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Clean Energy Expo Asia 2010:

Competitive Landscape and Strategic Positioning of the Solar Industry in China

4 November 2010



Global Banking & Markets

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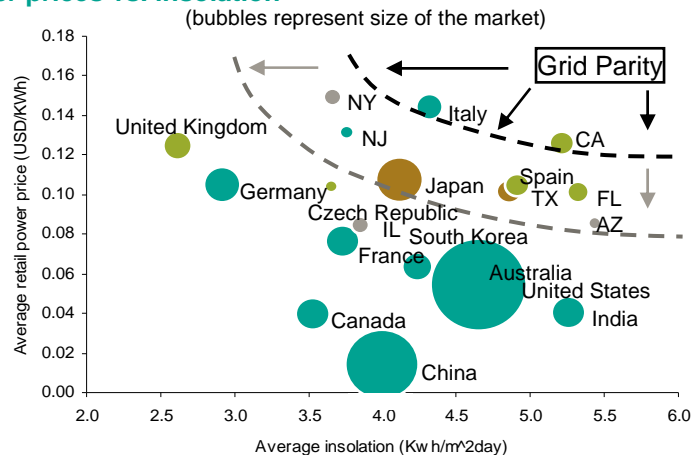
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How are Companies Positioning Themselves to Win in the Solar Industry?

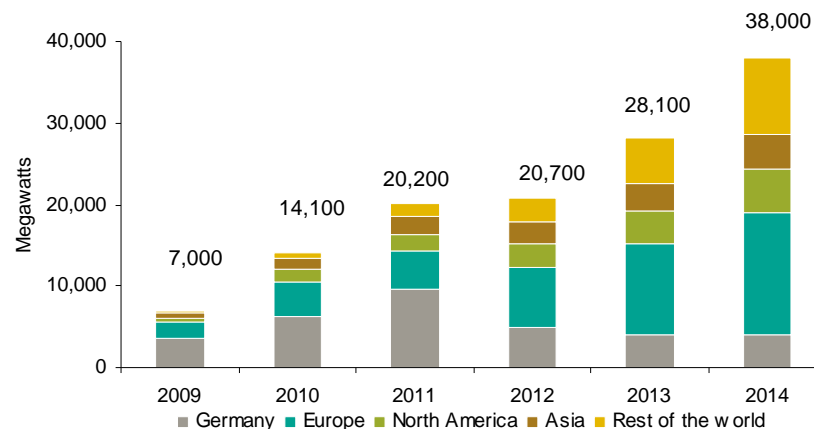
Despite FiT adjustments, several markets are about to enter the “near-parity” stage and global demand fundamentals appear to be strong

Power prices vs. insolation



Source: Energy Information Administration (EIA), Broker estimates

Demand for new solar PV installations by region, in MW



Source: iSuppli

Comments

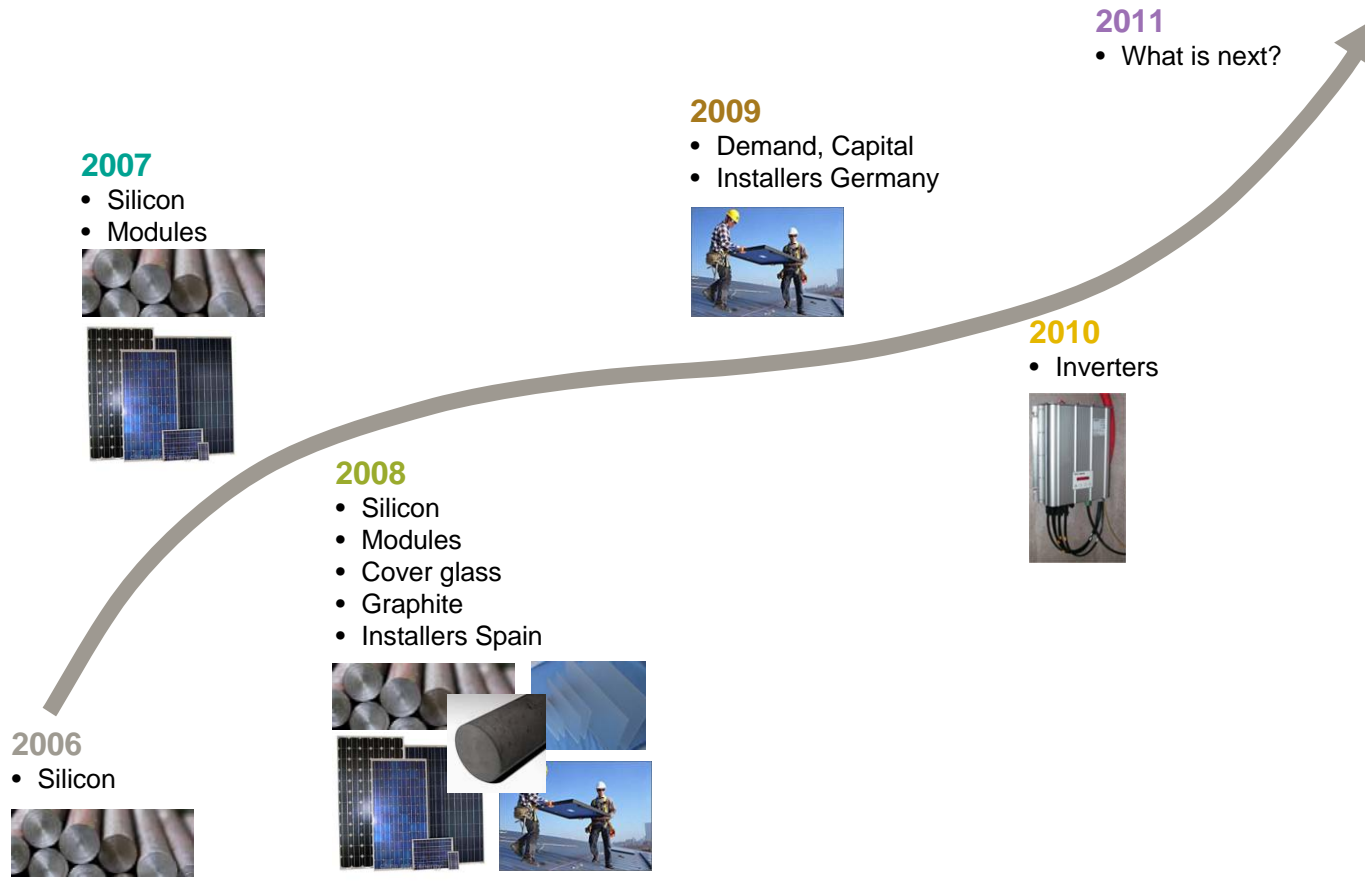
- Grid parity is only achieved in markets with net metering in place (non utilised electricity sold to the grid at retail price)
- Solar installation costs have declined by 50% over the last two years, mainly due to economies of scale and margin compression across the value chain
- Further cost reductions will be driven by technology innovation and efficiency improvement as well as geographical manufacturing location
- Project development increasingly focuses on utility-scale projects
- Manufacturers also have acquired developers projects to push products (First Solar, MEMC, Sharp)
- Many upstream players trying to “cut” the middleman

