural gas and wind.

Fig. 140: GE- revenue and growth rate of power-generation business



Note: operating margin includes sales of service at oil & gas

Source: Company reports, Nomura research

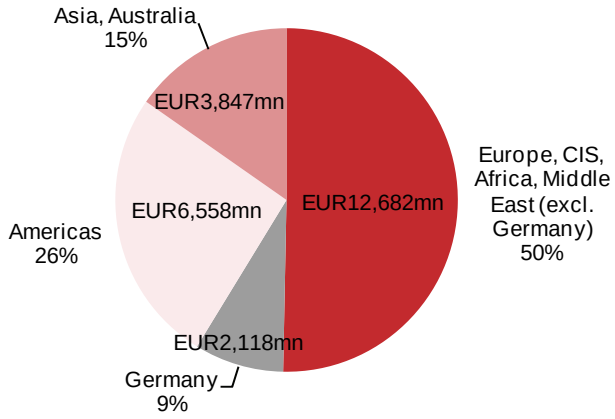
Siemens

Siemens is a leading global player in electronics and electrical engineering, and it operates in the industrial, energy and healthcare sectors. With its corporate headquarters in Munich, this 163-year-old German company employs around 405,000 employees. In FY10, Siemens' total revenue reached EUR76bn, according to company reports.

Siemens has three major business segments: industrial, energy and healthcare. The Energy sector is one of the world's leading suppliers in the field of energy technology and offers a wide spectrum of products, services and solutions for the generation, transmission and distribution of power, and the extraction, conversion and transport of oil and gas. It primarily addresses the needs of energy providers, but also serves industrial companies, particularly in the oil and gas industry. The Energy Sector covers the whole energy conversion chain.

In FY10, the Energy sector generated revenue of EUR25.5bn and profit of EUR3.6bn. In addition, this division received new orders of EUR30bn in 2010. The Energy sector consists of five divisions namely- Fossil Power Generation, Renewable Energy, Oil & Gas, Power Transmission and Power Distribution.

Fig. 141: Siemens- revenue breakdown of energy sector by region in FY2010



Source: Company reports, Nomura research

Alstom

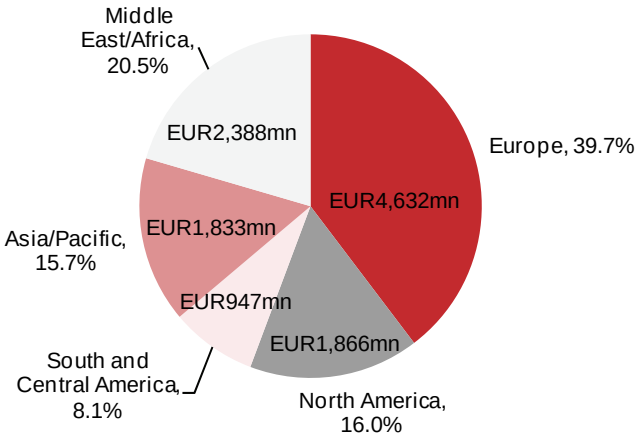
France-based Alstom is a global leader in transport infrastructure, power generation and transmission, with revenue of EUR20.9bn in FY10/11, according to company reports. It employed approximately 93,500 people as of the end of March 2011. Alstom separates its businesses into three segments: 1) Power, 2) Transport and 3) Grid.

Alstom's power activities include the design, manufacturing, services and supply of products and systems for the power generation sector and industrial markets. The group covers all energy sources - gas, coal, nuclear, hydro, wind. Close to 25% of the world's power production capacity depends on Alstom technology and services. Alstom supplies and maintains all components of a power plant and provides complete turnkey solutions. In FY10/11, Alstom Power sales amounted to EUR11.7bn with operating income of EUR1bn.

Alstom Power consists of three divisions namely Thermal Systems and Products, Thermal services and Renewables with Thermal Systems and Products contributing 47% and Thermal Services contributing 37% to Power sales.

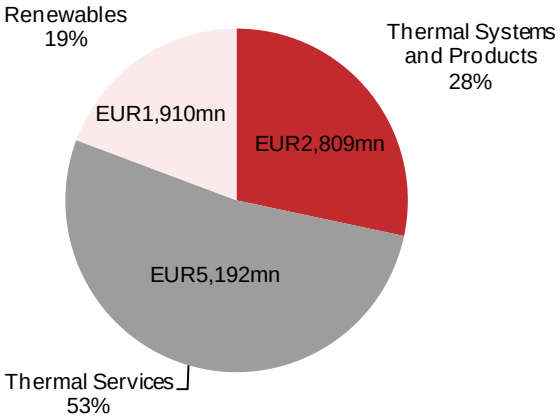
Region-wise, Europe had a share of 40% and Middle East/Africa had a share of 20% in Alstom Power sales.

Fig. 142: Alstom- revenue breakdown by region for FY10/11



Source: Company reports, Nomura research

Fig. 143: Alstom- breakdown of orders received in FY10/11



Source: Company reports, Nomura research

Areva

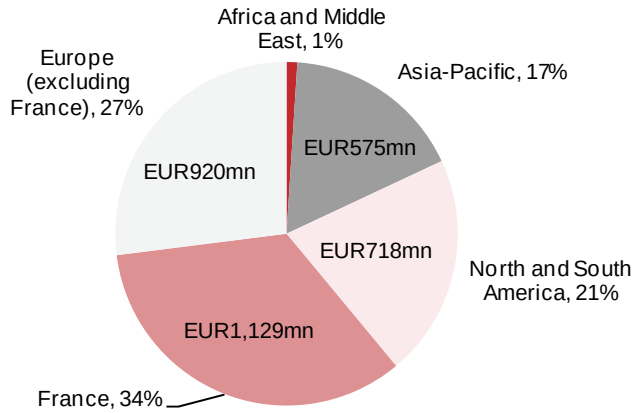
Areva is the global leader in providing nuclear-power equipment and services. The French company's headquarters are in Tour Areva in Courbevoie, Paris. Its revenues in FY10 were EUR9.1bn, and its employee strength was 48,000 according to company reports. Ranked first in the global nuclear power industry by sales , AREVA's unique integrated offering to utilities covers every stage of the fuel cycle, nuclear reactor design and construction, and related services. The group is also expanding in renewable energies – wind, solar, bioenergies, hydrogen and storage – to be one of the top three in this sector worldwide in 2012.

AREVA's activities are organized into five Business Groups. Mines groups the uranium mines exploration and operation activities. The Front End converts and enriches the uranium and designs the fuel for the nuclear reactors. Reactors and Services groups the activities of design and construction of nuclear reactors and propulsion and research reactors, and the activities of maintenance of the nuclear power plants. The Back End recycles the used fuel and provides transport, clean-up and dismantling services. Renewable Energy develops wind energy, bioenergy, solar power and hydrogen power solutions.

Areva has a significant presence in China. In the field of nuclear energy, AREVA has built the very first large scale nuclear power plant in China (at Daya Bay in 1986), and is currently involved in the construction of two Generation 3 EPR™ reactors in Guangdong province. Areva has long term agreement with China Guangdong Nuclear Power Corp

(CGNPC) for the supply of uranium fuel and has formed a joint venture with China National Nuclear Corporation (CNNC) to produce zirconium tubes for fuel assemblies.

Fig. 144: Areva- breakdown of reactors and services sales by region in FY2010



Source: Company reports, Nomura research

Appendix X: Reaction of Germany and Switzerland in light of Fukushima event

Germany

Post the Fukushima nuclear reactor incident in Japan in March 2011, German shut down seven of its nuclear reactors which were operational before 1980 and conducted safety checks on all German nuclear plants in light of nuclear safety concerns from the German public.

On top of the above action, the German government had initiated an independent feasibility study on a phase-out of the nuclear plants and on May 30, 2011, a little bit more than 2-months after the Fukushima nuclear incident that followed the Japanese earthquake, Germany's coalition government agreed to shut down all the country's nuclear power plants by 2022, according to the environmental minister. Such move is indeed making Germany the first industrialized nation in the last quarter century to walk away from nuclear.

The nuclear plants shutdown will be conducted in a phased manner, as below:

1). The 7 oldest nuclear plants have already been placed under a moratorium and the Kruemmel plant has already been taken offline. These plants are not to be resumed;

2) Group of 6 nuclear plants will go offline latest by end-2021; and

3) The 3 most modern power plants will go offline latest by 2022.

Switzerland

On March 14, 2011, the Swiss Energy Minister, Doris Leuthard, announced new-build and replacement plans for nuclear plants and new ones would be permitted until the completion of the safety review by expert. The suspension applied to any existing plants and planned sites.

Following a 20,000 people rally during the weekend of May 21, 2011, against nuclear development, the Swiss government agreed to walk away from nuclear power. No new plants will be built to replace existing nuclear power plants and existing plants will be closed at the end of their operative life. According to Reuters, the newest nuclear plant in Switzerland would remain in operation until 2034.

Sector valuation

Fig. 145: Sector Comparison (1/3)

Company	Type	Ticker	Reporting currency	Share o/s	Free float	Rating	Price target Local ($)	Price Local ($)	Market cap (US$mn)	EPS (local $) 2010	EPS (local $) 2011F	EPS (local $) 2012F	DPS (local $) 2010	DPS (local $) 2011F	DPS (local $) 2012F	Net profit (local $ m) 2010	Net profit (local $ m) 2011F	Net profit (local $ m) 2012F
Power Assets Holdings Ltd	Integrated	6 HK	HKD	2,134.26	61.12	Buy	57.30	54.05	13,464.26	3.42	4.00	4.16	2.11	2.20	2.29	7,306.68	8,540.58	8,880.81
CLP Holdings	Integrated	2 HK	HKD	2,406.14	63.41	Neutral	65.20	64.70	20,002.51	4.19	4.01	4.32	2.45	2.48	2.59	10,083.15	9,647.96	10,383.62
Hong Kong & China Gas	Gas	3 HK	HKD	7,900.55	98.17	Reduce	16.50	17.64	17,906.67	0.67	0.74	0.80	0.40	0.45	0.49	4,838.54	5,294.60	5,733.50
CKI	Integrated	1038 HK	HKD	2,254.21	15.17	Neutral	38.60	36.10	10,455.87	2.24	3.31	3.45	1.23	1.66	1.72	5,060.37	7,466.26	7,775.79
HK utilities average									**15,457.33**	**2.63**	**3.02**	**3.18**	**1.55**	**1.70**	**1.77**	**6,822.18**	**7,737.35**	**8,193.43**
Datang Intl	IPP	991 HK	CNY	12,310.04	85.49	Neutral	2.79	2.86	9,959.52	0.21	0.15	0.20	0.09	0.07	0.09	2,551.22	1,898.18	2,494.19
Huaneng Power Intl	IPP	902 HK	CNY	14,055.38	35.00	Neutral	4.69	4.55	11,931.60	0.28	0.23	0.30	0.20	0.13	0.16	3,347.99	3,280.45	4,182.39
Huadian Power Intl	IPP	1071 HK	CNY	6,771.08	93.99	Neutral	1.62	1.68	3,384.90	0.08	0.00	0.08	0.02	0.00	0.02	545.38	18.55	549.55
China Power Intl	IPP	2380 HK	CNY	5,107.06	31.02	Buy	2.00	1.82	1,194.05	0.12	0.14	0.15	0.05	0.06	0.06	613.26	706.34	747.65
China Resources Power	IPP	836 HK	HKD	4,719.50	35.60	Neutral	14.94	15.34	9,325.07	1.07	1.28	1.70	0.36	0.43	0.57	5,037.30	6,061.60	8,003.02
China power average									**6,767.77**	**0.37**	**0.38**	**0.49**	**0.14**	**0.14**	**0.18**	**2,684.52**	**2,615.20**	**3,281.21**
China Shenhua Energy	Coal	1088 HK	CNY	19,890.00	27.00	Buy	44.40	36.55	85,475.93	1.92	2.39	2.88	0.75	0.96	1.15	38,132.01	47,585.83	57,189.23
China Coal Energy	Coal	1898 HK	CNY	13,258.66	44.00	Neutral	10.86	9.93	19,193.58	0.56	0.66	0.87	0.15	0.18	0.23	7,466.36	8,793.67	11,572.22
Yanzhou Coal Mining	Coal	1171 HK	CNY	4,918.40	40.00	Buy	34.40	29.80	22,058.57	1.46	2.05	2.38	0.25	0.64	0.74	7,188.46	10,058.78	11,700.46
China coal average									**42,242.69**	**1.31**	**1.70**	**2.04**	**0.38**	**0.59**	**0.71**	**17,595.61**	**22,146.09**	**26,820.64**
Suntech	Solar	STP US	USD	179.05	70.47	Buy	11.00	7.41	1,334.90	0.65	1.13	1.38	-	-	-	116.02	201.58	246.45
Canadian Solar	Solar	CSIQ US	USD	42.84	69.50	Neutral	11.00	8.70	371.62	2.28	1.60	1.88	-	-	-	97.83	68.45	80.34
Trina Solar	Solar	TSL US	USD	68.05	70.00	Buy	34.00	21.17	1,680.89	5.16	3.68	4.60	-	-	-	351.16	250.77	312.95
Yingli Green	Solar	YGE US	USD	155.99	63.17	Buy	15.00	8.29	1,230.38	9.36	9.45	10.05	-	-	-	1,419.18	1,474.41	1,567.81
LDK Solar	Solar	LDK US	USD	151.30	29.00	Neutral	14.00	6.18	895.87	2.18	1.83	1.63	-	-	-	290.35	277.61	246.59
JA Solar	Solar	JASO US	USD	163.38	63.17	Neutral	8.50	5.46	917.18	1.63	1.27	1.32	-	-	-	265.96	207.67	215.67
Solargiga	Solar	757 HK	CNY	1,627.54	-	Reduce	1.10	1.88	436.45	0.16	0.19	-	-	-	-	278.11	314.58	-
GCL Poly	Solar	3800 HK	CNY	15,472.20	47.50	Buy	7.00	3.66	7,279.82	0.26	0.54	0.65	0.05	0.05	0.05	4,023.58	8,387.93	10,002.11
China solar average									**1,768.39**	**2.71**	**2.46**	**2.69**	**0.01**	**0.01**	**0.01**	**855.27**	**1,397.87**	**1,583.99**
China Everbright Intl	Water	257 HK	HKD	3,639.32	51.57	Buy	6.10	3.15	1,487.58	0.16	0.21	0.25	0.03	0.04	0.05	593.05	759.66	892.04
Guangdong Investment	Water	270 HK	HKD	6,253.69	38.88	Buy	5.50	4.00	3,202.35	0.38	0.40	0.40	0.13	0.13	0.14	2,340.92	2,494.82	2,535.35
China Water Affairs	Water	855 HK	HKD	1,327.67	63.02	Buy	4.10	2.88	512.83	0.11	0.15	0.19	0.05	0.05	0.06	141.02	197.89	257.05
Beijing Enterprises Water	Water	371 HK	HKD	7,860.85	42.03	Buy	3.30	2.34	2,059.55	0.10	0.13	0.13	-	-	-	417.61	785.87	1,059.62
Hyflux Limited	Water	HYF SP	SGD	570.51	68.60	Neutral	2.33	2.03	1,403.78	0.14	0.18	0.18	0.03	0.04	0.05	76.53	100.87	104.50
Sound Global Ltd	Water	967 HK	CNY	1,385.38	45.60	Buy	6.40	4.61	763.96	0.25	0.32	0.37	-	-	-	322.77	427.08	531.21
Tianjin Capital	Water	1065 HK	CNY	1,427.23	90.03	Reduce	2.10	2.45	1,168.68	0.20	0.16	0.11	0.10	0.07	0.05	289.49	222.77	161.93
China water average									**1,339.25**	**0.19**	**0.22**	**0.24**	**0.05**	**0.05**	**0.05**	**597.34**	**712.71**	**791.67**
ENN Energy	Gas	2688 HK	CNY	1,050.15	0.64	Neutral	24.10	27.05	3,649.19	0.97	1.14	1.22	0.24	0.28	0.37	1,016.48	1,194.91	1,278.07
Towngas China	Gas	1083 HK	HKD	2,443.36	0.24	Neutral	3.90	4.17	1,318.23	0.20	0.25	0.29	0.03	0.04	0.05	435.80	610.47	700.70
China Resources Gas	Gas	1193 HK	HKD	1,831.07	0.25	Buy	14.80	10.78	2,536.23	0.46	0.60	0.70	0.08	0.12	0.14	743.13	1,101.75	1,282.09
China Gas	Gas	384 HK	HKD	4,357.95	0.57	Reduce	3.70	3.18	1,790.86	0.26	0.19	0.23	0.01	0.02	0.02	875.64	747.40	1,009.83
Beijing Enterprises	Gas	392 HK	HKD	1,137.37	0.46	Buy	62.70	38.85	5,678.43	2.41	2.87	3.27	0.74	0.88	1.01	2,736.47	3,261.59	3,724.32
China gas average									**2,994.59**	**0.86**	**1.01**	**1.14**	**0.22**	**0.27**	**0.32**	**1,161.50**	**1,383.22**	**1,599.00**
China High Speed	Wind	658 HK	CNY	1,281.33	78.00	Buy	20.00	9.79	1,729.98	1.08	1.31	1.56	0.33	0.40	0.48	1,383.64	1,681.55	2,003.67
China Longyuan	Wind	916 HK	CNY	7,464.29	71.60	Neutral	7.60	8.14	7,806.77	0.27	0.35	0.39	0.05	0.07	0.08	2,018.57	2,587.07	2,879.31
China wind average									**4,768.37**	**0.68**	**0.83**	**0.97**	**0.19**	**0.24**	**0.28**	**1,701.10**	**2,134.31**	**2,441.49**
Shanghai Electric	Equipment	2727 HK	CNY	12,824.00	36.90	Buy	4.90	4.09	12,519.00	0.22	0.25	0.28	0.07	0.07	0.08	2,783.61	3,199.02	3,631.34
Dongfang Electric	Equipment	1072 HK	CNY	2,003.86	49.10	Buy	34.40	29.75	7,833.37	1.30	1.48	1.62	0.13	0.15	0.16	2,600.67	2,965.64	3,248.91
Harbin Power	Equipment	1133 HK	CNY	1,376.81	49.00	Neutral	8.90	9.35	1,654.03	0.74	0.64	0.67	0.14	0.12	0.13	1,024.50	883.70	921.66
China equipment average									**7,335.47**	**0.75**	**0.79**	**0.86**	**0.11**	**0.11**	**0.12**	**2,136.26**	**2,349.46**	**2,600.64**
Korea Electric Power	Integrated	015760 KS	KRW	641.57	40.95	Buy	40,000.00	29,600.00	17,443.99	(112.47)	(957.68)	52.00	-	(217.99)	36.38	(72.16)	(614.42)	33.36
Korea Gas	Gas	036460 KS	KRW	72.61	32.00	Buy	52,000.00	37,400.00	2,655.07	2,810.06	3,870.08	5,923.07	843.02	1,161.02	1,776.92	204.03	281.00	430.07
Korea utilities average									**10,049.53**	**1,348.79**	**1,456.20**	**2,987.53**	**421.51**	**471.52**	**906.65**	**65.94**	**(166.71)**	**231.71**
E-Ton Solar Tech	Solar	3452 TT	TWD	204.65	52.40	Reduce	37.00	26.10	432.88	(1.98)	2.11	2.91	-	-	-	(404.70)	432.54	595.77
Motech Industries	Solar	6244 TT	TWD	346.30	60.96	Neutral	111.00	97.50	1,282.82	12.30	14.34	14.73	7.00	5.50	5.50	4,259.47	4,966.78	5,102.30
Taiwan solar average									**857.85**	**5.16**	**8.23**	**8.82**	**3.50**	**2.75**	**2.75**	**1,927.39**	**2,699.66**	**2,849.04**
Indonesia																		
Perusahaan Gas Negara	Gas	PGAS IJ	IDR	24,241.51	43.04	Buy	4,800.00	4,025.00	11,368.06	283.69	274.98	300.06	154.43	175.58	183.90	6,876.59	6,665.86	7,273.85
Glow	IPP	GLOW TB	THB	1,439.00	24.74	Buy	55.00	51.75	2,488.60	3.52	3.63	4.96	1.91	2.01	2.48	5,067.12	5,219.67	7,141.33
Electricity Generating	IPP	EGCO TB	THB	526.47	39.59	Buy	110.00	94.50	1,635.47	13.27	12.63	11.82	5.05	5.10	5.15	6,984.84	6,651.61	6,221.82
Ratchaburi Generating	IPP	RATCH TB	THB	1,450.00	48.30	Buy	41.00	42.50	2,025.81	3.97	4.02	3.97	2.28	2.32	2.35	5,758.57	5,824.68	5,762.61
Thai power average									**2,049.96**	**6.92**	**6.76**	**6.92**	**3.08**	**3.14**	**3.33**	**5,936.84**	**5,898.65**	**6,375.26**
Tenaga Nasional	Integrated	TNB MK	MYR	5,440.88	39.43	Buy	8.00	7.11	12,965.95	0.47	0.38	0.56	0.16	0.13	0.13	2,545.90	2,041.97	3,019.79
YTLP	Integrated	YTLP MK	MYR	6,753.12	32.97	Neutral	2.28	2.22	5,313.01	0.18	0.19	0.18	0.11	0.12	0.12	1,126.40	1,264.11	1,242.02
Malaysia utilities average									**8,304.26**	**0.32**	**0.29**	**0.34**	**0.14**	**0.13**	**0.11**	**1,836.15**	**1,679.76**	**1,946.52**
Energy Development Corp	Power	EDC PM	PHP	18,750.00	53.56	Neutral	7.30	6.29	2,714.64	0.39	0.40	0.54	0.13	0.12	0.16	7,237.80	7,422.78	10,182.22
Meralco	Power	MER PM	PHP	1,127.71	69.10	Reduce	134.10	250.00	6,486.77	13.33	16.58	16.85	4.00	5.80	6.32	15,028.18	18,693.52	18,997.42
Philippines utilities average									**4,600.71**	**6.86**	**8.49**	**8.69**	**2.07**	**2.96**	**3.24**	**11,132.99**	**13,058.15**	**14,589.82**
NTPC	IPP	NTPC IN	INR	8,245.47	11.94	Buy	228.00	170.90	31,101.50	9.67	10.41	11.46	4.44	4.66	5.25	79,767.47	85,857.50	94,495.97
JSW Energy	Integrated	JSW IN	INR	1,640.06	31.15	Reduce	65.00	69.90	2,530.12	4.55	5.14	8.58	0.87	-	-	7,454.90	8,435.89	14,072.25
Adani Power	Integrated	ADANI IN	INR	2,180.04	26.55	Neutral	115.00	111.75	5,376.71	0.78	2.85	10.02	-	-	-	1,701.07	6,214.96	21,852.02
Power Grid	Grid	PWGR IN	INR	4,629.73	27.67	Buy	120.00	101.05	10,382.46	5.08	5.83	6.48	1.75	2.04	2.45	21,372.10	25,365.08	30,001.65
Reliance Power	Integrated	RPWR IN	INR	2,805.13	19.15	Reduce	136.00	110.10	6,816.25	2.85	3.03	3.45	-	-	-	6,838.95	7,752.07	9,671.44
Lanco Infratech	Integrated	LANCI IN	INR	24,078.05	19.49	Buy	51.00	32.65	1,735.04	2.05	1.71	4.03	-	-	-	4,585.73	4,129.08	9,706.83
India average									**9,553.80**	**4.16**	**4.87**	**7.40**	**1.18**	**1.13**	**1.28**	**20,286.70**	**23,122.50**	**30,236.98**
Australia																		
AGL ENERGY LTD	Integrated	AGK AU	AUD	4,613.12	99.10	Buy	17.50	14.23	6,208.71	0.96	1.03	1.06	0.59	0.62	0.64	428.90	470.77	488.82

Note: Ratings and price targets are as of the date of the most recently published report rather than the date of this document. Priced on May 26, 2011 market close. Except Tenaga, Huaneng and Power Grid, which are priced on May 31, 2011 close due to recent rating change.

Source: Bloomberg, Nomura estimates

Fig. 146: Sector comparison (2/3)

	EPS growth (%)			DPS growth (%)			Net earnings growth (%)			Net Gearing (%)			EV/MW (local $)			P/E (x)			Yield (%)		
Company	**2010**	**2011F**	**2012F**	**2010**	**2011F**	**2012F**	**2010**	**2011F**	**2012F**	**2010**	**2011F**	**2012F**	**2010**	**2011F**	**2012F**	**2010**	**2011F**	**2012F**	**2010**	**2011F**	**2012F**
Power Assets Holdings Ltd	9.10	16.89	3.98	-	4.32	3.98	9.10	16.89	3.98	32.09	24.25	18.17	NA	NA	NA	15.79	13.51	12.99	3.90	4.07	4.23
CLP Holdings	23.03	(4.32)	7.63	(1.15)	1.41	4.15	23.03	(4.32)	7.63	40.77	58.65	53.98	NA	NA	NA	15.45	16.15	15.01	3.79	3.84	4.00
Hong Kong & China Gas	(14.37)	9.43	8.29	14.28	12.50	8.89	(6.50)	9.43	8.29	22.45	22.94	23.57	NA	NA	NA	26.18	23.93	22.10	2.27	2.55	2.78
CKI	(9.12)	47.54	4.15	2.82	34.13	4.15	(9.12)	47.54	4.15	9.35	9.96	10.73	NA	NA	NA	16.08	10.90	10.47	3.42	4.59	4.78
HK utilities average	**2.16**	**17.39**	**6.01**	**3.99**	**13.09**	**5.29**	**4.13**	**17.39**	**6.01**	**26.16**	**28.95**	**26.61**	**NA**	**NA**	**NA**	**18.38**	**16.12**	**15.14**	**3.34**	**3.76**	**3.95**
Datang Intl	54.75	(27.20)	31.40	27.49	(25.60)	31.40	58.23	(25.60)	31.40	484.55	516.91	542.80	6.20	5.50	5.50	13.50	18.55	14.12	3.26	2.43	3.19
Huaneng Power Intl	(32.38)	(15.60)	27.49	(4.76)	(35.82)	27.49	(32.08)	(2.02)	27.49	246.31	255.39	257.48	3.30	3.00	2.80	14.06	15.65	11.64	5.15	3.52	4.72
Huadian Power Intl	(58.09)	(96.60)	2,862.98	(58.09)	(95.02)	2,862.98	(52.87)	(96.60)	2,862.98	466.84	518.44	544.30	3.30	3.10	3.00	20.86	613.32	20.70	0.98	0.05	1.45
China Power Intl	(15.15)	15.18	5.85	6.74	15.18	5.85	18.16	15.18	5.85	281.71	305.05	326.99	3.20	2.80	2.90	15.16	13.16	12.43	2.64	3.04	3.22
China Resources Power	(10.24)	19.87	32.03	(5.99)	20.33	32.03	(5.27)	20.33	32.03	150.36	165.41	172.86	5.10	4.70	4.50	14.40	11.96	9.06	2.33	2.80	3.70
China power average	**(8.23)**	**(20.30)**	**587.46**	**(9.70)**	**(18.24)**	**587.46**	**2.62**	**(18.55)**	**587.46**	**320.73**	**348.16**	**366.83**	**4.22**	**3.82**	**3.74**	**15.46**	**134.25**	**13.97**	**2.61**	**2.38**	**3.07**
China Shenhua Energy	20.27	24.79	20.18	41.51	27.60	20.18	20.27	24.79	20.18	net cash	net cash	net cash	NA	NA	NA	16.22	12.21	9.64	2.41	3.27	4.15
China Coal Energy	0.77	17.78	31.60	(2.78)	17.78	31.60	0.77	17.78	31.60	net cash	11.12	24.74	NA	NA	NA	15.00	11.97	8.63	1.77	2.22	3.08
Yanzhou Coal Mining	74.60	39.93	16.32	(37.50)	155.77	16.32	74.62	39.93	16.32	43.51	43.81	27.35	NA	NA	NA	17.35	11.65	9.50	0.99	2.68	3.29
China coal average	**31.88**	**27.50**	**22.70**	**0.41**	**67.05**	**22.70**	**31.88**	**27.50**	**22.70**	**43.51**	**27.46**	**26.05**	**NA**	**NA**	**NA**	**16.19**	**11.94**	**9.26**	**1.72**	**2.73**	**3.51**
Suntech	20.41	73.74	22.26	NA	NA	NA	20.41	73.74	22.26	65.65	50.44	32.99	NA	NA	NA	11.64	6.70	5.48	-	-	-
Canadian Solar	345.81	(30.04)	17.37	NA	NA	NA	361.87	(30.04)	17.37	60.31	90.19	111.63	NA	NA	NA	3.88	5.55	4.73	-	-	-
Trina Solar	146.55	(28.59)	24.79	NA	NA	NA	207.96	(28.59)	24.79	net cash	net cash	net cash	NA	NA	NA	4.62	6.47	5.19	-	-	-
Yingli Green	NA	0.93	6.33	NA	NA	NA	NA	3.89	6.33	31.56	51.79	66.05	NA	NA	NA	5.99	5.77	5.43	-	-	-
LDK Solar	NA	(15.99)	(11.17)	NA	NA	NA	NA	(4.39)	(11.17)	224.97	186.37	156.06	NA	NA	NA	2.83	3.37	3.79	-	-	-
JA Solar	NA	(22.15)	3.85	NA	NA	NA	NA	(21.92)	3.85	5.21	16.50	4.56	NA	NA	NA	3.51	4.53	4.36	-	-	-
Solargiga	NA	18.49	NA	NA	NA	NA	NA	13.11	NA	net cash	13.98	net cash	NA	NA	NA	9.59	8.09	NA	-	-	-
GCL Poly	NA	108.47	19.24	NA	-	-	NA	108.47	19.24	45.10	61.72	43.14	NA	NA	NA	14.10	6.76	5.67	1.39	1.39	1.39
China solar average	**170.92**	**13.11**	**11.81**	**NA**	**NA**	**NA**	**196.75**	**14.29**	**11.81**	**72.13**	**67.28**	**69.07**	**NA**	**NA**	**NA**	**7.02**	**5.91**	**4.95**	**0.17**	**0.17**	**0.17**
China Everbright Intl	50.58	28.09	17.43	59.47	28.09	17.43	61.58	28.09	17.43	41.00	60.77	68.65	NA	NA	NA	19.47	15.09	12.85	1.05	1.34	1.57
Guangdong Investment	15.93	6.23	1.28	14.18	6.20	1.29	16.59	6.57	1.62	15.84	7.27	net cash	NA	NA	NA	10.77	10.11	9.95	3.14	3.33	3.38
China Water Affairs	441.80	33.94	29.90	67.04	5.00	5.00	461.26	40.33	29.90	71.55	74.88	70.68	NA	NA	NA	27.11	20.64	17.11	1.74	1.83	1.92
Beijing Enterprises Water	57.77	21.88	6.58	NA	NA	NA	101.39	88.18	34.84	121.91	40.63	46.15	NA	NA	NA	22.55	18.50	17.36	-	-	-
Hyflux Limited	(2.33)	26.94	3.60	(13.47)	49.78	24.31	1.99	31.81	3.60	136.35	166.28	164.60	NA	NA	NA	14.87	11.99	11.57	1.45	2.18	2.71
Sound Global Ltd	15.05	27.60	16.10	(100.00)	NA	NA	15.05	32.32	24.38	net cash	net cash	net cash	NA	NA	NA	16.17	12.68	10.92	-	-	-
Tianjin Capital	19.14	(23.05)	(27.31)	19.14	(23.05)	(27.31)	19.14	(23.05)	(27.31)	40.76	36.31	32.47	NA	NA	NA	10.87	14.13	19.43	4.32	3.33	2.42
China water average	**85.42**	**17.38**	**6.80**	**7.73**	**13.21**	**4.15**	**96.71**	**29.18**	**12.06**	**71.23**	**64.36**	**76.51**	**NA**	**NA**	**NA**	**17.40**	**14.73**	**14.17**	**1.67**	**1.71**	**1.71**
ENN Energy	24.52	17.55	6.96	26.96	17.55	28.35	26.96	17.55	6.96	49.89	28.97	9.32	NA	NA	NA	24.98	20.29	18.41	1.03	1.27	1.68
Towngas China	47.21	25.34	14.78	50.33	40.08	14.78	64.40	40.08	14.78	19.61	15.98	11.63	NA	NA	NA	20.92	16.69	14.54	0.72	1.01	1.16
China Resources Gas	46.02	31.39	16.37	35.28	48.26	16.37	67.53	48.26	16.37	net cash	net cash	net cash	NA	NA	NA	23.54	17.92	15.40	0.75	1.12	1.30
China Gas	741.87	(26.05)	19.66	15.75	20.00	20.00	744.56	(14.64)	35.11	229.05	69.18	50.52	NA	NA	NA	15.64	22.13	16.38	0.44	0.52	0.63
Beijing Enterprises	14.07	19.17	14.19	14.07	19.19	14.19	14.07	19.19	14.19	8.65	14.74	19.35	NA	NA	NA	16.86	14.14	12.39	1.91	2.27	2.60
China gas average	**174.74**	**13.48**	**14.39**	**28.48**	**29.02**	**18.74**	**183.50**	**22.09**	**17.48**	**76.80**	**32.22**	**22.70**	**NA**	**NA**	**NA**	**20.39**	**18.23**	**15.42**	**0.97**	**1.24**	**1.47**
China High Speed	39.12	21.53	19.16	25.00	21.53	19.16	43.18	21.53	19.16	15.26	36.40	43.38	NA	NA	NA	8.13	6.54	5.49	4.00	4.98	5.93
China Longyuan	82.92	28.16	11.30	NA	28.16	11.30	125.76	28.16	11.30	142.15	174.10	202.63	NA	NA	NA	25.84	19.56	17.10	0.77	1.02	1.17
China wind average	**61.02**	**24.85**	**15.23**	**25.00**	**24.85**	**15.23**	**84.47**	**24.85**	**15.23**	**78.70**	**105.25**	**123.00**	**NA**	**NA**	**NA**	**16.99**	**13.05**	**11.29**	**2.39**	**3.00**	**3.55**
Shanghai Electric	11.66	13.89	13.51	10.71	14.92	13.51	13.46	14.92	13.51	65.74	66.87	63.60	NA	NA	NA	15.85	13.07	11.52	1.88	2.29	2.60
Dongfang Electric	38.55	14.03	9.55	62.50	14.03	9.55	54.88	14.03	9.55	244.00	197.34	160.01	NA	NA	NA	19.46	16.03	14.63	0.51	0.62	0.68
Harbin Power	69.00	(13.74)	4.30	105.88	(13.74)	4.30	69.00	(13.74)	4.30	35.02	35.72	35.50	NA	NA	NA	10.66	11.62	11.14	1.76	1.62	1.69
China equipment average	**39.74**	**4.73**	**9.12**	**59.70**	**5.07**	**9.12**	**45.78**	**5.07**	**9.12**	**114.92**	**99.98**	**86.37**	**NA**	**NA**	**NA**	**15.32**	**13.57**	**12.43**	**1.38**	**1.51**	**1.66**
Korea Electric Power	(131.11)	NA	NA	NA	NA	NA	(131.11)	NA	NA	90.22	93.99	97.43	NA	NA	NA	NA	NA	583.16	-	(0.74)	0.12
Korea Gas	(14.27)	37.72	53.05	(14.27)	37.72	53.05	(14.27)	37.72	53.05	510.39	543.02	496.84	NA	NA	NA	13.31	9.66	6.31	2.25	3.10	4.75
Korea utilities average	**(72.69)**	**37.72**	**53.05**	**(14.27)**	**37.72**	**53.05**	**(72.69)**	**37.72**	**53.05**	**300.30**	**318.50**	**297.13**	**NA**	**NA**	**NA**	**13.31**	**9.66**	**294.74**	**1.13**	**1.18**	**2.44**
E-Ton Solar Tech	NA	NA	37.74	NA	NA	NA	NA	NA	37.74	82.79	82.20	78.99	NA	NA	NA	NA	12.35	8.97	-	-	-
Motech Industries	2,975.00	16.61	2.73	250.00	(21.43)	-	12,735.15	16.61	2.73	net cash	8.14	10.14	NA	NA	NA	8.00	6.86	6.68	7.18	5.64	5.64
Taiwan solar average	**2,975.00**	**16.61**	**20.23**	**250.00**	**(21.43)**	**-**	**12,735.15**	**16.61**	**20.23**	**82.79**	**45.17**	**44.57**	**NA**	**NA**	**NA**	**8.00**	**9.60**	**7.82**	**3.59**	**2.82**	**2.82**
Indonesia																					
Perusahaan Gas Negara	22.62	(3.07)	9.12	0.16	13.69	4.74	24.98	(3.06)	9.12	12.42	net cash	net cash	NA	NA	NA	14.19	14.64	13.41	3.84	4.36	4.57
Glow	39.33	3.01	36.82	5.00	5.00	23.46	36.99	3.01	36.82	184.11	197.57	162.20	NA	NA	NA	14.70	14.27	10.43	3.70	3.88	4.79
Electricity Generating	(6.95)	(4.77)	(6.46)	1.00	1.00	1.00	(6.95)	(4.77)	(6.46)	1.41	net cash	net cash	NA	NA	NA	7.12	7.48	8.00	5.34	5.40	5.45
Ratchaburi Generating	(14.46)	1.15	(1.07)	1.50	1.50	1.50	(14.46)	1.15	(1.07)	25.65	17.95	12.09	NA	NA	NA	10.70	10.58	10.69	5.37	5.45	5.54
Thai power average	**5.98**	**(0.20)**	**9.76**	**2.50**	**2.50**	**8.65**	**5.19**	**(0.20)**	**9.76**	**70.39**	**107.76**	**87.14**	**NA**	**NA**	**NA**	**10.84**	**10.78**	**9.71**	**4.81**	**4.91**	**5.26**
Tenaga Nasional	17.82	(19.98)	47.89	46.90	(15.29)	(2.18)	18.02	(19.79)	47.89	54.98	45.49	36.43	NA	NA	NA	15.19	18.94	12.81	2.20	1.86	1.82
YTLP	56.71	5.22	(1.75)	(11.17)	1.50	1.50	74.21	12.23	(1.75)	206.23	202.96	203.52	NA	NA	NA	15.45	13.99	14.23	5.18	5.25	5.33
Malaysia utilities average	**37.26**	**(6.33)**	**12.38**	**17.87**	**(2.70)**	**(15.48)**	**46.12**	**(2.73)**	**12.38**	**130.61**	**123.84**	**120.33**	**NA**	**NA**	**NA**	**14.46**	**15.17**	**13.58**	**3.83**	**3.78**	**3.45**
Energy Development Corp	(0.53)	2.56	37.18	33.54	(10.80)	37.18	(0.53)	2.56	37.18	114.85	95.50	69.02	NA	NA	NA	16.29	15.89	11.58	2.12	1.89	2.59
Meralco	549.92	24.39	1.63	59.87	45.12	8.88	561.45	24.39	1.63	53.40	30.34	15.00	NA	NA	NA	18.76	15.08	14.84	1.60	2.32	2.53
Philippines utilities average	**274.70**	**13.47**	**19.40**	**46.71**	**17.16**	**23.03**	**280.46**	**13.47**	**19.40**	**84.12**	**62.92**	**42.01**	**NA**	**NA**	**NA**	**17.53**	**15.49**	**13.21**	**1.86**	**2.10**	**2.56**
NTPC	29.60	7.63	10.06	5.50	5.06	12.50	29.60	7.63	10.06	34.23	43.30	57.89	NA	NA	NA	20.62	19.16	17.41	2.23	2.34	2.63
JSW Energy	(10.21)	13.16	66.81	NA	(100.00)	NA	169.43	13.16	66.81	126.27	132.62	126.36	NA	NA	NA	15.09	13.34	8.00	1.27	-	-
Adani Power	NA	265.36	251.60	NA	NA	NA	NA	265.36	251.60	162.77	327.39	325.11	NA	NA	NA	142.32	38.95	11.08	-	-	-
Power Grid	21.37	14.87	11.09	24.72	16.54	20.00	21.37	18.68	18.28	195.37	174.13	196.65	NA	NA	NA	19.90	17.32	15.59	1.73	2.02	2.42
Reliance Power	179.70	6.35	13.62	NA	NA	NA	179.70	13.35	24.76	net cash	16.42	87.74	NA	NA	NA	38.64	36.33	31.98	-	-	-
Lanco Infratech	62.24	(16.17)	135.08	NA	NA	NA	63.56	(9.96)	135.08	197.92	269.84	437.21	NA	NA	NA	16.22	19.13	8.14	-	-	-
India average	**56.54**	**49.28**	**81.65**	**15.11**	**(25.03)**	**14.58**	**92.73**	**52.14**	**84.73**	**143.31**	**156.98**	**200.32**	**N/A**	**N/A**	**N/A**	**42.00**	**23.82**	**15.13**	**0.88**	**0.75**	**0.86**
Australia																					
AGL ENERGY LTD	12.47	7.66	2.99	9.26	5.08	3.23	13.23	9.76	3.83	7.25	10.04	10.80	NA	NA	NA	14.91	13.85	13.45	4.15	4.36	4.50

Note: Ratings and price targets are as of the date of the most recently published report rather than the date of this document. Priced on May 26, 2011 market close. Except Tenaga, Huaneng and Power Grid, which are priced on May 31, 2011 close due to recent rating change.

