Solar Power

Investing in Solar PV Manufacturing

-September 20, 2012-

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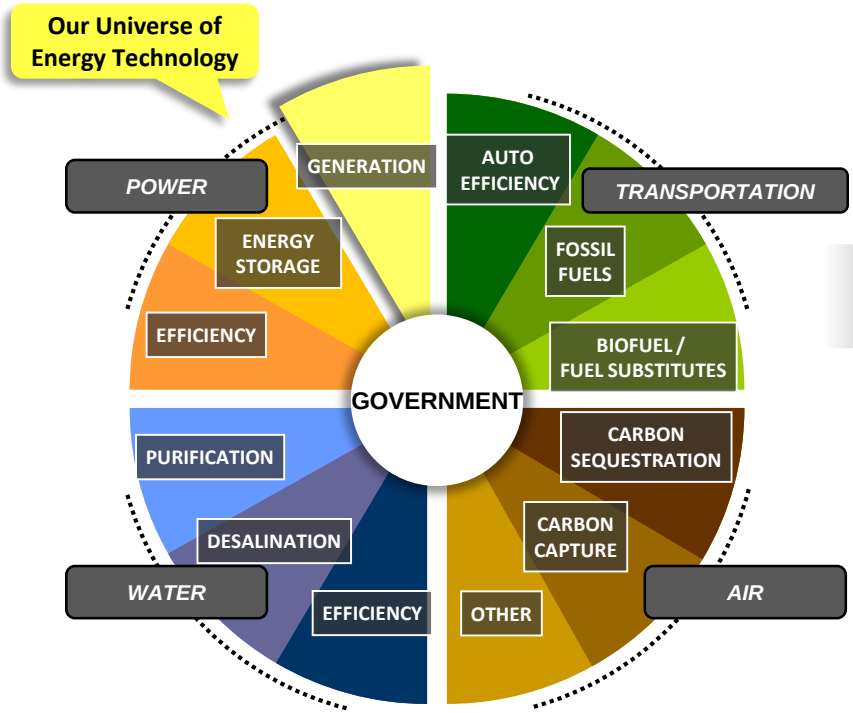
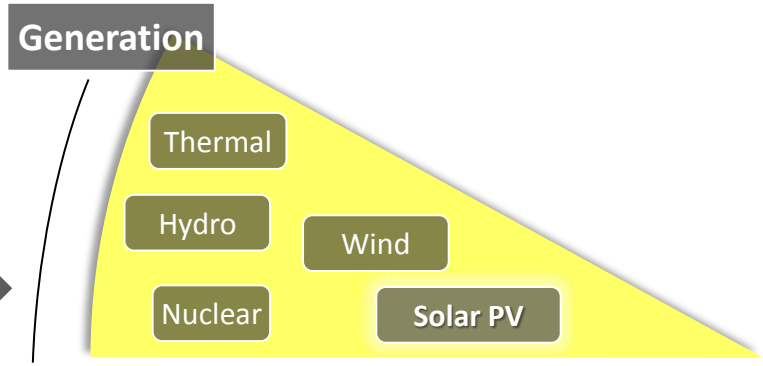
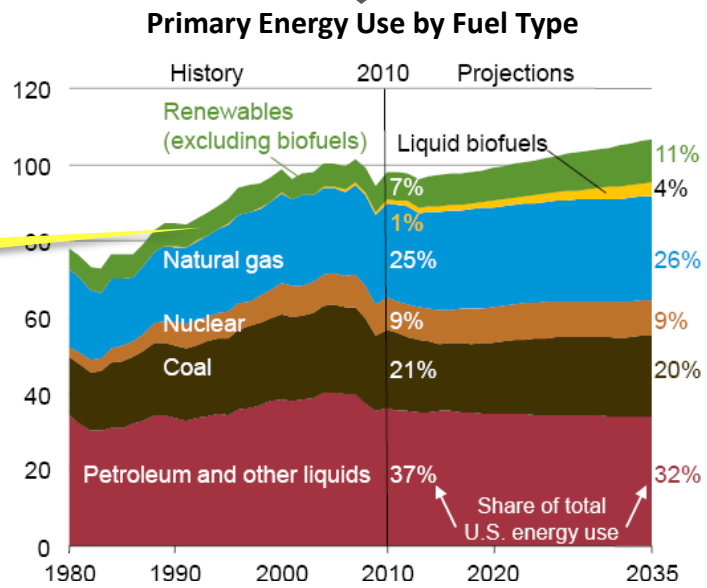
Investment Universe + Report Focus





Focus of this Report



1) Source: Annual Energy Outlook 2012 by US Energy Information Administration dated June 2012.

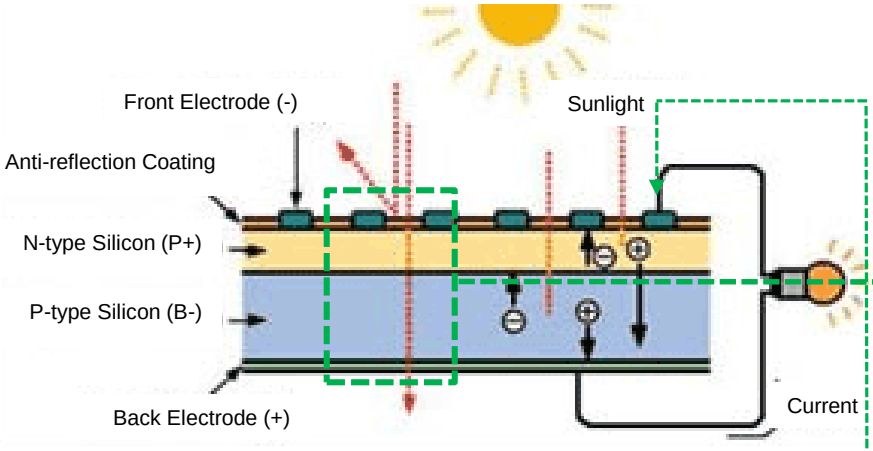
Investing in Solar PV:

- We believe a new buying cycle will emerge in 2013 with a) renewed demand from China, US and Japan; and b) improving capacity utilization of existing capacity
- Key drivers: a) subsidies/FiTs(1); b) macro economy; and c) innovation in technology

1) Feed-in tariff (FiT) is a policy mechanism that offers long-term contracts to renewable energy producers, designed to accelerate investment in renewable energy technologies.

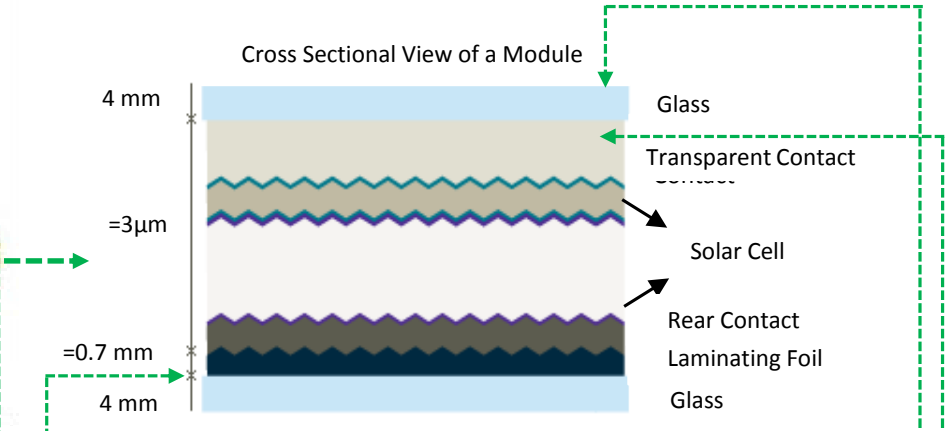
What is a PV Cell?

PV Cell and How it Works



- A PV cell converts sunlight which contains photons into electricity
- When photons strike a PV cell, the absorbed photons generate electricity by transferring the energy of the photon to an electron in an atom of the cell (which is actually a semiconductor)
- With this energy, the electron is able to escape from its normal position associated with that atom to become part of the current in an electrical circuit forming an "electron hole"

Cross-Section of a PV Cell

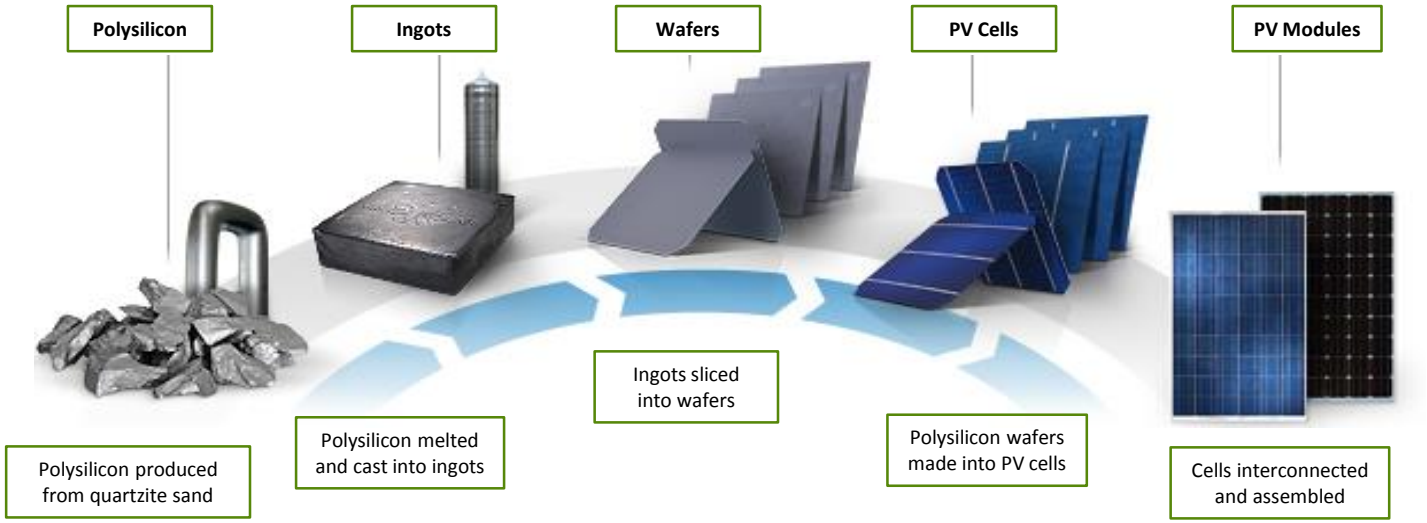


- A PV cell consists of an encapsulate (usually made of glass), and contact grid (made of a good conductor such as a metal)
- N-type and P-type silicon semi-conductors, corresponding to "-ve" and "+ve" charges (created by doping i.e. contaminating the silicon) are sandwiched together
- The back contact of a photovoltaic cell is made out of metal that covers the entire back surface and acts as a conductor

1) Source: Electron hole defines the lack of an electron at a position where one could exist in an atom or atomic lattice.