Comments

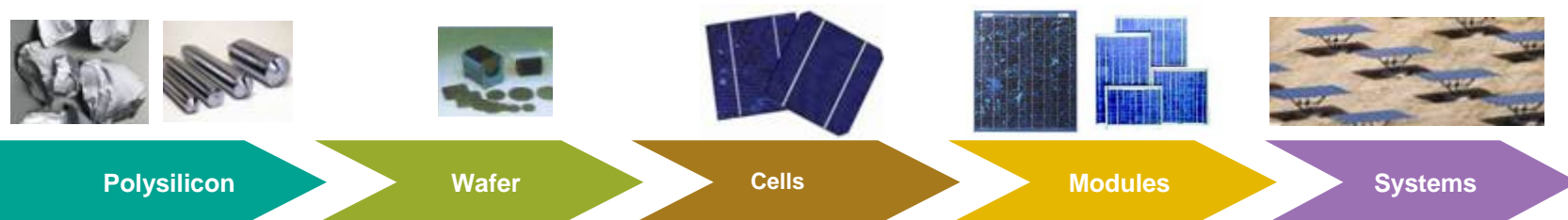
- Europe will maintain a strong position within the global PV market, with Germany as the strongest
- Key growth markets are China, India, Greece, Portugal, UK, US and Japan
- 2010 demand is expected at approximately 14GW with Germany at approximately 6.5 GW. However, revision of German FiT is currently expected to lead to decrease in project IRRs from 9-11% to 6-8%
- Italy: approved tariff reductions in 2011 will negatively influence the IRRs (currently ~15%); however, estimated 10% reduction in installation ASPs in 2010 will allow IRRs to remain comfortably above 10%

Shifting bottlenecks in the fast growing PV industry

A look at the solar industry timeline



Business models in China are adjusting to capture upside from both ends of the value chain



Trends	<ul style="list-style-type: none"> New entrants, but limited ability to produce at competitive cost levels Alternatives to energy intensive Siemens process are reaching commercial and sizeable production levels FBR has cost leadership potential as long as required quality levels can be achieved limiting off spec production UMG/ESS: Client acceptance process underway requiring discounts in the intermediate term 	<ul style="list-style-type: none"> Industry focused on extending wire saw life and reduction of slurry usage, including recycling Capacity growth has been lower as compared to further down the value chain given specialized knowhow required Pricing has recently been slightly increasing 	<ul style="list-style-type: none"> Margin Squeeze from both up – and downstream side Fierce competition from Asia Cost decrease through volumes, less breakage Efficiency reaching 20% Pure cell players moving into tolling services and modules to create brand awareness 	<ul style="list-style-type: none"> Drive to create brand awareness with end customers Fierce competition from Asia Quality and ability/perception to stand behind warranty for 20 years are key Push to continuously improve module efficiency Strong support of China Development Bank to select manufacturers Cost decreased 14-18% per annum during last 3-5 years with targets around 11% going forward 	<ul style="list-style-type: none"> Global integrated development footprint to take advantage at and mitigate local market regimes Focus on lowering BOS costs Project finance market opening up Utility scale projects increase market share Upstream players “cutting the middle man”
ASP	2010-2014E 59 » 40 (\$/kg)	2010-2014E 0.93 » 0.63 (\$/Wp)	2010-2014E 1.34 » 0.96 (\$/Wp)	2010-2014E 1.90 » 1.45 (\$/Wp)	2010-2014E 3.83 » 2.99 (\$/Wp)
EBITDA %	2010-2014E 45% » 36%	2010-2014E 15% » 13%	2010-2014E 16% » 11%	2010-2014E 4% » 5%	2010-2014E 5.5% » 9.5%
Capex'09	USD 10bn (59%)	USD 2.5bn (15%)	USD 3.25bn (19%)	USD 1.25bn (7%)	-
Capital intensity	USD 0.9/W	USD 0.7/W	USD 0.3/W	USD 0.3/W	-
Ann. capac.'10	11-12 GW	12-13 GW	14-16 GW	16-18 GW	-
Players	(20-50)	(25-50)	(50-100)	(>250)	(>500)
Cost reductions	<ul style="list-style-type: none"> Debottlenecking Improved supplier mix Production process High purity 	<ul style="list-style-type: none"> Wafer thickness Silicon waste reduction Production process Slurry recycling Diamond wire technology 	<ul style="list-style-type: none"> Cell efficiency Cell thickness Production process Volumes Printing 	<ul style="list-style-type: none"> Efficiency at module level Production process 	<ul style="list-style-type: none"> Trackers Inverter efficiency Performance through M&M B.O.S.