Source: Bloomberg Nomura estimates

Fig. 147: Sector comparison (3/3)

	Dividend payout (%)			BV/share (local $)			P/B (x)			EV/EBITDA (x)			EBITDA Margin (%)			RoIC (%)			RoE (%)			RoA (%)		
Company	2010	2011F	2012F	2010	2011F	2012F	2010	2011F	2012F	2010	2011F	2012F	2010	2011F	2012F	2010	2011F	2012F	2010	2011F	2012F	2010	2011F	2012F
Power Assets Holdings Ltd	61.64	55.01	55.01	25.75	27.55	29.42	2.10	1.96	1.84	14.11	11.75	11.18	70.41	69.56	69.58	10.34	11.14	11.58	13.65	15.02	14.61	8.98	9.72	10.06
CLP Holdings	58.45	61.95	59.95	31.11	32.65	34.41	2.08	1.98	1.88	10.33	9.54	8.97	28.47	27.59	26.91	9.54	8.27	8.12	13.85	12.57	12.86	6.30	5.47	5.36
Hong Kong & China Gas	59.38	61.04	61.38	4.92	5.27	5.64	3.58	3.35	3.13	17.28	16.24	15.19	38.36	37.17	36.24	10.08	10.86	11.17	14.19	14.46	14.64	7.29	7.76	8.06
CKI	55.00	50.00	50.00	23.13	24.56	26.06	1.56	1.47	1.39	16.83	11.51	11.26	22.62	26.93	27.60	9.50	12.48	12.32	10.73	13.89	13.63	8.77	11.56	11.54
HK utilities average	**58.62**	**57.00**	**56.58**	**21.23**	**22.51**	**23.88**	**2.33**	**2.19**	**2.06**	**14.64**	**12.26**	**11.65**	**39.97**	**40.31**	**40.08**	**9.87**	**10.69**	**10.80**	**13.10**	**13.98**	**13.93**	**7.84**	**8.63**	**8.75**
Datang Intl	44.03	45.00	45.00	2.51	2.60	2.71	1.14	1.10	1.06	10.22	10.67	9.45	28.18	24.80	26.04	1.78	1.18	1.43	8.94	6.04	7.64	1.28	0.84	1.01
Huaneng Power Intl	72.33	55.00	55.00	3.83	3.93	4.07	1.02	0.93	0.85	9.44	8.74	7.51	18.46	17.26	17.57	2.58	2.41	2.94	6.98	6.02	7.44	1.57	1.40	1.69
Huadian Power Intl	20.48	30.00	30.00	2.44	2.44	2.50	0.69	0.69	0.67	11.65	10.58	8.79	16.06	16.41	18.28	0.82	0.03	0.70	3.35	0.11	3.29	0.48	0.01	0.40
China Power Intl	40.00	40.00	40.00	2.51	2.59	2.68	0.73	0.70	0.68	11.15	10.05	9.38	27.74	27.04	25.11	1.43	1.49	1.44	4.86	5.43	5.56	1.06	1.06	1.01
China Resources Power	33.36	33.49	33.49	8.68	9.54	10.67	1.77	1.61	1.44	10.14	8.66	7.17	25.50	24.96	27.12	6.54	6.77	7.86	12.82	14.10	16.79	3.87	3.91	4.47
China power average	**37.12**	**39.97**	**39.97**	**4.01**	**4.24**	**4.55**	**1.09**	**1.04**	**0.98**	**10.37**	**9.66**	**8.52**	**23.59**	**22.46**	**23.05**	**2.81**	**2.50**	**2.90**	**7.92**	**6.71**	**8.24**	**1.78**	**1.54**	**1.74**
China Shenhua Energy	39.12	40.00	40.00	9.97	11.41	13.13	3.12	2.56	2.11	8.77	6.67	5.20	45.73	42.73	44.67	16.17	18.04	19.04	20.67	22.38	23.44	11.69	12.92	13.50
China Coal Energy	26.61	26.61	26.61	5.58	6.07	6.71	1.51	1.31	1.12	6.88	6.37	4.96	20.86	21.36	24.49	9.07	9.04	9.79	10.47	11.38	13.65	6.38	6.39	7.09
Yanzhou Coal Mining	17.11	31.27	31.27	7.59	9.00	10.63	3.34	2.65	2.13	11.06	7.57	5.96	37.53	41.04	41.85	16.91	15.34	15.70	27.92	24.66	24.24	13.73	12.67	13.06
China coal average	**27.61**	**32.62**	**32.62**	**7.72**	**8.82**	**10.16**	**2.66**	**2.17**	**1.79**	**8.90**	**6.87**	**5.37**	**34.71**	**35.04**	**37.00**	**14.05**	**14.14**	**14.85**	**19.69**	**19.47**	**20.44**	**10.60**	**10.66**	**11.22**
Suntech	-	-	-	10.57	11.70	13.07	0.70	0.63	0.57	6.68	5.37	4.30	12.46	13.99	14.38	10.80	6.93	7.40	15.03	10.11	11.11	5.70	3.84	4.60
Canadian Solar	-	-	-	12.47	14.02	15.89	0.70	0.62	0.55	4.45	5.14	5.58	10.43	9.17	8.06	9.20	10.73	11.30	10.13	12.06	12.54	4.11	4.27	4.06
Trina Solar	-	-	-	17.25	20.57	25.17	1.23	1.03	0.84	3.13	3.89	2.89	25.38	16.43	18.22	25.24	14.29	16.86	33.66	17.62	20.11	16.92	10.21	12.58
Yingli Green	-	-	-	55.32	63.20	73.25	0.96	0.84	0.72	3.10	3.54	3.48	27.78	24.22	23.70	14.55	11.06	9.81	18.84	16.17	14.73	7.01	5.75	5.38
LDK Solar	-	-	-	7.67	9.66	11.29	0.81	0.64	0.55	5.24	5.14	4.92	23.63	24.61	21.84	17.37	11.54	7.07	30.44	22.38	15.56	5.87	4.69	3.66
JA Solar	-	-	-	6.21	7.13	8.45	0.88	0.77	0.65	2.73	3.23	2.66	19.29	12.07	12.82	22.25	13.80	12.77	31.24	19.09	16.95	18.74	11.61	11.20
Solargiga	-	-	-	0.98	1.22	-	1.55	1.25	-	3.91	5.36	N/A	19.27	18.66	NA	17.38	16.59	N/A	18.22	17.25	N/A	11.98	11.57	N/A
GCL Poly	19.61	9.41	7.89	1.04	1.53	2.12	3.51	2.40	1.72	9.80	4.69	3.85	35.25	45.66	41.67	20.80	29.16	25.58	28.98	42.18	35.44	12.10	17.81	16.45
China solar average	**2.45**	**1.18**	**0.99**	**13.94**	**16.13**	**18.66**	**1.29**	**1.02**	**0.70**	**4.88**	**4.55**	**3.96**	**21.69**	**20.60**	**20.10**	**17.20**	**14.26**	**12.97**	**23.32**	**19.61**	**18.06**	**10.31**	**8.72**	**8.28**
China Everbright Intl	20.21	20.21	20.21	1.39	1.56	1.75	2.26	2.02	1.80	13.88	11.58	9.90	31.56	31.84	37.13	7.95	8.75	8.87	12.31	14.16	14.81	6.52	7.29	7.30
Guangdong Investment	33.39	33.38	33.38	2.99	3.26	3.53	1.34	1.23	1.13	6.21	5.47	4.92	70.45	71.97	68.10	9.90	9.92	9.48	13.13	12.80	11.94	7.37	7.39	7.06
China Water Affairs	45.03	35.30	28.54	1.92	1.99	2.13	1.50	1.45	1.36	12.98	8.72	7.31	31.12	39.67	41.19	8.37	4.48	5.32	13.63	7.63	9.42	4.53	2.51	3.12
Beijing Enterprises Water	-	-	-	0.79	1.25	1.38	2.95	1.88	1.69	17.46	9.77	7.58	9.14	13.79	17.41	6.78	5.44	4.77	13.37	11.71	10.26	4.53	4.04	3.51
Hyflux Limited	21.19	25.00	30.00	0.58	0.68	0.77	3.49	2.98	2.62	10.71	9.63	9.50	20.15	20.12	21.08	9.03	9.35	8.30	23.43	29.79	26.57	6.12	6.39	5.76
Sound Global Ltd	-	-	-	1.45	1.98	2.51	2.80	2.05	1.61	10.42	6.67	4.59	22.56	21.88	21.38	15.02	14.40	15.42	18.92	18.55	16.48	10.06	10.03	10.53
Tianjin Capital	46.99	46.99	46.99	2.42	2.50	2.56	0.91	0.88	0.86	6.78	8.73	10.25	51.67	43.33	38.83	5.24	4.19	3.02	8.59	6.35	4.49	4.24	3.48	2.55
China water average	**23.83**	**22.98**	**22.73**	**1.65**	**1.89**	**2.09**	**2.18**	**1.78**	**1.58**	**11.21**	**8.65**	**7.72**	**33.81**	**34.66**	**35.02**	**8.90**	**8.08**	**7.88**	**14.77**	**14.43**	**13.42**	**6.20**	**5.88**	**5.69**
ENN Energy	25.00	25.00	30.00	5.64	6.49	7.35	4.08	3.34	2.96	11.22	8.58	7.18	19.84	18.13	16.08	9.75	9.90	9.40	18.34	18.75	17.59	5.63	5.61	5.11
Towngas China	15.08	16.86	16.86	3.49	3.69	3.93	1.20	1.13	1.06	11.76	8.81	7.72	21.57	20.74	19.66	4.47	5.45	5.95	5.48	6.55	7.05	3.52	4.38	4.74
China Resources Gas	17.72	20.00	20.00	3.33	3.81	4.37	3.24	2.83	2.47	12.43	8.19	6.81	19.33	20.37	19.26	13.46	12.12	11.87	20.85	16.85	17.11	6.16	6.50	6.43
China Gas	5.30	8.61	8.63	1.23	1.83	2.04	2.59	1.74	1.56	14.30	9.09	7.10	17.13	14.46	13.79	7.76	5.83	7.11	23.84	12.35	11.96	4.27	3.10	3.70
Beijing Enterprises	30.81	30.82	30.82	29.23	31.33	33.69	1.33	1.24	1.15	7.98	7.37	6.87	16.91	15.29	14.84	6.66	7.27	7.59	8.48	9.47	10.07	4.46	4.91	5.18
China gas average	**18.78**	**20.26**	**21.26**	**8.58**	**9.43**	**10.28**	**2.49**	**2.06**	**1.84**	**11.54**	**8.41**	**7.14**	**18.96**	**17.80**	**16.73**	**8.42**	**8.11**	**8.38**	**15.40**	**12.79**	**12.75**	**4.81**	**4.90**	**5.03**
China High Speed	30.56	30.56	30.56	5.77	6.75	7.91	1.39	1.19	1.01	6.54	6.02	5.45	25.30	24.91	23.40	17.04	16.11	15.94	23.42	20.96	21.32	11.00	10.74	11.03
China Longyuan	19.97	19.97	19.97	3.12	3.41	3.73	2.24	1.94	1.78	15.35	11.83	9.96	37.51	52.61	53.44	4.96	4.84	3.84	8.94	10.62	10.81	2.83	3.01	2.62
China wind average	**25.26**	**25.26**	**25.26**	**4.44**	**5.08**	**5.82**	**1.81**	**1.56**	**1.40**	**10.94**	**8.93**	**7.70**	**31.41**	**38.76**	**38.42**	**11.00**	**10.48**	**9.89**	**16.18**	**15.79**	**16.07**	**6.91**	**6.88**	**6.82**
Shanghai Electric	29.99	29.99	29.99	2.11	2.29	2.50	1.65	1.42	1.31	11.76	9.28	8.28	7.12	8.25	8.54	10.40	10.55	11.01	11.25	11.35	11.83	3.48	3.69	3.85
Dongfang Electric	10.02	10.02	10.02	5.51	6.86	8.33	4.58	3.46	2.85	19.98	14.79	13.55	10.08	11.01	11.07	25.70	23.54	21.03	26.42	23.93	21.35	4.04	4.09	4.12
Harbin Power	18.81	18.81	18.81	7.00	7.50	8.05	1.13	0.99	0.93	8.05	7.79	7.46	6.07	5.72	5.63	8.73	6.97	6.81	11.21	8.85	8.61	2.53	2.21	2.15
China equipment average	**19.61**	**19.61**	**19.61**	**4.87**	**5.55**	**6.29**	**2.46**	**1.96**	**1.69**	**13.26**	**10.62**	**9.76**	**7.76**	**8.33**	**8.41**	**14.95**	**13.68**	**12.95**	**16.29**	**14.71**	**13.93**	**3.35**	**3.33**	**3.37**
Korea Electric Power	-	22.76	69.96	64,302.12	66,793.42	72,377.03	0.46	0.44	0.41	7.14	8.95	7.78	19.78	14.89	16.55	(0.10)	(0.80)	0.04	(0.18)	(1.46)	0.07	(0.07)	(0.60)	0.03
Korea Gas	30.00	30.00	30.00	60,105.82	63,132.88	67,894.92	0.62	0.59	0.55	13.58	12.39	11.56	6.66	7.16	6.71	1.13	1.39	2.00	4.75	6.28	9.04	0.76	0.90	1.32
Korea utilities average	**15.00**	**26.38**	**49.98**	**62,203.97**	**64,963.15**	**70,135.98**	**0.54**	**0.52**	**0.48**	**10.36**	**10.67**	**9.67**	**13.22**	**11.03**	**11.63**	**0.51**	**0.30**	**1.02**	**2.29**	**2.41**	**4.56**	**0.34**	**0.15**	**0.68**
E-Ton Solar Tech	-	-	-	41.64	43.75	46.67	0.63	0.60	0.56	31.09	11.08	8.43	8.82	7.99	9.42	(13.80)	2.58	3.44	(26.56)	4.95	6.44	(11.29)	2.05	2.68
Motech Industries	56.91	38.35	37.33	67.11	75.94	86.70	1.45	1.28	1.12	5.18	4.50	4.05	17.63	17.01	17.03	18.78	17.06	15.46	23.65	20.05	18.12	14.14	12.75	11.46
Taiwan solar average	**28.46**	**19.17**	**18.66**	**54.38**	**59.85**	**66.68**	**1.04**	**0.94**	**0.84**	**18.13**	**7.79**	**6.24**	**13.23**	**12.50**	**13.23**	**2.49**	**9.82**	**9.45**	**(1.45)**	**12.50**	**12.28**	**1.42**	**7.40**	**7.07**
Indonesia																								
Perusahaan Gas Negara	54.44	63.85	61.29	572.10	710.30	841.21	7.04	5.67	4.78	9.27	8.56	7.63	54.21	55.22	54.36	26.94	28.29	28.03	48.74	45.64	39.51	20.54	21.33	20.83
Glow	54.37	55.42	50.01	23.13	24.84	27.70	2.24	2.08	1.87	14.43	14.10	8.09	25.09	25.67	31.16	6.05	5.12	6.57	15.78	15.12	18.89	5.33	4.50	5.61
Electricity Generating	38.06	40.37	43.59	104.28	111.81	118.48	0.91	0.85	0.80	4.84	4.76	4.75	55.32	51.25	47.23	11.22	10.07	9.00	13.25	11.69	10.26	10.77	9.72	8.68
Ratchaburi Generating	57.50	57.70	59.20	32.39	34.09	35.71	1.31	1.25	1.19	7.29	6.56	6.36	19.66	19.82	18.86	9.52	9.91	9.89	12.59	12.08	11.39	8.17	8.21	8.13
Thai power average	**49.98**	**51.16**	**50.93**	**53.27**	**56.92**	**60.63**	**1.49**	**1.39**	**1.29**	**8.85**	**8.47**	**6.40**	**33.36**	**32.25**	**32.42**	**8.93**	**8.36**	**8.49**	**13.87**	**12.97**	**13.51**	**8.09**	**7.47**	**7.47**
Tenaga Nasional	33.34	35.30	23.35	5.29	5.67	6.24	1.34	1.25	1.14	6.97	7.49	6.06	25.56	21.63	23.53	6.41	5.85	7.47	11.69	9.78	11.69	4.40	3.96	5.09
YTLP	64.60	62.31	64.37	1.13	1.20	1.26	1.97	1.85	1.76	10.16	9.78	10.05	20.64	20.63	21.12	4.29	5.17	5.01	16.44	16.11	14.95	3.23	3.59	3.46
Malaysia utilities average	**48.97**	**50.06**	**42.27**	**3.21**	**3.44**	**3.72**	**1.58**	**1.48**	**1.39**	**8.28**	**8.27**	**7.98**	**23.10**	**21.36**	**22.31**	**5.35**	**5.56**	**5.89**	**14.06**	**13.03**	**12.78**	**3.82**	**3.81**	**4.05**
Energy Development Corp	34.49	30.00	30.00	1.64	1.97	2.43	3.85	3.18	2.59	15.47	10.50	8.39	39.75	53.78	53.95	6.34	10.87	13.20	13.86	25.42	27.96	4.95	9.59	11.39
Meralco	30.00	35.00	37.50	57.33	68.10	78.63	4.36	3.67	3.18	10.93	8.85	8.48	12.68	14.44	14.18	14.71	16.99	15.94	24.63	26.43	22.96	8.81	10.65	10.12
Philippines utilities average	**32.25**	**32.50**	**33.75**	**29.48**	**35.04**	**40.53**	**4.10**	**3.43**	**2.89**	**13.20**	**9.67**	**8.44**	**26.21**	**34.11**	**34.06**	**10.52**	**13.93**	**14.57**	**19.25**	**25.92**	**25.46**	**6.88**	**10.12**	**10.75**
NTPC	45.89	44.79	45.79	75.72	81.76	87.98	2.63	2.44	2.27	15.12	14.32	12.45	26.57	24.25	25.64	9.06	8.34	7.85	14.57	13.59	13.50	8.05	7.40	6.96
JSW Energy	19.24	-	-	29.15	34.29	42.87	2.35	2.00	1.60	14.24	12.03	6.90	51.54	36.84	41.22	7.43	6.20	8.62	23.82	16.22	22.24	6.22	5.38	7.47
Adani Power	-	-	-	26.50	29.36	39.38	4.19	3.78	2.82	137.87	39.68	11.51	56.07	56.97	61.58	1.44	2.72	6.29	4.22	10.21	29.17	1.32	2.46	5.58
Power Grid	34.48	34.98	37.79	37.87	46.15	50.18	2.67	2.19	2.01	13.28	12.27	10.64	82.35	83.66	83.71	4.37	4.79	4.43	13.36	14.46	13.45	3.46	3.87	3.66
Reliance Power	-	-	-	60.34	61.26	64.71	1.83	1.80	1.70	NA	96.90	40.67	(517.87)	26.82	31.69	4.30	3.34	2.63	4.84	4.90	5.47	4.16	3.16	2.45
Lanco Infratech	-	-	-	13.89	21.37	25.40	2.36	1.53	1.29	9.51	10.75	7.72	18.83	25.94	28.45	4.73	3.25	3.66	16.85	12.06	17.24	3.33	2.24	2.59
India average	**16.60**	**13.24**	**13.61**	**40.58**	**45.74**	**51.85**	**2.65**	**2.28**	**1.93**	**37.94**	**30.74**	**14.80**	**(47.08)**	**42.38**	**45.32**	**5.22**	**4.79**	**5.63**	**12.94**	**11.98**	**16.95**	**4.42**	**4.10**	**4.82**
Australia																								
AGL ENERGY LTD	61.74	60.26	60.40	12.57	13.12	13.55	1.13	1.08	1.05	8.64	8.60	7.77	11.93	11.30	11.62	5.21	6.09	6.76	6.12	7.09	7.95	4.02	4.70	5.22

Note: Ratings and price targets are as of the date of the most recently published report rather than the date of this document. Priced on May 26, 2011 market close. Except Tenaga, Huaneng and Power Grid, which are priced on May 31, 2011 close due to recent rating change.

Source: Bloomberg Nomura estimates

Valuation methodology and key risk

Fig. 148: Sector valuation methodology and key risk (1/3)

Company	Ticker	Valuation methodology	Risks
Adani Power	ADANI IN	We deploy FCFE-based methodology to value operational / under construction / reasonable likelihood power generation projects of the company. In order to capture the risk of a power project from conception to commissioning, we adjust the FCFE value of the projects for 'milestone discounts' (risk weights assigned to the non-achievement of six key milestones we identify for various types of projects). Key assumption of our FCFE model is 13% cost of equity.	Upside risks: 1) increase in tariff/delay in commencement date of 1000MW PPA with GUVNL; and 2) milestone achievements, especially related to fuel security and off-take arrangement. Downside risks: 1) lower-than expected merchant tariff realisation; and 2) lower GCV/higher price of imported coal from Adani Enterprises Ltd (AEL).
AGL Energy	AGK AU	DCF methodology utilising a WACC of 9.3%, a long term growth rate of 3.5%, target debt to equity of 20% and a risk free rate of 5.5%.	Competitors and customer loss, Electricity & gas supply and price, weather dependent, environmental concerns, Emissions trading scheme or carbon tax, potential source of funding.
BEH	392 HK	Our PT of HK$62.7 is based on a sum-of-the-parts (SOTP) valuation, which takes into account the different business nature and risk profile of BJE's investments. We divided BJE into five parts: Piped gas operation. We value the piped gas operation business using a DCF model, which assumes 1% terminal growth and a WACC of 7.7%. Brewery. We value the brewery business using the current market value of 56.48%-owned Yanjing Beer. Water treatment. We value the water business by using our price target of BJ Enterprises Water at HK$3.3. The valuation methodology of BJ Enterprises Water is based on DCF, assuming WACC of 10.5% and terminal growth rate of 2%. Our price target of HK$3.3 is subject to growth assumptions in treatment volumes, tariffs, capacity and capex. Expressway & toll road. We value the toll road business using a DCF model, assuming 0% terminal growth and a WACC of 7.7%.Other. We value the other businesses using EV/EBITDA and market value approaches.	Risks to our positive view include: 1) slower-than-expected sales growth for the gas, water and brewery businesses; 2) unfavourable regulatory changes to these three segments and 3) value-destructive asset acquisitions.
Beijing Enterprises Water	371 HK	Our valuation methodology is based on DCF, assuming a WACC of 10.5% and a terminal growth rate of 2%.	Our target prices are subject to growth assumptions in treatment volumes (including tap water supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our target prices.
Canadian Solar	CSIQ US	We value the company using the YTD average FY11F PER of the module peer group to which we assign a 10% discount to reflect market concerns about slowing growth.	Upside risks to our price target include: 1) Canadian Solar expanding margins ahead of our expectations on the back of faster cost reductions; and 2) faster sales diversification enabling it to improve market share. Downside risks to our price target: 1) Execution delays at its upstream integration into wafers; and 2) faster-than-expected subsidy reductions at European countries resulting in our worst-case demand scenario.
China Coal	1898 HK	Our PT is based on SOTP valuation, with a WACC of 11.6% and terminal growth rate of 2.5% for coal business DCF, while employing 9.4% WACC and 1% growth rate for equipment operation; 11.6% WACC and 1% terminal growth rate for coking operation	Upside risk includes: 1) Bigger-than-expected output growth and 2) higher-than expected contract price. Downside risk includes: 1) lower-than-expected spot price increase; 2) weaker coal demand due to weaker-than-expected economic growth in China and 3) higher-than-expected cost hike due to resource tax and inflation.
China Everbright Intl	257 HK	Our price target is derived using DCF, with a WACC of 10.0% and a 2% terminal growth rate.	Our target prices are subject to growth assumptions in treatment volumes (including tap water supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our target prices.
China Gas	384 HK	Our price target of HK$3.70 is based on DCF valuation, assuming 0% terminal growth, and a WACC of 7.6%. We do not incorporate any unapproved or unannounced development projects or future acquisitions, or any projects without specified commencement date.	Upside risks to our price target include: 1) higher than-expected gas volume sales to higher margin C&I and vehicle users; 2) value constructive acquisition; 3) continuous picking up for the LPG business margin and volume; and 4) possibility of being an acquisition target amid industry consolidation in the long-term.
China High Speed	658 HK	Based on DCF valuation, with a WACC of 9.5% and terminal growth of 1% after FY2020F.	Uncertainty of government policies for wind power; tightening global credit market; development of direct-drive wind turbine technology; the company's failure to improve technology to compete with foreign competitors; severe shortage of raw materials; delay in capacity expansion.
China Power Intl	2380 HK	Our revised price target HK$2.00 is based on DCF valuation, assuming 1% terminal growth, and a WACC of 7.4%	Our price target is subject to growth assumptions in power demand, tariffs and capex. Delays in revising electricity tariffs and lower than expected power demand may result in key changes in our forecasts, and hence our price target.
China Resources Gas	1193 HK	Our price target of HK$14.8 is based on a sum-of-the-parts (SOTP) valuation, of which HK$12.29 comes from the existing 41 projects and HK$2.50 from to-be-injected projects. For the to-be-injected projects, we assign a 50% discount to DCF value to reflect uncertainty over the timing and consideration.	We have a positive view on the company's overall operation, but are wary of a macro slowdown and the implications on commercial and industrial (C&I) demand. Meanwhile, the value from future asset injections would be hurt by higher-than-expected considerations, in our view.
China Resources Power	836 HK	Our revised price target HK$14.94 is based on DCF valuation, assuming 1% terminal growth, and a WACC of 7.9%	Upside risks include higher-than-expected output growth in coal production. Downside risks include: 1) delays in revising electricity tariffs; and 2) lower-than-expected power plant utilisation.
China Shenhua	1088 HK	Our PT is based on SOTP valuation, with a WACC of 11.4% and terminal growth rate of 2.5% for coal segment DCF valuation, while employing 10.0% WACC and 1% terminal growth rate for non-coal segments.	Downside risk includes: 1) lower-than-expected spot price increase; 2) weaker coal demand due to weaker-than-expected economic growth in China and 3) higher-than-expected cost hike due to resource tax and inflation. 4)worse than expected sales mix.
China Water Affairs	855 HK	Our price target is based on the sum-of-the-parts valuation methodology. We value the core business from water and infrastructure to deliver a DCF value of HK$3.10/share by employing a WACC of 10.5% with a 2% terminal growth rate (up from 0% growth rate). Our price target factors in value from CWA's landbank – at HK$1.0/share.	Our target prices are subject to growth assumptions in treatment volumes (including tap water supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our target prices.
CKI	1038 HK	Our valuation is based on sum-of-the-parts methodology, using an 8% cost of equity for assets in Australia, Canada, New Zealand and the UK businesses, and 9% cost of equity for its China and HK materials businesses.	Downside risk includes: 1) lower-than-expected spot price increase; 2) weaker coal demand due to weaker-than-expected economic growth in China and 3) higher-than-expected cost hike due to resource tax and inflation. 4)worse than expected sales mix
CLP Holdings	2 HK	DCF based on a WACC of 7.3% and a terminal growth rate of 1.5%.	Upside risks: Listing of its Indian or Australian assets; better-than-expected performance of its overseas business. Downside risks: Lower SOC capex in Hong Kong, poor operating results from overseas investments, potential write-down on its Yallourn plant, and earnings risks from the carbon trading scheme in Australia.
Datang Intl	991 HK	Our price target HK$2.79 is based on DCF valuation, assuming 1% terminal growth, and a WACC of 7.4%. We have not incorporated coal assets, coal-to-gas and coal-to-chemical businesses valued at HK$4.41 due to low visibility.	Any contribution from the coal-to-chemical and coal-to-gas projects could provide upside to our estimates. Downside risks include: 1) delays in revising electricity tariffs; and 2) lower-than-expected power plant utilisation.
Dongfang Electric	1072 HK	Our TP of HKD 34.4 is derived based on DCF with a WACC assumption of 6.22% and a terminal growth rate assumption of 2%.	Downside risk to our target price include: 1) Delay in nuclear development 2) Unanticipated decrease in domestic power equipment demand and 3) Increase in raw material cost, if not passed through, pressuring gross margin.
EDC	EDC PM	DCF-based price target assumes a WACC of 9.5% and a terminal growth rate of 2%. The cashflows are discounted back to FY11F	1) faster-than-anticipated progress in securing foreign new-build projects and 2) additional asset acquisitions (notably Unified Leyte's PPA) as the key upside risks to our call. Significant discontinuities in the Philippines' regulatory environment – while in our view a remote possibility – would be the key downside risk.
Electricity Generating	EGCO TB	We value EGCO using DCF with WACC = 7.5% and terminal growth assumption of 1.5%.	Political unrest and uncertainty surrounding PPA extension, although we have assumed that neither REGCO nor KEGCO's PPAs are lengthened.
ENN Energy	2688 HK	Our price target of HK$24.1 is based on DCF valuation, assuming 0% terminal growth, a one-year forward FX rate of HK$1.25:RMB1 and a WACC of 8.3%. We do not incorporate any unapproved or unannounced development projects or future acquisitions, or any projects without a specified commencement date (such as the Vietnam project).	Downside risks to our price target include: 1) slower-than-expected new connection and gas sales growth; 2) margin squeeze by cost pass-through delay; Upside risks include: 1) higher-than-expected gas volume sales to higher-margin commercial and industrial customers and vehicle users; 2) value-constructive asset injection / acquisition; and 3) possibility of being an acquisition target amid industry consolidation in the long-term.
E-Ton	3452 TT	We use the industry average P/B and apply a 20% discount to reflect the company's stretched balance sheet.	Upside risks to our price target include: 1) E-Ton's raising additional funding at attractive rates, and; 2) a faster-than-expected ramp-up of new R&D projects helping improve cost structure meaningfully.
GCL Poly	3800 HK	We use the peer average ROE adjusted FY11F P/BV [average PBV(x) / ROE(%)] to value GCL for a target FY11F P/BV of 4.5x. On an FY11F BV of HK$1.53, we set our price target at HK$7.	Downside risks could come from: A worse-than-expected slow-down in demand in global markets not offset by drop in ASPs (possibly owing to freeze in project financing), as this may result in: 1) Lower-than expected volume shipments, and; 2) Faster ASP declines resulting in margin squeeze.
Glow	GLOW TB	We value Glow Energy using a FCFE valuation methodology with a COE of 10.8% and a terminal growth rate assumption of 1.5%.	Key downside risks to our view include: weaker-than-anticipated industrial demand, and project delays and sentiment-related sell-downs stemming from Thailand's political unrest, which we believe will distract government from addressing construction delays in the MTP Industrial Estate, where essentially all of Glow's operations are concentrated.
Guangdong Investment	270 HK	Our PT is derived from DCF using a WACC of 9.5% and a 2% terminal growth rate.	Our target prices are subject to growth assumptions in treatment volumes (including tap water supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our target prices.
Harbin Electric	1133 HK	Our TP of HKD8.90 is based on DCF, assuming a WACC of 7.4% and terminal growth rate of 2%.	Upside risks to our target price include: 1) Higher than expected thermal equipment demand 2) Unexpected ramp up in its nuclear equipment production capacity and 3) Unanticipated wind equipment demand Downside risks to our target price include: 1) Rise in material cost, if not passed through, puts downward pressure to gross margin.
Hong Kong & China Gas	3 HK	SOTP valuation, which implies 22x FY10F P/E (3.1x book) for the Hong Kong Towngas business, 32x FY10F P/E (2.1x book) for the China business and no NAV discount for the property portfolio.	Upside risks include acquisitions of more projects in China and share buy-backs. Other risks include regulatory risks, larger-than-expected mark-to-market loss of investment securities and investment property write-down.
Hongkong Electric	6 HK	DCF based on WACC of 6.7% and 1.0% terminal growth rate.	Strengthening of the US dollar, lower-than-expected SOC capex spent during FY09-13F and poor operating performance at overseas projects.