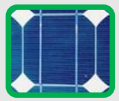
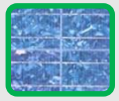
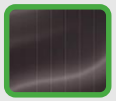
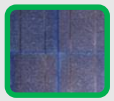
PV – Value Chain and Types

Vertical Integration of the Solar Module[1]



Types of PV Cells

Crystalline Silicon (C-Si): 85%-90% market share | **Thin-film: 10%-15% market share**

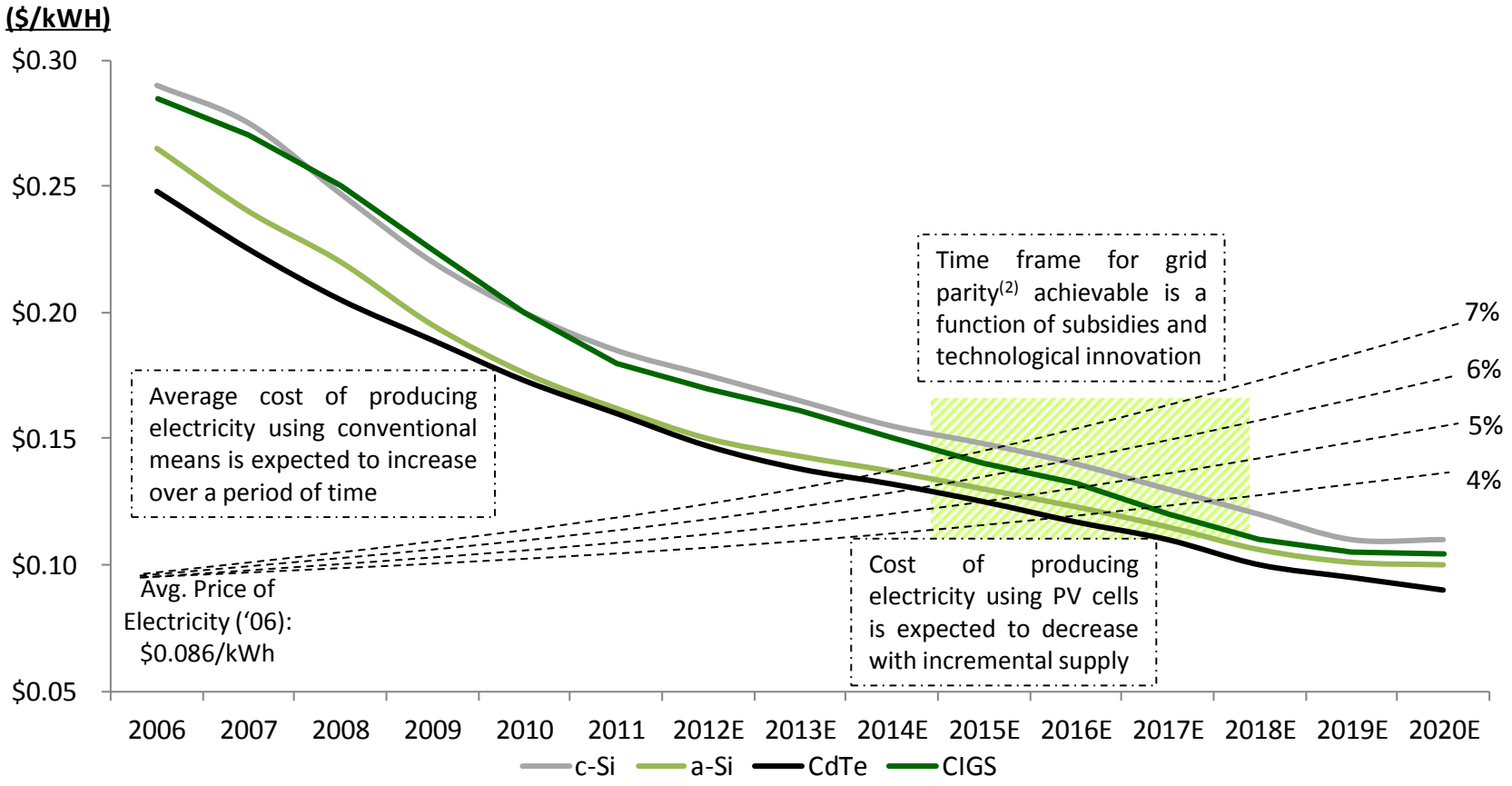
Name	Mono crystalline PV	Multi/Polycrystalline PV	Amorphous/Non-crystalline Silicon (a-Si)	Other Thin Films (CIGS/CIS and CdTe)	Thick Film Silicon
Structure					
Made from	Single cylindrical silicon slice	Cells of recrystallized silicon	Non-crystalline deposition	Copper, cadmium, indium, selenium, gallium	Deposition of silicon on a base metal
Efficiency[2]	15%-22%	11%-15%	10%	CIS: 10%-13% CdTe: 10%-14%	NA
Cost	●	◕	◑ (uses 1% of Si vs. typical c-Si cells)	◑	◑

(1) Source: http://www.yinglisolar.com/us/products.

(2) Efficiency = energy out as electricity ÷ energy in as light X 100.

Grid Parity

Grid parity likely to be achieved in next five years as cost of solar electricity falls.

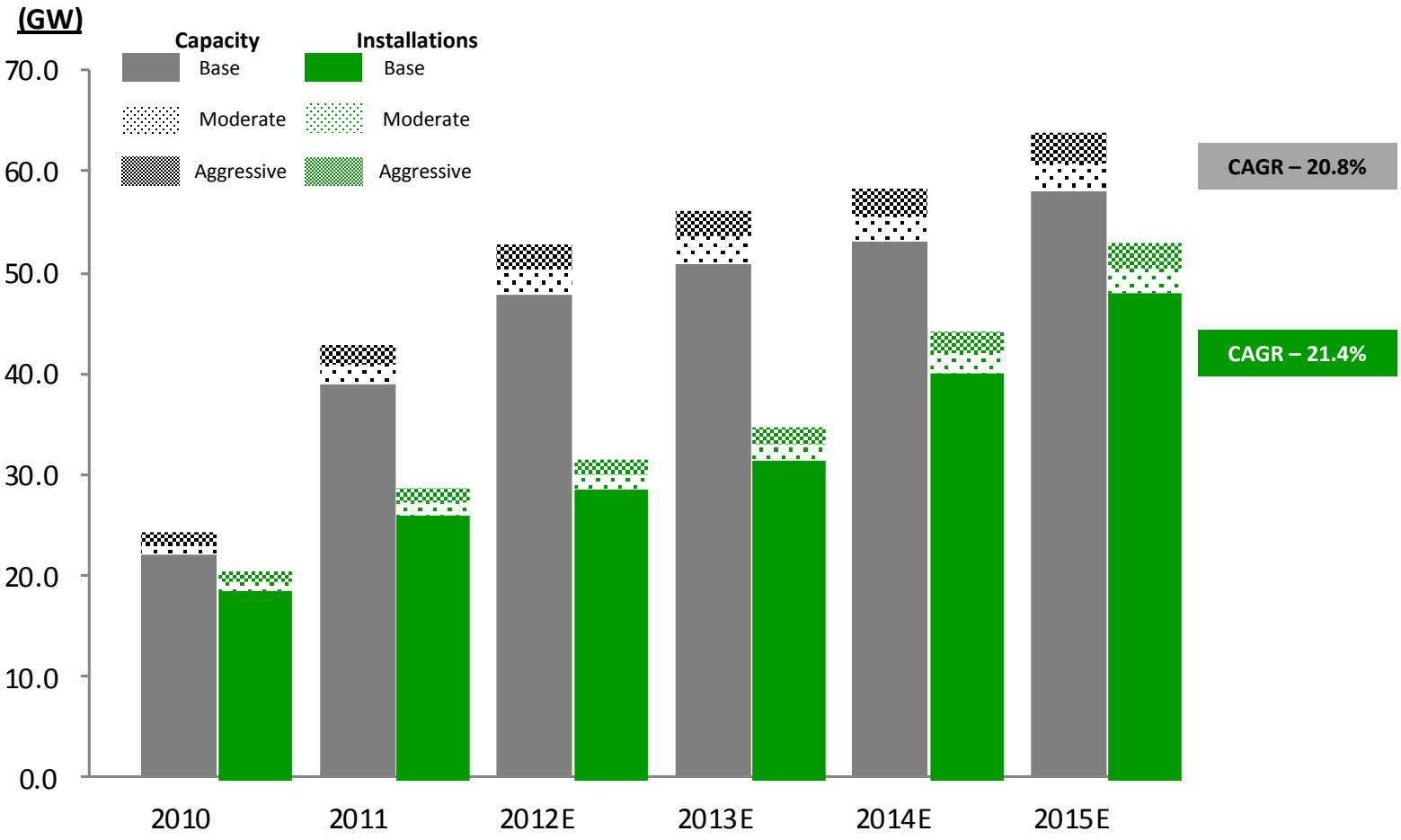


(1) Source: Solarbuzz article dated 8/13/12

(2) Grid parity is the point at which the means of generating electricity from alternative energy produces power at a levelized cost that is = or < the price of purchasing power from the grid.

Global PV Demand Supply Dynamics

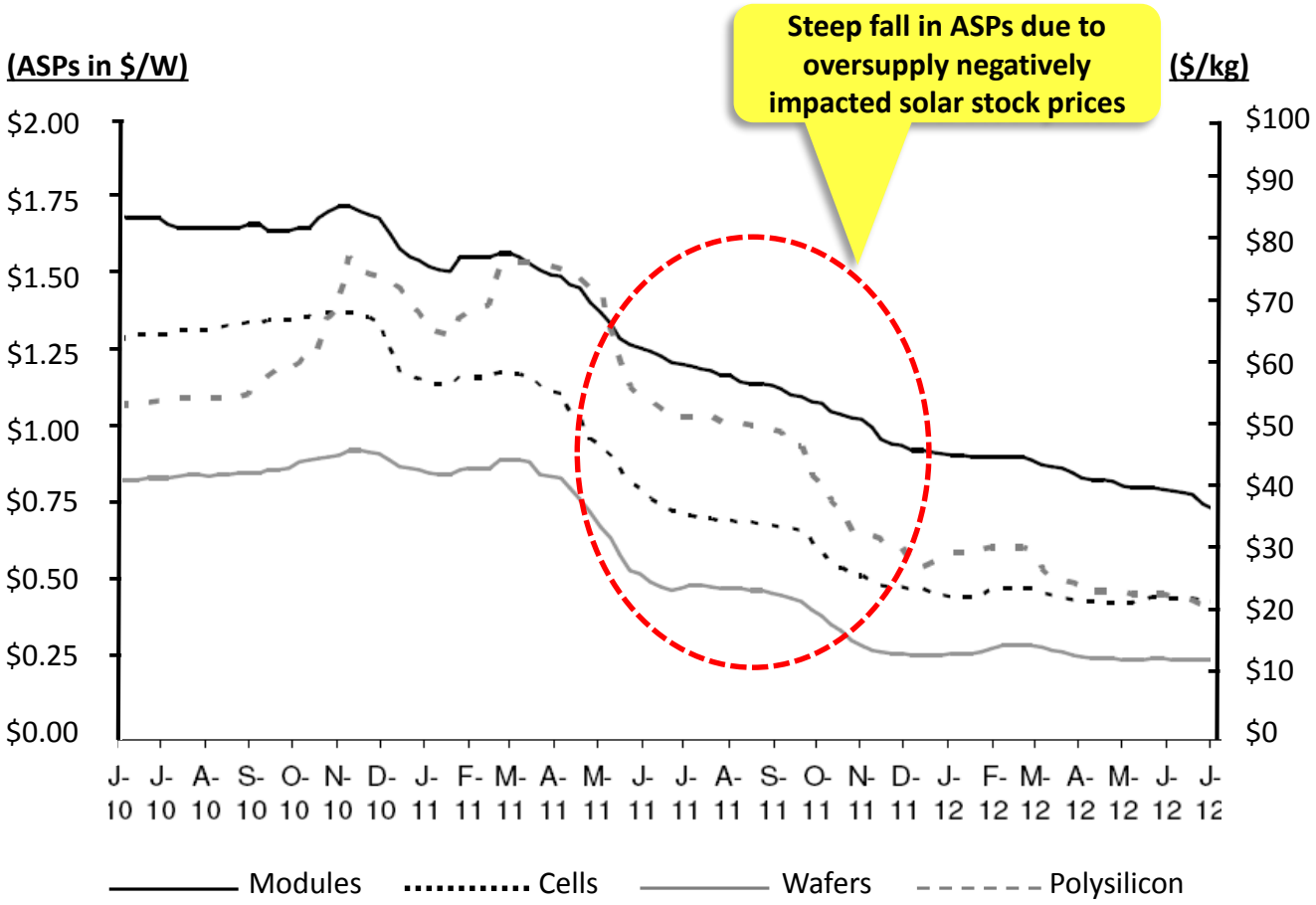
Capacity is expected to continue outstripping installations; however, the disparity will moderate (demand/supply parity at ~63% in '12 will increase to ~87% by '15).