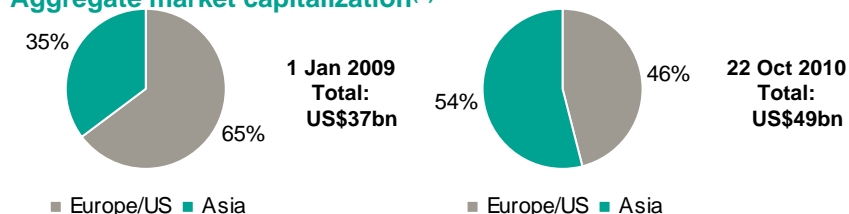
Where is value being assigned to the Chinese solar industry today?

1 Value migration towards downstream-focused integrated Asia based manufacturers

Share price performance (1 Jan 2009 – 22 Oct 2010)

Downstream focused Asia based industry players		Top Europe / US-based incumbents	
• Trina	+465%	• First Solar	6%
• Canadian Solar	+125%	• Solarworld	(35%)
• Yingli	+91%	• REC	(55%)
• Motech	+78%	• Sunpower	(64%)
• Suntech	(18%)	• Q-Cells	(85%)

Aggregate market capitalization⁽¹⁾



Notes: (1) Includes GCL, Wacker, OCI, MEMC, Tokuyama, Renesola Energy, GET, Solargiga, LDK, Gintech, Motech, JA Solar, Suntech, E-Ton, SunPower, Q-Cells, Trina Solar, Canadian Solar, Yingli, SolarWorld, REC, , Aleo, Phoenix Solar, Conergy, Solon, Evergreen Solar, Comtec (Aug 10 only) and China Singyes (Aug 10 only)

2 Continued capital deployment at both ends of the value chain (Polysilicon and Project Development)

Polysilicon

- **CIC**: 20% stake in **GCL** (US\$710mn)
- **AUO**: Acquisition of **M.Setek** (2 investments - US\$125mn & US\$170mn)
- **LDK**: Stake sale in its polysilicon plants to **Jiangxi Investments** (US\$219mn)
- **MEMC**: Acquisition of Solaicx (silicon wafer manufacturer) for US\$100mn; takeover speculation; 20% drop in share price post Q1 results
- **Capacity expansion**: Announced by Hemlock (13,000 metric tons by 2011 at its Michigan site), Wacker (10,000 metric tons by 2Q2010), OCI (5,000 metric tons by Oct 2011), Tokuyama (6,000 metrics tons by 2013), etc

Strategic tie-ups

- **AU Optronics** board approved the construction and operation of a US\$700m solar-cell plant in Malaysia with **SunPower**. Mass production in 4Q2010, planned capacity 1.4GW
- **TSMC** acquired 20% stake in **Motech** for total of approximately USD193mn

Project development

- **GCL**: 51/49 JV with **CIC** (initial capitalization US\$500mn)
- **First Solar**: 1.3GW project pipeline from **OptiSolar** (US\$400mn); Stake in **EMG's** solar pipeline; 1.1GW project pipeline via acquisition of **NextLight** (US\$285m)
- **MEMC**: Acquired PV project developer **SunEdison** (c.US\$340mn)
 - **SunEdison**: JV with **First Reserve** to provide for the acquisition of up to US\$1.5bn in current and future SunEdison PV projects
- **Sunpower**: Project pipeline of 1.2GW through acquisition of **SunRay** for US\$277mn
- **Recurrent**: Acquired by Sharp for US\$305mn and will operate under the same name