Source: Nomura Research

Fig. 149: Sector valuation methodology and key risk (2/3)

Company	Ticker	Valuation methodology	Risks
Huadian Power Intl	1071 HK	Our price target HK$1.62 is based on DCF valuation, assuming 1% terminal growth, and a WACC of 7.9%	Upside risk to our price target includes: Huadian expects to enjoy the fastest rebound in terms of financial performance upon any sector recovery, given its highly sensitive to coal price and interest rate characteristics. Downside risks include: 1) delays in revising electricity tariffs; and 2) lower-than-expected power plant utilisation.
Huaneng Power Intl	902 HK	Our price target HK4.78 is based on DCF valuation, assuming 1% terminal growth, and a WACC of 7.9%	Upside risks include any coal investment or injection from the parent. Downside risks include: 1) delays in revising electricity tariffs; and 2) lower-than-expected power plant utilisation.
Hyflux Limited	HYF SP	Our S$2.33 price target is based on a DCF valuation, with a WACC of 7.8% and a terminal growth rate of 2%.	Our target price is subject to growth assumptions in treatment volumes (including tap water supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our target price.
JA Solar	JASO US	We use the average forward P/E of cell peers in YTD-FY10 to value the company and give JA Solar a 10% discount to reflect concerns on slowing end-market demand in 2H11F	Upside risks to our price target include: JA Solar being able to expand margins ahead of our expectations as it increases its module business. Downside risks to our price target: 1) slower market share gains in new regions; and 2) demand at new growth centres being unable to offset lower demand from Germany.
JSW Energy	JSW IN	We deploy a FCFE-based methodology to value operational / under construction /reasonable likelihood power generation projects of the company. We adjust the FCFE value of the projects for 'milestone discounts' (risk weights assigned to the non-achievement of six key milestones we identify for various types of projects). The key assumption of our FCFE model is a 14% cost of equity.	Risks: 1) higher merchant tariff realizations; 2) addresses near-term exposure to imported spot coal; and 3) fall in spot prices of imported coal.
Korea Electric Power	015760 KS	Our price target of W40,000 is based on an EV/MW target (valuation methodology unchanged) of US$850,000, near the median of KEPCO's post-IPO 20-year EV/MW capacity range. With the impending fuel cost escalation scheme (implementation in July 2011), we think this new positive tariff scheme will exert more impact on KEPCO's share price than short-term earnings disappointments such as that expected in FY10F. Our valuation method and price target are not affected by FY10F earnings, as those are not earnings-based measures.	1) essentially all of KEPCO's earnings are denominated in won, while almost all of its fuel costs are in US dollars, exposing earnings to the volatility of the forex and energy markets; and 2) changes in the government's electricity tariff policy and the macro backdrop can also have a large impact on KEPCO's earnings. Further, earnings are highly leveraged to revenue growth, which poses a direct risk if the street cuts the sales forecasts.
Korea Gas	036460 KS	SOTP methodology based on NAV estimate of W52,091 per share, which comprises W26,267 for Kogas' core NG business, W24,071 for its E&P projects and W1,753 for its affiliates. Each of the first two parts is separately calculated using a discounted cashflow (DCF) methodology, while the last part is calculated based on 1x of book value.	Risks: 1) essentially all of Kepco's earnings are denominated in won, while almost all of its fuel costs are in US dollars, exposing earnings to the volatility of the forex and energy markets; and 2) changes in the government's electricity tariff policy and the macro backdrop can also have a large impact on Kepco's earnings. Further, earnings are highly leveraged to revenue growth, which poses a direct risk if the street cuts the sales forecasts.
Lanco Infratech	LANCI IN	We use a sum-of-the-parts (SOTP) valuation methodology for Lanco. 1) EPC/Construction: PV of FY12F-14F FCF – effectively the FCF from existing Rs270bn order backlog at 14% CoE Previously at 8x FY12E P/E; 2) Power: Milestone-adjusted FCFE valuation at 14% CoE; 3) Power Trading: 7x FY12F P/E; 50% discount to FY12 consensus P/E multiple of for PTC India; 4) Real Estate: 30% discount to NAV calculated using 20% WACC 5) Toll Roads: DCF at 15% CoE. No discount assumed as we now value only the FCF of existing EPC order backlog, remaining equity in power business not dependent on EPC cashflows	The key risk to our earnings / PT stems from the high dependence of 83% of its target 7.0GW coal-fired capacity (60% of its target 3000MW capacity up to FY13) on domestic linkage coal – specifically, the extent up to which Lanco can supplement potential supply shortfall of linkage coal by securing e-auction and/or imported coal.
LDK	LDK US	We use the average forward P/E of wafer peers' YTD-FY10 to value the company and assign a 10% discount to reflect market concerns about slowing growth.	Downside risks: 1) execution risks and cost over-runs for LDK's polysilicon production plant and expansion into the downstream segment; 2) negative surprises from government policy changes; and 3) earnings dilution from any equity offering. Upside risks: 1) stake sale in polysilicon plant which could help reduce balance sheet issues; and 2) faster-than-expected cost reduction in their downstream operations.
Longyuan	916 HK	Our PT is based on DCF valuation, assuming 1% terminal growth and WACC of 11.8%.	Upside risk includes 1) faster-than-expected capacity expansion, due to improvement in the grid situation; and 2) an unexpected drop in wind turbine price, thus reducing cost. Downside risk includes 1) unexpected failure of wind equipment, given short operating time of Chinese turbines; and 2) uncertainties from wind subsidies and policies.
Meralco	MER PM	DCF with WACC= 9.1% and terminal growth assumption of 1.5%	Further inflated bids for Meralco's shares
Motech	6244 TT	We use the average forward P/E of cell peers in YTD-FY10 to value the company and give Motech a 25% premium, due to its strong balance sheet and stake-holding by TSMC.	Upside risks: Motech being able to expand margins ahead of our expectations on the back of faster cost reductions and stronger ASPs in FY11F. Downside risks: 1) slower market share gains in new regions; and 2) demand at new growth centers being unable to offset lower demand from Germany.
NTPC	NATP IN	We use a residual income model to value the company. Key assumptions of our model are 1) Cost of equity - 12%; 2) Terminal RoE - 20%; and 3) terminal growth rate - 2%.	Risks: 1) Project execution delays; 2) lower coal supplies under already signed FSAs/LoAs; 3) reinvestment risk; and 4) adverse regulatory changes.
Perusahaan Gas Negara	PGAS IJ	Our IDR 4,800 DCF-based price target assumes a WACC of 9.5% and a terminal growth rate of 3%. The cashflows are discounted back to FY11F	Key downside risks to our view include a continued strengthening of the IDR relative to the USD, weaker-than-anticipated realised gas distribution flows and an inability to pass on what we expect will be a marked rise in future gas costs to
Power Grid	PWGR IN	We use a residual income model to arrive at our TP of Rs120. Key assumptions of our model are 1) Cost of equity - 12.5%; 2) Terminal RoE - 17%; and 3) Terminal growth rate - 3%.	Risks: 1)lower-than-expected capitalization of transmission assets due to execution delays (scalability, vendor ramp-up, turnkey workforce) and/or impediments in securing Right-of-Way (RoW) / forest clearance; 2) sharp push-back in generation capacity addition delaying capitalization of related transmission assets; and 3) overhang of a potential equity dilution in FY2014/15 in case annual capex exceeds our forecast by 15-20%.
Ratchaburi Generating	RATCH TB	We value Ratchaburi electric using a DCF methodology with WACC = 7.0% and terminal growth assumption of 1.5%.	Political unrest, problems with the execution of Ratch's growth pipeline in Laos
Reliance Power	RPWR IN	FCFE-based valuation methodology with 15% cost of equity (Rf =8%, Rm=6%, Beta=1.17)	1) Unadjusted for milestone discounts, of Rs186/share; ceteris paribus, our PT could rise as projects achieve milestones. 2) We factor feasible capacity of 25.7GW in our earnings forecasts, greater visibility on planned capacity addition of around 17GW could merit its inclusion in our earnings forecast, potentially lifting our PT. 3) We assume no thirdparty sale of 'surplus' coal from RPWR's domestic captive coal mines or from coal concessions in Indonesia.
Shanghai Electric	2727 HK	Our target price of HKD 4.90 is derived on DCF with a WACC assumption of 7.26% and a terminal growth rate assumption of 2%.	Downside risk to our target price include: 1) Delay in nuclear development 2) Slower than anticipated thermal equipments demand 3) Higher than expected rise in raw material cost 4) Unanticipated slowdown in property development and thus, elevator demand in China.
Solargiga	757 HK	We use the average FY10 and FY11F P/B of global peers to value the company	Upside risks to our price target: 1) Margin expansion ahead of our expectations on the back of faster cost reductions; and 2) earnings upside from the Qinghai Chenguang investment.
Sound Global	967 HK	Our PT is based on a sum-of-the-parts valuation, valuing the EPC division using a 15xP/E (which is the stock's historical average since 2006) over FY11F EPS, and the BOT division based on NAV assuming a replacement cost of RMB1,500 per m3 of daily capacity.	Risks to our investment view. Our price target is subject to growth assumptions in treatment volumes (including tapwater supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our price target .
Suntech Power	STP US	We value the company using the YTD average FY11F PER of the module peer group to which we assign a 10% discount to reflect market concerns about slowing growth.	Downside risks to our price target: 1) Slower market share gains in new regions and 2) demand at new growth centres being unable to offset lower demand from Germany.
Tenaga Nasional	TNB MK	We value TNB using a 14.5x forward P/E multiple applied to our FY12F normalised EPS estimate (methodology and multiple unchanged).	We believe the key downside risks to our view include weaker than-anticipated volumes and higher-than-expected coal costs without an upward adjustment to Tenaga's tariffs. On the upside, an automatic pricing mechanism and or base tariff review should support a strong re-rating of this name.
Tianjin Capital	1065 HK	DCF with a WACC of 12.0% and no terminal growth rate.	Our target prices are subject to growth assumptions in treatment volumes (including tap water supply, wastewater treatment, and waste-to-energy), tariffs, capacity and capex. Changes in the macro landscape and government regulations over the water industry may result in key changes in our forecasts, and hence our target prices.
Towngas China	1083 HK	Our price target of HK$3.90 is based on DCF valuation, assuming 1% terminal growth and a WACC of 7.0%. We do not incorporate any unapproved or unannounced development projects or future acquisitions, or any projects without a specified commencement date. In addition, we have not factored in any wellhead price hike, nor downstream tariff hike in our assumptions, as we assume any wellhead price hike can be fully passed through to end users and a fixed dollar margin can be maintained.	Downside risks to our price target include: 1) slower-than-expected new connection and gas sales growth; 2) margin squeeze by cost pass-through delay; and 3) value destructive asset injection / acquisition. Upside risks include: 1) higher-than-expected gas volume sales to higher margin C&I and vehicle users; and 2) value-constructive asset injection / acquisition.
Trina Solar	TSL US	We value the company using the YTD average FY11F PER of the module peer group to which we assign a 10% discount to reflect market concerns about slowing growth.	Downside risks to our price target: 1) slower market share gains in new regions; and 2) demand at new growth centres being unable to offset lower demand from Germany.
Yanzhou Coal	1171 HK	Our PT is based on SOTP valuation, with a WACC of 10.9% and terminal growth of 2.5% for coal segment DCF, while employing 9.2% WACC and 1.0% terminal growth rate for non-coal segments.	Key risk includes: 1) lower than expected spot price increase, 2) weaker coal demand due to weaker than expected China economy growth, and 3) higher than expected cost hike due to resources tax, smaller than expected cost cutting in Felix and Zhaolou and inflation risk and 4) FX risk
Yingli Green	YGE US	We value the company using the YTD average FY11F PER of the module peer group to which we assign a 10% discount to reflect market concerns about slowing growth.	Downside risks to our price target: 1) slower market share gains in new regions, and; 2) demand at new growth centres being unable to offset lower demand from Germany.
YTL Power International	YTLP MK	We value YTLP using a SOTP valuation based on COE of 9.0% for Malaysia, and 17% for Indonesia. We value Wessex Water at 1.08x FY11F RAB and PowerSeraya at 11.5x EV/EBITDA.	Key risks include the Malaysian regulatory environment; exchange rate risk, specifically relating to YTLP's Wessex Water in the UK.

Source: Nomura Research

Fig. 150: Sector valuation methodology and key risk (3/3)

Company	Ticker	Valuation methodology	Risks
Alstom	ALO FP	Our price target of EUR49 is based on our EVA®-based methodology, applying a long-term sustainable growth rate of 3%, incremental ROIC of 35.0% and a pretax WACC of 11.5%. The benchmark index for this stock is DJ STOXX 600 Industrial Goods and Services.	The key risks revolve around the strength of the power cycle and the execution of large projects.
BHEL	BHEL IN	We continue to value BHEL using a discounted cashflow (DCF) methodology, assuming a cost of equity of 11.5% and a terminal growth rate of 4% (explicit forecast period until FY17F, second-stage growth forecast until FY20F).	Upside risk: A higher-than-expected share of private orders under the 12th and 13th Five-Year Plans. Delays or cancellation in capacity by new domestic equipment manufacturers. Substantial decline in key commodity prices such as steel and copper as almost half of the orderbook is on fixed price contract, in our view. Downside risk: a rise in RM cost/sales in subsequent quarters could lead to earnings cuts and further downside. Continued disappointment to consensus estimates.
GE	GE US	Our price target of $24 is based on ~14.5x our 2012 EPS estimate of $1.65. Given still compressed financial multiples we are assuming a lower P/E on GECS at this stage. The benchmark for this stock is the S&P 500.	Risks to our price target of $24 include credit risk on the GE Capital business, tax legislation, key industrial cycles and healthcare.
Japan Steel Works	5631 JP	Our target price of ¥880, revised down from ¥900, is based on our new 12/3 EPS forecasts of ¥49, versus ¥43 previously.	The main potential downside risks we see are an economic slowdown in developing nations, rapid declines in crude oil prices, yen appreciation against the euro and the won, and nuclear power accidents having a negative impact on the construction of nuclear power plants worldwide. Potential upside risks we see include crude oil prices rising sharply, boosting demand for refining capacity, and depreciation of the yen.
Mitsubishi Heavy	7011 JP	Our target price is ¥465. In light of improvements in the profit structure, especially in the power systems business, we apply a target P/B of 1.2x (average during the last upturn in earnings (Aug 2005–Jul 2007), when P/B rose from 0.7x to 2.0x) to our end-13/3 BPS estimate of ¥386.	Downside risks to our target price include a larger-than-expected fall in profits owing to large cuts to power-generation and aerospace investment resulting from yen appreciation or an economic downturn, increased construction costs for plants (especially for overseas nuclear power plants, where MHI is expected to secure orders), and rises in raw material prices. Earnings could also be negatively impacted in the event of production delays or slower-than-expected orders for MHI's MRJ passenger jet. Furthermore, a deterioration in earnings at equity-method affiliate Mitsubishi Motors could result in valuation losses on MHI's holdings in the company (¥76.5bn in common shares and ¥24.5bn in preferred shares as of end-10/3), or require MHI to invest additional funds in the automaker.
Siemens	SIE GR	Our EUR100 target price is based on a long-term sustainable growth rate of 6%, an incremental ROIC of 28.5% and a pretax WACC of 12.2%.	The key risks revolve around the execution of the project businesses and the earnings of non-core businesses.
Toshiba Plant	1983 JP	Applying a target P/E of around 14x to our 12/3 EPS forecast of ¥94.4 yields a target price of ¥1,350.	Risks that could cause the share price to come in well below our target price include the impact of fluctuating power industry capex and changes in maintenance costs at nuclear power and thermal power plants on the power systems and nuclear power systems segments, and the impact of fluctuating capex at Toshiba-affiliated companies, the public sector, and general industries on the infrastructure & industrial systems segment. We note, however, that with 88% of 10/3 sales coming from operations in Japan, Toshiba Plant Systems & Services is hardly affected by currency fluctuations.

Source: Nomura Research

Shanghai Electric 2727.HK 2727 HK

POWER & UTILITIES

NOMURA
EQUITY RESEARCH

Diversified growth engines

Solid growth in major business lines, pushed up by new energy; BUY

June 2, 2011

Rating Starts at	**Buy**
Target price Starts at4.90	HKD 4.90
Closing price May 26, 2011	HKD 4.09
Potential upside	+19.8%

Action: Initiate with BUY and a TP of HKD4.90

We initiate coverage on Shanghai Electric with a BUY rating and a TP of HKD4.90, as we see growth catalysts that, in our view, have not been factored in.

Catalysts:

- **The most comprehensive nuclear equipment provider in China.** SEG's unique strength in nuclear equipment (reactor internals and forging components) makes it the most comprehensive of the big three, and this should let it capture rising demand, as evidenced by its strong order book (~RMB 36bn of nuclear equipment at 1Q11).
- **Diversified portfolio and defensive in the case of nuclear development delays.** According to our risk analysis, the short-term earnings (FY11F) and net present value/share of SEG stay largely intact in the case of nuclear projects delay, due to SEG's diversified portfolio.
- **Improving product mix and volume for modern services.** The shortened delivery schedule for the USD8.3bn Reliance orders gives rise to modern services' FY11F-13F's revenue. We forecast gross margin to improve to 8.5% for FY11F from 7.1% in FY10 due to better product mix. On top of this, we estimate SEG to have RMB91bn of overseas contracts for this segment, fuelling mid- to long-term growth.

Valuation: positive prospects not in the price

As at 26 May, 2011, SEG is trading at HKD4.09, 13.1x FY11F P/E. This looks undemanding on the back of its 13.3% FY11F-13F earnings CAGR.

31 Dec	FY10		FY11F		FY12F		FY13F
Currency (CNY)	Actual	Old	New	Old	New	Old	New
Revenue (mn)	62,957		70,433		78,451		84,400
Reported net profit (mn)	2,784		3,199		3,631		4,052
Normalised net profit (mn)	2,784		3,199		3,631		4,052
Normalised EPS	0.2		0.2		0.3		0.3
Norm. EPS growth (%)	11.7		13.9		13.5		11.6
Norm. P/E (x)	15.8	N/A	13.1	N/A	11.5	N/A	10.3
EV/EBITDA	11.8	N/A	9.3	N/A	8.3	N/A	7.3
Price/book (x)	1.6	N/A	1.4	N/A	1.3	N/A	1.2
Dividend yield (%)	1.9	N/A	2.3	N/A	2.6	N/A	2.9
ROE (%)	11.3		11.4		11.8		12.1
Net debt/equity (%)	65.7		66.9		63.6		55.9

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

Rising nuclear demand in light of China's energy goal provides growth opportunities for nuclear equipment players.

Nomura vs consensus

Our TP is 8% ahead of consensus, as we are more bullish on Shanghai's mid- to long-term prospects in light of its comprehensive nuclear exposure.

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Key data on Shanghai Electric

Income statement (CNYmn)

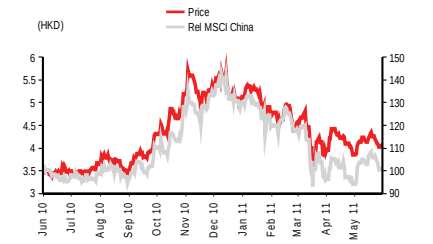
Year-end 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
Revenue	**57,622**	**62,957**	**70,433**	**78,451**	**84,400**
Cost of goods sold	-48,772	-52,679	-58,810	-65,392	-70,290
Gross profit	**8,850**	**10,279**	**11,623**	**13,060**	**14,110**
SG&A	-6,060	-7,022	-7,261	-7,912	-8,173
Employee share expense					
Operating profit	**2,790**	**3,257**	**4,362**	**5,148**	**5,937**
EBITDA	**3,878**	**4,483**	**5,811**	**6,698**	**7,575**
Depreciation	-993	-1,123	-1,346	-1,461	-1,562
Amortisation	-94	-102	-103	-89	-75
EBIT	2,790	3,257	4,362	5,148	5,937
Net interest expense	-59	-52	-41	-46	-50
Associates & JCEs	621	814	814	814	814
Other income	-124	7	0	0	0
Earnings before tax	**3,229**	**4,025**	**5,134**	**5,915**	**6,700**
Income tax	-7	-228	-770	-961	-1,173
Net profit after tax	**3,222**	**3,797**	**4,364**	**4,954**	**5,528**
Minority interests	-768	-1,014	-1,165	-1,323	-1,476
Other items					
Preferred dividends					
Normalised NPAT	**2,453**	**2,784**	**3,199**	**3,631**	**4,052**
Extraordinary items					
Reported NPAT	**2,453**	**2,784**	**3,199**	**3,631**	**4,052**
Dividends	-735	-835	-959	-1,089	-1,215
Transfer to reserves	**1,718**	**1,949**	**2,240**	**2,542**	**2,837**
Valuation and ratio analysis					
FD normalised P/E (x)	18.3	15.8	13.1	11.5	10.3
FD normalised P/E at price target (x)	21.9	19.0	15.7	13.8	12.4
Reported P/E (x)	18.3	15.8	13.1	11.5	10.3
Dividend yield (%)	1.6	1.9	2.3	2.6	2.9
Price/cashflow (x)	6.5	9.2	7.3	5.8	5.5
Price/book (x)	2.0	1.6	1.4	1.3	1.2
EV/EBITDA (x)	15.2	11.8	9.3	8.3	7.3
EV/EBIT (x)	20.0	15.3	11.9	10.4	9.1
Gross margin (%)	15.4	16.3	16.5	16.6	16.7
EBITDA margin (%)	6.7	7.1	8.3	8.5	9.0
EBIT margin (%)	4.8	5.2	6.2	6.6	7.0
Net margin (%)	4.3	4.4	4.5	4.6	4.8
Effective tax rate (%)	0.2	5.7	15.0	16.3	17.5
Dividend payout (%)	30.0	30.0	30.0	30.0	30.0
Capex to sales (%)	3.4	3.6	3.5	3.2	2.9
Capex to depreciation (x)	2.0	2.0	1.9	1.7	1.6
ROE (%)	11.2	11.3	11.4	11.8	12.1
ROA (pretax %)	4.6	5.1	6.0	6.3	6.7
Growth (%)					
Revenue	-2.4	9.3	11.9	11.4	7.6
EBITDA	-11.4	15.6	29.6	15.3	13.1
EBIT	-19.2	16.7	33.9	18.0	15.3
Normalised EPS	-8.7	11.7	13.9	13.5	11.6
Normalised FDEPS	-8.7	11.7	13.9	13.5	11.6
Per share					
Reported EPS (CNY)	0.20	0.22	0.25	0.28	0.32
Norm EPS (CNY)	0.20	0.22	0.25	0.28	0.32
Fully diluted norm EPS (CNY)	0.20	0.22	0.25	0.28	0.32
Book value per share (CNY)	1.80	2.11	2.29	2.50	2.73
DPS (CNY)	0.06	0.07	0.07	0.08	0.09

Source: Nomura estimates

Notes

EPS grows by 13.9% and 13.5% for FY11F and FY12F, respectively.

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (HKD)	1.5	-8.3	17.5
Absolute (USD)	1.3	-8.2	17.8
Relative to index	7.0	-12.7	0.2
Market cap (USDmn)	6,739.2		
Estimated free float (%)	36.9		
52-week range (HKD)	5.88/3.31		
3-mth avg daily turnover (USDmn)	16.65		
Major shareholders (%)			
Shanghai Electric (Group) Corporation	59.2		
Shenzhen Fengchi Investment Co.	7.3		

Note: This market cap is calculated based on the total number of A, H shares and the H share market price only.

Cashflow (CNYmn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
EBITDA	3,878	4,483	5,811	6,698	7,575
Change in working capital	886	787	-3,778	-3,180	-2,361
Other operating cashflow	2,133	-449	3,681	3,751	2,405
Cashflow from operations	**6,896**	**4,820**	**5,714**	**7,269**	**7,619**
Capital expenditure	-1,955	-2,297	-2,500	-2,471	-2,448
Free cashflow	**4,941**	**2,523**	**3,214**	**4,797**	**5,171**
Reduction in investments	-1,354	-117	-620	-665	-493
Net acquisitions	-3,051	-2,342	-2,986	-3,120	-3,136
Reduction in other LT assets	-182	-366	33	32	32
Addition in other LT liabilities	202	-86	0	0	0
Adjustments	4,214	788	2,994	3,132	3,274
Cashflow after investing acts	**4,769**	**401**	**2,635**	**4,177**	**4,847**
Cash dividends	-1,463	-755	-835	-959	-1,089
Equity issue	0	2,221	0	0	0
Debt issue	-424	-154	168	180	134
Convertible debt issue	0	0	0	0	0
Others	-770	1,054	-41	-46	-50
Cashflow from financial acts	**-2,658**	**2,366**	**-708**	**-825**	**-1,006**
Net cashflow	**2,112**	**2,767**	**1,927**	**3,352**	**3,841**
Beginning cash	10,493	12,605	15,372	17,299	20,651
Ending cash	12,604	15,372	17,300	20,651	24,493
Ending net debt	22,274	17,751	19,638	20,377	19,571

Source: Nomura estimates

Notes

Balance sheet (CNYmn)

As at 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
Cash & equivalents	12,605	15,372	17,299	20,651	24,493
Marketable securities	5,453	5,221	5,841	6,506	6,999
Accounts receivable	15,655	18,352	20,531	22,869	24,603
Inventories	19,532	19,872	22,185	24,667	26,515
Other current assets	16,863	18,028	19,393	20,858	21,944
Total current assets	**70,108**	**76,844**	**85,249**	**95,551**	**104,554**
LT investments	2,982	3,331	3,331	3,331	3,331
Fixed assets	12,279	13,461	14,615	15,624	16,510
Goodwill	77	16	16	16	16
Other intangible assets	670	684	582	493	418
Other LT assets	3,510	3,876	3,842	3,810	3,778
Total assets	**89,626**	**98,212**	**107,634**	**118,824**	**128,606**
Short-term debt	32,537	31,102	34,795	38,756	41,695
Accounts payable	12,818	15,968	16,918	18,811	20,221
Other current liabilities	11,970	13,809	14,938	16,149	17,048
Total current liabilities	**57,325**	**60,878**	**66,651**	**73,716**	**78,963**
Long-term debt	2,342	2,021	2,143	2,273	2,369
Convertible debt	0	0	0	0	0
Other LT liabilities	895	810	810	810	810
Total liabilities	**60,562**	**63,709**	**69,603**	**76,799**	**82,141**
Minority interest	6,589	7,500	8,665	9,988	11,464
Preferred stock	0	0	0	0	0
Common stock	12,508	12,824	12,824	12,824	12,824
Retained earnings	9,232	13,344	15,584	18,126	20,963
Proposed dividends	735	835	959	1,089	1,215
Other equity and reserves					
Total shareholders' equity	**22,475**	**27,002**	**29,367**	**32,039**	**35,001**
Total equity & liabilities	**89,626**	**98,212**	**107,635**	**118,825**	**128,606**
Liquidity (x)					
Current ratio	1.22	1.26	1.28	1.30	1.32
Interest cover	47.6	62.2	105.7	111.7	117.8
Leverage					
Net debt/EBITDA (x)	5.74	3.96	3.38	3.04	2.58
Net debt/equity (%)	99.1	65.7	66.9	63.6	55.9
Activity (days)					
Days receivable	88.5	98.6	100.8	101.2	102.6
Days inventory	153.1	136.5	130.5	131.1	132.9
Days payable	85.4	99.7	102.1	100.0	101.3
Cash cycle	156.2	135.4	129.2	132.4	134.2

Source: Nomura estimates

Notes

Customer deposits accounted for as non-interest bearing debt

Company profile

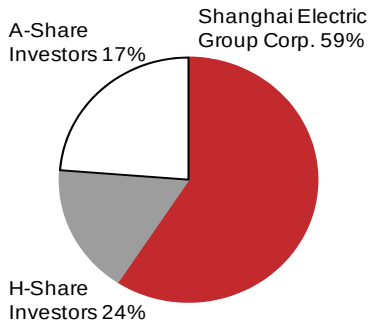
Fig. 151: Company profile

Shanghai Electric is dual-listed in Hong Kong (2727 HK) and Shanghai (601727 CN) Stock Exchange and:

1. is 59% owned by state-owned enterprise Shanghai Electric (Group) Corp.
2. is more diversified than DFE and HPE. Industrial segment (mostly elevator) made up 28% of SEG's revenue in FY10.
3. has exposure to both wind and nuclear equipment.
4. has a market share of 36.7% in nuclear power equipment as at FY10 (in terms of order backlog).
5. is the most integrated nuclear equipment providers in China, with capability in both forging and reactor internals .

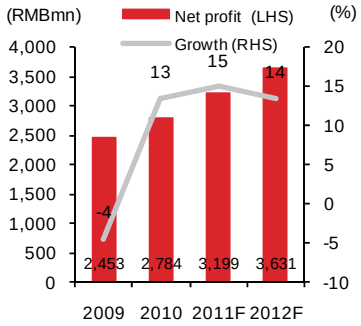
Source: Company, Nomura Research

Fig. 152: Shareholder structure



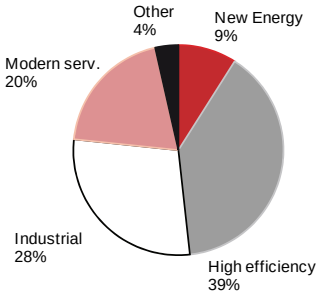
Source: Company

Fig. 153: Net profit trend



Source: Company, Nomura est.

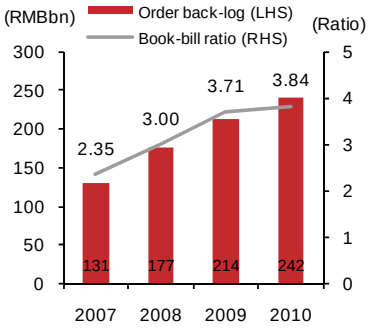
Fig. 154: FY10 revenue contribution



Note: Before inter and intra segment elimination

Source: Company

Fig. 155: Order backlog



Note: For power equipment only

Source: Company

Fig. 156: SWOT analysis

Strength

SEG is the most integrated nuclear equipment producer in the Chinese market, with capability in forging. Head-start in reactor vessel and internal.

Weakness

Currently, gross margin for the wind business is below peers', dragging down SEG's overall gross margin. However, management expects gross margin for this segment to improve as volume ramps up in FY11F.

Opportunity

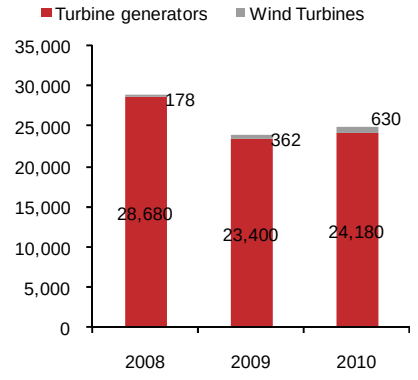
SEG can leverage its unique capability in nuclear to aggressively capture new orders when nuclear project approval suspension is lifted.

Threat

With its exposure to traditional industrial equipment, such as elevator and printing equipment, SEG may be more sensitive to the economic cycle, such as property development, than other plays that are just focused on power equipment.

Source: Nomura Research

Fig. 157: Production output for power generating equipment



Source: Company

Solid growth in major segments, pushed up by new energy

Investment thesis

We initiate coverage on Shanghai Electric Group with a BUY rating and 12-month target price of HKD4.90. In our view, growth catalysts for FY11-12F are among its major business lines. We project 14.9% and 13.5% earnings growth in FY11F and FY12F, respectively. At 26 May, 2011, SEG is at 13.1x FY11F P/E. We note an undemanding valuation, on the back of its 13.3% earnings CAGR for FY11F-13F.

New energy opportunities – the most comprehensive nuclear/wind play; revenue to rise 66% y-y in FY11F

We believe SEG will enjoy strong orders and visibility once the nuclear approval suspension is lifted, given its strong technical capability: 1) the first in China to engage in reactor internals equipment; and 2) the only company of the Big Three to have forging capability. We factor in 30% and 40% revenue growth for the nuclear island segment for FY11F and FY12F, respectively, according to management's guidance. We think such an assumption is on safe ground, given: 1) an expected rise in nuclear island equipment delivery; and 2) these revenues are secured by a delivery pipeline for approved projects. Management guided for margin improvement due to scale, and we factor in 17.0% and 19.0% gross margin for FY11F and FY12F (15.0% in FY10). We think scale economies helped by its in-house forging capacity will buoy gross margin, as the forging process improves.

In our view, wind revenue and gross margin will improve in FY11F, given expected growth in volume driven by strong order flows. According to management, SEG won RMB2bn of new wind orders during 1Q11, together with the RMB4bn order backlog as at FY10; wind orders are RMB5.6bn as at 1Q11, making management guidance of RMB5bn in wind revenue for FY11F seem achievable. We believe gross margin is set to improve to 11.0% and 12.0% for FY11F and FY12F, respectively, given production scale benefits and the mix of higher ASP orders from India this year.

Diversified portfolio and defensive against short-term delay in nuclear development

For reference, according to our risk analysis, SEG's FY11F earnings would fall by 1% and net present value would fall by 0.2% in the case of a half-year delay in nuclear development in China. Shanghai is the most diversified play of the big three, due to SEG's exposure to industrial equipment. As at FY10, industrial equipment (largely elevator products) contributed 28% of SEG's revenue.

Revenue growth and margin expansion on modern services, backed by Reliance's export orders

The USD8.3bn Reliance orders are to be pushed to be delivered in FY11F-13F (vs. the original estimate of a delivery of over ~10 years), giving rise to growth for the modern services business, for which we factor in 11% growth in FY11F and FY12F. Gross margin looks set to improve to 8.5% for FY11F and FY12F, from 7.1% in FY10, driven by the delivery of this order as this order relates to "equipment provider services", which enjoy a higher gross margin than "turnkey services". As at 1Q11, we estimate Shanghai has a backlog of RMB90.56bn in overseas EPC orders, providing sustainable growth for the company's modern services segment.

Growth prospect not fully priced-in

As at 26 May, 2011, SEG was at 13.1x FY11F P/E, in-line with peers' average of 13.6x but lower than Dongfang's 16.0x. In our view, valuation is still cheap, given 1) SEG's

13.3% earnings CAGR for FY11F-13F; 2) the company's unique position to capture nuclear and wind opportunities; and 3) improving revenue and margin for modern services with very strong EPC export order flows (backlog of ~RMB90.6bn export orders in 1Q11). On top of strong growth prospects, SEG looks defensive in the case of a short-term nuclear development delay, due to its size and diversified portfolio, according to our risk analysis. SEG is our top BUY in the sector.

Initiating at BUY, TP of HKD4.90

Stock valuation

We initiate coverage on SEG with a BUY rating and a 12-month target price of HKD4.90, implying potential upside of 19.8%. As at 26 May, 2011, SEG is trading at 13.1x FY11F P/E, versus its peers at 13.6x. Our target price of HKD4.90 is based on DCF with a WACC assumption of 7.26% and a terminal growth rate assumption of 2%.