Note: a) Installations (Base Case): from IMS, Solarbuzz, (Moderate Case): +5% over Base case, (Aggressive Case): +5% over Moderate Case; b) Capacity (Base Case): from iSuppli, IHS, (Moderate Case): +5% over Base case, (Aggressive Case): +5% over Moderate Case; and c) CAGR is for 2010-2015E.

Pricing Trends

Industry oversupply resulted in ~50%-70% fall in ASPs across the module value chain.



(1) Source: PV Insights.

(2) Note: The ASPs in $/W is for modules, cells and wafers and $/kg for Polysilicon.

Subsidy Framework *[CONTINUES]*

While subsidies have driven growth in many countries, post-financial crisis cuts have introduced increased uncertainty and volatility to the solar markets.

Country	Overview	Evolution	Current Status	XXX Believes...
 Germany	Predominantly FiTs to encourage utilities to buy electricity at a fixed rate for 20 years	• 2001: FiTs with rates of $0.32/kWh-$0.49/kWh • Aug '04: Increased to $0.66/kWh • Jun '06: Rates reduced by 20%-50% • Oct '11: Rates reduced by 15% from Jan '12 $0.22/kWh-$0.30/kWh	• Growth of 2.5GW-3.5GW/year, a cap on subsidies at 52GW Project Size: Upto 10kW; 10kW - 40kW; 40kW - 1MW; 1MW-10MW April '13: $0.25; $0.24; $0.21; $0.17 July '13: Rate cut of 1%/month from July 2014: Rate cut of 1%/year hereafter	As total installations reach 52GW subsidies will cap by 2014/2015
 Italy/Spain	High Spanish tariffs created an artificial market. FiTs in Italy made it the second biggest solar market after Germany	• 2008: Spain introduced FiTs of up to $0.55/kWh to all new solar panel projects plugged into the electrical grid by Sep '08 • 2005: Italy introduced FiTs in Conto Energia(1) • Five amendments to the bill since then	• Spain has closed all FiT grants to new applicants in light of financial crisis • The Conto Energia V was passed in Jul '12 with FiT of $0.21/kWh for plants >5MW	Moderate PV expansion (Italy) in '13 will continue even without subsidies with Conto Energia V
 USA	No national institution of FiTs. National installations are incentivized through tax credits	• Ongoing dispute over FiT legality in various states	• 31/50 states have RPS(2) • Through 2016, the US will offer a 30% federal tax credit on the cost of systems. Many states also offer additional tax credit	A suggested federal FiT and RPS policy would radically change the solar market (positive catalyst)
 Saudi Arabia	Plans to add 41GW to the grid in 20 years through investments of $109B	NA	• Will initiate the first round of bidding of 1.1GW of PV in early 2013. Bidding will be followed by the first FiTs. The second round of bidding will be held after Q2 '14	A third of the energy will be from solar sector by 2032

(1) Conto Energia stands for Energy Bill.
(2) RPS: Renewable Portfolio Standards.

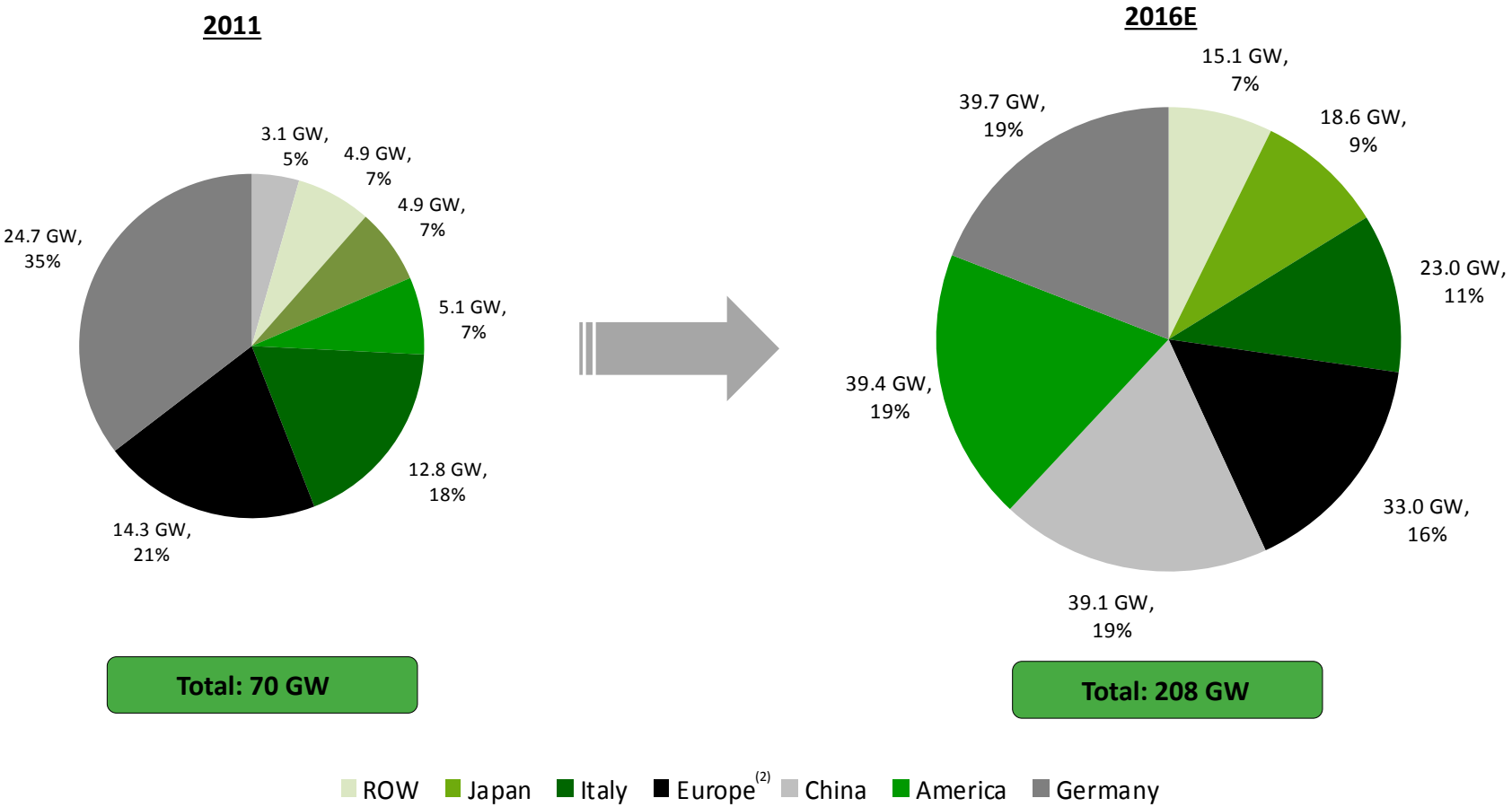
Subsidy Framework *[CONTINUED]*

The Asia-Pacific region, fueled by increased solar targets in China and Japan, is projected to grow rapidly and account for ~25% of global demand by 2015 vs. 11% today.

<table>
<tr><th>Country</th><th>Overview</th><th>Evolution</th><th>Current Status</th><th>XXX Believes...</th></tr>
<tr>
<td> 
China</td>
<td>Includes FiT/subsidy/rebate. Huge lines of credit from the China Development Bank in the range of >$30B</td>
<td>• Mar ‘09: System Size: >= 50KW. $2.19/W – BIPV and $2.92/W – rooftop
• Jul ‘09 (Golden Sun): System Size: >= 300KW. Subsidies on investments a) on grid: 50%; and b) off grid: 70%
• 2007-08: 4 PV stations approved with FiT of $0.58/kWh
• Jul ‘11: FiTs for a) projects approved before Jul ‘11 and completed by >end of 2011 ($0.18/kWh) and b) for others after that ($0.156/kWh)</td>
<td>• 2012: FiT rate at $0.136/kWh
• May ‘12: Cut in Golden Sun subsidy -21% from $1.11/W to $0.87/W</td>
<td>• Further reductions in FiTs and subsidies will set in with falling PV component prices
• Installed capacity to be 21GW by 2015</td>
</tr>
<tr>
<td> 
Taiwan</td>
<td>FiT determined by the date the project begins operations and not when the deal is signed. In the year of commencement, the project is locked into 20 year contracts with that year’s FiT rates</td>
<td>• Jun ‘09: FiTs of $0.37-$0.45/kWh for PV systems, promoting solar energy with a goal of adding 6.5-10GW of renewable energy by 2030 with $0.9B for construction and subsidies</td>
<td>• FiT 2012 ($/kWh)
<table>
<tr><th>Roof-Top</th><th>Jan - Jun</th><th>Jul - Dec</th><th colspan="2">Reduction (%)</th></tr>
<tr><td>1kWp - <10kWp</td><td>$0.32</td><td>$0.31</td><td>8.3%</td><td>10.3%</td></tr>
<tr><td>10kWp - <100kWp</td><td>$0.28</td><td>$0.28</td><td>7.0%</td><td>9.3%</td></tr>
<tr><td>100kWp - <500kWp</td><td>$0.27</td><td>$0.27</td><td>7.3%</td><td>9.7%</td></tr>
<tr><td>>500kWp</td><td>$0.24</td><td>$0.24</td><td>8.0%</td><td>9.8%</td></tr>
<tr><th>Ground-Mounted</th><th>Jan - Jun</th><th>Jul - Dec</th><th colspan="2">Reduction (%)</th></tr>
<tr><td>>1kWp</td><td>$0.23</td><td>$0.23</td><td>5.8%</td><td>7.8%</td></tr>
</table></td>
<td>• Energy efficiency of 33% to be achieved by 2025</td>
</tr>
<tr>
<td> 
Japan</td>
<td>Growth of solar energy driven by its initiative to cut reliance on nuclear power, post Fukushima disaster in Mar ‘11</td>
<td>• 2003: RPS system was introduced to achieve target of 16TWh/year of new energy generation by ‘14
• Nov ‘09: FiT was introduced but limited to sale of surplus power generated by solar PV</td>
<td>• Jul ‘12: FiT implemented with a) >10KW for 10 years: $0.53/kWh; and b) <10KW for 20 years: $0.50/kWh</td>
<td>• A revision will be announced in Mar ‘13
• PV capacity will reach 28GW by ‘20</td>
</tr>
</table>

Installations by Country

Geographical mix, skewed towards Europe (74%; primarily Germany and Italy) as of '11, will have a larger contribution from China (19%) and the USA (19%) by '16.