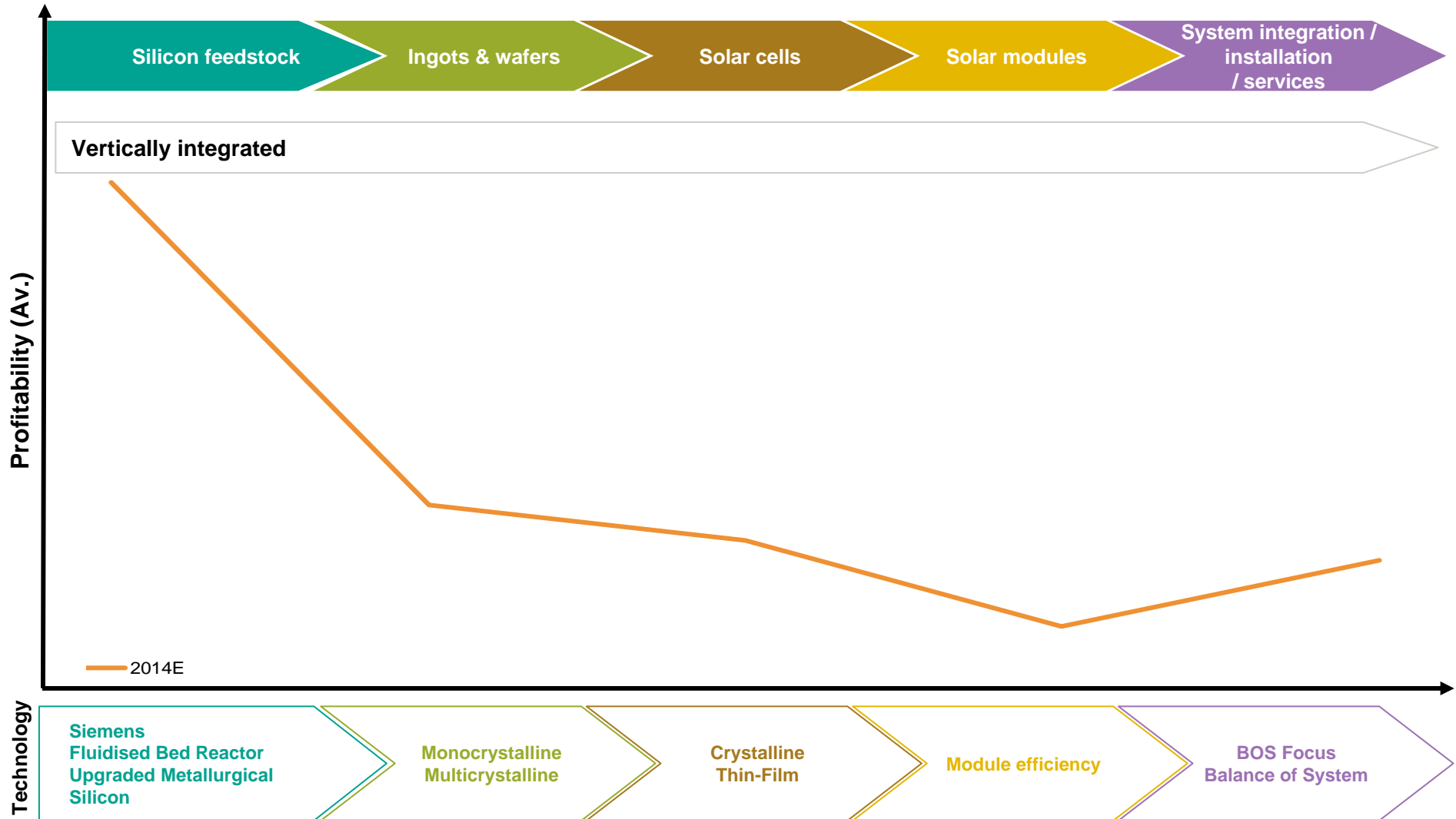
Independent developers - prime targets for established PV players



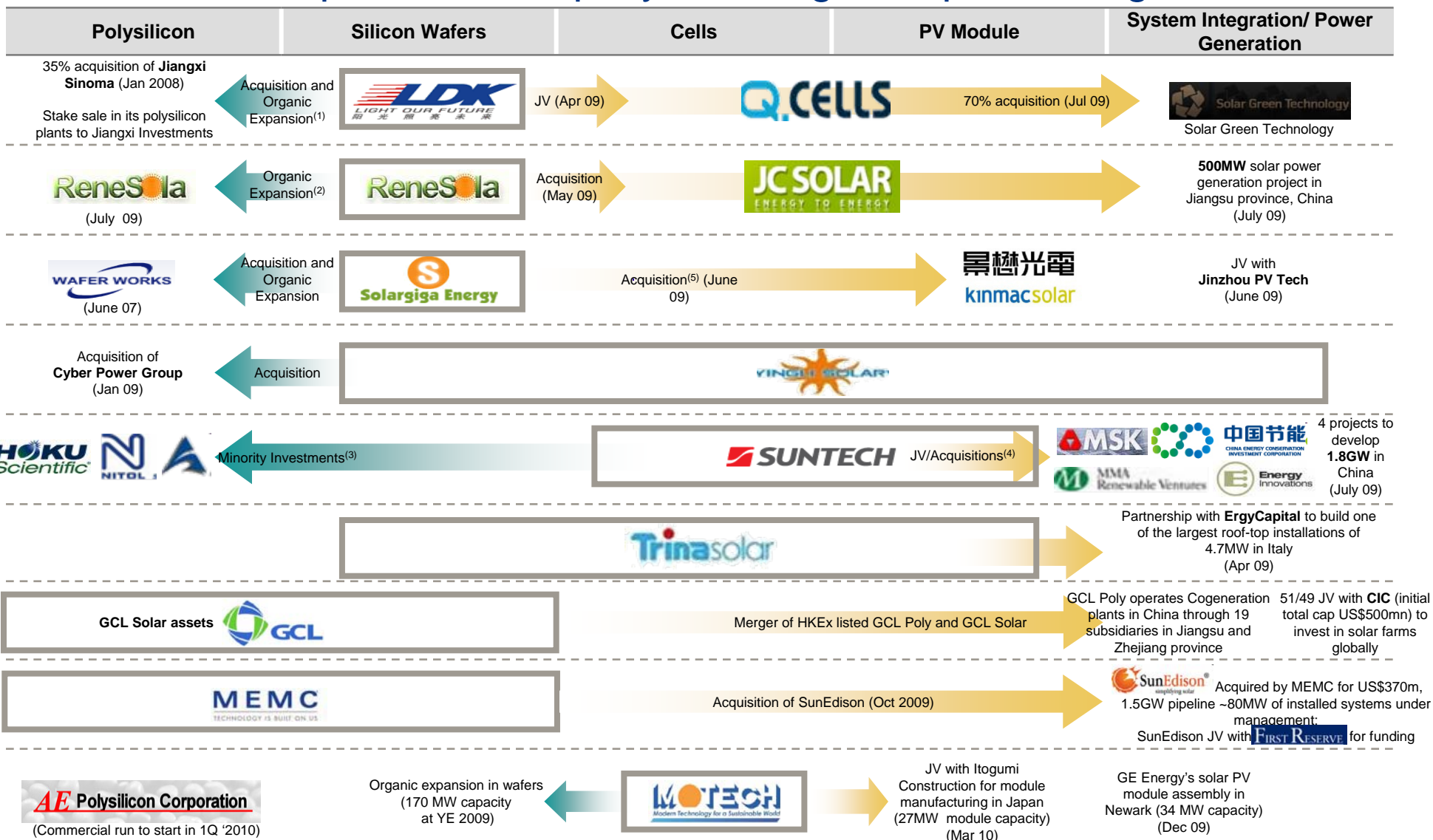
3 Stronger than expected 2010 end-demand... however, lack of visibility in 2011