Fig. 158: Shanghai Electric Group – DCF valuation

FCF (RMB'mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Reporting revenue	70,433	78,451	84,400	89,029	89,980	87,518	89,539	90,882	92,852	94,410
…Growth rate	*12%*	*11%*	*8%*	*5%*	*1%*	*-3%*	*2%*	*2%*	*2%*	*2%*
EBIT (non-IFRIC)	5,176	5,961	6,751	7,025	6,994	6,798	6,874	6,947	7,057	7,136
Depreciation/amortization	1,482	1,583	1,669	1,746	1,810	1,864	1,899	1,928	1,950	1,966
EBITDA	6,658	7,544	8,420	8,771	8,805	8,662	8,772	8,875	9,006	9,102
…EBITDA margin	*9%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
less:tax	(770)	(961)	(1,173)	(1,307)	(1,388)	(1,416)	(1,500)	(1,585)	(1,680)	(1,770)
minority interest	(1,165)	(1,323)	(1,476)	(1,512)	(1,482)	(1,422)	(1,420)	(1,417)	(1,420)	(1,417)
change in working capital	178	1,063	787	608	114	(333)	260	173	256	201
CAPEX	(2,500)	(2,471)	(2,448)	(2,404)	(2,352)	(2,213)	(2,187)	(2,142)	(2,109)	(2,064)
Leveraged FCF	2,400	3,852	4,111	4,156	3,697	3,278	3,924	3,904	4,053	4,053
Growth Rate										2.0%

WACC	Sum of PV (RMB'mn)	PV of TV (RMB'mn)	EV (RMB'mn)	Net cash/ (debt) (FY11F)	Equity Value (RMB'mn)	Shares out ('mn)	Value per share (HK$)
6.40%	28,411	53,754	82,165	(19,638)	62,527	12,709	6.17
6.50%	28,299	52,117	80,416	(19,638)	60,778	12,709	6.00
6.60%	28,188	50,556	78,743	(19,638)	59,105	12,709	5.83
6.70%	28,077	49,064	77,142	(19,638)	57,503	12,709	5.67
6.80%	27,968	47,639	75,607	(19,638)	55,968	12,709	5.52
6.90%	27,859	46,275	74,134	(19,638)	54,496	12,709	5.38
7.00%	27,751	44,969	72,720	(19,638)	53,082	12,709	5.24
7.10%	27,643	43,719	71,362	(19,638)	51,724	12,709	5.10
7.20%	27,537	42,519	70,056	(19,638)	50,418	12,709	4.97
7.30%	27,431	41,368	68,799	(19,638)	49,161	12,709	4.85
7.40%	27,325	40,263	67,589	(19,638)	47,950	12,709	4.73
7.50%	27,221	39,202	66,422	(19,638)	46,784	12,709	4.62
7.60%	27,117	38,181	65,297	(19,638)	45,659	12,709	4.51
7.70%	27,013	37,199	64,212	(19,638)	44,574	12,709	4.40
7.80%	26,911	36,253	63,164	(19,638)	43,526	12,709	4.29
7.90%	26,809	35,342	62,151	(19,638)	42,513	12,709	4.19
8.00%	26,707	34,465	61,172	(19,638)	41,534	12,709	4.10
8.10%	26,607	33,619	60,225	(19,638)	40,587	12,709	4.00
8.20%	26,507	32,802	59,309	(19,638)	39,671	12,709	3.91
7.26%	27,473	41,823	69,296	(19,638)	49,658	12,709	4.90

WACC Calculation	
Equity Beta	1.2
Risk Free Rate	3.0%
Equity Risk Premium	6.0%
Country Risk Premium	0%
Cost of Equity	9.9%
Cost of Debt	4.4%
Debt/Capital	40%
Tax	25.0%
WACC	7.3%
Terminal growth rate	2%

Source: Nomura estimates

Fig. 159: Valuation comparison

Company	Ticker	Rating	Price target L. Curr.	Price L. Curr.	Market cap (US$mn)	Fiscal Y/E	P/E (x) 11F	P/E (x) 12F	P/E (x) 13F	PEG 11-13F	P/B (x) 11F	P/B (x) 12F	P/B (x) 13F	Yield (%) 11F	Yield (%) 12F	Yield (%) 13F	Net debt/equity (%) 11F	Net debt/equity (%) 12F	Net debt/equity (%) 13F	RoE (%) 11F	RoE (%) 12F	RoE (%) 13F
China																						
Power equipment manufacturer																						
Shanghai Electric	2727 HK	Buy	4.90	4.09	12,523	Dec	13.1	11.5	10.3	0.9	1.4	1.3	1.2	2.3	2.6	2.9	67	64	56	11.4	11.8	12.1
Dongfang Electric	1072 HK	Buy	34.40	29.75	7,836	Dec	16.0	14.6	12.8	1.2	3.5	2.8	2.4	0.6	0.7	0.8	197	160	127	23.9	21.3	20.2
Harbin Power	1133 HK	Neutral	8.90	9.35	1,654	Dec	11.6	11.1	10.1	n.a.	1.0	0.9	0.9	1.6	1.7	1.9	36	35	31	8.9	8.6	8.8
Average							13.6	12.4	11.1	1.0	2.0	1.7	1.5	1.5	1.7	1.8				14.7	13.9	13.7
Heavy equipment player with exposure to forging parts for nuclear equipment																						
China First Heavy	601106 CH	Not rated	n.a.	5.06	5,095	Dec	22.6	17.6	23.0	0.9	1.8	1.7	1.7	0.5	0.6	0.4	9	15	21	8.1	9.2	7.5
China Erzhong	601268 CH	Not rated	n.a.	10.12	2,634	Dec	34.8	24.1	17.4	0.5	2.7	2.5	n.a.	0.6	0.9	0.7	47.86	38.87	n.a.	6.3	8.7	n.a.
Average							28.7	20.9	20.2	0.7	2.3	2.1	1.7	0.5	0.8	0.5				7.2	9.0	7.5
Wind turbine / components manufacturer																						
China High Speed Transmission	658 HK	Buy	20.00	9.79	1,730	Dec	6.5	5.5	4.4	13.6	1.2	1.0	0.9	4.9	5.9	7.3	36.40	43.38	34.54	21.0	21.3	22.6
Sinovel	601558 CH	Not rated	n.a.	56.93	8,813	Dec	15.4	12.1	6.8	0.3	3.2	2.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19.9	20.5	n.a.
Xinjiang Goldwind	2208 HK	Not rated	n.a.	10.40	5,853	Dec	10.0	9.4	8.6	15.6	1.5	1.3	1.3	2.5	2.6	3.4	net cash	net cash	net cash	17.9	15.6	16.0
Mingyang	MY US	Not rated	n.a.	7.12	875	Dec	5.6	4.8	4.0	0.2	1.3	1.0	0.8	n.a.	n.a.	0.6	net cash	net cash	net cash	22.9	20.3	n.a.
Average							7.5	6.4	4.8	5.9	1.4	1.2	0.7	2.5	2.8	2.8				16.3	15.5	12.9
China Average							15.1	12.3	10.8	4.1	2.0	1.7	1.3	1.9	2.1	2.2				15.6	15.3	14.5
Non-China																						
Power equipment player (incl. forging parts manufacturer)																						
GE	GE US	Buy	24.00	19.22	205,958	Dec	14.1	11.6	n.a.	n.a	1.6	1.5	n.a.	2.8	3.4	n.a.	net cash	net cash	n.a.	11.7	12.9	n.a.
Mitsubishi Heavy	7011 JP	Buy	465.00	381.00	15,812	Mar	42.3	24.9	16.9	0.3	1.0	1.0	0.9	1.6	1.6	1.6	80.00	70.00	70.00	2.3	3.9	5.5
BHI Co. Ltd	083650 KS	Not rated	n.a.	16,000.00	192	Dec	7.4	n.a.	n.a.	n.a	1.9	n.a.	n.a.	1.2	1.2	1.3	57.67	n.a.	n.a.	n.a.	n.a.	n.a.
Doosan	034020 KS	Not rated	n.a.	61,200.00	5,951	Dec	26.5	19.7	11.5	0.3	1.8	n.a.	n.a.	0.8	0.9	1.0	59.06	n.a.	n.a.	n.a.	n.a.	n.a.
BHEL	BHEL IN	Reduce	1,850.00	1,916.65	20,778	Mar	17.5	14.0	13.1	42.1	4.7	3.8	3.2	1.9	2.2	2.4	n.a.	n.a.	n.a.	33.3	29.8	26.4
Japan Steel Works	5631 JP	Neutral	880.00	592.00	2,705	Mar	12.2	12.1	9.3	1.2	1.8	1.6	1.4	4.1	4.2	4.2	30.00	net cash	net cash	14.4	13.2	15.1
Toshiba Plant	1983 JP	Buy	1,350.00	806.00	968	Mar	9.5	8.5	7.7	0.9	0.9	0.8	0.8	1.9	1.9	1.9	net cash	net cash	net cash	9.9	10.1	10.2
Siemens	SIE GR	Neutral	100.00	90.48	58,452	Sep	10.7	9.5	12.4	0.5	2.3	2.1	1.9	4.7	5.3	4.1	net cash	net cash	net cash	19.2	16.7	17.1
Alstom	ALO FP	Buy	49.00	41.34	8,534	Mar	26.5	13.0	10.4	n.a.	3.0	2.6	2.4	1.6	2.6	3.2	34.72	20.19	8.47	15.3	22.2	23.1
Areva SA	CEI FP	Not rated	n.a.	30.25	8,117	Dec	21.2	14.9	14.2	n.a.	1.3	1.2	1.1	0.8	1.5	1.4	n.a	n.a	n.a	5.7	7.5	7.2
Average							18.8	14.3	12.0	7.6	2.0	1.8	1.7	2.1	2.5	2.3				14.0	14.5	14.9
Wind turbine / components manufacturer																						
Hansen Transmissions	HSN LN	Not rated	n.a.	42.50	201	Mar	n.a.	n.a.	18.5	n.a	0.4	0.4	0.4	n.a.	n.a.	0.3	3.25	0.64	net cash	(2.4)	(0.3)	2.2
Gamesa	GAM SM	Suspended	n.a.	6.32	1,097	Dec	22.6	16.7	13.4	0.5	0.9	0.9	0.9	1.2	1.5	2.1	32.04	34.87	36.06	4.2	5.4	6.9
Vesta	VWS DC	Suspended	n.a.	148.70	21,375	Dec	27.4	22.7	17.7	0.5	2.7	2.4	2.1	n.a.	n.a.	0.1	20.94	13.14	5.33	9.6	11.1	13.0
Repower	RPW GR	Not rated	n.a.	131.20	859	Mar	22.8	18.7	16.2	2.2	2.4	2.2	2.0	1.1	1.2	1.6	net cash	net cash	net cash	10.6	11.5	13.5
Suzlon	SUEL IN	Suspended	n.a.	50.05	1,963	Mar	n.a.	39.4	12.3	n.a	1.2	1.3	1.2	n.a.	0.1	0.1	130.56	136.47	119.92	(12.9)	3.0	9.4
Average							24.3	24.4	15.6	1.1	1.5	1.4	1.3	1.1	0.9	0.8				1.8	6.1	9.0
Non-China Average							20.1	17.4	13.4	5.4	1.9	1.7	1.5	2.0	2.1	1.8				9.3	11.3	12.5
International Average							**18.0**	**15.3**	**12.3**	**4.8**	**1.9**	**1.7**	**1.4**	**1.9**	**2.1**	**2.0**				**11.9**	**12.9**	**13.1**

Source: Bloomberg consensus for Not Rated and Rating Suspended securities, Nomura estimates Note: Pricing as of May 26, 2011; for company reporting in Mar, 11F figures are actual if they have reported.

Nuclear: the most comprehensive play to capture market opportunity

Nuclear equipment

We forecast nuclear island equipment revenue to grow 30% and 40% in FY11F and 12F, respectively, on the back of expected rising delivery of nuclear equipment. In light of the current suspension of new nuclear project approval, SEG's nuclear island segment should stay largely intact in FY11F and FY12F, given SEG has RMB20bn of nuclear orders (~50% is nuclear island equipment and the other ~50% is conventional island equipment) from approved projects. As at FY10, SEG had a total nuclear order backlog of RMB37bn.

Overall, we like SEG's nuclear equipment development and believe that it has a lot of upside potential in acquiring strong orders once the state gives new nuclear projects approval, given SEG's:

- **Strong lead in terms of technical capability**

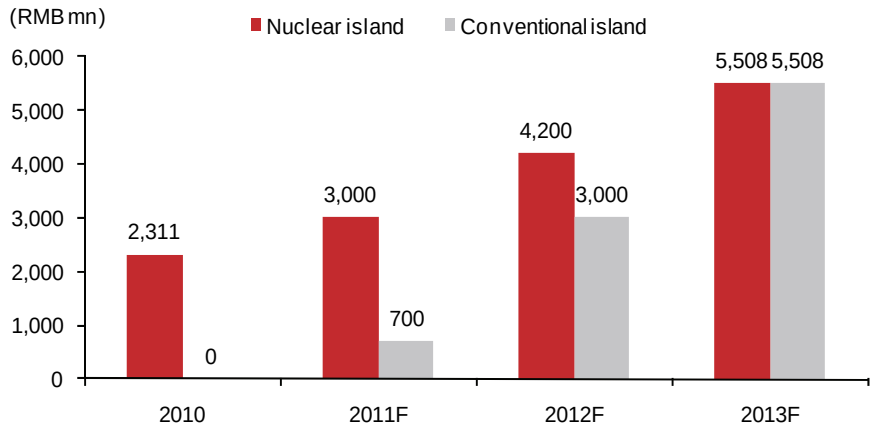
  SEG was the first company to engage in reactor internals of the Big Three, and enjoys near-monopoly status in China for reactor internals, according to management. Moreover, SEG is the only company of the Big Three to sport heavy-duty forging capability to produce forging components for nuclear island equipment.

- **Quick catch-up in market share (measured in order backlog)**

  As at FY08, Shanghai has only RMB15bn order backlog for nuclear orders (vs. Dongfang's RMB22.6bn). However, as at FY10, Shanghai has caught up significantly and has an order backlog of RMB37bn worth of nuclear equipment orders (vs. Dongfang's RMB40bn).

In our view, SEG's competitive advantages will likely stay for a couple of years until other players catch up with its technical development.

Fig. 160: Nuclear equipment revenue forecast (2010-13F)



Source: Company, Nomura estimates

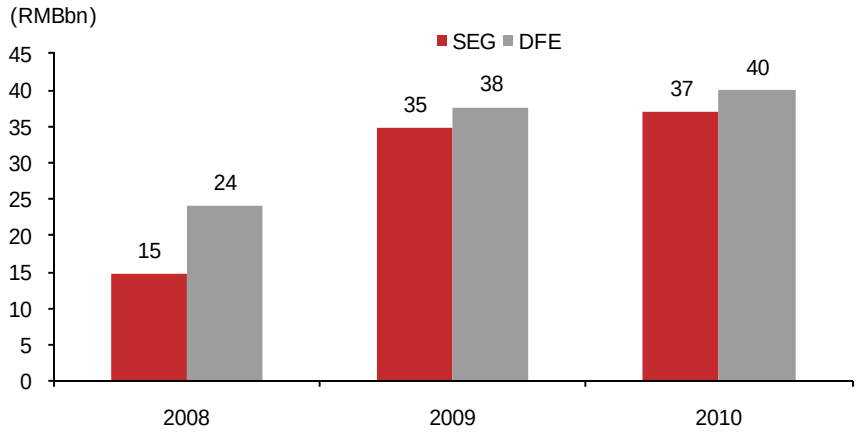
Order backlog on the rise, due to strong capabilities

On the back of SEG's strength in nuclear equipment:

- Unique competencies in reactor internals & rods control and forging capability.
- Being an early technology transferee for AP1000 components.

The amount of nuclear orders for SEG has been on the rise. As at FY10, it has a backlog of nuclear-related equipment orders of RMB37bn, accounting for 38.9% of the nuclear equipment market (measured by amount of order backlogs for major nuclear power equipment). This is close to the amount of DFE's order backlog (RMB40bn as at FY10).

Fig. 161: Nuclear order backlog of SEG and DFE



Source: Company, industry checks

Despite the suspension of nuclear project approval in China, management sees no impact on SEG's nuclear revenue in FY11F and FY12F, as it has RMB20bn of orders from approved projects.

In our view, the Big Three will likely have equal market share in the nuclear equipment market in the long run, similar to the nearly equal shares for the Big Three in the domestic thermal equipment market now. However, as slow players (HEC) are picking up, SEG should enjoy a larger market share, in our view, given that it possessed the manufacturing capabilities earlier than others.

Unique competencies for nuclear equipment

Of the three largest power equipment providers in China, SEG has the most comprehensive product range in nuclear equipment. On top of nuclear and conventional island equipment (the other two companies provide pressurised steam generators, pumps, turbines and turbine generators), SEG has core competencies in:

Reactor internals and rods control mechanism
SEG is the only domestic player producing reactor internals and the rods control mechanism. For these parts, SEG enjoys a near monopoly and a gross margin of as high as 30%, according to management. Even though other nuclear equipment manufacturers will likely catch up over the longer term, SEG should still enjoy the near-monopoly for the next three-four years, given its market share of more than 90% for these components (measured by order back-log, according to management), in our view.

Forging capability
SEG is the only company of the Big Three to have in-house forging capabilities. It has one 16,500MT free-style oil hydraulic press, one of the world's largest, according to the company. This gives SEG access to specific forging components such as the forging parts of pressure vessels and provides upside to its nuclear equipment gross margin as it can develop the forged parts in-house. We see gross margin for nuclear island equipment rising to 17.0% and 19.0% in FY11F and FY12F, respectively, as forging processes and yields improve.

One of the early technology transferees for AP1000

SEG was one of the early participators in the initial AP1000 technology transfer projects carried out by the State Nuclear Power Technology Corporation (SNPTC) – the Sanmen unit 1-2 and the Haiyang unit 1-2. According to industry checks, SEG will produce the pressure vessel and the steam generator for Haiyang unit 2 and the pressuriser for Haiyang unit 1-2, reactor internals and rods control mechanism for Sanmen unit 2 and Haiyang unit 2. Given the amount of AP1000 contracts in the early stage, SEG has a head start in the development of third generation AP1000 equipment.

Wind: quality play in the consolidating market, FY11F revenue at RMB5bn

Wind equipment play

Management guided for revenue of RMB5bn for FY11F (RMB3bn for FY10F) for wind equipment. In our view, this is possible, given:

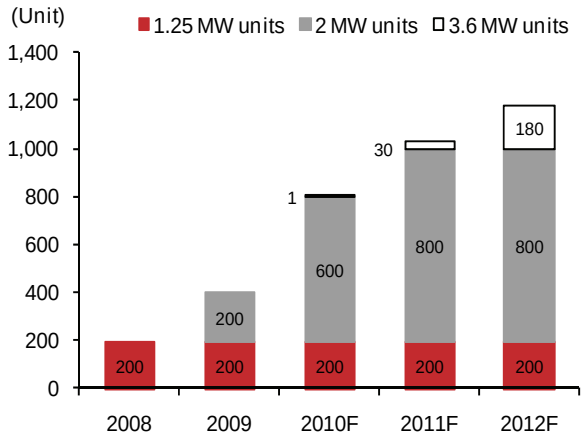
- A RMB2bn new order for wind equipment already came in during 1Q11, according to management, and with an order backlog of RMB4bn at FY10, SEG had RMB5.6bn of wind orders at 1Q11.
- Manufacturing capacity should not be an issue, as SEG has developed and announced its aggressive capacity expansion since 1H10.

Gross margin for the wind business was disappointing at 9.8% for FY10, due to low capacity. We forecast gross margin for wind business to improve to 11.0% and 12.0% for FY11F and FY12F, respectively, a conservative assumption given the industry average of 18-23% for scalable players in FY10.

Aggressive target achievable

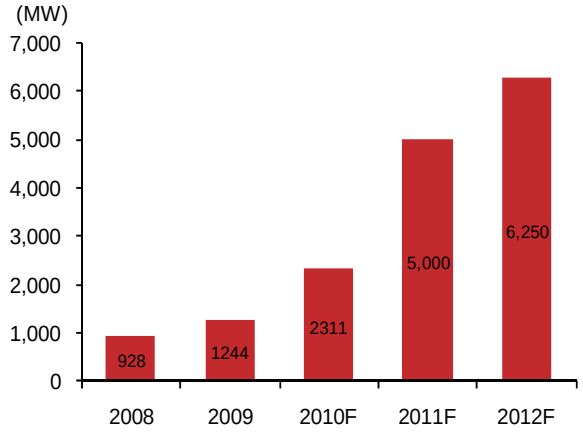
SEG already has one unit of its 3.6MW offshore turbine (Model W3600) grid-connected and in operation. This is by far the largest capacity turbine manufactured by a Chinese player (with self proprietary) connected to the grid, according to management, showing its pace in leading wind industry development.

Fig. 162: Wind turbine capacity expansion plan (units)



Source: Company data

Fig. 163: Wind equipment revenue forecast



Source: Company, Nomura est. Note: Before intra and inter segment elimination

Management targets to have a 25% market share in the offshore turbine market in China in the next five years (which we estimate would be 5GW). We think this is achievable and supported by management's capacity expansion plan, due to:

Strong order inflows: significant growth in the crowded market on high quality
In light of the crowded wind market in FY10, SEG managed to recognise RMB3bn revenue in the wind segment, a 141.6% y-y increase (before intra- and inter-segment elimination). However, due to SEG's aggressive expansion plan, we believe this volume is still low. Management believes that results will improve as volume increases. According to our checks, the quality of SEG's product has been well received by the market. According to management, SEG had new orders of RMB2bn for wind equipment during 1Q11.

Being a well recognised first mover in offshore development

In our view, SEG's effort in high-capacity turbine development is being well received by the market. SEG was awarded a 200MW project in the First National Offshore Concession Projects. Thus, SEG, together with Sinovel and Goldwind, will become the first batch to commence commercial off-shore turbine development. In our view, this does not only show recognition to SEG, but this also provides a solid foundation for SEG to engage in off-shore turbine.

High efficiency and clean energy business to grow 8% in FY11F against headwinds

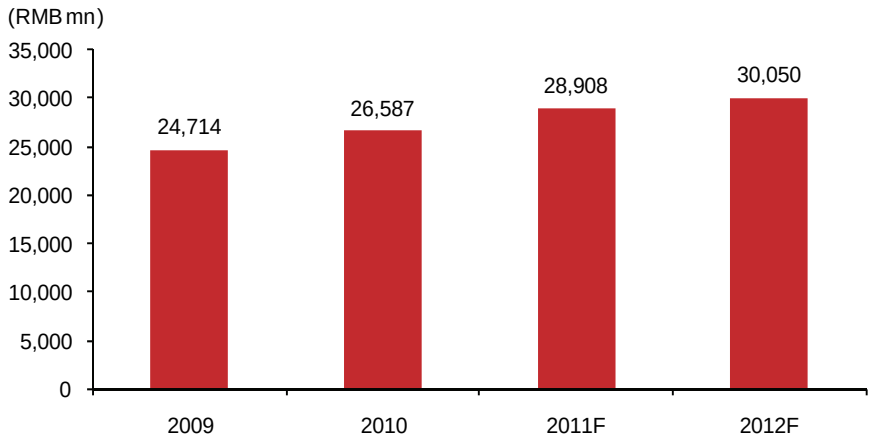
High efficiency and clean energy sector

We believe management-guided growth of 8% in FY11F is achievable, based on:

- Defensive position – backed by strong order backlog

  SEG's order order-to-sales ratio for this business was 5.2 as at FY10, which makes us comfortable in terms of production capacity utilisation and revenue outlook.
- Expected rise in revenue recognised from nuclear conventional island equipment.
- The company has 55% market share in the GW unit, according to management
- Increasing demand for T&D equipment

Fig. 164: High efficiency and clean energy revenue forecast



Source: Company data, Nomura estimates. Note: Before inter-segment elimination

Relies the least on traditional thermal business out of the three

The high efficiency and clean energy sector (largely thermal equipment related) contributed 40.3% of SEG's FY10 revenue. Among the Big Three, SEG has the least exposure to this traditional business, which is susceptible to any domestic thermal equipment demand slowdown.

Back by Reliance orders, modern services provides additional catalyst

Modern services segment

We forecast revenue for this segment to grow 11% for FY11F and FY12F, based on the early delivery of the USD8.3bn Reliance order and solid order flows for the E.P.C. business (order order-to-sales ratio at 7.1 as at FY10).

Gross profit margin is expected to rise to 8.5% level (from 7.1% at FY10) due to better product mix, according to management.

Early delivery provides additional catalyst for FY11-13F revenue
According to management, the USD8.3bn orders from Reliance (36 units of 660MW super-critical thermal power equipment) likely to be pushed for early delivery between FY11F and 13F (vs. the original plan of a delivery schedule of over 10 years). In our view, SEG should have the capability to deliver and this will drive up EPC revenues during FY11F-13F and we forecast 11% growth for FY11F and FY12F to factor in such catalyst.

Better product mix to drive up gross margin
Projects for power plant engineering services can be further split into two broad categories:

- Turnkey projects
- Providing full-set power equipment (including boiler, steam turbine, turbine generators and all subsequent auxiliary equipment)

According to industry checks, a turnkey project has a lower margin than providing a full-set of equipment due to the nature of work.

Management has disclosed that the Reliance order is an “equipment providing” service and thus, such order is likely to drive up the gross margin for this segment in FY11F-13F.

Export visibility fuels long-term growth
As at 1Q11, we estimate SEG to have RMB90.56bn backlog for overseas EPC orders, providing sustainable growth for the companies through the modern services segment.

Risks to our investment view

Where could we go wrong?

Downside risk to our target price include: 1) a delay in nuclear development 2) slower-than-anticipated thermal equipment demand; 3) a higher-than-expected rise in raw material cost; and 4) an unanticipated slowdown in property development and thus elevator demand in China.

Delay in nuclear development

Nuclear equipment is one of the drivers for the growth of the company; SEG's earnings prospects could be impacted should nuclear development see a substantial delay.

Slower-than-anticipated demand for thermal power equipment

As at FY10, the high-efficiency and clean energy sector contributed 40% of the company's revenue. As this sector is highly driven by thermal power equipment demand, the earnings outlook for the company could be worsened if demand came in lower than our anticipation.

Higher-than-expected rise in raw material costs

Given steel / steel-related components make up significant portion to the cost of sales, according to industry checks, an unanticipated hike in material costs / steel costs, if not passed through to customers, could hurt gross margin and earnings for the company.

Unanticipated slowdown in property development

Given SEG's exposure to the elevator business, any unanticipated slowdown in property development in China could drag down elevator's demand, and thus the company's growth.

Valuation methodology
Our TP of HKD4.90 is based on DCF, assuming a WACC of 7.26% and terminal growth of 2%.

Business description

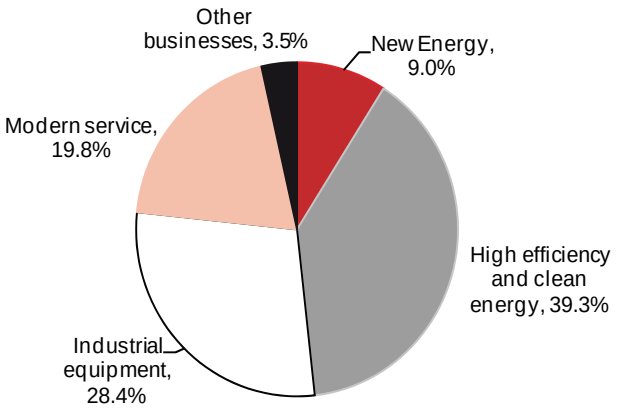
Company profile

Shanghai Electric Group is principally engaged in the design, manufacture and distribution of electric power and industrial equipment. Of the entire product lineup, power equipment and elevators contribute the most. The company is involved in five main sectors, namely 1) New energy, 2) High-efficiency and clean energy, 3) Industrial equipment, 4) Modern services and 5) Others.

Compared to its peers, Shanghai Electric Company is the most diversified. Power and power-related equipment makes up only approximately 72% of the company's revenue, with the rest contributed by the industrial equipment segment.

As at FY10, High efficiency and clean energy segment contributed 39% of the company's revenue, followed by Industrial equipment (28%), Modern services (20%) and New Energy (9%).

Fig. 165: SEG's revenue contribution at FY10



Source: Company

High efficiency and clean energy

High efficiency and clean energy includes the manufacturing and sales of thermal power generation equipment (namely boilers, turbines and turbine generators). This equipment accounted for approximately 71% of this segment's revenue in both FY09 and FY10. Shanghai has co-operated with Siemens in the thermal power equipment space, forming JVs such as Shanghai Electric Power Generation Equipment Co.

Other than the three major products, this business segment also includes the sales of power plant's Auxiliary equipment and Power transmission & distribution equipment. The power transmission & distribution equipment segment may benefit from the expected smart grid development mentioned in the 12th-Five Year Plan period. However, impact to Shanghai Electric should be minimal given its current low base and the mammoth size of Shanghai Electric's business in comparison with the T&D sector.

It is important to note that the sale of nuclear conventional island power equipment is also included in this business segment.

Shanghai Electric is the dominant player in high capacity units (mn-kw), with a market share of 55% in the domestic market. The company has also begun the development of 1,200MW class ultra-supercritical thermal unit.

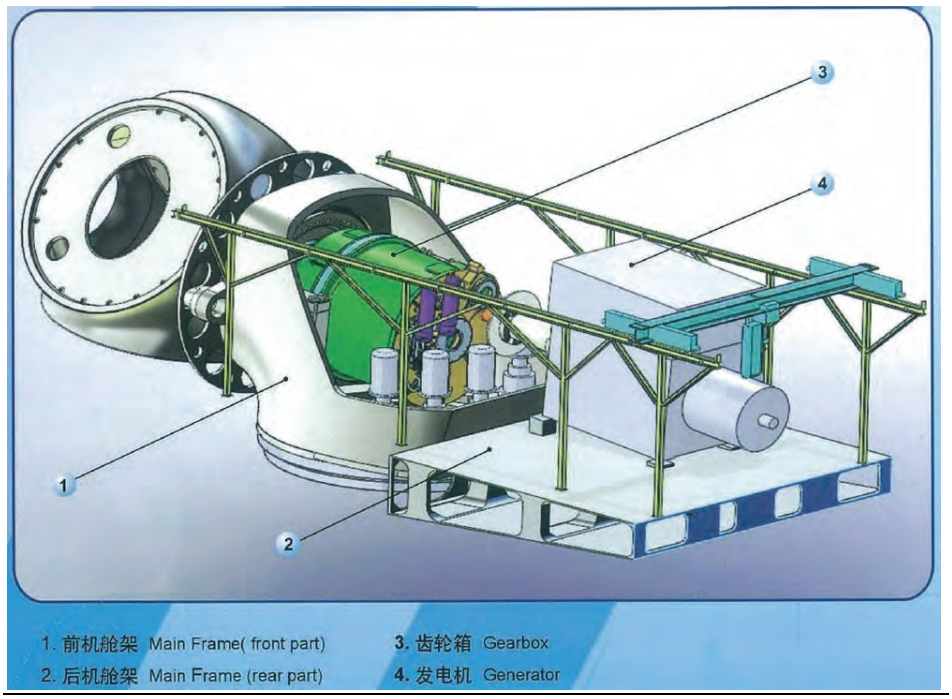
New Energy

Products in the new energy segment can be further sub-divided into three broad categories, namely wind equipment, nuclear island equipment and forging components.

Wind power equipment

Shanghai Electric is considered by some a late entrant into the wind turbine equipment market. Regardless, we believe Shanghai Electric has been catching up very quickly, both in terms of market share and technology development. This is due to its strong R&D capacity, in our view. Revenue from wind turbine equipment has increased 142% y-y to RMB3bn in FY10 (before intra and inter-segment elimination). Shanghai recently announced a 125 x 2MW order from KSK, thereby gaining exposure to the export market.

Fig. 166: SEG's 3.6MW offshore wind-turbine



Source: Company

According to management, Shanghai Electric already has one 3.6MW off-shore demonstration turbine unit connected to grid, which also accounts for one of the first high capacity operating turbine produced by Chinese manufacturers with its own proprietary technology. We believe a head start in the high capacity turbine development puts Shanghai Electric Group in an advantageous position in off-shore wind farm development in China.

Nuclear island power equipment and forging components

Major products in this business segment include steam generators, internal vessel & control rod mechanisms, pressurisers, pressure vessels and other auxiliaries of nuclear island.

In terms of revenue recognised, Shanghai Electric lagged behind Dongfang Electric in the nuclear equipment space. However, Shanghai Electric has been catching up quickly in both contracts won and technological capability.

As at FY10, Shanghai Electric has RMB37bn of nuclear equipment (including nuclear island and conventional island) orders in hand vs. Dongfang Electric's RMB40bn. Out of the big three, Shanghai Electric is the most integrated nuclear equipment play with forging capacity and the technical capability in developing reactor internals.

- Forging capabilities

  Shanghai Electric has one 16,500MT free style oil hydraulic press, one of the world's largest and the only company out of the big three in having such in-house forging capability. This indeed gives Shanghai Electric access to specific forging components such as the forging parts of pressure vessels.

• Competency in reactor internals

Shanghai Electric is the major player in reactor vessel internal and control rod drive mechanisms. According to management, these highly specified components can reach a gross margin of 30%, given limited competition in the market currently.

Fig. 167: Reactor internals

Source: Company

Fig. 168: Qinshan Phase II 600MW pressure vessel

Source: Company

Industrial equipment

Out of the big three power equipment manufacturers in China, Shanghai Electric is the only company that has an industrial equipment segment. The industrial segment produces large range of products, primarily elevators, electric motors, machine tools, printing equipment, metro-rail transportation equipment and crankshafts. Elevators contributed the most in this segment, consistently contributing around 50% revenue for this segment in both FY09 and FY10.

The elevator business is conducted through the Shanghai Mitsubishi Elevator Company, a joint venture with Mitsubishi. Shanghai Electric is the leader in the elevator market in China. In FY10, the company sold more than 40,000 units of elevator products.

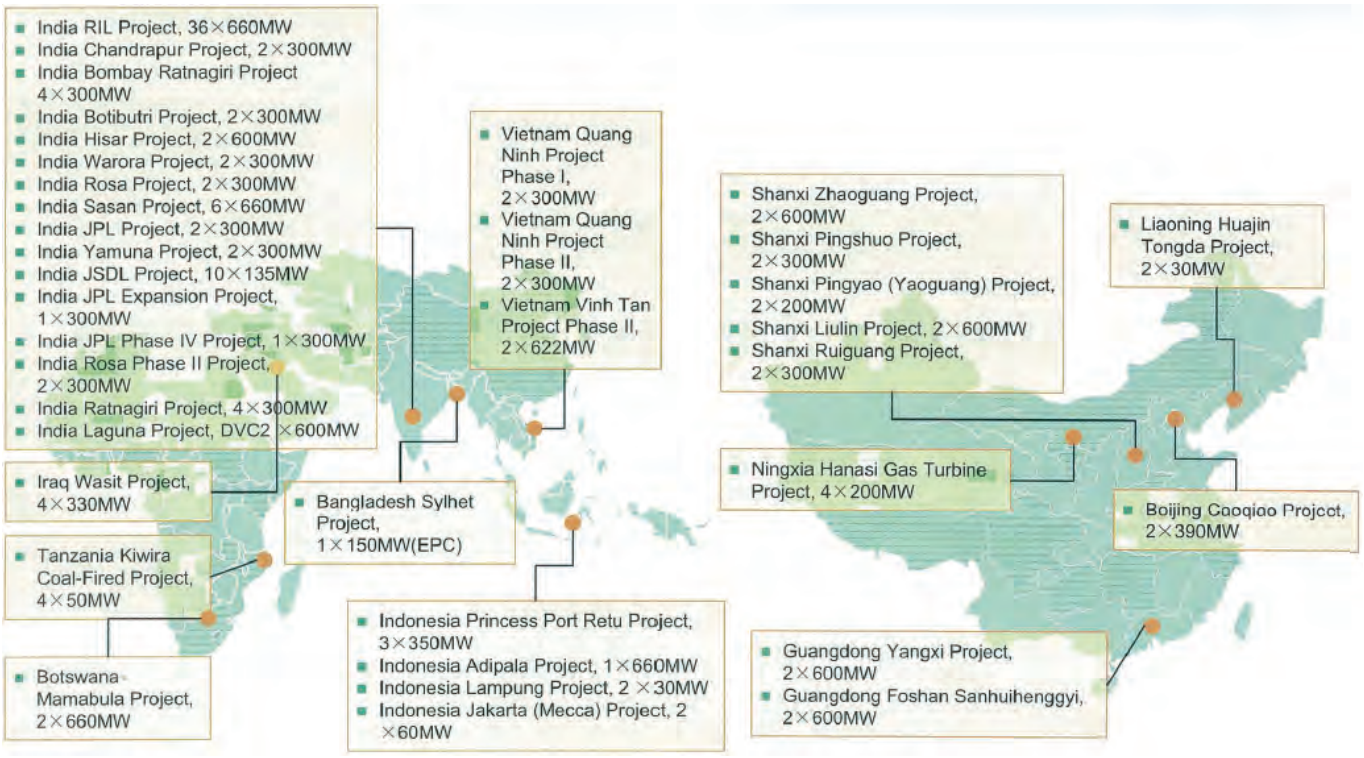
Management guided for an 8% growth for this business segment in FY11F, mostly driven by increases in elevator sales on the back of property development in China.

Modern services

Modern services sector mostly cover integrated engineering services for power station projects and other industries, international trade service and financial products. Power station projects dominate this sector, contributing 80.3% and 78% to this sector's revenue for FY09 and FY10, respectively (before intra and inter-segment elimination).

Power plant engineering services traditionally enjoy a lowered profit margin than equipment sales. However, engagement in power plant engineering services vastly open export opportunities for the company, given a lot of the export customers do not yet have the technical know-how in developing a complete power plant station. As at FY10, the power plant engineering project order backlog has reached RMB88bn, representing 40% y-y increase over FY09. As at 1Q11, we estimate Shanghai to have a backlog of overseas E.P.C. orders worth RMB 90.56bn, providing sustainable growth for the companies despite slowing thermal demand in China, in our view.

Fig. 169: Highlights of power plant engineering projects

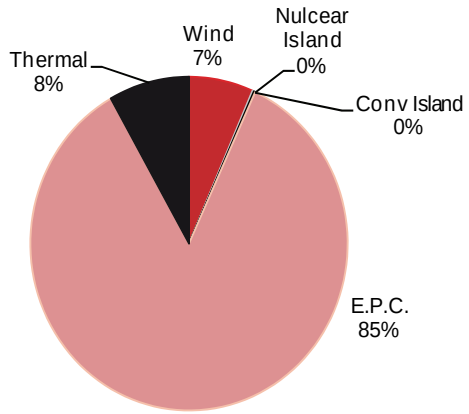


Source: Company

Order backlog

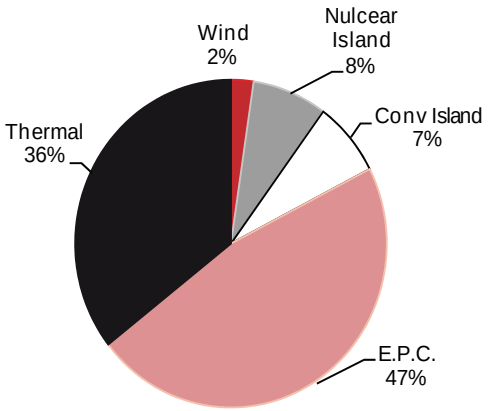
SEG's 1Q11 new orders came in at RMB30.5bn, of which 85% is from E.P.C. projects. Nuclear has limited new orders, as expected, due to approval suspension. In our view, Shanghai is deemed to get more nuclear orders once suspension is lifted, on the back of its technical capability. Cumulative order backlog was ~RMB241bn, of which E.P.C. dominates with a 47% mix.