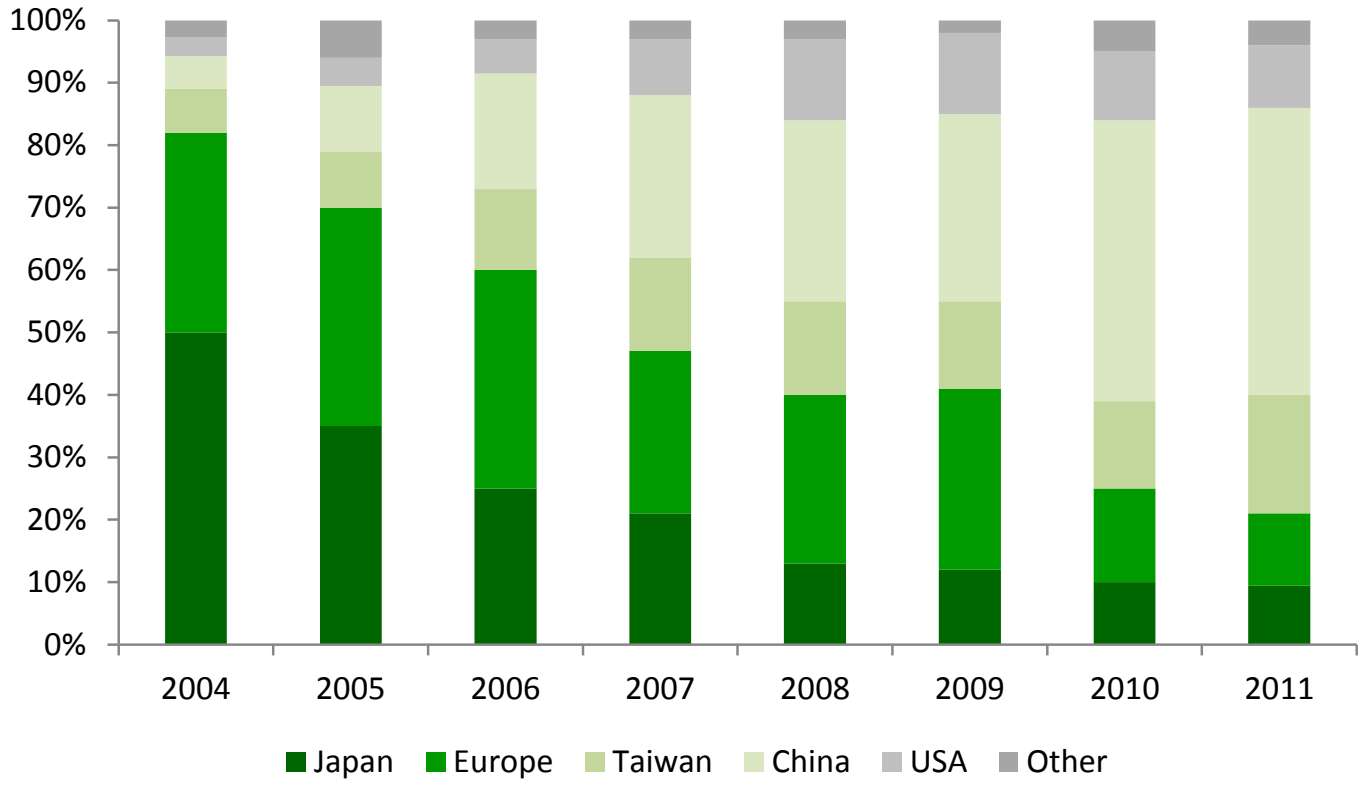


(1) Source: EPIA Photovoltaic Report 2016.

(2) Excluding Germany and Italy.

Manufacturing by Country

China's dominant share of the PV industry was driven by: a) low manufacturing costs; b) steady access to capital; and c) pro-solar government policies.



Source: Company Reports.

Competitive Analysis *[CONTINUES]*

Brand	Description	Technology	Major Geography	Capacity	Cost / W	ASP / W	Efficiency
First Solar	Manufactures and sells solar modules. Also designs, constructs, and sells PV solar systems	Thin Film CdTe (Cadmium Telluride)	United States (45% of revenue)	2.9GW AC (includes pipeline)	$0.72	NA	14.4%
SUNTECH	World's largest manufacturer of solar modules	c-Si (mono & quasi-mono)	United States (23% of revenue)	4GW	$0.74 (non-silicon cost)	$0.97	Mono c-Si – 18.2% Quasi Mono – 16.6% Pluto technology (20.3% on PV cells and 18.1% on PV modules)
YINGLI SOLAR	Vertically integrated business covering entire PV value chain, from poly silicon production to the assembly of modules	c-Si (mono & multi c-Si)	Germany (57% of revenue)	2.5GW	$0.77	NA	Multi c-Si – 17% Mono c-Si – 20%
Trinasolar The power behind the panel	Fully vertically integrated from the production of ingots to modules	c-Si (mono & multi c-Si)	Germany (42% of revenue)	2.4GW (Modules)	$0.52 (module unit non-silicon cost)	$0.92 (Q1 '12)	Mono c-Si – 19.9% Multi c-Si – 19.6%
SUNPOWER	Provides large-scale products and systems. Also sells components like solar panels and mounting systems, solar equipment	Mono c-Si	Americas (66% of revenue)	2.4GW	$1.46 (Q4 '11)	NA	Gen 3 cells: Upto 24%
CanadianSolar	Vertically integrated provider of ingots, wafers, cells, modules, solar power systems and specialized solar products	c-Si (mono & multi c-Si)	Europe (69% of revenue)	2GW	$0.67 (Q1 '12)	$1.34 (Q4 '11)	Mono c-Si – <21% Multi c-Si – <18.5%

Source: Company websites, Annual Reports, Company Presentations. Cost /W and ASP/W are for the latest quarter unless specified.

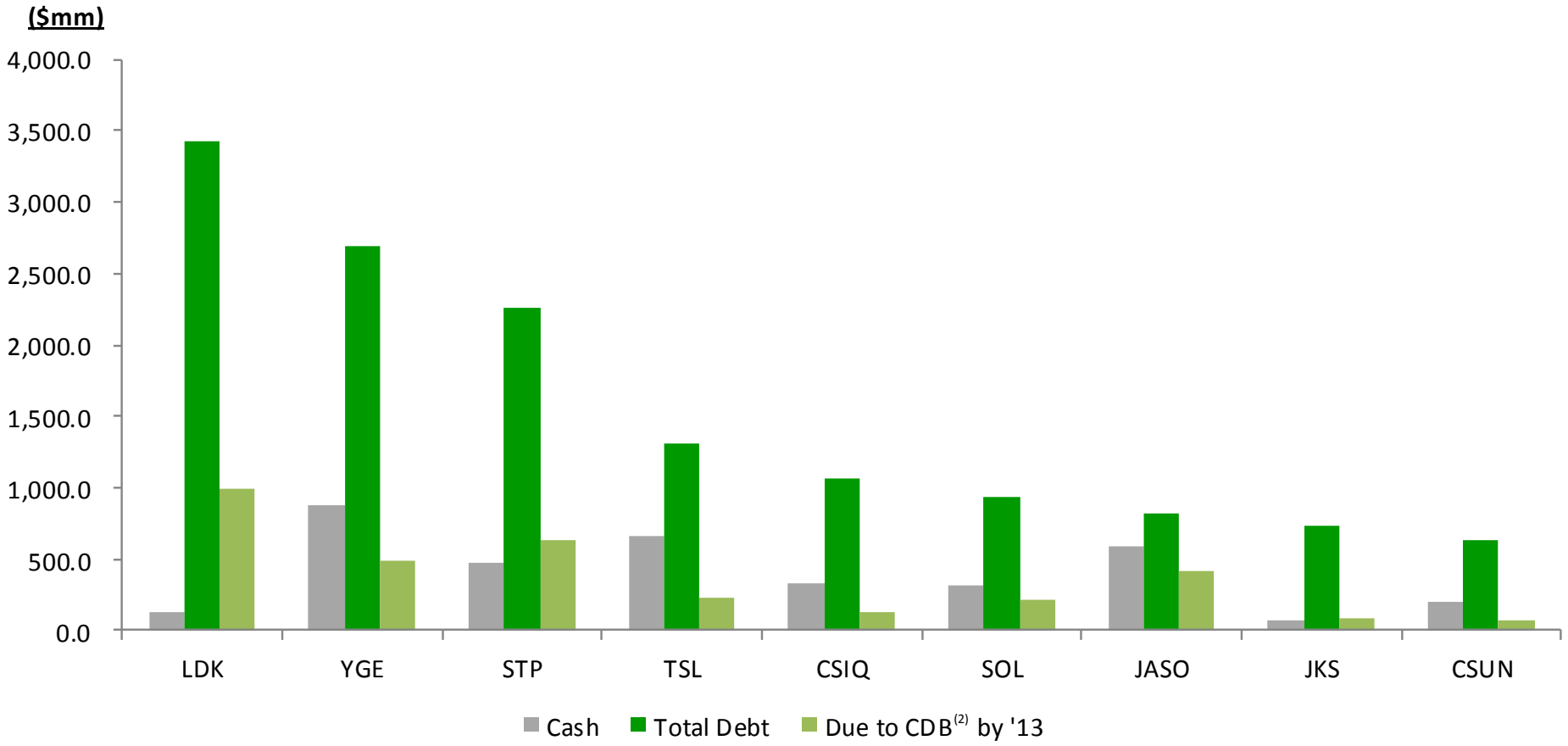
Competitive Analysis *[CONTINUED]*

Brand	Description	Technology	Major Geography	Capacity	Cost / W	ASP / W	Efficiency
LDK	Vertically integrated manufacturer of PV products. Includes Polysilicon, wafer, cell, module and farm projects	c-Si (mono & multi c-Si)	China (38.6% of revenue)	4.3GW – Wafer, 1.7GW each – Cell and Module	$1.70 (Q4 '11)	$0.80 (ex. processing business)	Normal Wafer – 17% M2 Wafer – 17.3% - 17.4%
aleo	Manufactures modules, inverters and installation systems that are all compatible to one another in the premium segment and also sells thin film solar modules	c-Si (mono & quasi-mono) + Thin film (sale of solar modules)	Germany (42% of revenue)	370MW (by end of 2012)	NA	NA	NA
SolarWorld	Vertically integrated business covering entire PV value chain, from poly silicon production to large scale solar facilities	c-Si (mono & multi c-Si)	Germany (49% of revenue)	2.7GW	NA	NA	NA
REC	Produces polysilicon, wafers, cells and modules and silicon materials for the electronic industry. Also engages in project development	c-Si (mono & multi c-Si)	China (17.3% of FY '11 revenue)	Wafer - 1.1GW, Module – 0.7GW	$0.89	NA	NA

Source: Company websites, Annual Reports, Company Presentations. Cost /W and ASP/W are for the latest quarter unless specified.