- Strong 1H10 demand to continue in 2H10 as FIT cuts are postponed until 2011
- However, there is limited supply/demand visibility beyond 2 quarters with some industry participants expecting some oversupply in 2011

Midstream PV manufacturing segment is challenging and requires clear differentiation in China to be successful



As a result, companies are rapidly evolving their positioning



Notes: (1) LDK reached mechanical completion of the first 5,000MT in its 15,000 MT annualized capacity polysilicon plant in Xinyu, China

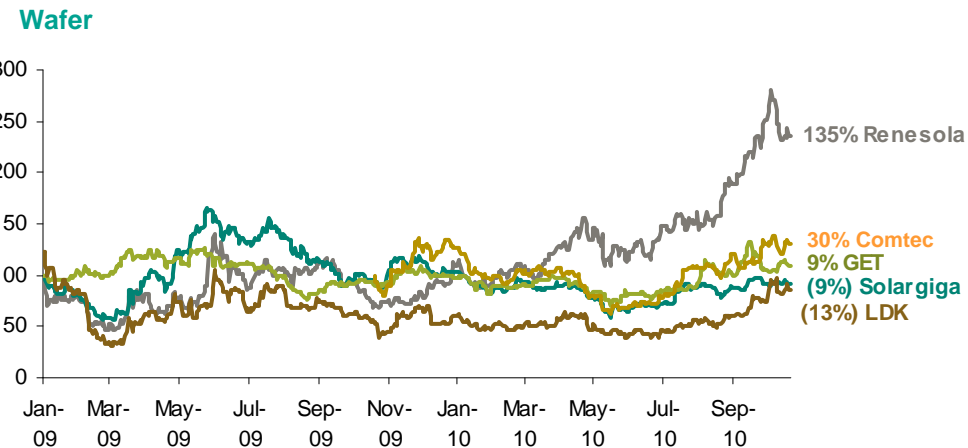
(2) In July 2009 ReneSola commenced production from Phase 1 of its two-phase, 3,000MT annualized capacity polysilicon manufacturing facility in China's Sichuan province

(3) Hoku Scientific (Feb 08), Nitel Solar (Mar 08), Asia Silicon (Feb 09); (4) MSK acquisition (Aug 06), JV with MMA Renewable (Oct 08), JV with Energy Innovations (Oct 08); Project development with CECIC (July 09); (5) Terminated in Dec 2009 since the approval of the Investment Commission of the Ministry of Economic Affairs of Taiwan was not obtained