Fig. 170: 1Q11 new orders



Source: Company, Nomura Research

Fig. 171: 1Q11 order backlog



Source: Company, Nomura Research

Fig. 172: SEG's new order and backlog at 1Q11

(RMBbn)	New orders	Backlog
Wind	2.00	5.60
Nulcear Island	0.05	18.70
Conv Island	0.05	17.80
E.P.C.	25.90	113.20
Thermal	2.50	85.70
Total	30.49	241.00

Source: Company, Nomura Research

Revenue and gross margin projection

Key assumption

Fig. 173: SEG: Key assumption

	2009	2010	2011F	2012F	2013F
Revenue (RMB mn)					
New Energy	3,173	5,659	8,393	10,953	12,483
High efficiency and clean energy	23,664	24,714	26,587	28,908	30,050
Industrial equipment	15,734	17,882	19,312	20,857	22,526
Modern service	12,099	12,473	13,845	15,368	16,905
Other businesses, incl. elimination	2,953	2,229	2,296	2,365	2,436
Total	57,622	62,957	70,433	78,451	84,400
(y-y)					
Revenue contribution (%)					
New Energy	6%	9%	12%	14%	15%
High efficiency and clean energy	41%	39%	38%	37%	36%
Industrial equipment	27%	28%	27%	27%	27%
Modern service	21%	20%	20%	20%	20%
Other businesses, incl. elimination	5%	4%	3%	3%	3%
Gross Margin (%)					
New Energy	12.1%	14.1%	13.8%	15.3%	16.1%
High efficiency and clean energy	15.7%	17.3%	17.4%	17.4%	17.4%
Industrial equipment	19.0%	19.1%	19.0%	19.0%	19.0%
Modern service	5.4%	7.1%	8.5%	8.5%	8.5%
Overall	15.4%	16.3%	16.5%	16.6%	16.7%
Production output (MW)					
Coal-fired boilers	19,290	21,940	23,037	23,037	21,308
(y-y%)		*13.7%*	*5.0%*	*0.0%*	*-7.5%*
Coal-fired steam turbines	24,470	29,270	30,734	30,734	28,427
(y-y%)		*19.6%*	*5.0%*	*0.0%*	*-7.5%*
Coal-fired turbine generators	23,400	24,180	25,389	25,389	23,484
(y-y%)		*3.3%*	*5.0%*	*0.0%*	*-7.5%*
Wind turbines	362	630	1,164	1,455	1,455
(y-y %)		*74.0%*	*84.8%*	*25.0%*	*0.0%*

Source: Company, Nomura est.

Risk analysis

What if…

Events

The magnitude 9.0 earthquake on 11 March, 2011 in Japan caused failure to the emergency core cooling systems in the Fukushima Daiichi units, causing the nuclear plant to shut down and two explosions, followed by leakage of some radioactivity materials. As of today, Japanese authorities are still working on the containment and proper handling of the site. Following the Japanese incidents, on 16 March, 2011, China's State Council called for safety inspections and a temporary suspension on the approval of new nuclear projects until further notice; details of the guidelines / announcement are below:

1) Require relevant departments to perform safety checks on all existing plants immediately to ensure nuclear safety.
2) Reinforce operating management / safety processes in all existing nuclear facilities and monitor to ensure these procedures / processes are in place.
3) Perform safety / risk assessments on all nuclear plants under construction and halt the construction process should a plant fail assessment.
4) Suspend approval of new nuclear projects including projects that have proceeded with pre-construction work until new nuclear safety procedures are set up.

In light of the above events and market concerns on the potential delay / cancellation in nuclear development in China, we have run three scenarios to study the impact on SEG, DFE and HEC, in terms of near-term earnings (FY11F) and the net present values in the case of nuclear development delay / reduction. On top of the three scenario analyses, we have run two more in which study the impact on thermal capacity coming in below our forecast.

Scenarios:

On nuclear development in China:

- Scenario 1: Delay for all projects for one-half year, 80GW of nuclear capacity is achieved by 1H 2021F.
- Scenario 2: Delay for all nuclear projects for one year, 80GW target is achieved by 2021F.
- Scenario 3: No delay on approved projects, but no new project will be approved at all. Total effective market size for the nuclear equipment space is down to the 35.5GW (The amount of approved projects currently).

On thermal equipment demand lower than our forecast:

- Scenario 4: Instead of our current assumption of an addition of 91GW of net power generating capacity for 2011F/12F, we assume the net gain to be 85GW for the two years, with the shortfall impacting thermal power generating capacity alone. Thus, the additional thermal capacity for 2011F and 2012F would be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base case. We revise our estimate of revenue generated from domestic thermal power equipments down for the three companies by the same amount, 9.9% and 10.4% for FY11F and 2012F, respectively.
- Scenario 5: Similar to scenario 4, but in this case, we assume the net gain of power generating capacity in China to be 78GW for 2011F and 2012F (as per latest CEC FY11F forecast), respectively. Again, we assume the shortfall is going to be from thermal power generating capacity. In this scenario, we revise the revenue generated from thermal power equipments (as well as the amount of thermal power capacity installed) down 24.2% and 25.6%.

Fig. 174: SEG: risk analysis results

Shanghai Electric

Earnings forecast (RMB mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Base Case	3,199	3,631	4,052	4,152	4,069	3,905	3,899	3,890	3,900	3,891
Scenario 1	3,152	3,567	3,975	4,130	4,109	3,972	3,895	3,887	3,897	3,890
(% diff)	*-1%*	*-2%*	*-2%*	*-1%*	*1%*	*2%*	*0%*	*0%*	*0%*	*0%*
Scenario 2	3,106	3,502	3,899	4,108	4,149	4,040	3,892	3,885	3,894	3,888
(% diff)	*-3%*	*-4%*	*-4%*	*-1%*	*2%*	*3%*	*0%*	*0%*	*0%*	*0%*
Scenario 3	3,199	3,631	3,976	4,017	3,850	3,733	3,679	3,635	3,643	3,635
(% diff)	*0%*	*0%*	*-2%*	*-3%*	*-5%*	*-4%*	*-6%*	*-7%*	*-7%*	*-7%*
Scenario 4	3,129	3,554	4,051	4,152	4,068	3,904	3,898	3,889	3,899	3,891
(% diff)	*-2%*	*-2%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Scenario 5	3,028	3,440	4,050	4,151	4,068	3,903	3,897	3,888	3,898	3,889
(% diff)	*-5%*	*-5%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

DCF valuation	
Base Case	4.90
Scenario 1	4.89
(% diff)	*-0.2%*
Scenario 2	4.87
(% diff)	*-0.6%*
Scenario 3	4.58
(% diff)	*-6.5%*
Scenario 4	4.88
(% diff)	*-0.4%*
Scenario 5	4.85
(% diff)	*-1.0%*

Source: Nomura Research

Conclusion

According to our risk analysis, the net present value / shares for SEG remain largely intact in the case of projects delay. In the case of 1-year delays in nuclear development in China, and thus, delay in revenues and deliveries, the net present value of SEG goes down by only 0.6%. However, short-term earnings (2011F earnings) would be down by 3%. Overall, we believe the values for SEG should be largely intact in light of projects delay.

On the other hand, were China not to approve any future nuclear projects, the net present value of SEG would go down by 6.4%.

Detailed scenarios study

Different scenarios of nuclear development in China

- Scenario 1: Delay for all projects for a half year, 80GW of nuclear capacity is achieved by 1H 2021F

  Near-term earnings:

  There is only a -1% drop in earnings for SEG for FY11F.

  Net present value / shares:

  SEG: Down 0.2% to HKD4.89 from HKD4.90

- Scenario 2: Delay for all nuclear projects for 1 year, 80GW target is achieved by 2021F

  The impact on SEG is largely in line with Scenario 1, one but at a more severe magnitude. In terms of short-term earnings, SEG sees a 3% downward impact on its FY11F earnings, bringing it down to RMB 3,106mn.

  Net present value / shares, the impact is as follows:

  SEG: Down 0.6% to HKD4.87 from HKD4.90

- Scenario 3: There is no delay on approved projects but no new project will be approved at all. Thus, the total effective market size for the nuclear equipment space is down to 35.5GW (equal to approved projects currently).

  In this case, short-term earnings remain intact, given 30.1GW out of the 35.5GW (approved projects) are to commence before 2015F.

  Net present value / shares is as follows:

  SEG: Down 6.5% to HKD4.58 from HKD4.90

Scenario on thermal equipment demand slower than our forecast

- Scenario 4: Instead of our current assumption of 91GW of net power generating capacity addition for 2011F/12F, we assume net gain to be 85GW for the two years, , while the shortfall is going to impact thermal power generating capacity alone. Thus, the additional thermal capacity for 2011F and 2012F is going to be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base case. We revise revenue generated from domestic thermal power equipment down by 9.9% and 10.4% for FY11F and FY12F, respectively.

  FY11F earnings are down by 2% only, due to SEG's diversification away from domestic thermal business while net present value / shares is down -0.4%.

- Scenario 5: This is similar to scenario 4, but in this case, we assume the net gain of power generating capacity in China to be 78GW for 2011F and 2012F (as per latest CEC FY11F forecast). Again, we assume the shortfall is going to be from thermal power generating capacity. In this scenario, we revise the revenue generated from thermal power equipment (as well as the amount of thermal power capacity installed) down 24.2% and 25.6%.

  The impact on FY11F earnings:

  -5% for SEG.

  Net present value / shares is as follows:

  SEG: Down 1.0% to HKD4.85 from HKD4.90

Dongfang Electric 1072.HK 1072 HK

POWER & UTILITIES

NOMURA
EQUITY RESEARCH

Positioned to capture new energy opportunity

BUY on strong fundamentals

June 2, 2011

Rating Starts at	**Buy**
Target price Starts at34.40	HKD 34.40
Closing price May 26, 2011	HKD 29.75
Potential upside	+15.6%

Action: Initiate with BUY and a target price of HKD34.40

We initiate with a BUY rating and a target price of HKD34.40. We believe nuclear development will remain a focus in China and market concerns over the Fukushima incident and China's temporary suspension of nuclear project approvals are overdone.

Catalysts: Has exposure in all significant energy segments

- **Dongfang is the largest domestic nuclear equipment provider in China.** We expect revenue contribution from nuclear to grow in FY11F /12F given its current nuclear development pipeline and order backlog.
- **Despite slowing domestic thermal equipment demand in the mid/long term, no concern on the high-efficiency segment (thermal + conventional island).** We expect revenue of traditional thermal equipment to grow in FY11F on Dongfang's strong delivery schedule. In our view, rising conventional island equipment sales will help offset slowing domestic thermal demand ahead.
- **Exposure to all significant new energy segments (nuclear, wind, hydro).** We believe it is well positioned to capture opportunities driven by China's target to make non-fossil energy account for 15% of primary energy consumption and reduce CO2 intensity by 45% over 2005-levels by 2020.

Valuation: Premium value looks justified

As at 26 May 2011, Dongfang traded at 16.0x FY11F P/E vs. peers' 13.6x. We see the valuation premium justified in view of its significant exposure in the new energy sector amid China's energy / carbon reduction goals.

31 Dec	FY10		FY11F		FY12F		FY13F
Currency (CNY)	Actual	Old	New	Old	New	Old	New
Revenue (mn)	37,604		45,037		48,660		51,991
Reported net profit (mn)	2,601		2,966		3,249		3,705
Normalised net profit (mn)	2,601		2,966		3,249		3,705
Normalised EPS	1.3		1.5		1.6		1.8
Norm. EPS growth (%)	38.5		14.0		9.6		14.0
Norm. P/E (x)	19.5	N/A	16.0	N/A	14.6	N/A	12.8
EV/EBITDA	20.0	N/A	14.8	N/A	13.5	N/A	11.9
Price/book (x)	4.6	N/A	3.5	N/A	2.8	N/A	2.4
Dividend yield (%)	0.5	N/A	0.6	N/A	0.7	N/A	0.8
ROE (%)	26.4		23.9		21.3		20.2
Net debt/equity (%)	244.0		197.3		160.0		127.5

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

Rising nuclear demand in light of China's energy goal provides potential growth opportunities to nuclear equipment players.

Nomura vs consensus

Our TP is 4% ahead of consensus, as we see higher growth prospects in the mid-term with nuclear delivery peaking in 2015F.

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Key data on Dongfang Electric

Income statement (CNYmn)

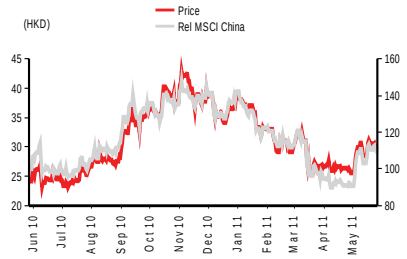
Year-end 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
Revenue	**32,775**	**37,604**	**45,037**	**48,660**	**51,991**
Cost of goods sold	-27,425	-30,500	-36,266	-39,086	-41,597
Gross profit	**5,349**	**7,104**	**8,771**	**9,574**	**10,394**
SG&A	-3,412	-4,245	-5,119	-5,522	-5,705
Employee share expense					
Operating profit	**1,937**	**2,860**	**3,652**	**4,051**	**4,690**
EBITDA	**2,538**	**3,789**	**4,957**	**5,388**	**6,046**
Depreciation	-601	-930	-1,305	-1,337	-1,356
Amortisation					
EBIT	1,937	2,860	3,652	4,051	4,690
Net interest expense	-289	-119	-122	-116	-120
Associates & JCEs	23	92	92	92	92
Other income	26	47	0	0	0
Earnings before tax	**1,697**	**2,880**	**3,622**	**4,027**	**4,662**
Income tax	11	-180	-543	-654	-816
Net profit after tax	**1,708**	**2,700**	**3,079**	**3,373**	**3,846**
Minority interests	-29	-99	-113	-124	-141
Other items					
Preferred dividends					
Normalised NPAT	**1,679**	**2,601**	**2,966**	**3,249**	**3,705**
Extraordinary items					
Reported NPAT	**1,679**	**2,601**	**2,966**	**3,249**	**3,705**
Dividends	-160	-261	-297	-325	-371
Transfer to reserves	**1,519**	**2,340**	**2,669**	**2,923**	**3,334**
Valuation and ratio analysis					
FD normalised P/E (x)	27.8	19.5	16.0	14.6	12.8
FD normalised P/E at price target (x)	32.2	22.5	18.5	16.9	14.8
Reported P/E (x)	27.8	19.5	16.0	14.6	12.8
Dividend yield (%)	0.3	0.5	0.6	0.7	0.8
Price/cashflow (x)	9.7	17.5	11.6	9.0	8.3
Price/book (x)	6.0	4.6	3.5	2.8	2.4
EV/EBITDA (x)	28.2	20.0	14.8	13.5	11.9
EV/EBIT (x)	36.8	26.3	19.9	17.9	15.3
Gross margin (%)	16.3	18.9	19.5	19.7	20.0
EBITDA margin (%)	7.7	10.1	11.0	11.1	11.6
EBIT margin (%)	5.9	7.6	8.1	8.3	9.0
Net margin (%)	5.1	6.9	6.6	6.7	7.1
Effective tax rate (%)	-0.6	6.3	15.0	16.3	17.5
Dividend payout (%)	9.5	10.0	10.0	10.0	10.0
Capex to sales (%)	13.2	6.8	3.3	2.9	2.7
Capex to depreciation (x)	7.2	2.8	1.1	1.0	1.0
ROE (%)	31.1	26.4	23.9	21.3	20.2
ROA (pretax %)	3.7	4.6	5.2	5.3	5.7
Growth (%)					
Revenue	18.2	14.7	19.8	8.0	6.8
EBITDA	-6.8	49.3	30.8	8.7	12.2
EBIT	-12.5	47.6	27.7	10.9	15.8
Normalised EPS	237.6	38.5	14.0	9.6	14.0
Normalised FDEPS	237.6	38.5	14.0	9.6	14.0
Per share					
Reported EPS (CNY)	0.94	1.30	1.48	1.62	1.85
Norm EPS (CNY)	0.94	1.30	1.48	1.62	1.85
Fully diluted norm EPS (CNY)	0.94	1.30	1.48	1.62	1.85
Book value per share (CNY)	4.32	5.51	6.86	8.33	10.02
DPS (CNY)	0.08	0.13	0.15	0.16	0.19

Source: Nomura estimates

Notes

Historical EPS/DPS in 2009 adjusted for the stock split in 2010 for comparison purposes

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (HKD)	14.0	2.1	32.2
Absolute (USD)	13.8	2.2	32.5
Relative to index	19.5	-2.4	14.9
Market cap (USDmn)	7,659.7		
Estimated free float (%)	49.1		
52-week range (HKD)	43.8/22.4		
3-mth avg daily turnover (USDmn)	20.31		
Major shareholders (%)			
Dongfang Electric corporation	50.1		

Note: This market cap is calculated based on the total number of A, H shares and the H share market price only.

Cashflow (CNYmn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
EBITDA	2,538	3,789	4,957	5,388	6,046
Change in working capital	-8,955	-5,873	-2,811	-2,605	-2,352
Other operating cashflow	11,240	4,973	1,942	2,496	2,022
Cashflow from operations	**4,823**	**2,889**	**4,088**	**5,280**	**5,715**
Capital expenditure	-4,331	-2,572	-1,500	-1,400	-1,404
Free cashflow	**492**	**317**	**2,588**	**3,880**	**4,312**
Reduction in investments	-34	-85	0	0	0
Net acquisitions	-8	-474	0	0	0
Reduction in other LT assets	-234	-464	0	0	0
Addition in other LT liabilities	-2,069	-1,604	0	0	0
Adjustments	2,619	2,457	179	202	252
Cashflow after investing acts	**767**	**147**	**2,767**	**4,081**	**4,563**
Cash dividends	-18	-160	-261	-297	-325
Equity issue	5,000	0	0	0	0
Debt issue	-263	1,415	-631	162	149
Convertible debt issue	0	0	0	0	0
Others	-2,299	-2,440	-122	-116	-120
Cashflow from financial acts	**2,420**	**-1,185**	**-1,013**	**-251**	**-296**
Net cashflow	**3,187**	**-1,038**	**1,754**	**3,830**	**4,267**
Beginning cash	11,521	14,708	13,671	15,424	19,254
Ending cash	14,708	13,670	15,424	19,254	23,521
Ending net debt	19,935	26,933	27,121	26,713	25,593

Source: Nomura estimates

Balance sheet (CNYmn)

As at 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
Cash & equivalents	14,708	13,671	15,424	19,254	23,521
Marketable securities	0	0	0	0	0
Accounts receivable	9,932	12,105	14,497	15,664	16,736
Inventories	27,156	32,187	35,273	38,016	40,457
Other current assets	12,322	11,707	13,656	14,606	15,479
Total current assets	**64,119**	**69,670**	**78,850**	**87,539**	**96,193**
LT investments	234	318	318	318	318
Fixed assets	8,651	10,355	10,613	10,708	10,773
Goodwill					
Other intangible assets	106	131	68	35	18
Other LT assets	1,498	1,962	1,962	1,962	1,962
Total assets	**74,608**	**82,436**	**91,811**	**100,563**	**109,265**
Short-term debt	33,883	40,327	42,335	45,741	48,872
Accounts payable	12,398	13,833	16,448	17,727	18,865
Other current liabilities	16,105	15,386	17,386	18,361	19,257
Total current liabilities	**62,387**	**69,546**	**76,169**	**81,828**	**86,994**
Long-term debt	760	276	210	227	242
Convertible debt					
Other LT liabilities	2,434	830	830	830	830
Total liabilities	**65,581**	**70,652**	**77,209**	**82,886**	**88,067**
Minority interest	378	746	859	982	1,123
Preferred stock	0	0	0	0	0
Common stock	1,002	2,004	2,004	2,004	2,004
Retained earnings	7,487	8,774	11,442	14,366	17,699
Proposed dividends	160	261	297	325	371
Other equity and reserves	0	0	0	0	0
Total shareholders' equity	**8,649**	**11,038**	**13,743**	**16,695**	**20,074**
Total equity & liabilities	**74,608**	**82,436**	**91,811**	**100,563**	**109,265**
Liquidity (x)					
Current ratio	1.03	1.00	1.04	1.07	1.11
Interest cover	6.7	24.1	30.0	34.9	39.2
Leverage					
Net debt/EBITDA (x)	7.86	7.11	5.47	4.96	4.23
Net debt/equity (%)	230.5	244.0	197.3	160.0	127.5
Activity (days)					
Days receivable	99.8	107.0	107.8	113.4	113.7
Days inventory	316.2	355.1	339.5	343.1	344.3
Days payable	144.0	157.0	152.4	160.0	160.5
Cash cycle	272.0	305.1	294.9	296.6	297.5

Source: Nomura estimates

Notes

Deposit from customers is accounted for as non-interest bearing debt

Company profile

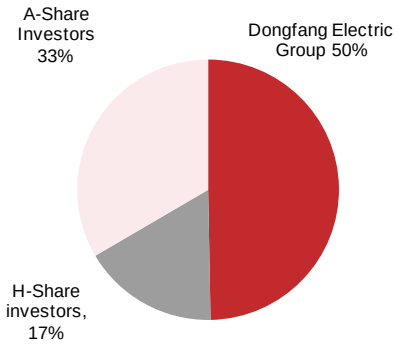
Fig. 175: Company profile

Dongfang Electric Corporation Limited is dual-listed in Hong Kong (1072 HK) and Shanghai (600875 CN). The company:

1. is 50% owned by state-owned enterprise Dongfang Electric Group
2. has diversified towards new energy (such as wind and nuclear)
3. ranks No. 3 in domestic wind equipment market share after Sinovel and Goldwind (measured by cumulative installed capacity as at FY10, CWEA)
4. has been the largest nuclear power equipment providers (measured in the amount of backlog for major products covered by the Big 3 and First Heavy).

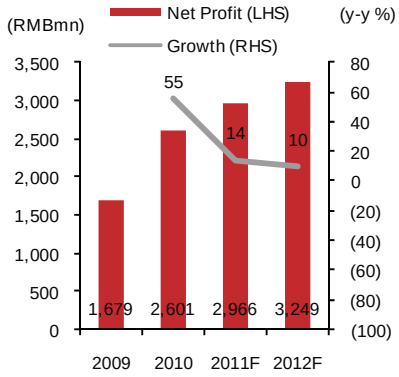
Source: Company, Nomura Research

Fig. 176: Shareholders' structure



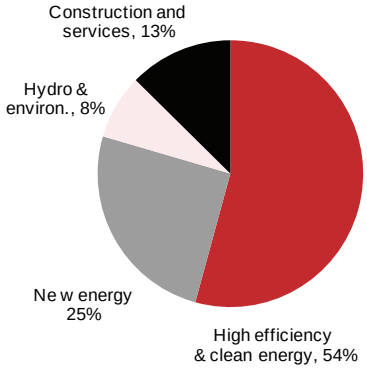
Source: Company data

Fig. 177: Net profit trend



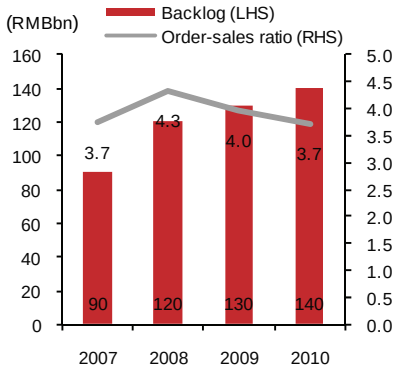
Source: Company, Nomura estimates

Fig. 178: FY10 revenue contribution



Source: Company data

Fig. 179: Order backlog



Source: Company data

Fig. 180: SWOT analysis

Strength

Dongfang has long engagement in nuclear power equipment. It is the first company, out of the three, to see meaningful gross profit contribution from the nuclear sector. As at FY10, it had a ~42% market share in this segment (measured by the amount of orders in-hand).

Weakness

Dongfang's hydro business's gross margin was consistently lower than its major domestic competitor, Harbin, in the past. However, it caught up slightly in FY10.

Opportunity

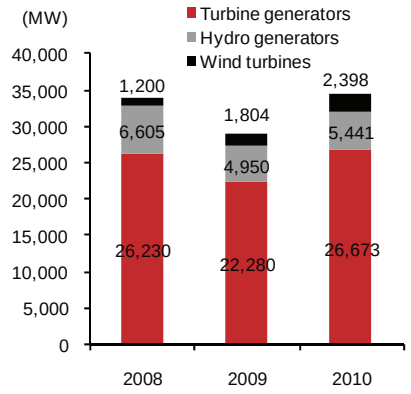
The environmental protection initiatives and the target to increase non-fossil fuel contribution to China's primary energy consumption give rise to the nuclear power sector. We see Dongfang in a solid position to capture the industry growth and expand its earnings.

Threat

In spite of its diversification away from the thermal business, Dongfang is still very focused in the power equipment sector. Its earnings outlook could be weakened should there be factors that hinder power demand growth in China.

Source: Nomura Research

Fig. 181: Production output (power generating equipment)



Source: Company data

Well positioned to capture new energy opportunity

Investment thesis

We initiate coverage of Dongfang Electric with a BUY rating and a target price of HKD34.40. In our opinion, the company is well positioned to capture growth from new energy power equipment. Its recent share price weakness, due to the Fukushima event, is overdone, as we believe China's long-term nuclear development plans are intact. We expect its earnings to increase in FY11F/12F on nuclear revenue. In view of its strong fundamentals, we see recent share price weakness a good buying opportunity and initiate coverage with a BUY rating.

Nuclear revenue to grow on approved projects

China's suspension of new nuclear project approvals may have a short-term impact on new order flow, but this is unlikely to have a material impact on Dongfang's FY11F and FY12F revenue, according to management. Management has guided for RMB18-20bn in revenue from nuclear equipment for FY11F-12F. Downside risk is relatively low, given these deliveries are for approved projects, according to management. We forecast revenue from the conventional island will grow 49% and 25% in FY11F and FY12F, respectively, and revenue from the nuclear island will grow 113% and 25% in FY11F and FY12F, respectively.

No foreseeable concern in traditional business, given strong conventional island's revenue and thermal delivery

Since FY10, the company has grouped the sales of nuclear conventional island equipment and those of traditional thermal equipment into the high efficiency and clean energy business, given their similar nature of production and product attributes. We project revenue will grow 19% in FY11F, driven by strong thermal orders delivery schedule, according to management, and strong growth in conventional island equipment.

Positioned to capture new energy development

Dongfang is well positioned to capture opportunities driven by China's 2020F energy / carbon reduction targets given its strong market position in all significant new energy segments, in our view. In terms of market share, Dongfang ranked No. 1 in nuclear equipment, No. 3 in wind turbines and No. 1 in hydro in China for the year 2010.

Valuation: Premium value looks justified

As at 26 May 2011, Dongfang traded at 16.0x FY11F P/E, vs. peers' 13.6x. In our view, the share price premium is justified on the back of DFE's strong fundamentals, exposure to the all significant non-fossil fuel equipment segment, and strong position to capture opportunities as a result of China's energy goals. The share price of Dongfang, having fallen 18.7% at one point in time, is currently down 4.0% since the Japanese earthquake on 11 March 2011. In our view, the market has overreacted. We believe nuclear development plans are intact in China in the longer term, given China's goal of reducing its carbon footprint.

Initiate with BUY, TP of HKD34.40

We initiate coverage of Dongfang Electric with a BUY rating and a 12-month target price of HKD34.40, implying potential upside of 15.6% from current levels. As at 26 May 2011, the stock traded at 16.0x FY11F P/E.

Our target price of HKD34.4 is based on a discounted cashflow (DCF) methodology with a WACC assumption of 6.22% and a terminal growth rate assumption of 2%.

Fig. 182: Dongfang: DCF valuation

FCF (RMB'mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Reporting revenue	45,037	48,660	51,991	53,835	49,182	43,495	43,854	43,750	44,410	44,518
…Growth rate	*20%*	*8%*	*7%*	*4%*	*-9%*	*-12%*	*1%*	*0%*	*2%*	*0%*
EBIT (non-IFRIC)	3,743	4,143	4,782	5,231	4,930	4,332	4,386	4,420	4,518	4,568
Depreciation/amortization	1,305	1,337	1,356	1,368	1,376	1,460	1,409	1,352	1,290	1,227
EBITDA	5,049	5,480	6,137	6,599	6,306	5,792	5,795	5,771	5,808	5,795
…EBITDA margin	*11%*	*11%*	*12%*	*12%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
less:tax	(543)	(654)	(816)	(958)	(962)	(885)	(940)	(991)	(1,057)	(1,114)
minority interest	(113)	(124)	(141)	(152)	(141)	(122)	(122)	(122)	(123)	(123)
change in working capital	(239)	656	646	324	(855)	(1,018)	57	(19)	108	15
CAPEX	(1,500)	(1,400)	(1,404)	(1,429)	(1,224)	(1,011)	(947)	(873)	(813)	(741)
Leveraged FCF	2,654	3,958	4,422	4,384	3,124	2,755	3,843	3,768	3,923	3,832
Growth Rate										2.0%

WACC	Sum of PV (RMB'mn)	PV of TV (RMB'mn)	EV (RMB'mn)	Net cash/ (debt) (FY10F)	Equity Value (RMB'mn)	Shares out ('mn)	Value per share (HK$)
5.40%	29,156	71,616	100,771	(27,121)	73,651	2,004	46.09
5.50%	29,042	68,978	98,020	(27,121)	70,899	2,004	44.37
5.60%	28,928	66,493	95,421	(27,121)	68,300	2,004	42.74
5.70%	28,815	64,147	92,962	(27,121)	65,842	2,004	41.20
5.80%	28,703	61,930	90,633	(27,121)	63,512	2,004	39.75
5.90%	28,592	59,831	88,423	(27,121)	61,302	2,004	38.36
6.00%	28,482	57,842	86,323	(27,121)	59,202	2,004	37.05
6.10%	28,372	55,954	84,326	(27,121)	57,205	2,004	35.80
6.20%	28,263	54,161	82,423	(27,121)	55,303	2,004	34.61
6.30%	28,154	52,455	80,609	(27,121)	53,488	2,004	33.47
6.40%	28,047	50,831	78,877	(27,121)	51,757	2,004	32.39
6.50%	27,940	49,283	77,223	(27,121)	50,102	2,004	31.35
6.60%	27,834	47,806	75,639	(27,121)	48,519	2,004	30.36
6.70%	27,728	46,395	74,124	(27,121)	47,003	2,004	29.41
6.80%	27,623	45,047	72,671	(27,121)	45,550	2,004	28.51
6.90%	27,519	43,758	71,277	(27,121)	44,157	2,004	27.63
7.00%	27,416	42,523	69,939	(27,121)	42,819	2,004	26.80
7.10%	27,313	41,341	68,654	(27,121)	41,533	2,004	25.99
7.20%	27,211	40,207	67,417	(27,121)	40,297	2,004	25.22
6.22%	28,242	53,830	82,072	(27,121)	54,951	2,004	34.39

WACC Calculation	
Equity Beta	1.1
Risk Free Rate	3.0%
Equity Risk Premium	6.0%
Country Risk Premium	0.0%
Cost of Equity	9.4%
Cost of Debt	4.8%
Debt/Capital	55.0%
Tax	25.0%
WACC	6.2%
Terminal growth rate	2%

Source: Company data, Nomura estimates

Fig. 183: Valuation comparison

Company	Ticker	Rating	Price target L. Curr.	Price L. Curr.	Market cap (US$mn)	Fiscal Y/E	P/E (x) 11F	P/E (x) 12F	P/E (x) 13F	PEG 11-13F	P/B (x) 11F	P/B (x) 12F	P/B (x) 13F	Yield (%) 11F	Yield (%) 12F	Yield (%) 13F	Net debt/equity (%) 11F	Net debt/equity (%) 12F	Net debt/equity (%) 13F	RoE (%) 11F	RoE (%) 12F	RoE (%) 13F
China																						
Power equipment manufacturer																						
Shanghai Electric	2727 HK	Buy	4.90	4.09	12,523	Dec	13.1	11.5	10.3	0.9	1.4	1.3	1.2	2.3	2.6	2.9	67	64	56	11.4	11.8	12.1
Dongfang Electric	1072 HK	Buy	34.40	29.75	7,836	Dec	16.0	14.6	12.8	1.2	3.5	2.8	2.4	0.6	0.7	0.8	197	160	127	23.9	21.3	20.2
Harbin Power	1133 HK	Neutral	8.90	9.35	1,654	Dec	11.6	11.1	10.1	n.a.	1.0	0.9	0.9	1.6	1.7	1.9	36	35	31	8.9	8.6	8.8
Average							13.6	12.4	11.1	1.0	2.0	1.7	1.5	1.5	1.7	1.8				14.7	13.9	13.7
Heavy equipment player with exposure to forging parts for nuclear equipment																						
China First Heavy	601106 CH	Not rated	n.a.	5.06	5,095	Dec	22.6	17.6	23.0	0.9	1.8	1.7	1.7	0.5	0.6	0.4	9	15	21	8.1	9.2	7.5
China Erzhong	601268 CH	Not rated	n.a.	10.12	2,634	Dec	34.8	24.1	17.4	0.5	2.7	2.5	n.a.	0.6	0.9	0.7	47.86	38.87	n.a.	6.3	8.7	n.a.
Average							28.7	20.9	20.2	0.7	2.3	2.1	1.7	0.5	0.8	0.5				7.2	9.0	7.5
Wind turbine / components manufacturer																						
China High Speed Transmission	658 HK	Buy	20.00	9.79	1,730	Dec	6.5	5.5	4.4	13.6	1.2	1.0	0.9	4.9	5.9	7.3	36.40	43.38	34.54	21.0	21.3	22.6
Sinovel	601558 CH	Not rated	n.a.	56.93	8,813	Dec	15.4	12.1	6.8	0.3	3.2	2.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19.9	20.5	n.a.
Xinjiang Goldwind	2208 HK	Not rated	n.a.	10.40	5,853	Dec	10.0	9.4	8.6	15.6	1.5	1.3	1.3	2.5	2.6	3.4	net cash	net cash	net cash	17.9	15.6	16.0
Mingyang	MY US	Not rated	n.a.	7.12	875	Dec	5.6	4.8	4.0	0.2	1.3	1.0	0.8	n.a.	n.a.	0.6	net cash	net cash	net cash	22.9	20.3	n.a.
Average							7.5	6.4	4.8	5.9	1.4	1.2	0.7	2.5	2.8	2.8				16.3	15.5	12.9
China Average							15.1	12.3	10.8	4.1	2.0	1.7	1.3	1.9	2.1	2.2				15.6	15.3	14.5
Non-China																						
Power equipment player (incl. forging parts manufacturer)																						
GE	GE US	Buy	24.00	19.22	205,958	Dec	14.1	11.6	n.a.	n.a	1.6	1.5	n.a.	2.8	3.4	n.a.	net cash	net cash	n.a.	11.7	12.9	n.a.
Mitsubishi Heavy	7011 JP	Buy	465.00	381.00	15,812	Mar	42.3	24.9	16.9	0.3	1.0	1.0	0.9	1.6	1.6	1.6	80.00	70.00	70.00	2.3	3.9	5.5
BHI Co. Ltd	083650 KS	Not rated	n.a.	16,000.00	192	Dec	7.4	n.a.	n.a.	n.a	1.9	n.a.	n.a.	1.2	1.2	1.3	57.67	n.a.	n.a.	n.a.	n.a.	n.a.
Doosan	034020 KS	Not rated	n.a.	61,200.00	5,951	Dec	26.5	19.7	11.5	0.3	1.8	n.a.	n.a.	0.8	0.9	1.0	59.06	n.a.	n.a.	n.a.	n.a.	n.a.
BHEL	BHEL IN	Reduce	1,850.00	1,916.65	20,778	Mar	17.5	14.0	13.1	42.1	4.7	3.8	3.2	1.9	2.2	2.4	n.a.	n.a.	n.a.	33.3	29.8	26.4
Japan Steel Works	5631 JP	Neutral	880.00	592.00	2,705	Mar	12.2	12.1	9.3	1.2	1.8	1.6	1.4	4.1	4.2	4.2	30.00	net cash	net cash	14.4	13.2	15.1
Toshiba Plant	1983 JP	Buy	1,350.00	806.00	968	Mar	9.5	8.5	7.7	0.9	0.9	0.8	0.8	1.9	1.9	1.9	net cash	net cash	net cash	9.9	10.1	10.2
Siemens	SIE GR	Neutral	100.00	90.48	58,452	Sep	10.7	9.5	12.4	0.5	2.3	2.1	1.9	4.7	5.3	4.1	net cash	net cash	net cash	19.2	16.7	17.1
Alstom	ALO FP	Buy	49.00	41.34	8,534	Mar	26.5	13.0	10.4	n.a.	3.0	2.6	2.4	1.6	2.6	3.2	34.72	20.19	8.47	15.3	22.2	23.1
Areva SA	CEI FP	Not rated	n.a.	30.25	8,117	Dec	21.2	14.9	14.2	n.a.	1.3	1.2	1.1	0.8	1.5	1.4	n.a	n.a	n.a	5.7	7.5	7.2
Average							18.8	14.3	12.0	7.6	2.0	1.8	1.7	2.1	2.5	2.3				14.0	14.5	14.9
Wind turbine / components manufacturer																						
Hansen Transmissions	HSN LN	Not rated	n.a.	42.50	201	Mar	n.a.	n.a.	18.5	n.a	0.4	0.4	0.4	n.a.	n.a.	0.3	3.25	0.64	net cash	(2.4)	(0.3)	2.2
Gamesa	GAM SM	Suspended	n.a.	6.32	1,097	Dec	22.6	16.7	13.4	0.5	0.9	0.9	0.9	1.2	1.5	2.1	32.04	34.87	36.06	4.2	5.4	6.9
Vesta	VWS DC	Suspended	n.a.	148.70	21,375	Dec	27.4	22.7	17.7	0.5	2.7	2.4	2.1	n.a.	n.a.	0.1	20.94	13.14	5.33	9.6	11.1	13.0
Repower	RPW GR	Not rated	n.a.	131.20	859	Mar	22.8	18.7	16.2	2.2	2.4	2.2	2.0	1.1	1.2	1.6	net cash	net cash	net cash	10.6	11.5	13.5
Suzlon	SUEL IN	Suspended	n.a.	50.05	1,963	Mar	n.a.	39.4	12.3	n.a	1.2	1.3	1.2	n.a.	0.1	0.1	130.56	136.47	119.92	(12.9)	3.0	9.4
Average							24.3	24.4	15.6	1.1	1.5	1.4	1.3	1.1	0.9	0.8				1.8	6.1	9.0
Non-China Average							20.1	17.4	13.4	5.4	1.9	1.7	1.5	2.0	2.1	1.8				9.3	11.3	12.5
International Average							**18.0**	**15.3**	**12.3**	**4.8**	**1.9**	**1.7**	**1.4**	**1.9**	**2.1**	**2.0**				**11.9**	**12.9**	**13.1**

Source: Bloomberg consensus for Not Rated and Rating Suspended securities, Nomura estimates; Note: Pricing as of May 26, 2011; FY11F figures are actual for companies with Y/E in Mar which have reported

We forecast healthy earnings growth in FY11F and FY12F

Visible growth outlook

We expect Dongfang's earnings to grow 14% and 10% in FY11F and FY12F, respectively, backed by strong revenue growth in nuclear power equipment. Dongfang is the biggest major nuclear equipment provider in China (with an estimated market share of 40% as at FY10, based on its amount of order backlog). For FY11F, management has guided for a 38GW production target vs. 34.5GW production in FY10, representing an increase of 10% y-y. However, due to changes in product mix and revenue recognition methodology, management expects revenue to grow 19.8% y-y in FY11F.