Debt Profile – Chinese Companies

China's solar industry, facing credit issues (debt: ~$21B vs. cash: ~$4B), may be pushed to the edge with a new government (with probable introduction of stringent debt policies).

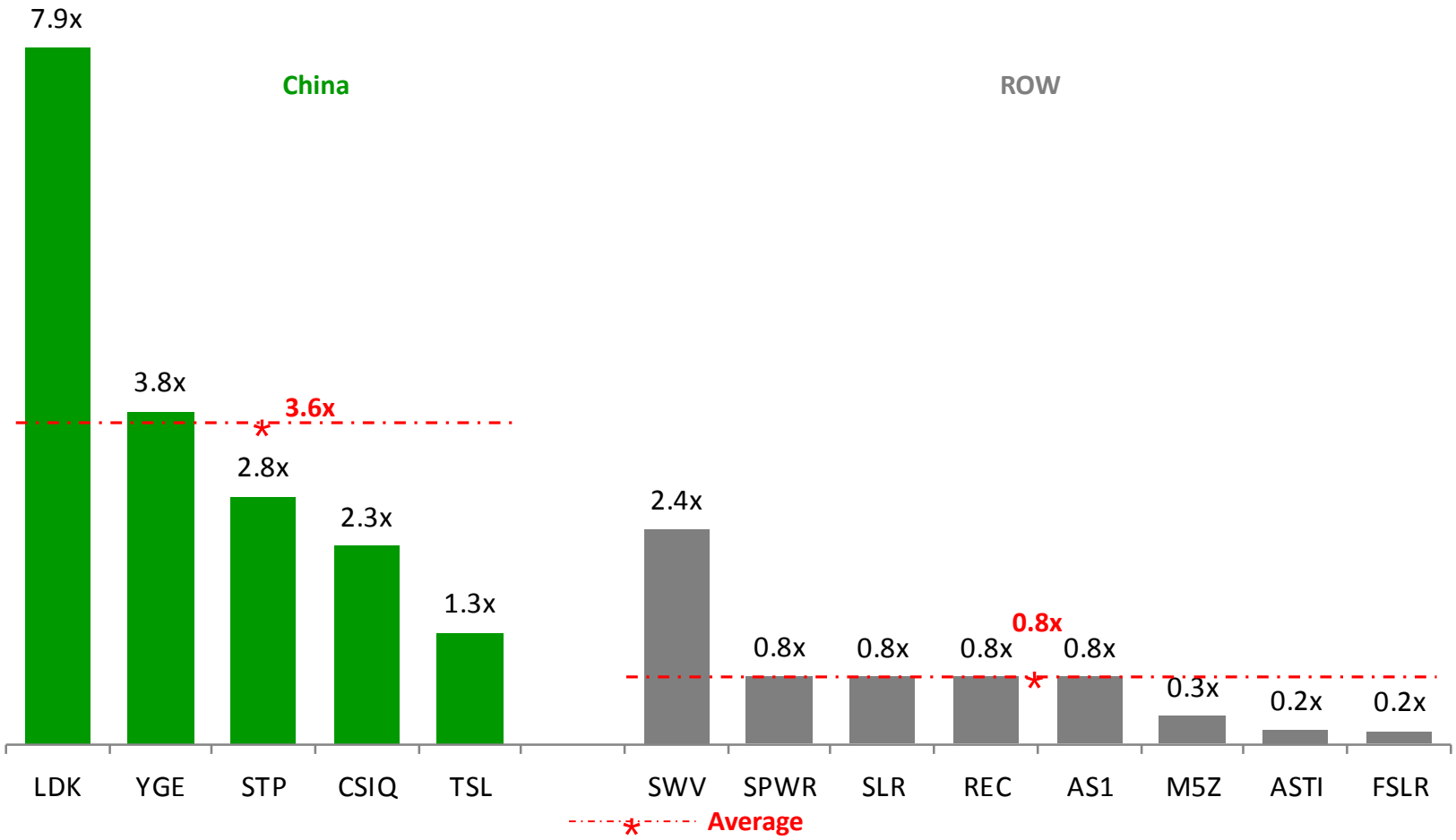


(1) Source: Company Reports.

(2) China Development Bank.

China Solar – Current Capital Structure

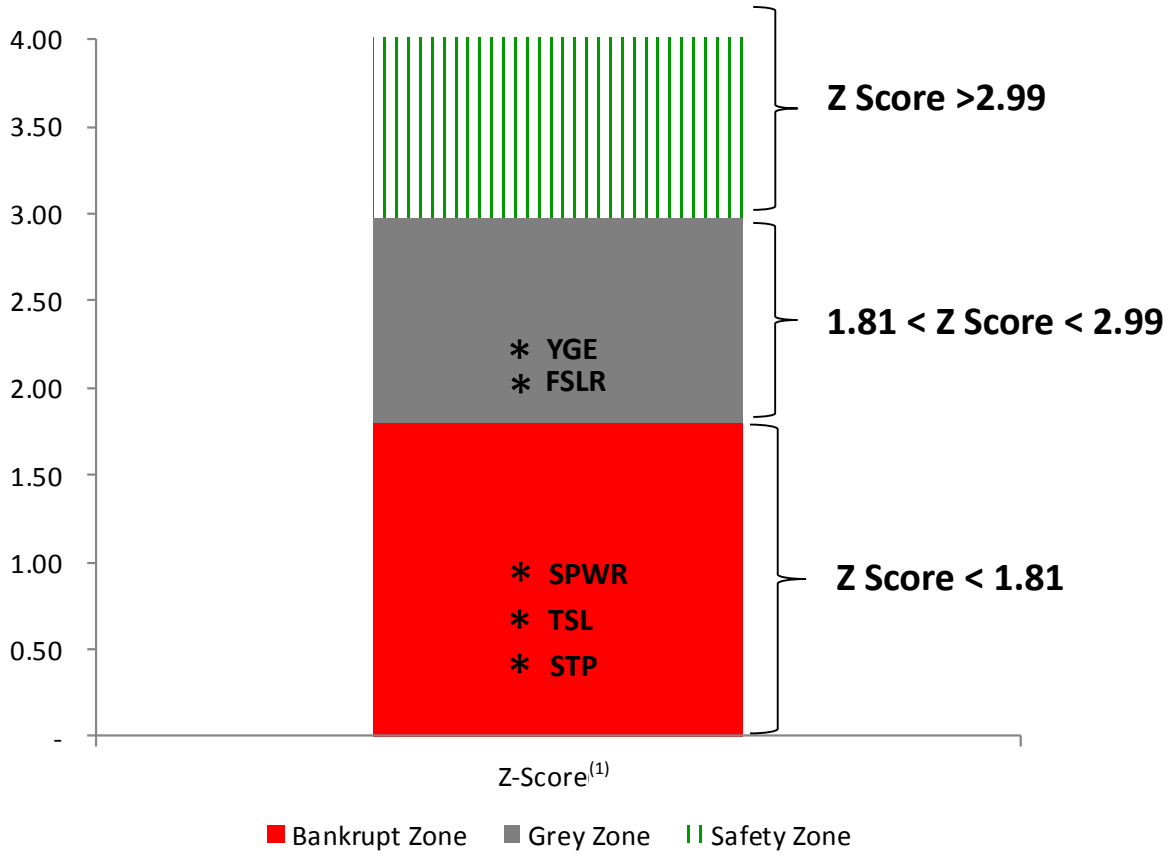
Easy access to cheap funding in 2008/2009 has resulted in ~4x leverage in Chinese PV manufacturers versus RoW (rest of world) peers.



Source: Bloomberg, Company filings. These numbers are as of Q2 '12 except STP and LDK.

On the Verge of Bankruptcy?

Chinese solar companies – with overleveraged balance sheets – may be pushed towards bankruptcy if market conditions or government policy changes prevent refinancing.



Source:

(1) Z Score denotes Altman's formula to predict the probability that a firm will go into bankruptcy within two years.

(2) Bloomberg, Company filings.

- We are structurally positive on solar achieving grid parity and reducing industry disequilibrium
- We expect underperformance from businesses unable to: a) control costs as oversupply leads to lower ASPs; and b) diversify out of geographies with uncertain subsidies/FiTs

Solar PV Comps

Takeaways

- **Comps Selection**
  - Considering the strong impact that policies and regulation have on solar players, we have focused on mono- and multi-crystalline solar producers in the US and China (STP, SPWR, YGE and TSL) and a thin film PV producer in the US (FSLR).
- **Key Metric(s)**
  - Capacity/Efficiency/Cost/W/Utilization:
    - Can company consistently reduce costs in an oversupplied market in order to maintain margins?
    - Can company change its geographical mix to countries with encouraging solar growth through attractive FiTs and subsidies?
- **Market Valuation**
  - We believe that analyzing LTM/near-term forward multiples for solar companies is not a helpful exercise given the: a) improvement in business fundamentals in a longer time-frame; and b) impending debt repayment which might result in industry consolidation, affecting the business dynamics in the medium term.