Solar sector: 2009-2010YTD stock price performance



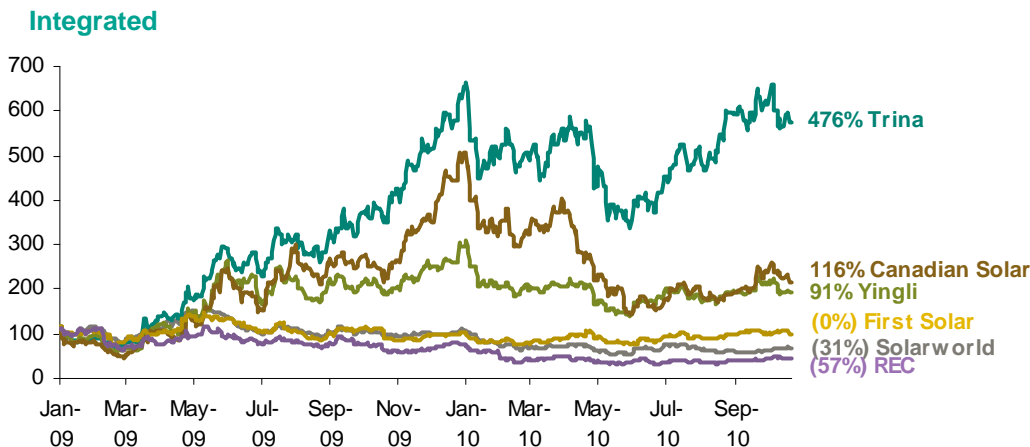
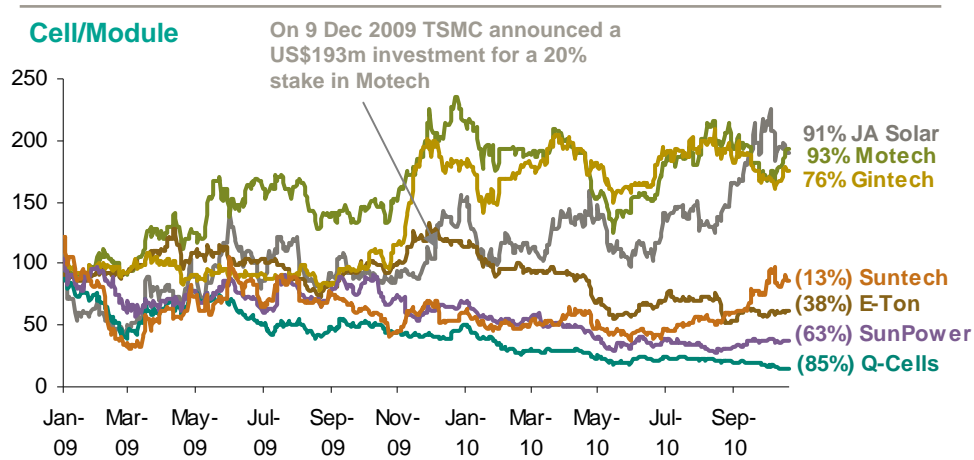
- Emergence of two new, large-scale polysilicon players in Asia: OCI and GCL
- Strong operational and financial performance (esp. Wacker, OCI and GCL); however long-term price declines, cost competitiveness, excess supply and concerns over new entrants in China continue to weigh on global polysilicon stocks
- Rising semiconductor demand should gradually improve underutilization and margins of producers with exposure to the semiconductor sector (Tokuyama, GCL, MEMC)



- Volume recovery in 2010 but price erosion likely to continue; renewed focus on quality production
- Bottlenecking has created significant demand opportunities in the mono- and multi-crystalline wafer and ingot markets
- Progress with polysilicon plant expansion (LDK, Renesola) although questions subsist
- Increasing focus on downstream segment (Solargiga, LDK, Renesola)
- Significant financial leverage weighing on certain players (LDK, GET); scale cannot be achieved at the expense of over-leverage

Source: Bloomberg as of 30 Oct 2010

Solar sector: 2009-2010YTD stock price performance (cont'd)

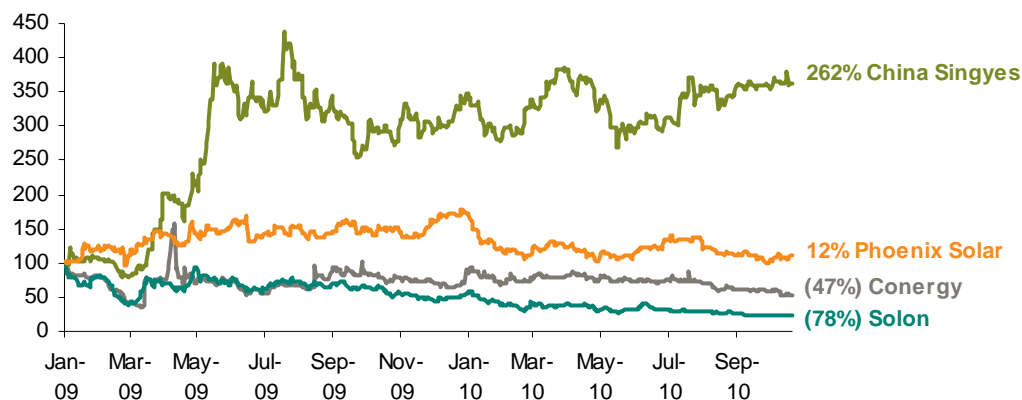


Source: Bloomberg as of 30 Oct 2010

- Strong performance from many “integrated” Asian players in absolute and relative terms
 - Competitive cost structure
 - Beneficiary of declining polysilicon prices
 - Well positioned to take advantage of growth of the Chinese market
 - Strong financial support from PRC banks
- European / U.S. players facing structural and company-specific challenges:
 - Structural (i.e., eroding pricing power and higher cost structures than Asian peers)
 - Company specific (i.e., profit warnings, operational delays, financial pressure)
 - Most European and US stocks were down in 2009

Solar sector: 2009-2010YTD stock price performance (cont'd)

Module and Systems integration



Source: Bloomberg as of 30 Oct 2010
Note: (1) China Singyes from IPO on 13 January 2009