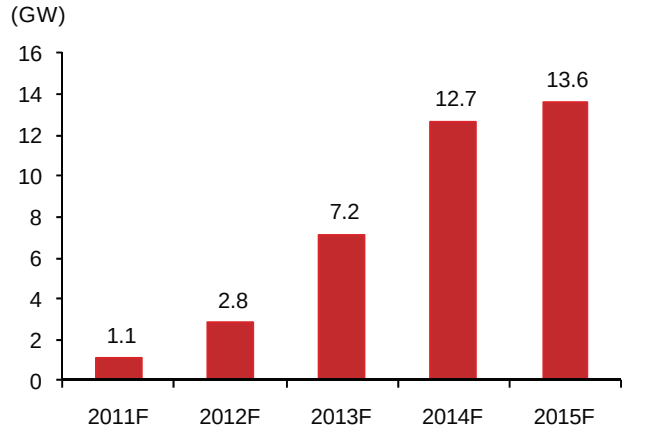
RMB18-20bn nuclear equipment to be delivered between FY11F and FY12F

According to management, Dongfang plans to deliver RMB18-20bn worth of nuclear equipment (including both nuclear island and conventional island equipment) over 2011F-12F, with revenue contribution of RMB8-10bn in each year. China's suspension of nuclear project approvals should have minimal impacts on these deliveries, given these orders are from approved projects.

For FY11F, we forecast revenue growth of 49% y-y to RMB4bn for conventional island equipment and 113% y-y to RMB4bn for nuclear island equipment. For FY12F, we estimate revenue for both conventional island and nuclear island equipment will increase a further RMB5bn.

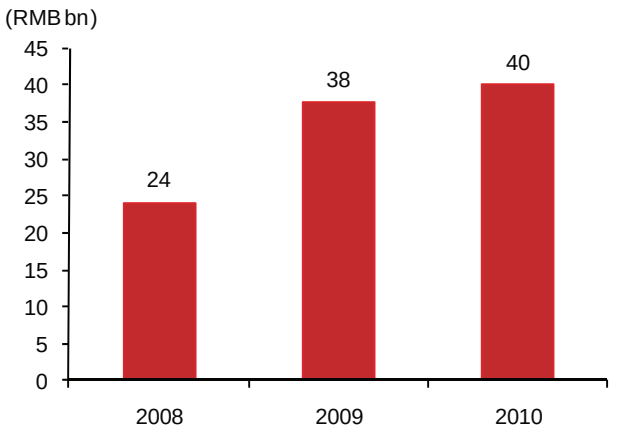
Nuclear equipment output to surge in the near- to mid-term
Working backwards the number of projects under development and planned in China, we arrive with new nuclear capacity addition forecasts up to 2015F. We forecast a 37.3GW of nuclear capacity to come on-line during 2011F-15F (assuming no delay and the approval suspension is lifted in the near term).

Fig. 184: Nuclear capacity addition forecast



Source: WNA, Nomura estimates

Fig. 185: Nuclear equipment backlog



Source: Company data, Nomura research

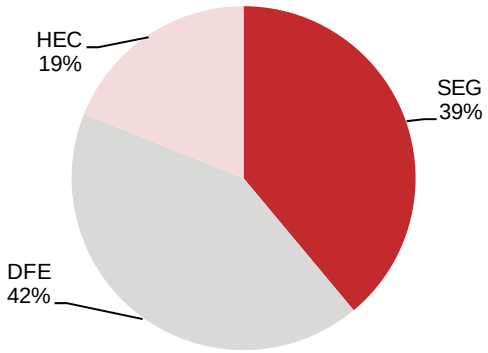
According to the expected commencement schedule (source: WNA), we estimate that a substantial amount of capacity addition would take place during 2013F-15F. Given that nuclear equipment orders would take 3-4 years to deliver, and taking into consideration the percentage of completion method for revenue recognition and the timing of Dongfang's orders received, we expect Dongfang's nuclear revenue to start making a substantial contribution from FY11F, which is in line with management's guidance.

Dongfang, together with Shanghai Electric, will continue to dominate the nuclear market in the next few years

In our view, Dongfang and Shanghai Electric are likely to dominate the nuclear equipment market in the next few years in terms of revenue recognised and the amount of equipment delivered, due to reasons as follows:

- As at FY10, Dongfang and Shanghai Electric had a combined market share of 81.1% in the major nuclear equipment market.
- There was already significant revenue contribution from the nuclear segment in FY10. Revenue contributed by the nuclear segment for Dongfang and Shanghai were around RMB4.6bn and RMB2.3bn for FY10, respectively. Harbin Power had no revenue contribution from the nuclear segment during the same period.

Fig. 186: Market shares for major nuclear equipment (2010)



Note: M/S defined as amount of order in the company's order-book in FY10

Source: Company data, Nomura estimates

For the near term, we see Dongfang retaining its leading player status in the nuclear segment, given its strong production capacity that gives the company an edge over its peers and its dominant position in the 2/2.5G nuclear equipment segment. From our industry channel checks, nuclear power equipment is in hot demand. This, together with its existing market position, will likely enable Dongfang to retain its dominant position with Shanghai Electric in the next few years, in our view.

Reasonable position in the wind market

We believe Dongfang has a reasonable position in the wind market, as:

- It has an advantage in market consolidation, due to its size; and
- It has clear export visibility

During industry consolidation, size matters

Although slowing demand for wind equipment is expected in the near term, we see Dongfang's wind business in a defensive position. In the long term, we see Dongfang as one of the winners in industry consolidation.

In the next two years, consolidation is likely to take place in China's wind equipment industry with big players taking further market share from smaller players, due to:

– Limited growth in wind equipment demand in the short term

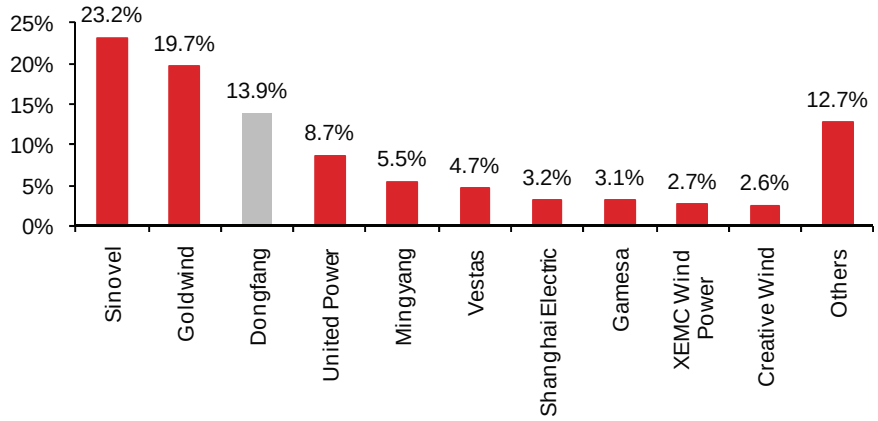
  Although wind power is an economic choice for clean energy, its variability characteristics have resulted in issues such as grid connection bottlenecks. From our industry checks, we estimate installed wind power capacity in China will be 17.9GW in 2011F and 17.GW in 2012F (vs 18.9GW in FY10).

– Overcapacity observed

The average selling price (ASP) of a wind turbine had dropped from RMB5,000/kw at the end of FY09 to RMB4,000 at the end of FY10 (according to our industry checks) for new orders. This is a strong sign of overcapacity in the industry, in our opinion.

Being the No. 3 player in the wind turbine market, we believe Dongfang has the scale to survive and compete with others. Moreover, we believe its export orders (with higher ASPs) are likely to offset some domestic ASP pressure. We do not see risk in the wind sector making a dent in Dongfang's FY11F and FY12F earnings.

Fig. 187: Market share (wind equipment in China) as at FY10



Note: Market shares defined as amount of new installed capacity over the year
Source: CWEA

Traditional business not a concern

High efficiency and clean energy segment pose no concern

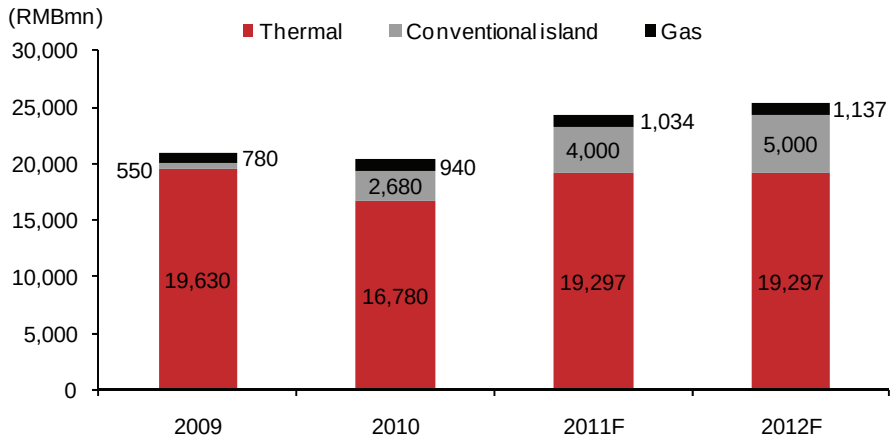
Management guided for growth of 19% in the high efficiency and clean energy sector in FY11, driven by:

- Strong revenue growth in nuclear conventional island equipment; and
- Guidance of 15% revenue growth in thermal power equipment

  Despite slowing domestic thermal demand, management guided for 15% revenue growth in thermal equipment for FY11, given strong orders in 2008, which are due for delivery in FY11.

For FY12F, we factor only 5% revenue growth in the high efficiency and clean energy segment, to be largely driven by growth in conventional island equipment.

Fig. 188: Revenue forecast for high efficiency and clean energy segment



Source: Company data, Nomura estimates

Margins to improve slightly in FY11F and FY12F

Gross margin outlook

We expect Dongfang's overall gross margin to improve slightly to 19.5% in FY11F and 19.7% in FY12F, from 18.9% in FY10F, on the back of:

- Margin expansion in nuclear conventional island equipment; and
- Improving product mix towards higher margin products

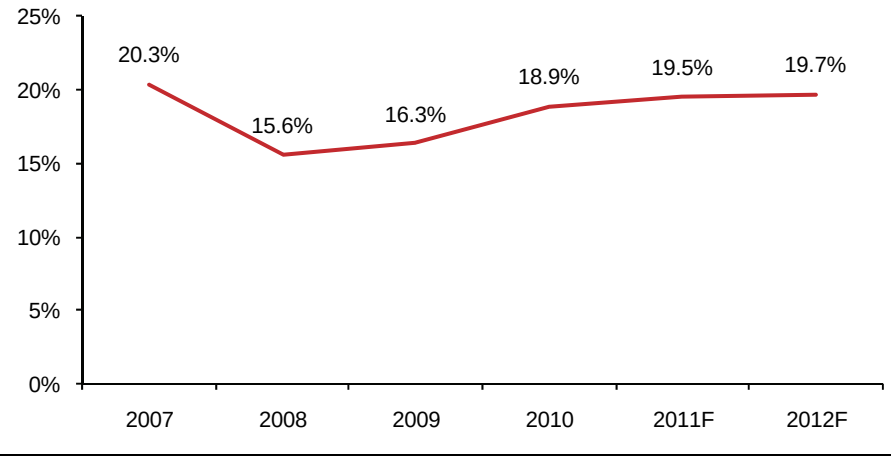
Conventional island equipment expected to see margin expansion in FY11F and FY12F

Gross profit margin for the conventional nuclear island equipment was only 5.1% in FY10, weighed down by low sales volume despite higher production and delivery. As we forecast revenue for nuclear conventional island equipment to reach RMB5bn in FY11F, we expect gross margin to significantly improve towards 15% as production scale increases, in line with management's guidance.

Increasing revenue contribution from high-margin segments

Given the expected delivery of nuclear island equipment, we believe revenue contribution from this high-margin business (gross margin of 30% as at FY10) will likely increase. This will further drive up the gross margin in FY11F and FY12F.

Fig. 189: Gross profit margin forecast



Source: Company data, Nomura estimates

Risks to our investment view

Where could we go wrong?

Downside risk to our target price include: 1) delay in nuclear development; 2) unexpected decline in domestic power equipment demand; and 3) increase in raw material costs, which if not pass through could exert pressure on gross margin.

Delay in nuclear development

Nuclear equipment will likely be the growth driver of Dongfang's revenue and gross margin in the near term, in our view. Should there be any delay in nuclear development in China or in Dongfang's production capacity ramp-up, we expect its growth prospects to worsen quickly.

Unexpected decline in domestic power equipment demand

More than 87.4% of Dongfang's revenue was directly related to domestic power equipment (including thermal, wind, nuclear) as at FY10. Any decline in power equipment demand will likely have a significant impact on Dongfang's earnings and future growth prospects.

Increase in raw material costs, which if not passed through could exert pressure on gross margin

According to management, raw material (largely steel and steel related components) costs make up a substantial proportion of Dongfang's cost of sales. A 20% hike in steel prices could hurt gross margin by 1.0-1.5%, according to our sensitivity analysis. Thus, an unexpected hike in raw material prices, which if not pass through to customers, could exert pressure on Dongfang's earnings.

Valuation methodology:
Our target price of HKD34.40 is based on DCF with a WACC assumption of 6.22% and a terminal growth rate assumption of 2%.

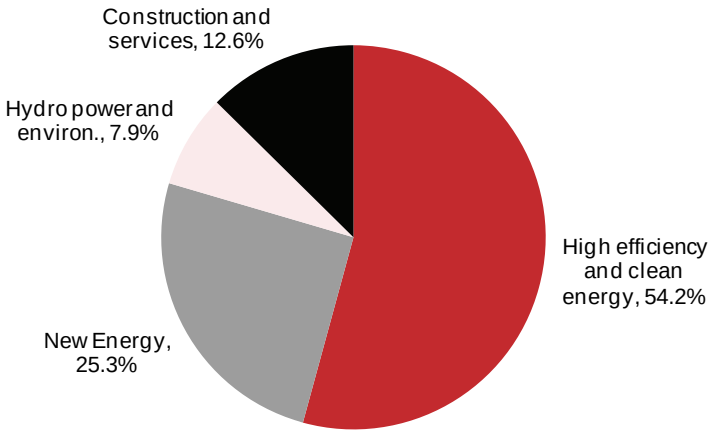
Business description

Company profile

Dongfang Electric engages in the manufacturing and sales of a comprehensive range of power generation equipment. Starting from the FY10 financial result, the company reclassified its business lines into the following four segments to better align and represent the business: 1) High efficiency and clean energy (including traditional thermal equipment, boilers, turbines, turbine generator and nuclear conventional power equipment); 2) New energy (including wind, nuclear island equipment); 3) Hydro power and environmental protection equipment; and 4) Construction and services (including engineering services, turnkey services and repairing/upgrade services for power stations).

As at 2010, 54.2% of its total revenue was contributed by high efficiency and clean energy, followed by new energy (25.3%), construction and services (12.6%) and Hydro power & environmental equipment (7.9%). It is worthwhile to note that clean energy related business (New energy sector and Hydro power) have contributed 33.2% of Dongfang's revenue, which is the highest out of the Big Three.

Fig. 190: Dongfang: FY10 revenue contribution

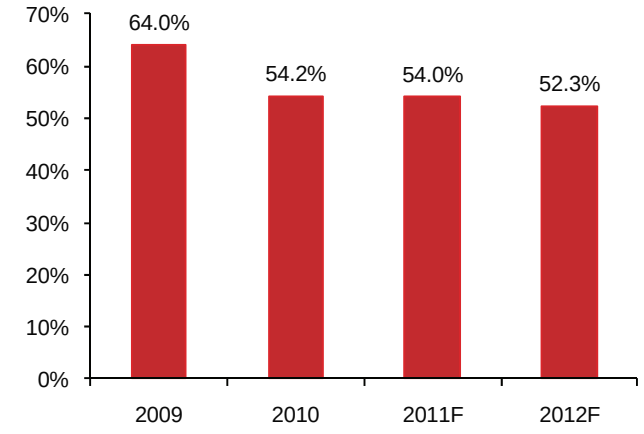


Source: Company data

High efficiency and clean energy

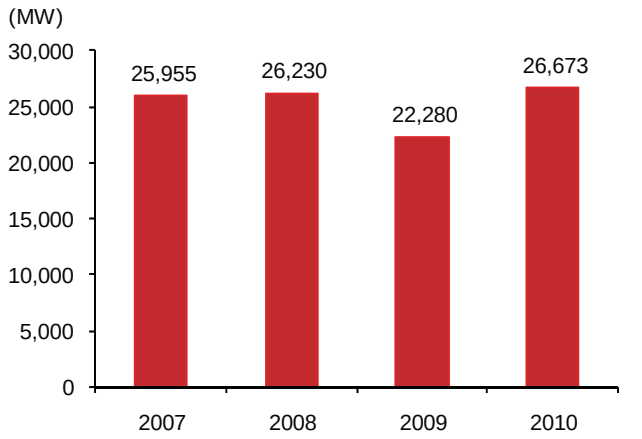
This business segment includes traditional thermal power equipment, such as boilers, steam turbines and steam turbine generators, as well as gas turbines power equipment. It's worthwhile to note that nuclear conventional island equipment is grouped in the segment as well, given the similarity in production process, technology employed and product categories between conventional island equipment and traditional thermal equipment. A slowdown in domestic thermal equipment demand will likely be offset by nuclear conventional island output. Thus, we still see growth opportunity in this segment.

Fig. 191: Revenue contribution (High eff. & clean energy)



Source: Company data, Nomura estimates

Fig. 192: Production output of turbine generators (MW)



Source: Company data

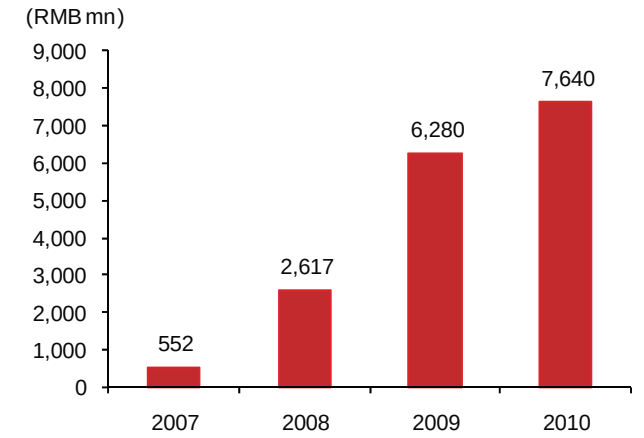
New energy

Dongfang's new energy segment can be further broken down into two major product lines: 1) wind turbine equipment; and 2) nuclear island equipment

Wind turbine equipment

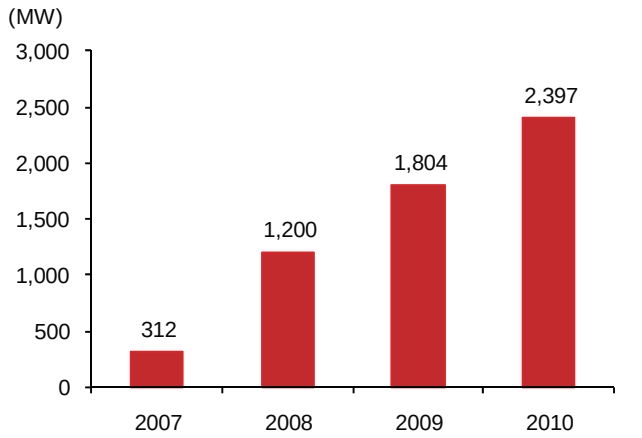
Riding on the strong growth in the domestic wind market, Dongfang has seen its wind equipment output increase by a 97.3% CAGR from 312MW in 2007 to 2,397 MW in 2010. As at FY10, Dongfang was the No. 3 player in the domestic wind turbine market (measured by the cumulative installed capacity, Source: China Wind Energy Association).

Fig. 193: Revenue from wind sector



Source: Company data

Fig. 194: Wind equipment production output (MW)



Source: Company data

In light of its leading position and cost advantage (due to its production scale), Dongfang has the potential to further grow its wind business by taking market share from competitors under an industry consolidating environment. On top of its sizeable domestic market share, Dongfang is one of the leaders in capturing meaningful overseas orders. Dongfang has entered into the supply contract with KSK Energy to supply 166units of 1.5MW turbine with a contract value of ~USD203mn to India.

According to management, its high capacity turbine development is likely to catch the rising off-shore wind farm development in China. Management expects the 3MW turbine to launch in 2011, while higher capacity turbines (such as 5-MW units) are under active development. Indeed, Dongfang recently launched the 2.5MW turbine on 12 April 2011.

Nuclear island equipment

Dongfang provided equipment for both nuclear islands including but not limited to the following major components: pressurisers, steam generators, nuclear pumps, steam turbines and turbine generators.

The company engaged in nuclear power equipment development earlier than Shanghai Electric and Harbin Power and dominated the market in the 2.5G segment. In terms of 3G (AP1000) equipment, Dongfang had a relatively late start, as it had limited involvement in the first batch of suppliers for the AP1000 localisation support projects (Sanmen unit 1-2 and Haiyang unit 1-2). Despite the delayed start, we note that Dongfang has won AP1000 contracts (eg pressuriser for the Haiyang project, steam generator and pressure vessel for Taohuajiang project). According to management, Dongfang provides equipment for reactors with CPR1000, AP1000 and EPR technology.

We are not concerned that Dongfang will be left behind in the 3G+ segment, given:

- The State Nuclear Power Technology Corporation (SNPTC) is the ultimate technology owner of the AP1000 equipment, and it can share technical details with any suppliers; and
- Dongfang's previous engagement in nuclear equipment and its existing capacity, which are attractive in the high demand market, according to channel checks.

Fig. 195: Steam generator for Lingao Phase II

Source: Company data

Hydro power and environmental equipment

This business segment largely consists of manufacturing and sales of hydro power equipment, which contributed nearly 90% of revenue for this business segment in FY10.

Dongfang is one of the two dominant players in the domestic hydro equipment market, sharing the market with Harbin Power. It has participated in the high-profile Three Gorges' hydro project.

Through dedicated R&D effort, Dongfang has capability in Francis Turbine, Kaplan Turbine, Pelton Turbine, Tubular Turbine and other various types of water turbine generators. As Dongfang has attained the capacity to manufacture 800MW class hydro equipment, it is currently working towards the 1,000MW class.

Despite its market share and exposure in hydro, Dongfang was not as strong a player as Harbin Power in the past. Historically, Dongfang has had a gross margin of ~10% (vs. over ~20% for Harbin Power). However, this has changed over the course of FY10, during which Dongfang's gross margin for the hydro business improved to 15.8% from 10.6% in FY09. According to management, improvement in manufacturing process was

responsible for the widened gross margin. In light of the Chinese government's initiatives for clean energy, we forecast revenue growth of 10% for this segment in each of FY11F and FY12F. However, this segment is still regarded to be smaller in size than other business segments.

Construction and services

The construction and services can be broadly classified into two major categories:

- Turnkey solution provider

  In this case, Dongfang will provide the design, implement and construction service of an entire power plant (including the equipment as well).

- Equipment provider

  Here, Dongfang will only provide the "full-set" of equipment including boiler, steam turbine, turbine generators and other auxiliary equipment.

The key difference between the above-mentioned services provided is gross margin. Being an "equipment provider" usually enjoys a higher gross margin than "turnkey solution provider". According to management, Dongfang's better-than-peers gross margin achieved in FY10 (21.8%) was largely attributed to a changed product mix towards "equipment provider". It is worthwhile to note that most of export thermal equipment is recognized in this business segment.

Some of Dongfang's major contracts

Fig. 196: Selected major contracts of Dongfang Electric

Location	Project / company	Component
India	Abhijeet Group	10x660MW Thermal power project
Vietnam	Duyen Hai phase I	Turnkey contract for 2x622MW coal-fired power station
Bosnia	Stanari	1x300MW coal-fired turkey contract
India	KSK	166 sets of 1.5MW direct drive wind turbine
Fujian, China		4x300MW pumped-storage power project
Henan, China	Xinzhongyi	4x660 super criticial thermal power equipments
India	TPCIL	2x660MW super critical thermal power equipments
India	ECEPL	2x660MW Phase II BTG equipment and service contract
Liaoning, China	Hongyanhe Unit 5 / 6	Turbine generators for the conventional island
Shandong, China	Haiyang nuclear	Steam generator for unit 4
India	Athena	2x600MW BTG equipment contracts
Hubei, China	Xianning nuclear Phase I	Nuclear island's pressure vessel and steam generator for unit 2
Fujian, china	Fuqing nuclear	Nuclear island's steam generators for unit 3 / 4
India	Lanco	3 sets of 2x660MW boilers
Shandong, China		2x1000MW main thermal power and auxiliary equipments
Jiangsu, China		Main equipment for 2x220MW gas turbine generators
Jiangsu, China	Tianwan nuclear	Turbine Generator for unit 5/ 6
Hunan, China	Taohuajiang nuclear	Nuclear island's pressure vessels and steam generators
Chile	GDP Suez Enegry	2x17.2MW hydro power equipment
India	ECEPL	2x660MW BTG equipments
Saudi Arabia	Rabigh	2x660MW EPC projects
Hebei, China		2x350MW thermal power equipments
Ningxia, China		2x350MW super critical thermal power equipments
Xiluodu, China		9x770MW Hydroelectric turbine generator in Jinshajiang River
Ludia, China		6x360MW hydro turbines in Ludia
Liaoning, China	Hongyanhe nuclear	Conventional island turbine generator
Fujian	Ningde nuclear	Conventional island turbine generator
Zhejiang	Fangjiashan nuclear	Conventional island turbine generator
Fujian	Fuqing nuclear	Conventional island turbine generator
Guangdong	Taishan nuclear	2x1750MW conventional island turbine generator
Shandong	Haiyang nuclear	2 x pressurisers

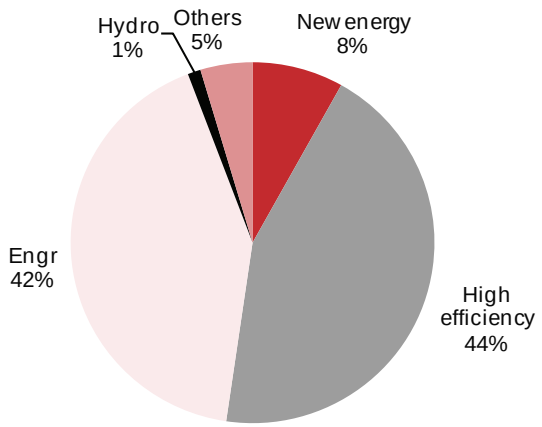
Source: Company data

Order backlog

Dongfang had RMB8.6bn new orders in 1Q11. According to management, there is no new nuclear order due to project approval suspension. The high efficiency and clean energy sector and the engineering services segment contributed RMB3.8bn and RMB3.6bn of new orders.

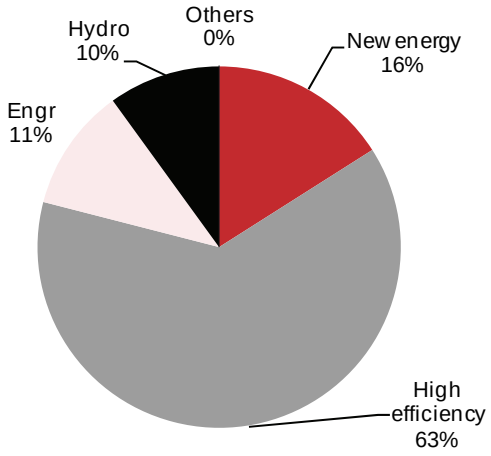
There was RMB140bn order backlog at FY10. The high efficiency and clean energy sector accounted for RMB88.2bn, out of which ~RMB68.2bn were thermal equipment orders and ~RMB20bn were conventional island equipment orders, according to management.

Fig. 197: New orders at 1Q11



Source: Company data, Nomura research

Fig. 198: Order backlog at FY10



Source: Company data, Nomura research

Revenue and gross margin projection

Key assumptions

Fig. 199: Key assumptions

	2009	2010	2011F	2012F	2013F
Revenue (RMB mn)					
High efficiency and clean energy	20,961	20,394	24,331	25,434	25,905
New Energy	7,581	9,518	12,000	13,377	15,182
Hydro power and environ.	3,246	2,958	3,262	3,588	4,018
Construction and services	987	4,734	5,444	6,260	6,887
Total	32,775	37,604	45,037	48,660	51,991
(y-y)		*15%*	*20%*	*8%*	*7%*
Revenue contribution (%)					
High efficiency and clean energy	64.0%	54.2%	54.0%	52.3%	49.8%
New Energy	23.1%	25.3%	26.6%	27.5%	29.2%
Hydro power and environ.	9.9%	7.9%	7.2%	7.4%	7.7%
Construction and services	3.0%	12.6%	12.1%	12.9%	13.2%
Gross Margin (%)					
High efficiency and clean energy	15.9%	17.7%	18.5%	18.7%	18.8%
New Energy	12.1%	21.0%	21.7%	22.1%	22.8%
Hydro power and environ.	10.6%	15.8%	15.8%	15.8%	15.8%
Construction and services	77.2%	21.8%	21.0%	21.0%	21.0%
Overall	16.3%	18.9%	19.5%	19.7%	20.0%
Production output (MW)					
Coal-fired boilers	22,151	20,505	23,062	23,062	21,332
(y-y%)		*-7.4%*	*12.5%*	*0.0%*	*-7.5%*
Coal-fired steam turbines	27,168	32,844	36,941	36,941	34,169
(y-y%)		*20.9%*	*12.5%*	*0.0%*	*-7.5%*
Coal-fired turbine generators	22,280	26,673	30,000	30,000	27,749
(y-y%)		*19.7%*	*12.5%*	*0.0%*	*-7.5%*
Hydro equipment	4,950	5,441	5,500	5,882	6,064
(y-y%)		*9.9%*	*1.1%*	*6.9%*	*3.1%*
Wind turbines	1,804	2,398	2,800	2,932	2,932
(y-y%)		*32.9%*	*16.8%*	*4.7%*	*0.0%*

Source: Company data, Nomura estimates

Risk analysis

What if …

Events:

The magnitude 9.0's earthquake on 11 March 2011 in Japan has caused failure to the emergency core cooling systems in the Fukushima Daiichi units, causing nuclear plants shutdown and the two explosions, followed by radioactivity materials leakage. As of today, Japan's authority is still working on the containment and proper handling of the site. Following the Japanese incidents, on 16 March 2011, China's State Council called for safety inspection and temporary suspension of new nuclear projects approval until further notice. We provide details of the guidelines / announcement below.

1) Require relevant departments to perform safety checks on all existing plants immediately to ensure nuclear safety
2) Re-enforce operating management / safety process in all existing nuclear facilities and monitor to ensure these procedures / processes are in place
3) Perform safety / risk assessment on all nuclear plants under construction and halt construction process should the plants fail assessment
4) Suspend approval of new nuclear projects including projects that have proceeded with pre-construction work until new nuclear safety procedures are set up.

In light of the above events and market concerns on the potential delay / cancellation in nuclear development in China, we have run three scenarios to study the impact on Dongfang, in terms of near-term earnings (FY11F) and the net present values in the case of nuclear development delay / reduction in China. We also run two more scenario analysis in which we study the impacts on thermal capacity coming in below our forecasts.

Scenarios:

On nuclear development in China:

- Scenario 1: Delay all projects by six months, the 80GW of nuclear capacity is achieved by 1H21F
- Scenario 2: Delay ll nuclear projects by a year, the 80GW target is achieved by 2021F
- Scenario 3: No delay on approved projects but no new project will be approved at all. Total effective market size for the nuclear equipment space is down to 35.5GW, the current amount of approved projects.

On thermal equipment demand slower than our forecast:

- Scenario 4: Instead of our current assumption of 91GW of net power generating capacity addition for FY11F/12F, we assume net gain would be 85GW for these two years, while the shortfall is going to impact thermal power generating capacity alone. Thus, the additional thermal capacity for FY11F and FY12F would be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base-case scenario. We revise revenue generated from domestic thermal power equipment down for the three companies (Dongfang Electric, Shanghai Electric and Harbin Power) by the same amount, 9.9% and 10.4% for FY11F and FY12F, respectively.
- Scenario 5: Similar to scenario 4, but in this case, we assume net gain of power generating capacity in China would be 78GW for each of FY11F and FY12F (as per the latest FY11 forecast by China Electricity Council). Again, we assume the shortfall would come from the thermal power generating capacity. In this scenario, we revise lower the revenue generated from thermal power equipment (as well as the amount of thermal power capacity installed) by 24.2% for FY11F and 25.6% for FY12F.

Fig. 200: Risk analysis results

Dongfang Electric										
Earnings forecast (RMB mn)										
	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Base Case	2,966	3,249	3,705	3,999	3,706	3,209	3,211	3,195	3,225	3,219
Scenario 1	2,648	3,154	3,534	3,928	3,893	3,392	3,207	3,190	3,220	3,216
(% diff)	*-11%*	*-3%*	*-5%*	*-2%*	*5%*	*6%*	*0%*	*0%*	*0%*	*0%*
Scenario 2	2,331	3,058	3,363	3,858	4,081	3,575	3,203	3,185	3,214	3,213
(% diff)	*-21%*	*-6%*	*-9%*	*-4%*	*10%*	*11%*	*0%*	*0%*	*0%*	*0%*
Scenario 3	2,966	3,249	3,493	3,601	3,121	2,752	2,637	2,534	2,563	2,562
(% diff)	*0%*	*0%*	*-6%*	*-10%*	*-16%*	*-14%*	*-18%*	*-21%*	*-21%*	*-20%*
Scenario 4	2,838	3,112	3,699	3,996	3,702	3,205	3,207	3,191	3,221	3,215
(% diff)	*-4%*	*-4%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Scenario 5	2,653	2,911	3,689	3,992	3,698	3,199	3,201	3,185	3,215	3,209
(% diff)	*-11%*	*-10%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

DCF valuation	
Base Case	34.39
Scenario 1	34.21
(% diff)	*-0.5%*
Scenario 2	34.04
(% diff)	*-1.0%*
Scenario 3	26.73
(% diff)	*-22.3%*
Scenario 4	34.19
(% diff)	*-0.6%*
Scenario 5	33.91
(% diff)	*-1.4%*

Source: Nomura Research

Conclusion:

According to our risk analysis, the net present value / shares for Dongfang remains largely intact in the case of projects delay. In the case of a 1-year delay in nuclear development in China, and thus, delays in revenues and deliveries, the net present value would drop by 1.0%. However, its short-term earnings (FY11F earnings) would be down by 21%.

On the other hand, we expect Dongfang to be impacted by China's long-term nuclear development plans. If China is not to approve any future nuclear projects, exhausting nuclear equipment revenue in the future, the net present value of Dongfang would drop by 22.3%, according to our risk analysis.

In the case of a thermal shortfall, Dongfang's near-term earnings would be impacted negatively by 4-11% on different scenarios. However, the long-term value would only drop by 0.6%-1.4%.

Detailed scenarios study:

Scenario on nuclear development in China:

- Scenario 1: Delay all projects by six months, 80GW of nuclear capacity is achieved by 1H21F

  Near term earnings:

  Dongfang's FY11F earnings would be down 11% in this scenario, given the expected spike in nuclear revenue as in the base-case forecast.

  In terms of net present value /shares of DFE, the impact is minimal, as delayed revenue will eventually catch up:

Dongfang: Down 0.5% to HKD34.39 from HKD34.21

- Scenario 2: Delay all nuclear projects by one year, the 80GW target is achieved by 2021F

  The impacts on Dongfang is largely in-line with scenario one with a more severe magnitude. In terms of short-term earnings, Dongfang's FY11F earnings is projected to go down 21% to RMB2,331mn

  Net present value / shares, the impact would be:

  Dongfang: Down 1.0% to HKD34.04 from HKD34.39

- Scenario 3: There is no delay on approved projects but no new project will be approved at all. Thus, the total effective market size for the nuclear equipment space is down to 35.5GW, the amount of approved projects currently.