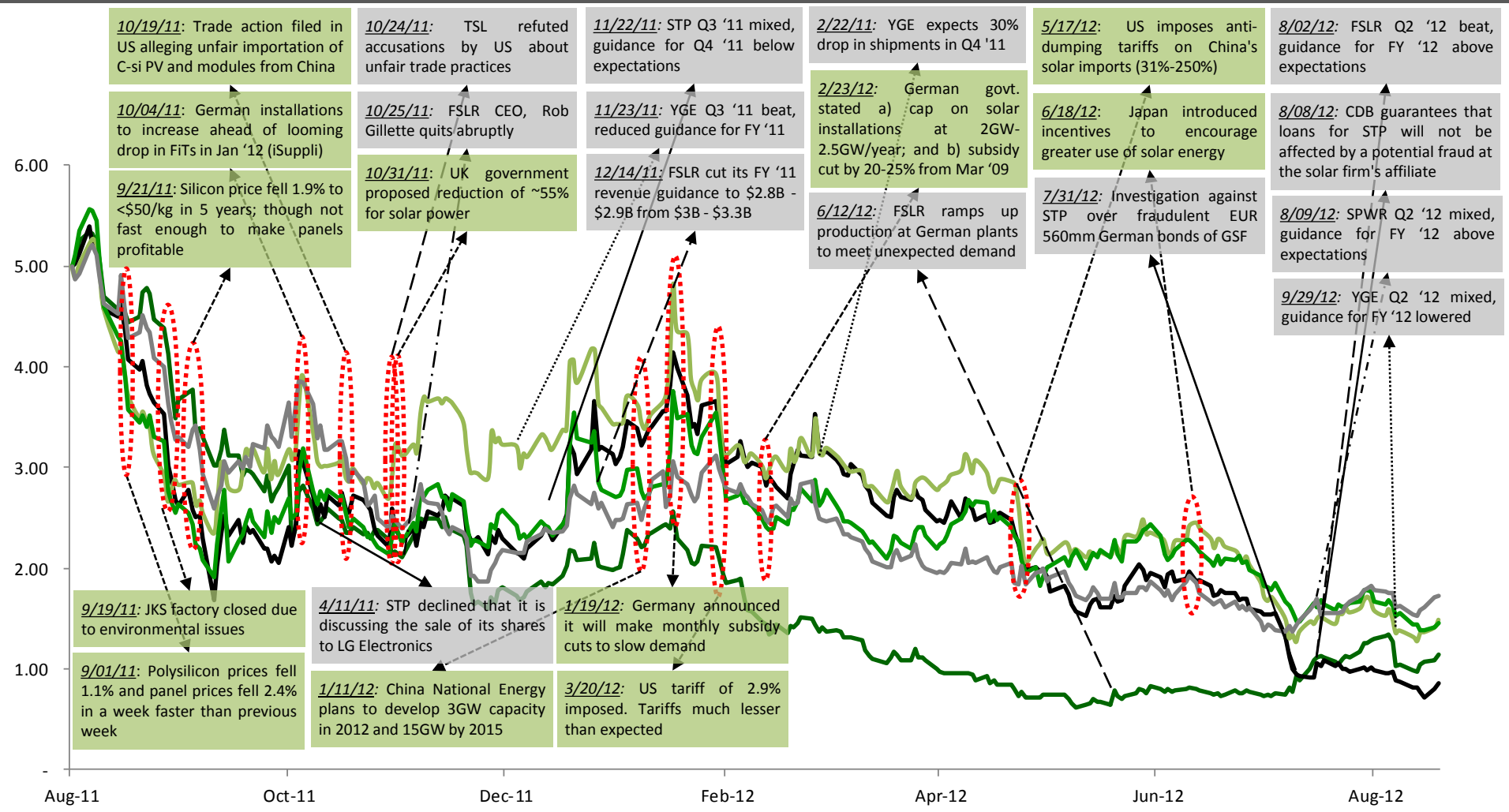
Key Statistics

Company	First Solar	Suntech	Yingli	Trinasolar	SunPower
Ticker	FSLR	STP	YGE	TSL	SPWR
Share Price [1]	$23.48	$1.01	$1.76	$4.53	$4.88
Market Cap	$2,042.8	$182.0	$277.7	$368.7	$580.7
Less: Cash	$743.7	$663.8	$882.5	$841.0	$375.8
Plus: Debt	$518.9	$1,705.8	$2,691.0	$1,302.8	$835.0
Enterprise Value	$1,817.9	$1,224.0	$2,086.2	$830.5	$1,039.9
Revenue					
2013E	$3,619.0	$1,976.0	$1,909.0	$1,633.0	$2,931.0
Y/Y Growth	*(3.8%)*	*4.6%*	*5.6%*	*12.5%*	*14.5%*
2012E	$3,762.0	$1,889.0	$1,807.0	$1,452.0	$2,560.0
Y/Y Growth	*20.6%*	*(29.5%)*	*(12.5%)*	*(10.0%)*	*8.5%*
LTM	$3,120.5	$2,679.0	$2,064.1	$1,613.5	$2,358.9
2013 EV/Sales	0.50x	0.62x	1.09x	0.51x	0.35x
2012 EV/Sales	0.48x	0.65x	1.15x	0.57x	0.41x
LTM EV/Sales	0.58x	0.46x	1.01x	0.51x	0.44x
Metric	Backlog	Products	Modules	Modules	Modules
Sales (MW) - 2013E	*2.0%*	*1.8%*	*1.6%*	*15.0%*	*10.0%*
Sales (MW) - 2012E	*NA*	*16.0%*	*32.7%*	*15.6%*	*NA*
Cost/W - 2013E	*NA*	*(9.5%)*	*(15.5%)*	*(16.5%)*	*NA*
Cost/W - 2012E	*NA*	*(10.0%)*	*(28.8%)*	*(32.7%)*	*NA*
Efficiency - 2011	14.4%	18.3%	18.5%	19.8%	upto 24%
EBITDA					
2013E	$665.2	$14.1	$139.2	$85.6	$187.4
Y/Y Growth	*32.8%*	*NM*	*NM*	*NM*	*57.8%*
2012E	$500.9	($184.2)	($5.7)	($109.8)	$118.8
Y/Y Growth	*(11.2%)*	*NM*	*(102.6%)*	*NM*	*841.2%*
LTM	$563.8	($215.0)	$217.3	($68.5)	$12.6
Margin					
2013E	18.4%	0.7%	7.3%	5.2%	6.4%
2012E	13.3%	(9.8%)	(0.3%)	(7.6%)	4.6%
LTM	18.1%	(8.0%)	10.5%	(4.2%)	0.5%
EPS					
2013E	$4.07	($1.48)	($0.73)	($0.70)	$0.29
Y/Y Growth	*(9.0%)*	*NM*	*NM*	*NM*	*NM*
2012E	$4.47	($2.01)	($1.31)	($2.45)	($0.01)
Y/Y Growth	*893.8%*	*NM*	*NM*	*NM*	*NM*
LTM	$0.45	($2.33)	($3.22)	($2.74)	($3.37)
2013 P/E	5.8x	NM	NM	NM	16.6x
2012 P/E	5.3x	NM	NM	NM	NM
LTM P/E	52.2x	NM	NM	NM	NM

Source: Company Filings, Bloomberg Estimates and XXX Research Estimates.
1) Closing share price as of 9/19/12 taken for both comps and valuation.

Stock Price Analysis

Stock performance has closely tracked policy changes.



Source: Bloomberg.

The stock prices have been benchmarked in multiples of $5.00.

First Solar [NASDAQ: FSLR]

FSLR, the largest thin-film PV producer, has strategically positioned itself to focus on its systems integration business, yielding an unmatched gross margin profile.

KEY SEGMENTS

- **Systems Integration:** ~70% of revenues ($670mm in Q2 '12, +17x Y/Y; adj. gross margin of 38.2%). Involves EPC, O&M, M&D and project financing for PV power plants. Grown inorganically through acquisition of OptiSolar and NextLight. Order pipeline of 2.7 GW AC in the USA. Principal customer (2011) – NRG Energy.

- **Components Business**: ~30% of revenues ($288mm in Q2 '12, -42% Y/Y; adj. gross margin of -3.4%). Designs, manufactures, and sells solar modules. Average rated power of 80W (2011). Manufacturing facilities in Perrysburg, Ohio, Germany, and Malaysia. Principal customers (2011) – EDF EN Development and Belectric.

CONSENSUS CONCERNS

- **Losing Cost Advantage:** Faster rate of fall in prices of polysilicon (61%) vs. cadmium and tellurium (~43% and 57%) from Aug '10 to Jul '12.

    - Our view: We partially share this concern. Although thin-film technology still has a cost advantage over c-Si, it is fast narrowing ($0.72/W of FSLR vs. avg. of $0.76/W of STP and YGE). This coupled with lower efficiency leads to higher costs at the module and installation level leaving little room for profit. However, with closure of factory lines, utilization levels will move up – positively impacting the costs.

- **Lack of Quality Control:** Indicated by increasing warranty liability margins (0.9% in FY '08 vs. 5.8% in Q2 '12).

    - Our view: We partially share this concern. CdTe, by default, exhibits high temperature degradation. The growth areas of FSLR (US, Asia and Africa) are relatively high temperature areas where degradation issues exist. Accruing these expenses consistently poses a serious threat for survival. However, we will review the outcome of its efforts (module removal, testing, replacement) in the next few quarters.

First Solar [CONTINUED]

Price Target = $25.91 (10.3% appreciation[1]). Accumulate under $15.05.

WHAT WE LIKE

- **Shift towards Systems Integration:** FSLR's gross margin improvement was primarily reflective of higher sales volume and a favorable systems business mix which increased to 70% in Q2 '12 vs. 53% in Q1 '12. Gross margin over last 4 quarters was 29% for systems vs. 18% for components.
- **Strong Balance Sheet (Q2 '12):** Net debt level decreased by $426mm (vs. $201mm in Q1 '12) from repayment of: a) entire outstanding balance of German facility agreement; and b) portion of revolving line of credit. Credit ratios improved vs. Q1 '12: a) D/E at 0.15x vs. 0.27x; and b) cash/debt at 1.43x vs. 0.77x.

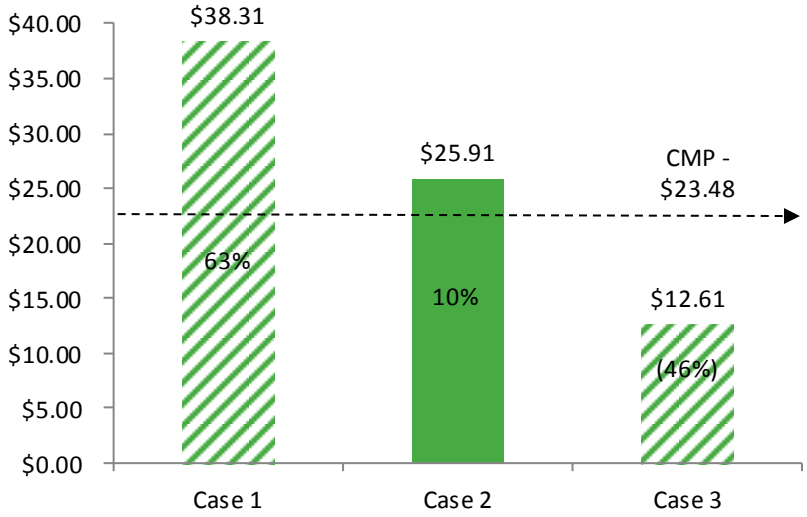
XXX RESEARCH RECOMMENDATION = BUY under $15.05, aggressively under $14.06

- **Price Target**: We arrive at a price target of $25.91 based on DCF. The valuation stems from assumptions of: a) ASP stability by '16 (cumulative drop of 16.2% from FY '12 to FY '16); b) focus on higher margin systems segment (revenue CAGR of 4.3% from FY '12-'18) and diffusion of the components segment (revenue CAGR of -11% from FY '12-'16). For systems business, we assume execution of 1.3GW-1.4GW in FY '13 and FY '14 (existing contracted backlog). We assume installation ASP of $0.80/W to remain constant till FY '18 and the variable ASP for module to fluctuate with the industry ASPs. We foresee EBITDA margins to reach 26% by FY '18 from 22% in Q2 '12.
    - Price Support: We recommend closely watching $11.43 for downside support (52 week low).
    - Short: The risk reward ratio for a short trade becomes favorable (at >4.5x) above $23.28. We would consider a fundamental short position if the long-thesis is "over-confirmed" (if shares rise above $28.50).
- **Stock should move after…** a) Q3 '12 earnings (10/26/12); b) further FiT cuts in Germany.

1) Based on closing share price of $23.48 as of 9/19/2012.

First Solar [CONTINUED]

Target Price Scenarios



FY '12 Projections

Particular	EnerTech View	Company Guidance	Consensus Estimate
Revenue (in B)	$3.7B	$3.6-$3.8B	$3.8B
EPS	$3.99	$4.20-$4.70	$4.47
Enertech vs.		**Guidance**	**Consensus**
Revenue		(0.9%)	(2.5%)
EPS		(10.4%)	(10.8%)

KEY ASSUMPTIONS IN ORDER OF SENSITIVITY

- ASPs: $1.88/W in FY '11 to $1.57/W in FY '18
- Growth in systems backlog driving the higher margin segment
- Change in working capital as a % of sales impacting the FCF

Liquidity

Avg. Daily Trading Volume	9.149
Shares Outstanding	87.000
Free Float	60.000
Free Float - %	69.0%
Short Interest	29.300
Short Interest as a % of Float	48.8%
Short Interest Growth Over 4 Months	23.6%

(1) Source: Bloomberg, Company Reports, NASDAQ Website.