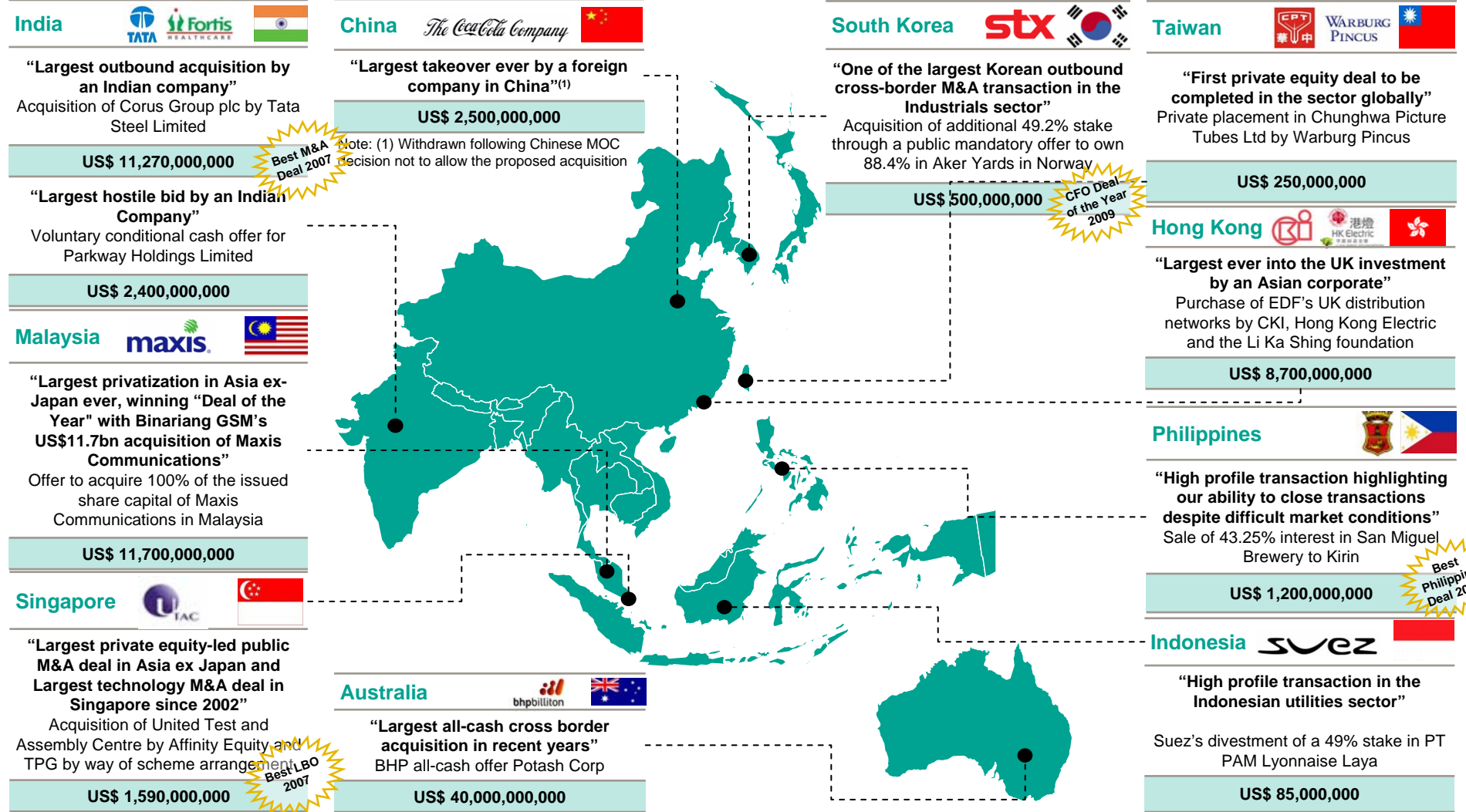
- Phoenix Solar likely to have benefitted from the strong demand in Germany during 1H10 with increased orders ahead of the expected mid-year FIT cut
- Conergy performance impacted by efforts to strengthen its capital basis through debt reduction and/or a debt for equity swap
- China Singyes, listed in HK, is benefitting from its first-mover advantages in emerging BIPV systems market in China (e.g., potential beneficiary of MOHURD⁽¹⁾ subsidies program) and is expected to continue this run with its broad range of products and stronger turnover growth of solar energy business
- Development and project ownership companies are poised to be well positioned as new markets open in the long-term

Note: (1) Ministry of Housing and Urban-Rural Development



**RBS Renewable Energy and Investment
Banking Team**

RBS has a track record of leading high-profile and cross-border M&A transactions in Asia



RBS is a leading bank for renewable energy capital raisings

RBS led two of the largest equity offerings in the sector in 2009

Pre-IPO

UPC Renewables China Holdings Ltd.	
	