  In this case, short-term earnings remain intact, given 30.1GW out of the 35.5GW (approved projects) capacity are to commence before 2015F. However, there are substantial impacts on longer-term earnings.

  Net present value / shares would be:

  Dongfang: Down 22.3% to HKD26.73 from HKD34.39

Scenario on thermal equipment demand slower than our forecast:

- Scenario 4: Instead of our current assumption of 91GW of net power generating capacity addition for FY11F/12F, we assume net gain would be 85GW for these two years, while the shortfall is going to impact thermal power generating capacity alone. Thus, the additional thermal capacity for FY11F and FY12F would be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base-case scenario. We revise revenue generated from domestic thermal power equipment down by 9.9% and 10.4% for FY11F and FY12F, respectively.

  This scenario impacts Dongfang's FY11F earnings by 4%.

  Net present value / shares for these companies are as follow:

  Dongfang: Down 0.6% to HKD34.19 from HKD34.39

- Scenario 5: This is similar to scenario 4, but in this case, we assume net gain of power generating capacity in China would be 78GW for each of 2011F and 2012F. Again, we assume the shortfall would come from the thermal power generating capacity. In this scenario, we revise lower the revenue generated from thermal power equipment (as well as the amount of thermal power capacity installed) by 24.2% and 25.6% for 2011F and 2012F, respectively.

  FY11F earnings are down 11%.

  Net present value / shares would be:

  Dongfang: Down 1.4% to HKD33.91 from HKD34.39

Harbin Electric 1133.HK 1133 HK

POWER & UTILITIES

NOMURA EQUITY RESEARCH

Lack of near-term catalyst, fair valuation

Despite aggressive plan for new energy, contribution limited until 2013F

June 2, 2011

Rating Starts at	**Neutral**
Target price Starts at8.90	HKD 8.90
Closing price May 26, 2011	HKD 9.35
Potential downside	-4.8%

Action: Initiate with NEUTRAL and a TP of HKD8.90

We initiate Harbin Electric with a NEUTRAL rating and a TP of HKD8.90, as we are concerned on near-term visibility in its new energy development and huge exposure to domestic thermal power equipment.

Catalysts:

- **Most exposed to slowing domestic thermal equipment demand.** Of the Big 3, Harbin is most exposed to domestic thermal equipment sales. In FY10, thermal equipment sales made up 62% of its revenue. Despite recent upside catalysts on thermal development due to power shortages, we view high revenue growth like that experienced by SEG and DFE (driven by nuclear) as unlikely.
- **Sizable nuclear revenue contribution not until 2013F.** No doubt, Harbin has sizeable nuclear orders (RMB18bn as at FY10) and is exposed to nuclear opportunities. However, according to management, sizeable revenue (RMB 2bn) contribution is expected in 2013F, fuelling meaningful growth only by then.
- **Late to wind game.** Despite Harbin's recent JV with GE, we believe the opportunity is limited, as wind market demand is slowing, in our view.

Valuation: Lack of growth prospect until 2013F justifies a NEUTRAL

Despite our view that Harbin is well positioned to capture nuclear equipment opportunities, its strong reliance on thermal has made us cautious on its earnings growth prospects in FY11F/12F. At 26 May, 2011, even though the stock was trading at an 11.6x FY11F P/E, a 15% discount vs peers, we believe the lack of a near-term catalyst justifies our rating.

31 Dec	FY10		FY11F		FY12F		FY13F
Currency (CNY)	Actual	Old	New	Old	New	Old	New
Revenue (mn)	28,816		30,874		33,337		34,168
Reported net profit (mn)	1,024		884		922		1,013
Normalised net profit (mn)	1,024		884		922		1,013
Normalised EPS	0.7		0.6		0.7		0.7
Norm. EPS growth (%)	69.0		-13.7		4.3		9.9
Norm. P/E (x)	10.7	N/A	11.6	N/A	11.1	N/A	10.1
EV/EBITDA	8.1	N/A	7.8	N/A	7.5	N/A	6.7
Price/book (x)	1.1	N/A	1.0	N/A	0.9	N/A	0.9
Dividend yield (%)	1.8	N/A	1.6	N/A	1.7	N/A	1.9
ROE (%)	11.2		8.9		8.6		8.8
Net debt/equity (%)	35.0		35.7		35.5		30.6

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

Rising nuclear demand in light of China's energy goal provides a growth opportunity for nuclear equipment players.

Nomura vs consensus

Our earnings forecast for FY11F is 6% below consensus, as we have factored in lower gross margin for nuclear equipment in the first year of revenue contribution.

Research analysts

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Key data on Harbin Electric

Income statement (CNYmn)

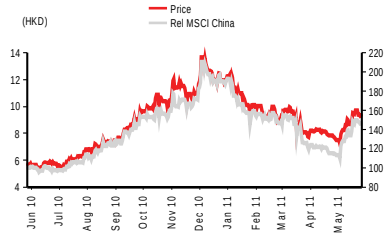
Year-end 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
Revenue	**28,630**	**28,816**	**30,874**	**33,337**	**34,168**
Cost of goods sold	-24,964	-24,666	-26,521	-28,705	-29,411
Gross profit	**3,666**	**4,150**	**4,353**	**4,632**	**4,757**
SG&A	-2,535	-2,881	-3,068	-3,285	-3,276
Employee share expense					
Operating profit	**1,130**	**1,269**	**1,286**	**1,347**	**1,481**
EBITDA	**1,554**	**1,750**	**1,766**	**1,877**	**2,053**
Depreciation	-401	-468	-468	-519	-563
Amortisation	-22	-13	-12	-10	-9
EBIT	1,130	1,269	1,286	1,347	1,481
Net interest expense	-180	-132	-93	-100	-105
Associates & JCEs	35	26	26	26	26
Other income	0	248	0	0	0
Earnings before tax	**985**	**1,410**	**1,218**	**1,273**	**1,402**
Income tax	-227	-272	-237	-249	-276
Net profit after tax	**758**	**1,138**	**982**	**1,024**	**1,125**
Minority interests	-151	-113	-98	-102	-112
Other items	0	0	0	0	0
Preferred dividends	0	0	0	0	0
Normalised NPAT	**606**	**1,024**	**884**	**922**	**1,013**
Extraordinary items	0	0	0	0	0
Reported NPAT	**606**	**1,024**	**884**	**922**	**1,013**
Dividends	-94	-193	-166	-173	-191
Transfer to reserves	**513**	**832**	**717**	**748**	**822**
Valuation and ratio analysis					
FD normalised P/E (x)	18.6	10.7	11.6	11.1	10.1
FD normalised P/E at price target (x)	17.7	10.2	11.1	10.6	9.6
Reported P/E (x)	18.6	10.7	11.6	11.1	10.1
Dividend yield (%)	0.8	1.8	1.6	1.7	1.9
Price/cashflow (x)	2.4	12.8	6.4	5.8	6.3
Price/book (x)	1.3	1.1	1.0	0.9	0.9
EV/EBITDA (x)	13.0	8.1	7.8	7.5	6.7
EV/EBIT (x)	17.8	11.0	10.6	10.3	9.2
Gross margin (%)	12.8	14.4	14.1	13.9	13.9
EBITDA margin (%)	5.4	6.1	5.7	5.6	6.0
EBIT margin (%)	3.9	4.4	4.2	4.0	4.3
Net margin (%)	2.1	3.6	2.9	2.8	3.0
Effective tax rate (%)	23.0	19.3	19.4	19.6	19.7
Dividend payout (%)	15.4	18.8	18.8	18.8	18.8
Capex to sales (%)	3.0	3.2	3.2	2.9	2.8
Capex to depreciation (x)	2.1	2.0	2.1	1.9	1.7
ROE (%)	7.2	11.2	8.9	8.6	8.8
ROA (pretax %)	2.8	3.2	3.3	3.2	3.3
Growth (%)					
Revenue	-4.3	0.6	7.1	8.0	2.5
EBITDA	-30.2	12.6	0.9	6.3	9.4
EBIT	-35.2	12.3	1.3	4.8	9.9
Normalised EPS	-41.8	69.0	-13.7	4.3	9.9
Normalised FDEPS	-41.8	69.0	-13.7	4.3	9.9
Per share					
Reported EPS (CNY)	0.44	0.74	0.64	0.67	0.74
Norm EPS (CNY)	0.44	0.74	0.64	0.67	0.74
Fully diluted norm EPS (CNY)	0.44	0.74	0.64	0.67	0.74
Book value per share (CNY)	6.27	7.00	7.50	8.05	8.66
DPS (CNY)	0.07	0.14	0.12	0.13	0.14

Source: Nomura estimates

Notes

In light of strong nuclear equipment revenue in 2013F, guided by management, we estimate FY13F EPS will grow 10% y-y.

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (HKD)	20.6	4.1	81.2
Absolute (USD)	20.5	4.3	81.6
Relative to index	26.1	-0.3	63.9
Market cap (USDmn)	1,654.0		
Estimated free float (%)	49.0		
52-week range (HKD)	13.9/5.05		
3-mth avg daily turnover (USDmn)	9.68		
Major shareholders (%)			
Harbin Electric Corporation	50.9		

Cashflow (CNYmn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
EBITDA	1,554	1,750	1,766	1,877	2,053
Change in working capital	3,459	6,314	-1,125	-1,314	-514
Other operating cashflow	-379	-7,210	971	1,198	84
Cashflow from operations	**4,633**	**854**	**1,611**	**1,761**	**1,622**
Capital expenditure	-847	-932	-1,000	-967	-942
Free cashflow	**3,786**	**-78**	**611**	**794**	**681**
Reduction in investments	-6	94	0	0	0
Net acquisitions	-7	46	0	0	0
Reduction in other LT assets	8	-94	11	10	10
Addition in other LT liabilities	3,059	-526	542	649	219
Adjustments	-3,163	3,412	-166	-267	165
Cashflow after investing acts	**3,678**	**2,854**	**999**	**1,187**	**1,075**
Cash dividends	-103	-94	-193	-166	-173
Equity issue	0	0	0	0	0
Debt issue	344	579	147	176	59
Convertible debt issue					
Others	-529	-2,526	-286	-266	-279
Cashflow from financial acts	**-288**	**-2,041**	**-332**	**-257**	**-393**
Net cashflow	**3,390**	**814**	**667**	**930**	**682**
Beginning cash	7,222	10,612	11,426	12,093	13,023
Ending cash	10,612	11,426	12,093	13,023	13,705
Ending net debt	9,435	3,376	3,690	3,935	3,648

Source: Nomura estimates

Balance sheet (CNYmn)

As at 31 Dec	FY09	FY10	FY11F	FY12F	FY13F
Cash & equivalents	10,612	11,426	12,093	13,023	13,705
Marketable securities	0	0	0	0	0
Accounts receivable	12,169	11,123	11,917	12,868	13,189
Inventories	14,230	12,563	13,507	14,620	14,979
Other current assets	10,574	9,139	9,608	10,138	10,390
Total current assets	**47,585**	**44,250**	**47,126**	**50,649**	**52,262**
LT investments	428	333	333	333	333
Fixed assets	4,261	4,815	5,358	5,816	6,205
Goodwill	0	0	0	0	0
Other intangible assets	99	90	78	68	59
Other LT assets	503	597	586	576	566
Total assets	**52,876**	**50,086**	**53,482**	**57,443**	**59,426**
Short-term debt	16,526	12,209	13,079	14,121	14,472
Accounts payable	10,167	11,746	12,629	13,670	14,006
Other current liabilities	4,327	4,913	5,113	5,352	5,433
Total current liabilities	**31,020**	**28,868**	**30,821**	**33,143**	**33,911**
Long-term debt	3,521	2,593	2,704	2,836	2,881
Convertible debt	0	0	0	0	0
Other LT liabilities	8,118	7,593	8,135	8,784	9,003
Total liabilities	**42,659**	**39,053**	**41,660**	**44,763**	**45,794**
Minority interest	1,578	1,395	1,493	1,595	1,707
Preferred stock	0	0	0	0	0
Common stock	1,377	1,377	1,377	1,377	1,377
Retained earnings	7,169	8,068	8,786	9,534	10,356
Proposed dividends	94	193	166	173	191
Other equity and reserves	0	0	0	0	0
Total shareholders' equity	**8,639**	**9,638**	**10,329**	**11,084**	**11,924**
Total equity & liabilities	**52,876**	**50,086**	**53,482**	**57,442**	**59,426**
Liquidity (x)					
Current ratio	1.53	1.53	1.53	1.53	1.54
Interest cover	6.3	9.6	13.8	13.4	14.1
Leverage					
Net debt/EBITDA (x)	6.07	1.93	2.09	2.10	1.78
Net debt/equity (%)	109.2	35.0	35.7	35.5	30.6
Activity (days)					
Days receivable	156.3	147.5	136.2	136.1	139.2
Days inventory	198.6	198.2	179.4	179.3	183.7
Days payable	130.7	162.1	167.7	167.7	171.7
Cash cycle	224.2	183.6	147.9	147.7	151.1

Source: Nomura estimates

Notes

Customer deposits accounted as non-interest bearing debt

Company profile

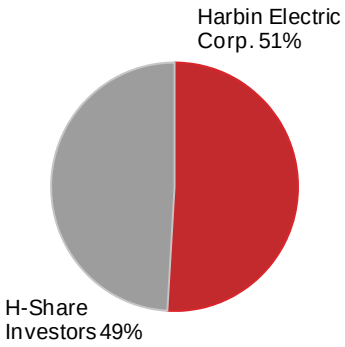
Fig. 201: Company profile

Harbin Electric Company is listed in Hong Kong (1133 HK) and it:

1. 51% owned by state-owned enterprise Harbin Electric Corp.
2. Primarily a power equipment manufacturer.
3. The most reliant on traditional thermal business (the production of boilers, turbines and turbine generators) out of the big 3 power equipment companies. Thermal business contributes 66% of its FY10 revenue.
4. Market share of 18.9% in nuclear power equipment as at FY10 (in terms of order backlog). However, there is currently limited revenue contribution from the nuclear segment.

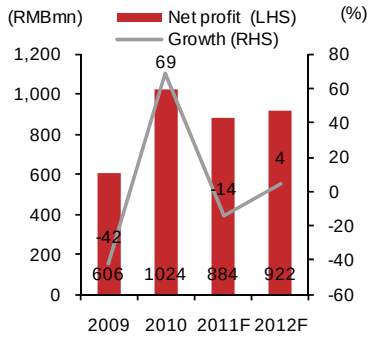
Source: Company data, Nomura research

Fig. 202: Shareholder structure



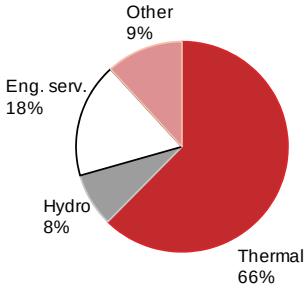
Source: Company data

Fig. 203: Net profit trend



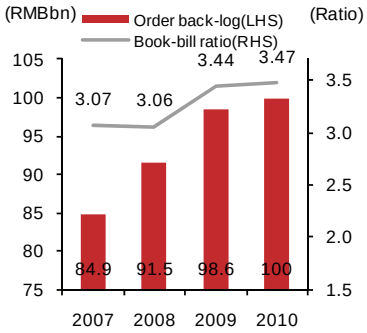
Source: Company data, Nomura estimates

Fig. 204: FY10 revenue contribution



Source: Company data

Fig. 205: Order backlog



Source: Company data

Fig. 206: SWOT analysis

Strength

HEC's hydro business has enjoyed a higher gross margin than major competitors and has been HEC's strength.

Weakness

Overall gross margin of Harbin has been historically lower than competitors, due to the technology it relies on for thermal equipment. Also, the company has been slow in engaging opportunities in the nuclear sector.

Opportunity

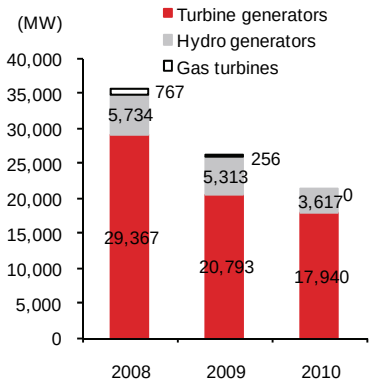
In light of environmental protection initiative in China and worldwide, demand for hydro power equipment may rise. Harbin could leverage its strength to capture this growth opportunity should it arise

Threat

As HEC is the most reliance on thermal equipment business out of the big three, its earnings could deteriorate should domestic thermal power demand significantly weakens.

Source: Nomura research

Fig. 207: Production output (power generating equipment)



Source: Company data

Limited near-term growth catalyst

We initiate coverage of Harbin Electric Company with a NEUTRAL rating and a 12-month target price of HKD8.90. In our view, the company has limited growth potential over the next two years, as thermal still dominates its revenue and gross profit. Given slowing domestic thermal market demand, somewhat offset by export orders, we believe strong growth for the company is unlikely. Potential growth may come as the nuclear and wind businesses start to make meaningful contributions to the company in 2013F. However, given its late start in the game and limited exposure in nuclear equipment, we are concerned on the execution uncertainty and production capacity ramp-up. Despite cheap valuation in comparison with peers and a solid position in the nuclear supply chain, the lack of a near-term catalyst deserves a NEUTRAL.

Reliance on thermal drags down near-term growth

With thermal power equipment contributing 62% to its gross profit in FY10, Harbin is the most exposed of the big three Chinese Power equipment companies to the slowdown in domestic thermal power equipment demand. We do not expect revenue from thermal equipment related business to drop due to its strong order backlog (RMB46bn of thermal orders as at FY10). Despite recent shortages posting upside to thermal equipment demand, meaningful expansion from thermal equipment business alone is unlikely, in our view, dragging down the company's growth potential in 2011F/12F.

Nuclear and wind to contribute, but not until 2013F

In spite of Harbin's effort in diversifying itself away from the thermal business, we do not see new business areas to make significant addition to its bottom-line in the near future, due to its lack of exposure in developing nuclear equipment, in our view. Unlike Shanghai and Dongfang, which have sizable revenue contributed by nuclear equipment, Harbin still has no revenue contribution from nuclear equipment as at FY10. Meaningful gross profit contribution is unlikely until 2013F, according to management, and in line with our view. Harbin is also getting exposed to the wind business through its J.V. announced in Sep, 2010, making itself the last one out of the big three in penetrating in this space. But again, material contribution will not start until 2013F.

Arriving late in the game could limit Harbin's wind prospects

After doubling its installed wind generating capacity over the past five years, China's wind demand is likely to slow down. We forecast wind turbine installation at ~17.9GW / year for 2011F (vs. 18.9GW in FY10). Given the fierce competition in wind turbines and the forecasted flattish growth, we feel that Harbin has missed the opportunity to grow with the sector. Substantial growth in the wind business for Harbin in the short term is unlikely, given that Harbin has to fight for market share with existing players. Management targeted RMB 6-8bn annual revenue as a long-term goal, which, even if achievable, will not come in the near term given current market dynamics.

Cheap but fair valuation, in our view

We like HEC's position to capture nuclear equipment opportunities in China. However, a lack of near-term catalysts makes us cautious. As at May 26, 2011, the stock was trading at HKD9.35 (11.6x FY11F P/E vs. peers' 13.6x).Even at a discount of 15% to its peers, we think this is fair. Despite a 69.0% y-y increase in FY10 earnings, earnings quality is poor given there was RMB 248mn contributed by disposal (a piece of property) gain and fair value gains. We forecast FY11F earnings to come in 14% lower than FY10 earnings, given the one-off in FY10 is unlikely to recur. Although the company is in solid position to capture new energy opportunities in long term, a lack of near-term catalysts lead us to initiate with NEUTRAL.

Initiate at NEUTRAL, TP of HKD8.90

We initiate coverage on Harbin Electric Company with a NEUTRAL rating and a 12-month target price of HKD8.90. As of May 26, 2011, the stock was trading at 11.6x FY11F P/E, and 1.0x FY11F P/B.

Our TP of HKD8.90 is derived based on DCF with a WACC assumption of 7.4% and a terminal growth rate assumption of 2%.

Fig. 208: Harbin Electric Company: DCF valuation

FCF (RMB'mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Reporting tevenue	30,874	33,337	34,168	37,015	38,648	37,958	38,486	38,716	39,683	40,162
…Growth rate	*7%*	*8%*	*2%*	*8%*	*4%*	*-2%*	*1%*	*1%*	*2%*	*1%*
EBIT (non-IFRIC)	1,286	1,347	1,481	1,782	1,854	1,784	1,784	1,773	1,798	1,801
Depreciation/amortization	480	530	572	607	641	669	687	699	706	708
EBITDA	1,766	1,877	2,053	2,389	2,495	2,453	2,471	2,473	2,504	2,509
…EBITDA margin	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*
less:tax	(237)	(249)	(276)	(337)	(352)	(355)	(372)	(386)	(408)	(426)
minority interest	(98)	(102)	(112)	(136)	(140)	(133)	(131)	(129)	(129)	(127)
change in working capital	335	402	137	473	267	(116)	85	36	158	77
CAPEX	(1,000)	(967)	(942)	(962)	(928)	(856)	(812)	(761)	(723)	(674)
Leveraged FCF	766	961	859	1,428	1,342	993	1,240	1,233	1,401	1,359
Growth Rate										2.0%

WACC	Sum of PV (RMB'mn)	PV of TV (RMB'mn)	EV (RMB'mn)	Net cash/ (debt) (FY11F)	Equity Value (RMB'mn)	Shares out ('mn)	Value per share (HK$)
6.40%	8,673	18,028	26,700	(11,804)	14,896	1,377	13.57
6.50%	8,637	17,479	26,116	(11,804)	14,311	1,377	13.03
6.60%	8,601	16,955	25,556	(11,804)	13,752	1,377	12.53
6.70%	8,566	16,455	25,020	(11,804)	13,216	1,377	12.04
6.80%	8,531	15,976	24,507	(11,804)	12,703	1,377	11.57
6.90%	8,496	15,519	24,015	(11,804)	12,211	1,377	11.12
7.00%	8,461	15,081	23,542	(11,804)	11,738	1,377	10.69
7.10%	8,427	14,662	23,088	(11,804)	11,284	1,377	10.28
7.20%	8,392	14,260	22,652	(11,804)	10,848	1,377	9.88
7.30%	8,358	13,874	22,232	(11,804)	10,428	1,377	9.50
7.40%	8,324	13,503	21,827	(11,804)	10,023	1,377	9.13
7.50%	8,291	13,147	21,438	(11,804)	9,633	1,377	8.77
7.60%	8,257	12,805	21,062	(11,804)	9,258	1,377	8.43
7.70%	8,224	12,475	20,699	(11,804)	8,895	1,377	8.10
7.80%	8,191	12,158	20,349	(11,804)	8,545	1,377	7.78
7.90%	8,159	11,853	20,011	(11,804)	8,207	1,377	7.48
8.00%	8,126	11,558	19,684	(11,804)	7,880	1,377	7.18
8.10%	8,094	11,275	19,368	(11,804)	7,564	1,377	6.89
8.20%	8,062	11,001	19,063	(11,804)	7,258	1,377	6.61
7.40%	8,030	13,508	21,537	(11,804)	9,733	1,377	8.87

WACC Calculation	
Equity Beta	1.2
Risk Free Rate	3.0%
Equity Risk Premium	6.0%
Country Risk Premium	0%
Cost of Equity	10.2%
Cost of Debt	5.3%
Debt/Capital	45%
Tax	25.0%
WACC	7.4%
Terminal growth rate	2%

Source: Nomura estimates

Fig. 209: Valuation comparison

Company	Ticker	Rating	Price target L. Curr.	Price L. Curr.	Market cap (US$mn)	Fiscal Y/E	P/E (x) 11F	P/E (x) 12F	P/E (x) 13F	PEG 11-13F	P/B (x) 11F	P/B (x) 12F	P/B (x) 13F	Yield (%) 11F	Yield (%) 12F	Yield (%) 13F	Net debt/equity (%) 11F	Net debt/equity (%) 12F	Net debt/equity (%) 13F	RoE (%) 11F	RoE (%) 12F	RoE (%) 13F
China																						
Power equipment manufacturer																						
Shanghai Electric	2727 HK	Buy	4.90	4.09	12,523	Dec	13.1	11.5	10.3	0.9	1.4	1.3	1.2	2.3	2.6	2.9	67	64	56	11.4	11.8	12.1
Dongfang Electric	1072 HK	Buy	34.40	29.75	7,836	Dec	16.0	14.6	12.8	1.2	3.5	2.8	2.4	0.6	0.7	0.8	197	160	127	23.9	21.3	20.2
Harbin Power	1133 HK	Neutral	8.90	9.35	1,654	Dec	11.6	11.1	10.1	n.a.	1.0	0.9	0.9	1.6	1.7	1.9	36	35	31	8.9	8.6	8.8
Average							13.6	12.4	11.1	1.0	2.0	1.7	1.5	1.5	1.7	1.8				14.7	13.9	13.7
Heavy equipment player with exposure to forging parts for nuclear equipment																						
China First Heavy	601106 CH	Not rated	n.a.	5.06	5,095	Dec	22.6	17.6	23.0	0.9	1.8	1.7	1.7	0.5	0.6	0.4	9	15	21	8.1	9.2	7.5
China Erzhong	601268 CH	Not rated	n.a.	10.12	2,634	Dec	34.8	24.1	17.4	0.5	2.7	2.5	n.a.	0.6	0.9	0.7	47.86	38.87	n.a.	6.3	8.7	n.a.
Average							28.7	20.9	20.2	0.7	2.3	2.1	1.7	0.5	0.8	0.5				7.2	9.0	7.5
Wind turbine / components manufacturer																						
China High Speed Transmission	658 HK	Buy	20.00	9.79	1,730	Dec	6.5	5.5	4.4	13.6	1.2	1.0	0.9	4.9	5.9	7.3	36.40	43.38	34.54	21.0	21.3	22.6
Sinovel	601558 CH	Not rated	n.a.	56.93	8,813	Dec	15.4	12.1	6.8	0.3	3.2	2.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19.9	20.5	n.a.
Xinjiang Goldwind	2208 HK	Not rated	n.a.	10.40	5,853	Dec	10.0	9.4	8.6	15.6	1.5	1.3	1.3	2.5	2.6	3.4	net cash	net cash	net cash	17.9	15.6	16.0
Mingyang	MY US	Not rated	n.a.	7.12	875	Dec	5.6	4.8	4.0	0.2	1.3	1.0	0.8	n.a.	n.a.	0.6	net cash	net cash	net cash	22.9	20.3	n.a.
Average							7.5	6.4	4.8	5.9	1.4	1.2	0.7	2.5	2.8	2.8				16.3	15.5	12.9
China Average							15.1	12.3	10.8	4.1	2.0	1.7	1.3	1.9	2.1	2.2				15.6	15.3	14.5
Non-China																						
Power equipment player (incl. forging parts manufacturer)																						
GE	GE US	Buy	24.00	19.22	205,958	Dec	14.1	11.6	n.a.	n.a	1.6	1.5	n.a.	2.8	3.4	n.a.	net cash	net cash	n.a.	11.7	12.9	n.a.
Mitsubishi Heavy	7011 JP	Buy	465.00	381.00	15,812	Mar	42.3	24.9	16.9	0.3	1.0	1.0	0.9	1.6	1.6	1.6	80.00	70.00	70.00	2.3	3.9	5.5
BHI Co. Ltd	083650 KS	Not rated	n.a.	16,000.00	192	Dec	7.4	n.a.	n.a.	n.a	1.9	n.a.	n.a.	1.2	1.2	1.3	57.67	n.a.	n.a.	n.a.	n.a.	n.a.
Doosan	034020 KS	Not rated	n.a.	61,200.00	5,951	Dec	26.5	19.7	11.5	0.3	1.8	n.a.	n.a.	0.8	0.9	1.0	59.06	n.a.	n.a.	n.a.	n.a.	n.a.
BHEL	BHEL IN	Reduce	1,850.00	1,916.65	20,778	Mar	17.5	14.0	13.1	42.1	4.7	3.8	3.2	1.9	2.2	2.4	n.a.	n.a.	n.a.	33.3	29.8	26.4
Japan Steel Works	5631 JP	Neutral	880.00	592.00	2,705	Mar	12.2	12.1	9.3	1.2	1.8	1.6	1.4	4.1	4.2	4.2	30.00	net cash	net cash	14.4	13.2	15.1
Toshiba Plant	1983 JP	Buy	1,350.00	806.00	968	Mar	9.5	8.5	7.7	0.9	0.9	0.8	0.8	1.9	1.9	1.9	net cash	net cash	net cash	9.9	10.1	10.2
Siemens	SIE GR	Neutral	100.00	90.48	58,452	Sep	10.7	9.5	12.4	0.5	2.3	2.1	1.9	4.7	5.3	4.1	net cash	net cash	net cash	19.2	16.7	17.1
Alstom	ALO FP	Buy	49.00	41.34	8,534	Mar	26.5	13.0	10.4	n.a.	3.0	2.6	2.4	1.6	2.6	3.2	34.72	20.19	8.47	15.3	22.2	23.1
Areva SA	CEI FP	Not rated	n.a.	30.25	8,117	Dec	21.2	14.9	14.2	n.a.	1.3	1.2	1.1	0.8	1.5	1.4	n.a	n.a	n.a	5.7	7.5	7.2
Average							18.8	14.3	12.0	7.6	2.0	1.8	1.7	2.1	2.5	2.3				14.0	14.5	14.9
Wind turbine / components manufacturer																						
Hansen Transmissions	HSN LN	Not rated	n.a.	42.50	201	Mar	n.a.	n.a.	18.5	n.a	0.4	0.4	0.4	n.a.	n.a.	0.3	3.25	0.64	net cash	(2.4)	(0.3)	2.2
Gamesa	GAM SM	Suspended	n.a.	6.32	1,097	Dec	22.6	16.7	13.4	0.5	0.9	0.9	0.9	1.2	1.5	2.1	32.04	34.87	36.06	4.2	5.4	6.9
Vesta	VWS DC	Suspended	n.a.	148.70	21,375	Dec	27.4	22.7	17.7	0.5	2.7	2.4	2.1	n.a.	n.a.	0.1	20.94	13.14	5.33	9.6	11.1	13.0
Repower	RPW GR	Not rated	n.a.	131.20	859	Mar	22.8	18.7	16.2	2.2	2.4	2.2	2.0	1.1	1.2	1.6	net cash	net cash	net cash	10.6	11.5	13.5
Suzlon	SUEL IN	Suspended	n.a.	50.05	1,963	Mar	n.a.	39.4	12.3	n.a	1.2	1.3	1.2	n.a.	0.1	0.1	130.56	136.47	119.92	(12.9)	3.0	9.4
Average							24.3	24.4	15.6	1.1	1.5	1.4	1.3	1.1	0.9	0.8				1.8	6.1	9.0
Non-China Average							20.1	17.4	13.4	5.4	1.9	1.7	1.5	2.0	2.1	1.8				9.3	11.3	12.5
International Average							**18.0**	**15.3**	**12.3**	**4.8**	**1.9**	**1.7**	**1.4**	**1.9**	**2.1**	**2.0**				**11.9**	**12.9**	**13.1**

Note: Pricing as of 26 May, 2011; FY11F figures could be actual for companies with mar Y/E if companies reported

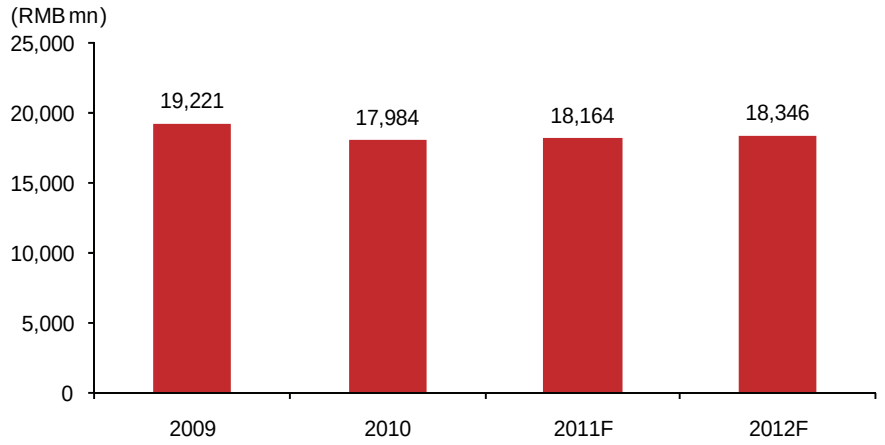
Source: Nomura estimates / Bloomberg consensus for unrated or rating suspended securities

Revenue level to be sustained in the near term, high growth unlikely …

Thermal & engineering services business sector

Given the RMB46bn thermal orders on hand and an order-to-sales ratio of 2.43 for the thermal segment as at FY10, we see limited downside for Harbin to sustain its thermal business' revenue level in the near term.

Fig. 210: Revenue forecast for HEC's thermal business



Source: Company data, Nomura estimates

Back by a sizable contract in India; construction already started

Harbin announced a RMB10bn contract with Lanco in September 2010 in which Harbin is to provide 16 sets of 660MW super critical units for coal power generation for Lanco projects such as Anpara, Amarkantak and Bahandh.

This is the largest overseas order Harbin has won thus far. The contract amounts to ~35% of Harbin's revenue for FY10. Depending on the construction progress, Harbin can recognize some revenue in 2011F through its engineering services segment, while more revenue contribution is expected between 2012F and 2013F, according to management.

Overall thermal equipment market has limited growth potential

We see Harbin's thermal power equipment not significantly different than Shanghai's and Dongfang's, given:

- All the three equipment manufacturers have approximately equal market shares in the China market (industry checks); and
- Nearly equal market shares in India market in terms of amount of contract secured for the 12th Five-Year Plan so far

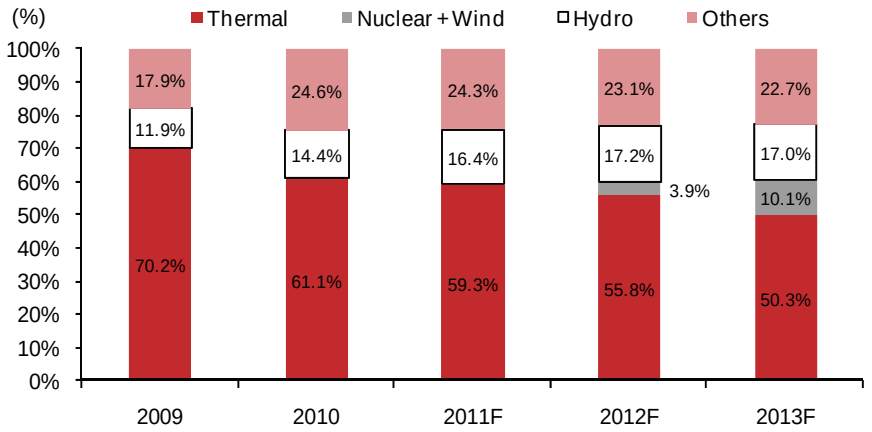
On the back of slowing domestic demand for thermal power equipment, offset by improvement on export orders, we see limited growth potential for the overall thermal related businesses for Harbin, substantial growth is unlikely.

Better late than never, but no meaningful contribution until 2013F

New energy sector

Unlike Shanghai and Dongfang, Harbin still has no contribution from the new energy sector as at FY10, due to its late engagement in the nuclear and wind business. As the saying goes, better late than never; we have seen Harbin's aggressive move in tackling the new growth area, but as Harbin is taking its time to ramp up production capacity and market share, we project nuclear and wind sector will only start to make a meaningful contribution to the gross profit (10.1%) in 2013F.

Fig. 211: HEC's gross profit contribution forecast

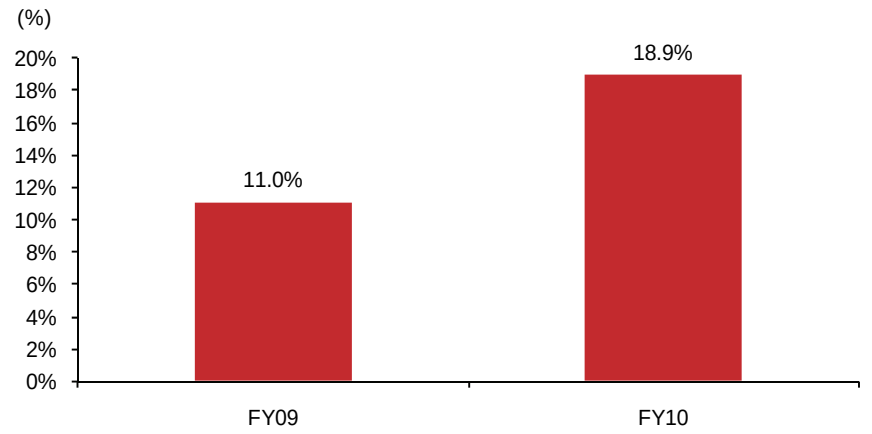


Source: Company data, Nomura estimates

For nuclear, Harbin is one of the technology transferees during the development of the first four AP1000 reactors…

Harbin was indeed one of the early transferees for AP1000 equipment as outlined in the AP1000 localisation plan by the State Nuclear Power Technology Corporation (SNPTC), the official state-owned body overseeing AP1000 nuclear projects development and technology localisation.