(2) Case Assumptions: Case 1: Chinese government reduces support for unprofitable domestic players, resulting in a moderation of ASP declines; Case 2: Industry approached grid parity starting 2014, but oversupply persists until 2017; and Case 3: Meaningful oversupply continues to plague solar market.

Suntech [NASDAQ: STP]

STP, the largest PV cell and module manufacturer, faces serious issues of debt refinancing amid an ongoing lawsuit over its solar fund in Italy.

KEY SEGMENTS

- **PV Modules**: ~97% of revenues ($399mm in Q1 '12; -54% Y/Y). Designs, develops, manufactures and markets mono crystalline and poly crystalline PV cells through including value-added BIPV in Wuxi, China. Manufactures wafers and ingots through Zhenjiang Rietech (acquired in Dec '10). Largest manufacturer of PV cells and modules, based on production output and deliveries (sold >2GW worth of modules in FY '11).

- **Others:** ~3% of revenues ($10.4mm in Q1 '12; -45% Y/Y). Provides PV system integration services and equipment automation.

CONSENSUS CONCERNS

- **Inflated Cost Structure:** Costs coming down but still at a slower pace than peers.
  - Our view: We share this concern, STP's Q1 '12 non-silicon cost/W is above peers at $1.05/W (due to conversion to mono-cast from multi). FY '12 target guidance of $0.75/W is still above the target guidance of CSIQ's $0.55-0.60/W and TSL's ~$0.57/W. This is also reflected in STP's low gross margins (0.6% in Q1 '12 vs. >5% for TSL and YGE).

- **Stretched Balance Sheet:** $1.6B of net debt as of Q1 '12, including $560mm in convertible bond due in Mar '13.
  - Our view: We share this concern, as STP has a high debt/equity ratio of 2x. Its previous strategies to increase liquidity through: a) monetization of 80% stake in GSF - Global Solar Fund (fair value of $369mm as of Dec '11); and b) issuance of RMB denominated bond have come to a standstill. Post the GSF fraud case (where Javier Romero used $700mm in fake German bonds to guarantee funding) and the Italian court filing for criminal charges against STP, its plan to refinance convertible bonds next year is jeopardized.

Suntech [CONTINUED]

Price Target = $0.55 (45.5% depreciation[1]). Do not initiate any position.

WHAT WE LIKE

- **Market Opportunity in RoW:** RoW accounts for ~22% of revenues. STP has huge growth potential in Japan (management assumes 10% market share post FiTs), China (5-7GW of PV to be installed in 2012 alone, Source: IMS Research) and KSA (41GW PV over 20 years).
- **Higher Efficiency:** Manufacturing equipment for multi-crystalline wafers has been converted to 100% mono-cast (quasi mono), enabling about a 1% improvement in efficiency.
- **Higher ASPs than Competitors:** Q1 '12 ASP stands at $0.97/W for STP vs. $0.92/W and $0.95/W for TSL and YGE respectively. The premium is a function of higher efficiency technology. Note that ASPs fell 10% Q/Q (management projection of low teens) vs. decline for LDK (21.6%) and YGE (14%) in Q1 '12.

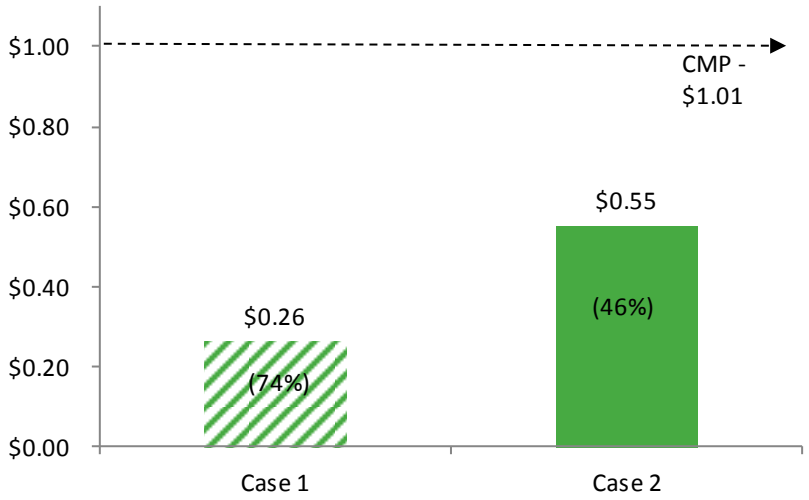
XXX RESEARCH RECOMMENDATION = Do not initiate any position

- **Price Target**: We arrive at a target price of $0.55 based on DCF. Key assumptions are: a) utilization to grow from 87.3% in FY '12 to 89.3% in FY '13 to 98.5% in FY '24; this implies a revenue CAGR of 0.8% between FY '11-'24 (with growth of 2.6% in FY '12 and -7.6% in FY '13); and b) gross profit margin improves to historical levels of 19% by FY '24 from 12.3% in FY '11; this implies EBITDA margin reaches 8.6% by FY '24E from 2.9% in FY '11.
    - Recommendation: Risk reward is compelling for a short trade, however we'll wait for the near term catalyst - additional potential undisclosed liabilities related to GSF to materialize.
- **Stock should move after…** a) Q2 '12 earnings (9/20/12); b) outcome of GSF trial in Italy; c) change in FiTs in Japan.

1) Based on closing share price of $1.01 as of 9/19/2012.

Suntech [CONTINUED]

Target Price Scenarios



FY '12 Projections

Particular	EnerTech View	Company Guidance	Consensus Estimate
Shipment	2.1GW	1.8GW-2.0GW	NA
EPS	($1.75)	NA	($2.01)
Enertech vs.		**Guidance**	**Consensus**
Shipment		10.3%	NA
EPS		NA	(13.1%)

KEY ASSUMPTIONS IN ORDER OF SENSITIVITY

- ASPs: Modules - $1.50/W in FY '11 to $1.03/W in FY '24, Cells - $2.57/W in FY '11 to $1.76/W in FY '24
- Operating expenses margin: Selling and marketing expenses (5.2% in FY '12 - '24), G&A expenses (7.9% in FY '12 - '24), R&D (1.2% in FY '12 to 5.8% FY '24)
- Change in working capital as a % of sales impacting the FCF

Liquidity

Avg. Daily Trading Volume	1.172
Shares Outstanding	180.200
Free Float	127.820
Free Float - %	70.9%
Short Interest	17.764
Short Interest as a % of Float	13.9%
Short Interest Growth Over 4 Months	(3.0%)

(1) Source: Bloomberg, Company Reports, NASDAQ Website.

(2) Case Assumptions: Case 1: Meaningful oversupply continues to plague solar market; and Case 2: Industry approached grid parity starting 2014, but oversupply persists until 2017.

Yingli Solar [NASDAQ: YGE]

YGE, with ~2/3rd of its revenue exposure to US and Germany has had recent improvement in liquidity on account of a medium term note issuance.

KEY SEGMENTS

- **PV Modules:** ~98% of revenues ($477mm in Q2 '12, -29% Y/Y; gross margins of 4.4%). Designs, manufactures and sells mono crystalline (Panda modules with size ranging from 195W - 270W) and multi crystalline PV modules (size ranging from 180W – 300W). Also manufactures poly silicon ingots, wafers and PV cells.

- **PV Systems and Others: ~**2% of revenues ($11.4mm in Q2 '12, -34% Y/Y; gross margins of 13%). Design, assemble and sell PV systems along with related installations services. Other revenues consist of sales of raw materials & low efficiency PV cells. >4 GW of modules installed around the world till date.

CONSENSUS CONCERNS

- **Geographical Concentration**: ~66% of Q2 '12 revenues are from US/Germany (countries with FiT/tariff issues).

    - Our view: We share this concern. Though YGE's efforts towards ~30% shipments in FY '12 to China (implying market share of ~12%-14%) are commendable, China has one of the lowest module ASPs globally ($0.65-$0.75 vs. $0.85-$0.95 in US and $0.90-$1.10 in Japan). In the absence of substantial cost reduction (non-silicon cost guidance of <$0.50/W by FY '12), YGE may face additional margin pressure.

- **Highly Leveraged Balance Sheet**: Debt/Equity reached 2.1x as of Q2 '12 vs. 1.8x in Q1 '12 and 0.9x in Q2 '11.

    - Our view: We share this concern. Being highly dependent on domestic banks for expansion (borrowed $5.3B from China Development Bank until Q1 '12); rise in interest rates, difficult economic conditions and weakening profitability could impact YGE's ability to raise more capital for future expansions or repay debt (outstanding net debt position of ~$1.2B).

Yingli Solar [CONTINUED]

Price Target = $1.09 (37.8% depreciation(1)). Accumulate under $0.82.

WHAT WE LIKE

- **Improving Working Capital:** In May '12, YGE successfully issued a RMB 1.5B ($237mm) unsecured medium term notes to: a) partially repay higher interest bank loans; and b) enhance working capital balance (-$14.5mm as of Q1 '12 vs. +$148.1mm as of Q2 '12) by: i) minimizing accounts receivable risk (improving accounts receivable from 96 days in Q1 '12 to 93 days in Q2 '12); ii) increasing accounts payable days by 10 days to 133 days; and iii) effectively managing utilization rate in H2 '12 to improve inventory carrying costs.

- **Functional Stability (technologically) under Extreme Conditions:** Unlike peers facing quality issues under high temperature situation, YGE's multi-crystalline modules passed the Potential Induced Degradation test conducted by Intertek Group for high voltage, temperature and humidity.

XXX RESEARCH RECOMMENDATION = SELL above $1.09, accumulate under $0.82

- **Price Target**: We arrive at a target price of $1.09 based on DCF. Our valuation stems from: a) CAGR of 2.6% in module sales till FY '20 (32.7% and 1.6% for FY '12 and FY '13 respectively); b) utilization rate to grow from 83.5% in FY '12 increasing to 93.1% by FY '20; c) decrease in non-silicon cost/W by ~60% to $0.45/W and silicon cost by 70% to $1.39/W by FY '20. This implies EBITDA margin to reach 6.7% by FY '20 from 0.9% in FY '12.