USD 30,000,000 Pre-IPO Financing - Convertible Participating Preferred Shares	
Sole Financial Adviser	
February 2010 China	

Highlights

- Long-standing RBS relationship since 1999
- Pre-IPO investment of UPC's greenfield wind farm business in China by GEF in 2010
- GEF is a renewable energy-focused private equity fund with US\$1 bn in AUM

“Re-IPO”

China WindPower Group Ltd	
	
HKD 595,000,000 Share Placement	
Sole Bookrunner	
July 2009 Hong Kong	

Highlights

- Reopened the door for a wind farm capital raising event and was the first in Asia in 2009
- First ever top-up placement in the renewable energy sector in Hong Kong
- Effectively a re-IPO, significantly expanding China WindPower's institutional investor base by 4x
- RBS sales force successfully educated first-tier investors on a new story to the market

Rights issue

Renewable Energy Corporation ASA	
	
NOK 4,500,000,000 (equivalent to EUR500m) Rights Issue	
Joint Bookrunner & Joint Lead Manager	
July 2009 Norway	

Highlights

- Largest renewable energy rights issue in Europe ever
- Largest rights issue in Norway since December 2007
- Holistic approach involving both debt and equity

Accelerated bookbuild











































Vestas Wind Systems AS	
	
DKK 5,975,500,000 Accelerated Bookbuilt Offering	
Joint Bookrunner & Joint Global Co-ordinator	
April 2009 Denmark	

Highlights

- Largest renewable energy Accelerated Book Build offering in Europe ever
- 1-day bookbuild is a testament of RBS sales force's leading position and knowledge of investors who buy renewable energy shares

RBS has extensive experience as an advisor and bookrunner in the global solar sector

Selected recent transactions

<p>OC Oerlikon Corporation AG</p>  <p>CHF 1,000,000,000 Rights Issue</p> <p>Joint Bookrunner</p> <p>June 2010 Switzerland</p> 	<p>First Solar</p>  <p>USD 300,000,000 3 Year Revolving Credit Facility</p> <p>Documentation Agent</p> <p>September 2009 US</p> 	<p>Renewable Energy Corp</p>  <p>NOK 4,500,000,000 rights issue</p> <p>Joint Lead Manager Joint Bookrunner</p> <p>July 2009 Norway</p> 	<p>Acciona Energia</p>  <p>EUR 242,100,000 Credit facility to Thermosolar Alvarado 50MW Solar Thermal Plant</p> <p>Project Finance</p> <p>2008 Spain</p> 	<p>Sacyr Vallehermoso</p>  <p>EUR 283,000,000 Credit facility to Solucia Renovables 50MW Solar Thermal Plant</p> <p>Project Finance</p> <p>2008 Spain</p> 	<p>Trinasolar</p>  <p>USD 120,000,000 Convertible Bond</p> <p>Joint Bookrunner</p> <p>2008 China</p> 	<p>Renewable Energy Corp.</p>  <p>NOK 6,000,000,000 SGD 1,000,000,000 Syndicated Facilities</p> <p>Mandated Lead Arranger & Bookrunner</p> <p>2008 Norway</p> 
<p>Suntech</p>  <p>USD 575,000,000 Convertible Bond offering</p> <p>Joint Bookrunner</p> <p>2008 China</p> 	<p>First Reserve Corporation</p>  <p>EUR 261,000,000 Sole Financial Adviser to First Reserve Corporation on its Acquisition of Gamesa Solar SAU</p> <p>Sole Financial Adviser</p> <p>2008 Spain</p> 	<p>Renovalia Energy</p>  <p>EUR 346,750,000 47.6 MW Photovoltaic Solar Plant Project Finance</p> <p>Mandated Lead Arranger, Sole Bookrunner, Facility Agent, Security Trustee & Hedge Provider</p> <p>2008 Spain</p> 	<p>Ecotècnia</p>  <p>EUR 350,000,000 Sole financial adviser on the sale of Ecotècnia to Alstom</p> <p>Financial Adviser</p> <p>2007 Spain</p> 	<p>Eolia Renovables</p>  <p>EUR 114,600,000 Credit facility for 15.75 MW Photovoltaic solar plants</p> <p>Project Finance</p> <p>2007 Spain</p> 	<p>Fotowatio</p>  <p>EUR 82,200,000 Credit facility for 10 MW photovoltaic solar plant</p> <p>Project Finance</p> <p>2007 Spain</p> 	<p>Suntech</p>  <p>USD 425,000,000 Joint Bookrunner Convertible Bond</p> <p>Joint Bookrunner</p> <p>2007 China</p> 
<p>Enersol Proyectos</p>  <p>EUR 78,500,000 Credit facility for 10 MW Photovoltaic Solar Plant</p> <p>Project Finance</p> <p>2007 Spain</p> 	<p>Fotowatio</p>  <p>EUR 68,060,000 Credit facility for 10 MW Photovoltaic Solar Plant</p> <p>Project Finance</p> <p>2007 Spain</p> 	<p>Fotowatio</p>  <p>EUR 71,200,000 Credit facility for 10 MW Photovoltaic Solar Plant</p> <p>Project Finance</p> <p>2007 Spain</p> 	<p>Wacker Chemie</p>  <p>EUR 2,000,000,000 Initial Public Offering Wacher Chemie AG</p> <p>Co-manager IPO</p> <p>2006 Germany</p> 	<p>Scheuten</p>  <p>EUR 50,000,000 Capital structure advisory and refinancing of the solar business</p> <p>Sole financial Adviser</p> <p>2006 Netherlands</p> 	<p>Renewable Energy Corp.</p>  <p>NOK 5,425,000,000 Syndicated Credit Facility Joint Mandated Lead Arranger</p> <p>Joint lead Arranger</p> <p>2006 Norway</p> 	<p>Renewable Energy Corp.</p>  <p>EUR 170,000,000 Acquisition financing for solar grade silicon manufacturing unit</p> <p>Lead Arranger</p> <p>2005 Norway</p> 

Thank you