Fig. 212: HEC's M/S in nuclear space (FY09-10)



Note: Accounting for major nuclear equipment sold by the big three

Source: Company data and Nomura estimates.

According to SNPTC's announcement, Harbin would capture the technology and produce steam generators and reactor coolant pumps during the first two localization-supporting projects (Sanmen unit 1-2 and Haiyang unit 1-2). Being the first batch of equipment producers for AP1000 equipment should give Harbin an edge in terms of technology know-how in competing for AP1000 orders. Harbin indeed gained substantial market share (measured by the amount of nuclear equipment order backlog) from 11% in FY09 to 18.9% in FY10, as we see more AP1000 projects under development (estimate for major equipment).

…but no significant gross profit contribution is expected until 2013F

As at FY10, we have yet to see revenue contribution from nuclear equipment. According to management, the nuclear sector should start to generate minimal revenue in FY11F. We forecast nuclear will not make a meaningful contribution to Harbin's earnings until 2013F, given:

- We project gross margin of 0% and 5.0% in FY11F and FY12F, respectively. (For comparison, Dongfang recorded a gross margin of -0.2% and -1.6% for the nuclear segment in the first two years' revenue contribution) and
- It may take longer for Harbin to ramp up production capacity due to the lack of nuclear exposure in the 2.5G era, creating significant execution uncertainty. This is in line with management's guidance of only RMB2bn in nuclear revenue in 2013F.

In longer term, Harbin should catch up

Despite Harbin's early engagement in 3G (AP1000) technology, it is still regarded as a late entry in the overall nuclear equipment space. In our view, it would take some time for Harbin to ramp up its production capacity due to its limited exposure on nuclear equipment. In the longer term, nuclear revenue is set to increase given the company had 18.9% market share for major nuclear equipment as at FY10 (measured by order backlog). In our view, in the long run, we foresee the big three having similar shares in the nuclear equipment market, just as they do in the thermal equipment market now.

Despite Harbin's exposure to wind via two recent JVs…

In September 2010, Harbin formed two joint ventures, the Shenyang and Jiangsu entities, to get itself exposed to the wind turbine equipment space.

Fig. 213: J.V. details

	Harbin		GE China		GE Pacific	
	Investment (RMBmn)	Share-holding (%)	Investment (RMBmn)	Share-holding (%)	Investment (RMBmn)	Share-holding (%)
Jiangsu Company	186	51%	179	49%		
Shenyang Company	160	49%			167	51%

Source: Company

The Shenyang J.V. is currently producing 1.5MW high-speed synchronized turbine. For the Jiangsu J.V., Harbin is planning to develop 3.5MW near-shore / offshore direct drive / hybrid drive wind turbines.

…The wind market is a different place now

We see Harbin's rationale for getting into wind as a way to diversify itself away from the traditional thermal sector to facilitate growth. According to management, Harbin and G.E. could create synergies, as G.E. has the technical know-how and brand-equity in wind turbine while Harbin can provide access to domestic customers and potential cost reductions. Moreover, partnering with GE could allow this venture to tap wind-turbine export opportunities.

In our view, the above-mentioned synergies do exist. However, the wind market is a different place now. It would not be easy for Harbin to achieve its RMB 6-8bn sales / year long-term target.

The volume of new installed wind turbine power is projected to be 17.9GW in FY11F, vs. 18.9GW in FY10

After doubling its installed wind-generating capacity in the past five years and the current issues with grid connection bottleneck, we see limited potential for further growth in wind turbine demand in China in the near term. We project annual installation of new wind turbines to slow to 17.9GW in FY11F. With slowing demand growth, the industry is undergoing a period of overcapacity. Existing players are already fighting for market share from each other, and there is not much room for excessive growth, even for a new player as strong as Harbin/GE.

The competition is on price, where a new player may not have an edge

Wind turbine manufacturers are in the midst of a price war, in which ASP/kW decreased from the RMB 5,000/kw level in the beginning of 2010 toward RMB 4,000/kw by the end of the year. We do not see a new player, such as Harbin, to be price-competitive as it ramps up production volume during the initial production years.

Margin improvement not likely for Harbin in the next 2 years

Gross margin outlook

We project gross margin to slightly decrease in 2011F to 14.1% and 13.9% in 2012F.

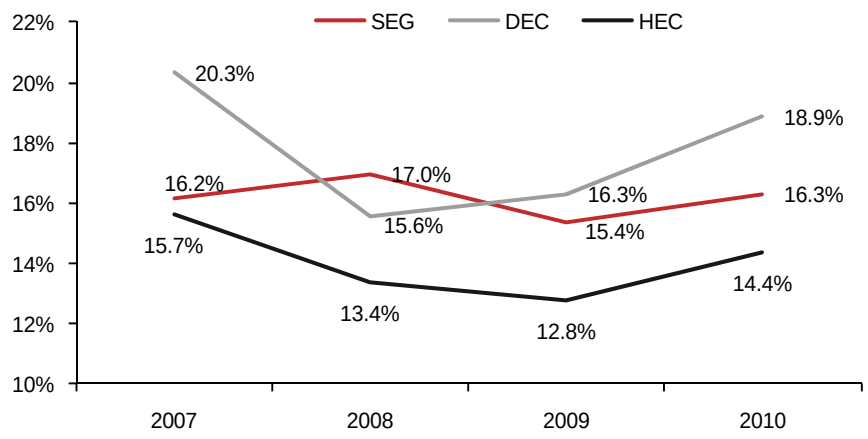
Nuclear is going to slightly drive down margin, as Harbin is getting its production up to scale

Prior to meaningful contribution from the nuclear sector in 2013F, we forecast nuclear gross margin to be 0.0% and 5.0% in 2011F and 2012F due to limited scale of production as capacity ramps up. Revenue contribution from nuclear equipment is actually going to put downward pressure on Harbin's gross margin over the next two years, in our view.

Traditionally a low-margin player

In comparison with Shanghai and Dongfang, Harbin has been a lowered-margin player, largely due to the core technology being used for its thermal power equipment. According to Harbin's management, Harbin used to work with Mitsubishi Heavy Industries to develop its thermal technology. This technology has its pros in quality and efficiency, but it uses more materials than others and thus, putting downward pressure to Harbin's gross margin.

Fig. 214: Historical gross margin comparison



Source: Company, Nomura est.

Beyond 2013F, we think that Harbin's gross margin may improve towards peers' level, due to:

Continuous improvement on thermal manufacturing process

According to management, Harbin has been working to improve and optimize its thermal equipment design / manufacturing process over the original Mitsubishi Heavy's technology.

Increasing contribution from nuclear equipment

The traditional weaker thermal equipment business will play a smaller role to Harbin, given rising revenue contribution from nuclear equipment, which we believe Harbin would enjoy a gross margin in-par with peers.

Risks to our investment view

Where could we go wrong?

Upside risks to our target price include: 1) higher-than-expected thermal equipment demand; 2) an unexpected ramp up in its nuclear equipment production capacity; and 3) unanticipated wind equipment demand.

Downside risks to our target price include a rise in material costs, if not passed through, puts downward pressure to gross margin.

Higher-than-expected thermal equipment demand

Should China decided to increase its reliance on thermal power generation to support its massive energy demand, higher thermal equipment demand would drive significant growth for Harbin, as thermal equipment contributed 62.4% of Harbin's revenue as at FY10.

Unexpected ramp-up of its nuclear equipment production capacity

Due to its lack of nuclear exposure before, Harbin would take longer time than Dongfang and Shanghai to ramp up its nuclear equipment production capacity, in our view, in line with management guidance. Having said so, if Harbin managed to ramp up its production capability faster than our expectation, it's likely for the company to achieve higher growth in revenue and market shares in the near term, as well as gross margin (economics of scale).

Unanticipated wind equipment demand

We see limited potential in the new wind unit due to slowing demand growth in the wind power equipment. If China managed to resolve the grid connection bottleneck and thus, substantially increases its turbine installation volume, this would allow Harbin to capture market share and grow its new business as market opportunities open up.

Rise in material cost, if not passed through, could put downward pressure on gross margin

Given that the cost of materials makes up a substantial part of the cost of sales, an increase in material costs, if not passed-through to customers, could put downward pressure on gross margin and earnings.

Valuation methodology:
Our TP of HKD8.90 is based on DCF, assuming a WACC of 7.4% and terminal growth rate of 2%.

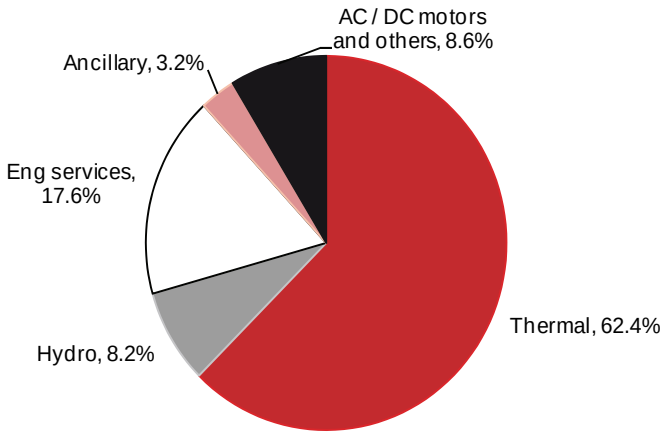
Business description

Company profile

Harbin Electric Company is primarily engaged in the power equipment manufacturing business. The company primarily manages its businesses through five major sectors, namely 1) Thermal power equipment 2) Hydro power equipment 3) Engineering services 4) Ancillary equipment and 5) AC/DC motors and others. Traditionally, Harbin has sold most of its power equipment domestically, but we have seen an increasing trend in its exports in recent years.

As at 2010, 62.4% of its total revenue was contributed by the traditional thermal segment, 8.2% by its Hydro segment. Engineering Services contributed another 17.6%. Harbin is also looking into exploring additional opportunities in the nuclear and wind equipment market. However, as at FY10, both of these areas made no revenue contribution to the company.

Fig. 215: HEC: 2010 revenue contribution

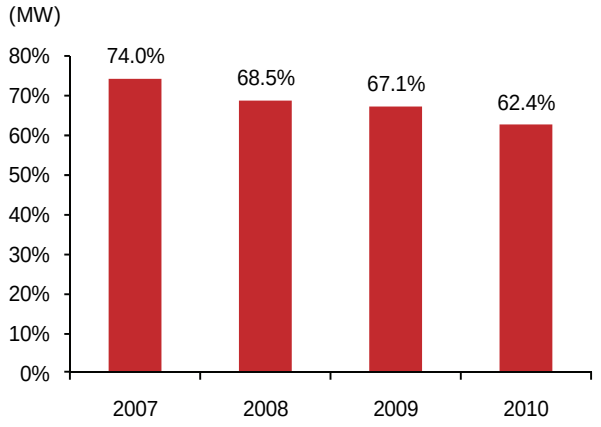


Source: Company data

Thermal power equipment

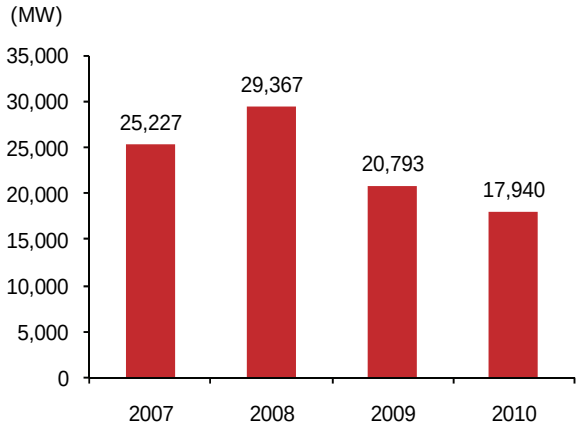
Thermal power equipment mostly consists of the following products: boilers, steam turbines and steam turbine generators. The thermal power units also produce gas turbines and combined cycle units. Harbin has relied on its thermal equipment segment, and this segment had consistently contributed approximately 70% of Harbin's total revenue. However, this dropped to 62.4% level in 2010.

Fig. 216: Revenue contribution (Thermal)



Source: Company data

Fig. 217: Thermal equipment production volume (MW)



Source: Company data

Harbin's thermal power equipment, particularly its boilers, has been both Harbin's strength and weakness. According to industry checks, Harbin's boilers have higher quality, in terms of durability, and coal efficiency than competitors' products and allow the use of a wider range of coal as well. However, this comes with a cost. According to management, for a typical 300MW boiler, Harbin's products are 10% heavier than competitors', largely due to the amount of materials used. In today's competitive market, the extra cost is not passed through to customers, putting margin pressure on Harbin in recent years.

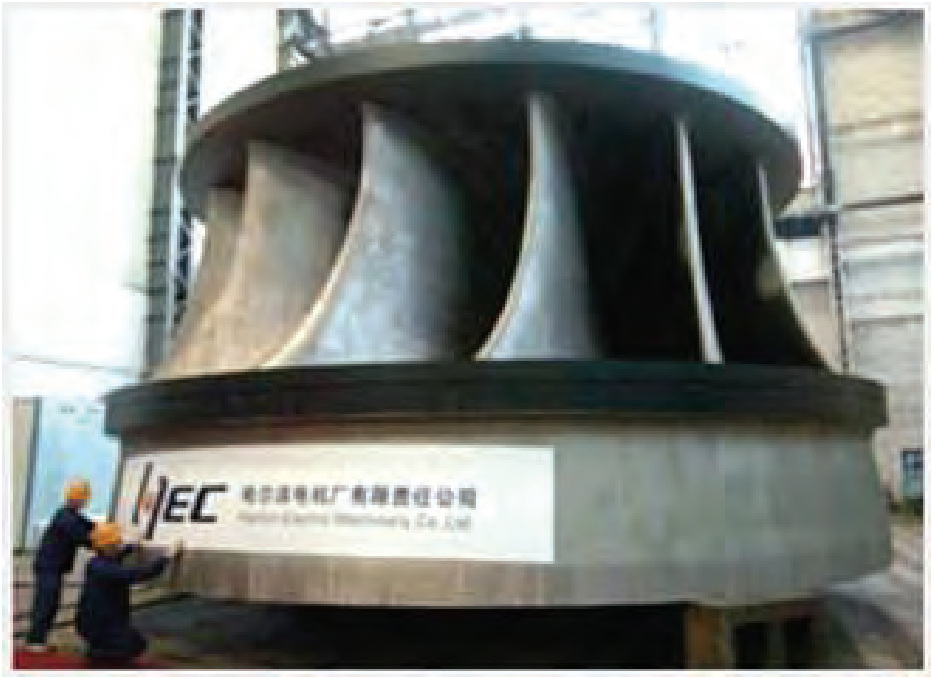
Lignite boiler supercritical unit project: Harbin is the first Chinese equipment player to develop such technology. Having this technology know-how provides Harbin an edge to export power equipment to where the availability of high-quality thermal coal is limited.

Hydro power equipment

This business segment specializes in the manufacturing of hydropower equipment, such as hydro-turbines and hydro-generators, taking up approximately 50% of domestic market share. In particular, Harbin has engaged in key national projects by providing its Francis turbine with unit capacity of up to 700MW; pumped storage equipment with capacity of 300MW; Kaplan turbine with maximum capacity of 200MW; and Tubular turbine with unit capacity of up to 45MW.

Harbin's hydro power segment has a gross margin of ~20% (vs. ~10% for Dongfang, the other big player in the hydro market in China), due to better product mix and technology know-how, according to management. However, Dongfang narrowed the gross margin difference a bit in FY10. The unit has a strong track record in China, having produced more than 300 sets of water turbine generators to over 200 power stations. Globally, Harbin has more than 80 sets of water turbine generator running in 26 power stations in countries such as USA, Canada, Japan, Venezuela, Thailand, Philippines, Nepal, Turkey, Congo and Iran.

Fig. 218: 700MW hydro turbine



Source: Company report

Engineering services

This business unit provides EPC services (including complete sets of power equipment) to clients. EPC contracts involve the entire chain of processes in the construction/development of power plants, including but not limited to the following major activities: production and installation of auxiliary systems, design, supply-chain management, on-site construction, equipment installation, stall training, testing & trial runs, as well as maintenance and monitoring.

To date, some of Harbin's key EPC projects include: 3 x 210 MW from Pakistan Jameshore Power Plant; 2 x 210MW from Pakistan Mozaffargan Station; 586 MW from UCH Combined Cycle Power Plant of Pakistan; 3 x 125 MW from Vietnam Xiefu Power Plant; 1 x 18 MW from Philippines Angat Hydropower Station Installation; 2 x 330 MW from Hefei Power Station; 2 x 600MW from TogToh Power station; 2 x 600MW from Hancheng Power Plant, SudanMerowe transmission line project and other 30 aboard EPC projects. It is important to note that most of the export orders are grouped into this business segment.

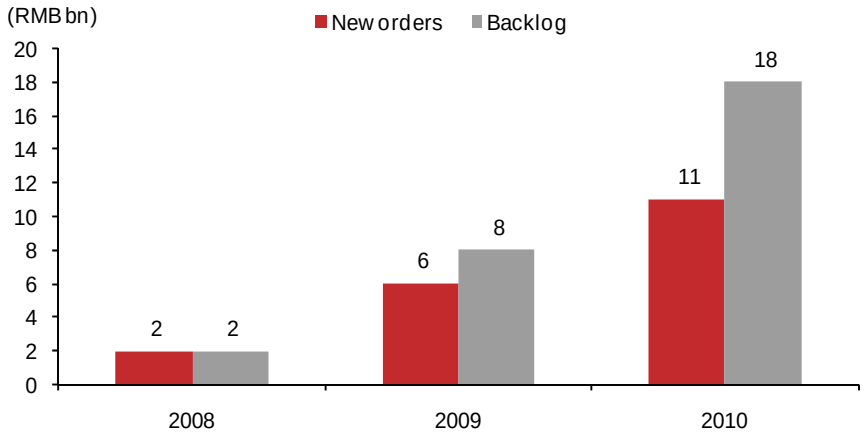
New energy business

The company is also engaged in new opportunities in nuclear and wind power equipment, although no significant revenue contribution has been observed so far.

Nuclear power equipment

Harbin manufactures both nuclear island and conventional island power equipment. It is also one of the first transferees in the technology localisation support projects conducted by State Nuclear Power Technology Corporation (SNPTC). Harbin has manufactured nuclear island and conventional island equipment including steam generators, pressurisers, coolant pumps, turbines and turbine generators. However, Harbin has minimal exposure to nuclear equipment manufacturing in the 2.5G era.

Fig. 219: HEC: Nuclear new order and backlog



Source: Company, Nomura est.

Wind power equipment

Through its JV with GE, Harbin has finally tapped into the wind equipment business, the last of the big three to enter this space. Meaningful contribution to revenue and earnings is to come in after 2013F, as per our estimates, in line with management's guidance.

Some of Harbin's major contracts over the past three years

Fig. 220: Select contracts FY08-10

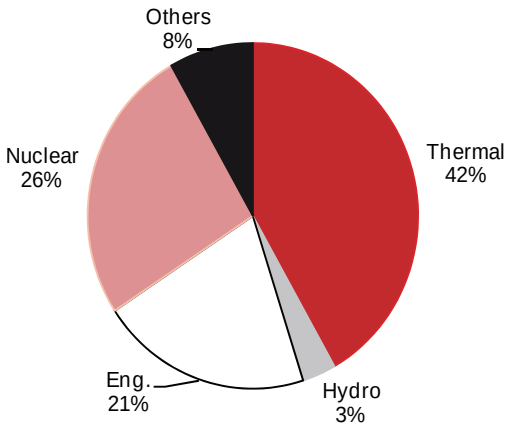
Location	Project / company	Component
China, Hunan	Xianning Nuclear project	T&G for AP1000 nuclear power projects
China, Zhejiang	Sanmen Nuclear project	T&G for AP1000 nuclear power projects
China, Zhejiang	Haiyang Nuclear project	T&G for AP1000 nuclear power projects
China, Guizhou	Guanyinyan hydro project	Two 600MW francis water turbines
China, Guangxi	Yantan Hydropower Station	Two 300MW francis water turbines
Kajbar, Sudan		10 units/sets of 600MW thermal and six 60MW hydro units
Feilu, Mali		Three 21.15MW hydropower units
India		16 sets of 660MW super critical thermal power units
China, Zhejiang	Sanmen Nuclear project	CMT and PRHRHX equipment
India	Tuticorin project	2x660MW sub-critical coal-fired thermal power (BTG)
Pakistan	Bin Qasim project	Turnkey contract for combined cycle power plants
China, Heilongjiang	Baoqing project	2x660MW supercritical coal-fired units
India	Ucchpinda project	4x360MW turbine and power generators
China, Hunan	Taohuajiang Nuclear project	2 AP1000 steam generators
India	Amravati project	2x660MW supercritical coal-fired units
China, Hubei	Xianning nuclear project	AP1000 conventional island and steam generator
India	Karnataka project	2x660MW supercritical turbine and generator
Laos	Hongsa project	Turn-key contracts of 3x600MW sub-critical coal-fired thermal power plants
Russia		Two 660MW coal-fired thermal power unit
India	Salaya	2nd stage Two 600MW expansion coal-fired thermal power project (BTG)
India	Jarkhand	Two 600MW sub-critical coal-fired thermal power project
China	CTGPC	10 hydro generating units for 4x800MW and 6x770MW
China, Guangdong	Zhujiang project	Three main equipment of 1x1000MW ultra-supercritical unit
China, Zhejiang	Sanmen Nuclear project	Steam generator for Unit number 2

Source: Company

Order backlog

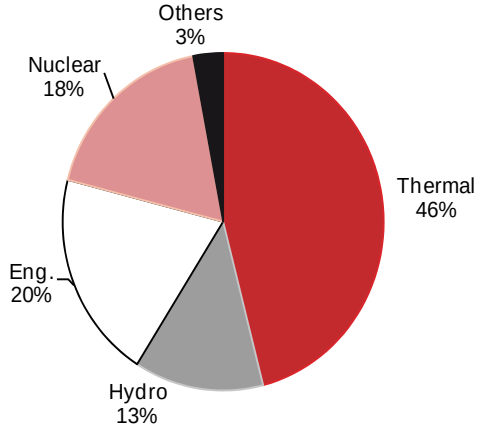
As at FY10, Harbin's had an order backlog of ~RMB100bn, of which, RMB46bn are thermal equipment orders. It is important to note that Harbin has 18% of its backlog in nuclear equipment. For FY10, new orders came in at RMB42.4bn, of which 42% are thermal orders, followed by nuclear (26%).

Fig. 221: FY10 new orders



Source: Company, Nomura research

Fig. 222: FY10 order backlog



Source: Company, Nomura research

Fig. 223: New orders and order backlog at FY10

(RMB bn)	New Orders	Backlog
Thermal	17.7	46.0
Hydro	1.4	13.0
Eng.	8.8	20.0
Nuclear	11.0	18.0
Others	3.5	3.0
Total	42.4	100.0

Source: Company, Nomura research

Revenue and gross margin projection

Key assumptions

Fig. 224: HEC: Key assumptions

	2009	2010	2011F	2012F	2013F
Revenue (RMB mn)					
Main thermal power equipment	19,221	17,984	18,164	18,346	16,969
Main hydro power equipment	1,893	2,362	2,835	3,260	3,361
Engineering services for power stations	4,300	5,060	5,566	6,123	6,429
Ancillary equipment for power stations	1,251	919	919	919	919
AC/DC motors and others	1,964	2,490	2,490	2,490	2,490
Nuclear Equipment	-	-	600	1,200	2,000
Wind Equipment	-	-	300	1,000	2,000
Total	28,630	28,816	30,874	33,337	34,168
(y-y)		*0.6%*	*7.1%*	*8.0%*	*2.5%*
Revenue contribution (%)					
Main thermal power equipment	67.1%	62.4%	58.8%	55.0%	49.7%
Main hydro power equipment	6.6%	8.2%	9.2%	9.8%	9.8%
Engineering services for power stations	15.0%	17.6%	18.0%	18.4%	18.8%
Ancillary equipment for power stations	4.4%	3.2%	3.0%	2.8%	2.7%
AC/DC motors and others	6.9%	8.6%	8.1%	7.5%	7.3%
Nuclear Equipment	0.0%	0.0%	1.9%	3.6%	5.9%
Wind Equipment	0.0%	0.0%	1.0%	3.0%	5.9%
Gross Margin (%)					
Main thermal power equipment	13.4%	14.1%	14.1%	14.1%	14.1%
Main hydro power equipment	23.1%	25.2%	25.0%	24.5%	24.0%
Engineering services for power stations	-1.4%	3.4%	3.6%	3.6%	3.6%
Ancillary equipment for power stations	25.3%	33.5%	33.5%	33.5%	33.5%
AC/DC motors and others	20.3%	21.7%	21.7%	21.7%	21.7%
Nuclear Equipment			0.0%	5.0%	10.0%
Wind Equipment			12.0%	12.0%	14.0%
Overall	12.8%	14.4%	14.1%	13.9%	13.9%
Production output (MW)					
Coal-fired boilers	22,185	26,070	26,331	26,594	24,598
(y-y%)		*17.5%*	*1.0%*	*1.0%*	*-7.5%*
Coal-fired steam turbines	20,832	20,827	21,036	21,246	19,652
(y-y%)		*0.0%*	*1.0%*	*1.0%*	*-7.5%*
Coal-fired turbine generators	20,793	17,940	18,119	18,301	16,927
(y-y%)		*-13.7%*	*1.0%*	*1.0%*	*-7.5%*
Hydro equipment	5,313	3,617	4,340	4,991	5,145
(y-y %)		*-31.9%*	*20.0%*	*15.0%*	*3.1%*

Source: Company, Nomura estimates

Risk analysis

What if…

Events

The magnitude 9.0 earthquake on 11 March, 2011 in Japan caused failure to the emergency core cooling systems in the Fukushima Daiichi units, causing the nuclear plant to shut down and two explosions, followed by leakage of some radioactivity materials. As of today, Japanese authorities are still working on the containment and proper handling of the site. Following the Japanese incidents, on 16 March, 2011, China's State Council called for safety inspections and a temporary suspension on the approval of new nuclear projects until further notice; details of the guidelines / announcement are below:

1) Require relevant departments to perform safety checks on all existing plants immediately to ensure nuclear safety.
2) Reinforce operating management / safety processes in all existing nuclear facilities and monitor to ensure these procedures / processes are in place.
3) Perform safety / risk assessments on all nuclear plants under construction and halt the construction process should a plant fail assessment.
4) Suspend approval of new nuclear projects including projects that have proceeded with pre-construction work until new nuclear safety procedures are set up.

In light of the above events and market concerns on the potential delay / cancellation in nuclear development in China, we have run three scenarios to study the impact on SEG, DFE and HEC, in terms of near-term earnings (FY11F) and the net present values in the case of nuclear development delay / reduction. On top of the three scenario analyses, we have run two more in which study the impact on thermal capacity coming in below our forecast.

Scenarios:

On nuclear development in China:

- Scenario 1: Delay for all projects for one-half year, 80GW of nuclear capacity is achieved by 1H 2021F.
- Scenario 2: Delay for all nuclear projects for one year, 80GW target is achieved by 2021F.
- Scenario 3: No delay on approved projects, but no new project will be approved at all. Total effective market size for the nuclear equipment space is down to the 35.5GW (The amount of approved projects currently).

On thermal equipment demand lower than our forecast:

- Scenario 4: Instead of our current assumption of an addition of 91GW of net power generating capacity for 2011F/12F, we assume the net gain to be 85GW for the two years, with the shortfall impacting thermal power generating capacity alone. Thus, the additional thermal capacity for 2011F and 2012F would be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base case. We revise our estimate of revenue generated from domestic thermal power equipments down for the three companies by the same amount, 9.9% and 10.4% for FY11F and 2012F, respectively.
- Scenario 5: Similar to scenario 4, but in this case, we assume the net gain of power generating capacity in China to be 78GW for 2011F and 2012F (as per latest CEC FY11F forecast), respectively. Again, we assume the shortfall is going to be from thermal power generating capacity. In this scenario, we revise the revenue generated from thermal power equipments (as well as the amount of thermal power capacity installed) down 24.2% and 25.6%.

Fig. 225: HEC: risk analysis results

Harbin Electric

Earnings forecast (RMB mn)	2011F	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F
Base Case	884	922	1,013	1,224	1,269	1,202	1,187	1,164	1,165	1,149
Scenario 1	908	934	1,015	1,187	1,249	1,218	1,178	1,153	1,153	1,138
(% diff)	*3%*	*1%*	*0%*	*-3%*	*-2%*	*1%*	*-1%*	*-1%*	*-1%*	*-1%*
Scenario 2	932	947	1,017	1,150	1,230	1,234	1,170	1,143	1,142	1,126
(% diff)	*5%*	*3%*	*0%*	*-6%*	*-3%*	*3%*	*-1%*	*-2%*	*-2%*	*-2%*
Scenario 3	884	922	1,013	1,182	1,161	1,091	1,031	963	940	902
(% diff)	*0.0%*	*0.0%*	*0.0%*	*-3.4%*	*-8.5%*	*-9.2%*	*-13.1%*	*-17.3%*	*-19.3%*	*-21.5%*
Scenario 4	841	916	1,012	1,224	1,268	1,201	1,186	1,163	1,164	1,149
(% diff)	*-5%*	*-1%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Scenario 5	779	908	1,011	1,223	1,267	1,200	1,185	1,162	1,163	1,148
(% diff)	*-12%*	*-2%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*

DCF valuation	
Base Case	8.87
Scenario 1	8.72
(% diff)	*-1.7%*
Scenario 2	8.58
(% diff)	*-3.3%*
Scenario 3	5.21
(% diff)	*-41.3%*
Scenario 4	8.78
(% diff)	*-1.0%*
Scenario 5	8.67
(% diff)	*-2.3%*

Source: Nomura Research

Conclusion

Conclusion

According to our risk analysis, the net present value / share for the companies under our coverage remains largely intact in the case of projects delay. In the case of a one-year delay in nuclear development in China, and thus, a delay in revenues and deliveries, the net present value of SEG goes down by only 0.6%, DFE by 1.0% and HEC by 3.3%. However, short-term earnings (2011F earnings) would be impacted. SEG would be down 3% due to its diversified portfolio. DFE would be down 11%, while HEC would experience a positive impact due to our assumption of a 0% gross margin (loss making in earnings due to administration and delivery expenses forecasted) for 2011F's nuclear revenue. 2011F is the first year of nuclear revenue recognition for the company (For comparison, DFE had a -0.2% gross margin during the its first year of nuclear revenue recognition in 2008). Overall, we believe the net present value for these equipment plays should be largely intact in light of a delay in projects.

On the other hand, these names would be impacted by China's long-term nuclear development. If China does not approve any future nuclear projects, exhausting nuclear equipment revenue in the future, the net present value of SEG would go down by 6.4%. DFE would go down by 22.3% while HEC would go down by 41.3%, due to its limited exposure to nuclear as of today in light of our assumption of HEC having one-third of the major nuclear equipment market in the long term.

In the case of a thermal demand shortfall, this would impact our companies' short-term earnings but would have a limited impact on the net present value / share.

Detailed scenario study

Scenario on nuclear development in China

- Scenario 1: Delay in all projects for half a year, 80GW of nuclear capacity is achieved by 1H21F

  Near-term earnings:

  Our model forecasts a positive impact on FY11F earnings due to 0% gross profit margin in the first year of nuclear equipment revenue contribution.

  In terms of net present value /shares of these companies, the impact is minimal, given that delayed revenue will eventually catch up:

  HEC: Down 1.7% to HKD 8.72 from HKD 8.87

- Scenario 2: Delay in all nuclear projects for one year, 80GW target is achieved by 2021F

  The impact on HEC is largely in line with Scenario 1, with a more severe magnitude. In terms of short-term earnings, positive contribution is indeed modelled for HEC.

  Net present value / shares, the impact is as follows:

  HEC: Down 3.3% to HKD 8.58 from HKD 8.87

- Scenario 3: There is no delay on approved projects but no new project will be approved at all. Thus, the total effective market size for the nuclear equipment space is down to 35.5GW (the amount of approved projects currently).

  In this case, short-term earnings remain intact, given 30.1GW out of the 35.5GW (approved projects) are to commence before 2015F. However, there will be a significant impact on long-term earnings, due to: limited nuclear revenue in the near term while we expect HEC to pick up nuclear market share towards 2020F.

  Net present value / shares is as follows:

  HEC: Down 41.3% to HKD5.21 from HKD8.87

Scenario on thermal equipment demand being slower than our forecasts

- Scenario 4: Instead of our current assumption of 91GW of net power generating capacity addition for FY11F/12F. We assume the net gain to be 85GW for the two years, while the shortfall is going to impact thermal power generating capacity alone. Thus, the additional thermal capacity for FY11F and FY12F will be 60.8GW and 57.8GW, down 9.9% and 10.4%, respectively, from our base case. We revise our estimates of revenue generated from domestic thermal power equipment down by 9.9% and 10.4% for FY11F and 12F, respectively.

  Net present value / shares is as follows:

  HEC: Down 1.0% to HKD 8.78 from HKD 8.87

- Scenario 5: This is similar to scenario 4, but in this case, we assume the net gain of power generating capacity in China to be 78GW for FY11F and FY12F (as per latest CEC FY11F forecasts). Again, we assume the shortfall is going to be from thermal power generating capacity. In this scenario, we revise the revenue generated from thermal power equipment (as well as the amount of thermal power capacity installed) down by 24.2% and 25.6% for FY11F and FY12F, respectively.

  FY11F earnings are down 12%.

  Net present value / shares is as follows:

  HEC: Down 2.3% to HKD 8.67 from HKD 8.87

Appendix A-1

Analyst Certification

We, Ivan Lee, Alan Hon, Kenneth Chan and Tacky Cheng, hereby certify (1) that the views expressed in this Research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this Research report, (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this Research report and (3) no part of our compensation is tied to any specific investment banking transactions performed by Nomura Securities International, Inc., Nomura International plc or any other Nomura Group company.

Issuer Specific Regulatory Disclosures

Mentioned companies

Issuer name	Ticker	Price	Price date	Stock rating	Sector rating	Disclosures
Shanghai Electric	2727 HK	4.06 HKD	30-May-2011	Buy	Not rated	
Dongfang Electric	1072 HK	29.00 HKD	30-May-2011	Buy	Not rated	4,58,61
Harbin Electric	1133 HK	9.23 HKD	30-May-2011	Neutral	Not rated	

Disclosures required in the European Union

4 **Market maker**
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Disclosures required in Hong Kong

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61 **Nomura financial interest/business relationships disclosures:**
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Previous Rating

Issuer name	Previous Rating	Date of change
Shanghai Electric	Not rated	01-Jun-2011
Dongfang Electric	Not rated	01-Jun-2011
Harbin Electric	Not rated	01-Jun-2011

Rating and target price changes

	Ticker	Old stock rating	New stock rating	Old target price	New target price
Shanghai Electric	2727 HK	Not rated	Buy	N/A	4.90
Dongfang Electric	1072 HK	Not rated	Buy	N/A	34.40
Harbin Electric	1133 HK	Not rated	Neutral	N/A	8.90

Shanghai Electric (2727 HK) **4.06 (30-May-2011)**

Chart Not Available

Valuation Methodology Our target price of HKD4.90 is based on DCF with a WACC assumption of 7.26% and a terminal growth rate assumption of 2%.

Risks that may impede the achievement of the target price Downside risk to our price target include: 1) Delay in nuclear development 2) Slower than anticipated demand for the high efficiency and clean energy sector 3) Higher than expected rise in raw material cost 4) Unanticipated slowdown in property development and thus, elevator demand in China

Dongfang Electric (1072 HK) **29.00 (30-May-2011)**

Chart Not Available

Valuation Methodology Our target price of HKD34.4 is based on a discounted cashflow (DCF) methodology, assuming a WACC of 6.22% and a terminal growth rate of 2%.

Risks that may impede the achievement of the target price Downside risks to our target price include: 1) a delay in nuclear development; 2) an unanticipated decrease in domestic power equipment demand; and 3) an increase in raw material cost, if not passed through, pressuring gross margin.

Harbin Electric (1133 HK) **9.23 (30-May-2011)**

Chart Not Available

Valuation Methodology Our TP of HKD8.90 is based on DCF, assuming a WACC of 7.4% and terminal growth rate of 2%.

Risks that may impede the achievement of the target price Upside risks to our price target include: 1) Higher than expected thermal equipment demand 2) Unexpected ramp up in its nuclear equipment production capacity and 3) Unanticipated wind equipment demand Downside risks to our price target include: 1) Rise in material cost, if not passed through, puts downward pressure to gross margin

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Explanation of Nomura's equity research rating system for Asian companies under coverage ex Japan published from 30 October 2008 and in Japan from 6 January 2009

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Explanation of Nomura's equity research rating system for Asian companies under coverage ex Japan published prior to 30 October 2008

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A '**Neutral'** recommendation indicates that upside or downside is less than 10%.
A '**Reduce'** recommendation indicates that downside is between 10% and 20%.
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