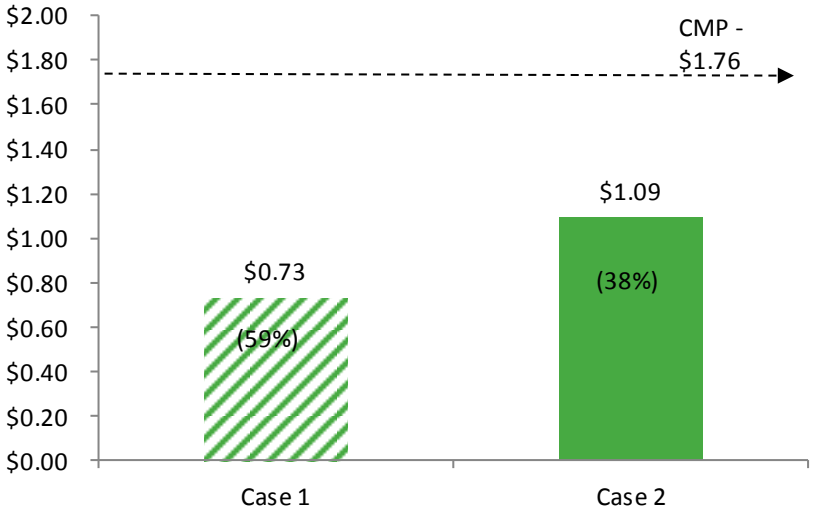
    - Recommendation: Risk reward ratio is not compelling for a long trade, but would consider selling above $1.09 a week prior to the next quarterly earnings release. We would consider a fundamental long position if the short-thesis is "over-confirmed" (if shares drops below $0.82).

- **Stock should move after…** a) Q3 '12 earnings (11/23/12); b) subsidy announcements in Germany & US; c) support stance from CDB after new government in China

1) Based on closing share price of $1.76 as of 9/19/2012.

Yingli Solar [CONTINUED]

Target Price Scenarios



FY '12 Projections

Particular	EnerTech View	Company Guidance	Consensus Estimate
Revenue	1,971.2	NA	1,807.0
Modules Sold	2.2GW	2.1GW-2.2GW	NA
EPS	($1.19)	NA	($1.31)
Enertech vs.		**Guidance**	**Consensus**
Revenue		NA	9.1%
Shipment		2.0%	NA
EPS		NA	(8.5%)

KEY ASSUMPTIONS IN ORDER OF SENSITIVITY

- ASPs: $0.89/W in FY '11 to $0.72/W in FY '20
- Costs: $0.83/W in FY '12 to $0.34/W in FY '20
- Change in working capital as a % of sales impacting the FCF

Liquidity

Avg. Daily Trading Volume	0.813
Shares Outstanding	157.600
Free Float	103.190
Free Float - %	65.5%
Short Interest	6.322
Short Interest as a % of Float	6.1%
Short Interest Growth Over 4 Months	(39.5%)

(1) Source: Bloomberg, Company Reports, NASDAQ Website.

(2) Case Assumptions: Case 1: Meaningful oversupply continues to plague solar market; and Case 2: Industry approached grid parity starting 2014, but oversupply persists until 2017.

Trinasolar [NASDAQ: TSL]

TSL, with its vertically integrated model, has been able to contain costs in a challenging market and should benefit from demand acceleration.

KEY SEGMENTS

- **Components and Modules:** Earned revenue of $346mm in Q2 '12, -40.3% Y/Y; adj. gross margin of 19.6%. 419MW of solar modules shipped in Q2 '12 (+5.7% Y/Y). Based in China, TSL designs, develops, manufactures and sells high efficiency PV modules. Produces standard mono crystalline modules ranging from 175W-210W and multi crystalline modules ranging from 225W-295W. TSL also manufactures silicon ingots, silicon wafers and solar cells.

CONSENSUS CONCERNS

- **Skewed Geographical Revenue Mix**: ~68% of revenues were from USA and Germany in Q2 '12.
    - Our view: We share this concern, as TSL is heavily dependent on geographies with uncertain FiT regulations and anti-dumping and countervailing tariffs against Chinese companies. Although TSL is moving towards other countries (ROW mix increased by 5% Q/Q), we believe the shift is too slow and will continue to impact profitability in the medium term.
- **Continuing Negative CFO over 2 Quarters**: CFO continued to be negative in Q2 '12 at -$54mm.
    - Our view: We do not share this concern. TSL faced rising inventory issues due to PV demand deceleration in 2011. We are confident in management's assessment of generating positive CFO starting Q3 '12 due to a) improvement in demand (specifically from China) in H2 '12; and b) emphasis on efficient collection of receivables.

Trinasolar [CONTINUED]

Price Target = $3.39 (25.1% depreciation(1)). Accumulate under $2.54.

WHAT WE LIKE

- **Non-silicon Cost Reduction:** TSL has tremendous control on non-silicon cost which was $0.52/W in Q2 '12 vs. $0.60/W in Q1 '12 ($0.55/W for Q2 '12 for YGE). Management is targeting costs of $0.50/W by FY '12 end and also suggesting a possibility of $0.45/W (under certain circumstances) driven by streamlined/vertically integrated supply chain.

- **Better than Average Balance Sheet as of Q1 '12:** With $748m of total cash ($664mm – STP, $675mm – YGE), $502m of ST debt ($1.6B – STP, $1.3B for YGE) and $118m convertible debt outstanding due in Jul '13 ($560mm maturing in Mar. '13 for STP), TSL has one of the strongest balance sheets in the sector with debt/equity of 1.0x (2.8x for STP and 2.1x for YGE) and debt/cash ratio of 1.7x (4.8x for STP and 3.4x for YGE)

XXX RESEARCH RECOMMENDATION = SELL above $3.39, accumulate under $2.54

- **Price Target**: We arrive at a target price of $3.39 based on DCF till FY '18. We assume the capacity sold to increase at a CAGR of 10% from FY '11 to FY '18. We assume that non-silicon cost/W to reduce at a CAGR of 12.2% to $0.28 and silicon cost/W to reduce at a CAGR of 19.4% to $0.08 by FY '18. We assume implied EBITDA margin to reach 9.9% by FY '18 from 8.4% in FY '11.

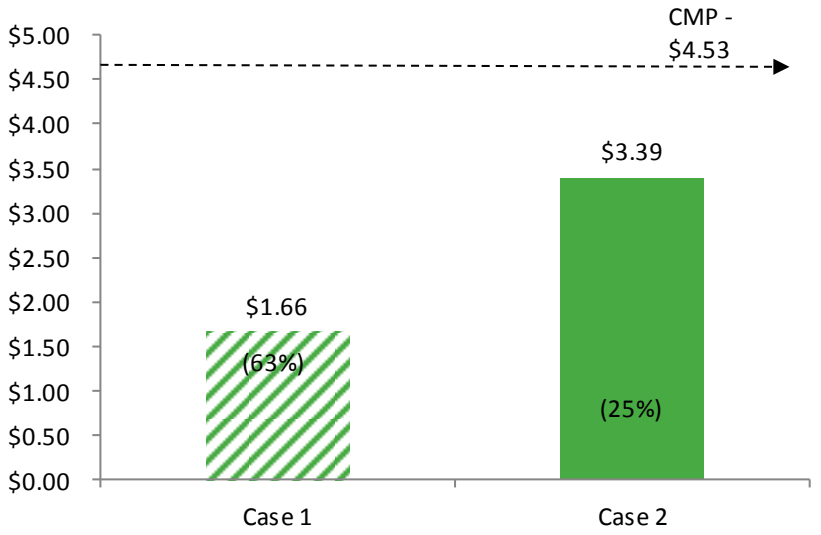
    - Recommendation: Risk reward ratio is not compelling for a long trade, but would consider selling above $3.39 a week prior to the next quarterly earnings release. We would consider a fundamental long position if the short-thesis is "over-confirmed" (if shares drops below $2.54).

- **Stock should move after…** a) Q3 '12 earnings (11/21/12); b) subsidy announcements in Germany & US

1) Based on closing share price of $4.53 as of 9/19/2012.

Trinasolar [CONTINUED]

Target Price Scenarios



FY '12 Projections

Particular	EnerTech View	Company Guidance	Consensus Estimate
Revenue (in mm)	$1,438.3	NA	$1,452.0
Shipment	1.8GW	1.75GW-1.8GW	NA
EPS	($2.90)	NA	($2.45)
Enertech vs.		**Guidance**	**Consensus**
Revenue		NA	(0.9%)
Shipment		0.0%	NA
EPS		NA	18.4%

KEY ASSUMPTIONS IN ORDER OF SENSITIVITY

- ASPs: $0.81/W in FY '12 to $0.66/W in FY '20
- Costs: $0.76/W in FY '12 to $0.46/W in FY '20
- Change in working capital as a % of sales impacting the FCF

Liquidity

Avg. Daily Trading Volume	0.972
Shares Outstanding	81.400
Free Float	66.110
Free Float - %	81.2%
Short Interest	13.013
Short Interest as a % of Float	19.7%
Short Interest Growth Over 4 Months	(21.0%)

(1) Source: Bloomberg, Company Reports, NASDAQ Website.

(2) Case Assumptions: Case 1: Meaningful oversupply continues to plague solar market; and Case 2: Industry approached grid parity starting 2014, but oversupply persists until 2017.

SunPower [NASDAQ: SPWR]

SPWR, with #1 position in US residential market and strong backing from Total, should capture a larger share of the growing solar pie.

KEY SEGMENTS[1]

- **UPP (Utility Power Plants):** 46% of revenues ($1.1B in FY '11, -10.3% Y/Y; adj. gross margin of 12.9%). Provides large-scale solar products and systems including plant project development and project sales, turn-key EPC services, and O&M services. It also sells solar panels and mounting systems. Delivered >120 large-scale PV systems over the past decade. Currently in final stage of financing for 30 MW of projects in South Africa. Installed ~30% of panels at California Valley Solar Ranch (CVSR) ramp up of 250MW power plant.

- **R&C (Residential & Commercial):** 54% of revenues ($1.2B mm in FY '11, +21% Y/Y; adj. gross margin of 13.1%). Provides solar equipment sales to the residential and small commercial market through third-party global dealer network, as well as direct sales, EPC, and O&M services. Enjoys #1 position in the US residential market[2].

CONSENSUS CONCERNS

- **Trade-off Between Cost and Technology**: With conversion efficiency of >20% and expected efficiency adjusted cost of $0.75/W (CSIQ's $0.55-$0.60/W and TSL's ~$0.57/W in '12), consumers may not be willing to pay higher ASPs in an over-supply market.

    - Our view: We do not share this concern. We believe that as a technology leader, SPWR will be able to take advantage of demand upturn in coming quarters. Also, SPWR is making efforts to be cost efficient with a) ramped up C7 technology by 2014 which will enable LCOE to be ~20% lower; and b) JV with AUO which is expected to remove ~40% of the steps in the production process, potentially driving cost savings of 15%.

1) SPWR changed its segmentation reporting for revenues from UPP and R&C to regional focus from Q1 '12.
2) Maximum number of households covered by its solar panels.

SunPower [CONTINUED]

Price Target = $2.91 (40.4% depreciation[1]). Accumulate under $2.18.

WHAT WE LIKE

- **Relationship with Total SA:** In Jun '11, Total acquired 60% stake in SPWR. Total's $1B credit will help SPWR to fund growth and reduce cost of capital. SPWR can leverage Total through a broader market place (access of MENA and European markets through Tenesol acquisition).
- **Leasing Program, a Key Growth Driver:** # of leases signed doubled Q/Q in Q2 '12 to >10K (run rate of 1.5MW-2.0MW per week). Through leasing, SPWR sustains tax and depreciation benefits and gets monthly cash rentals making leasing cash flow positive. Management expects it to contribute ~20%-25% of revenues in 1-2 years.
- **Partnership with Toshiba:** Provides a channel and competitive advantage in Japan (contributes 10% of revenue).

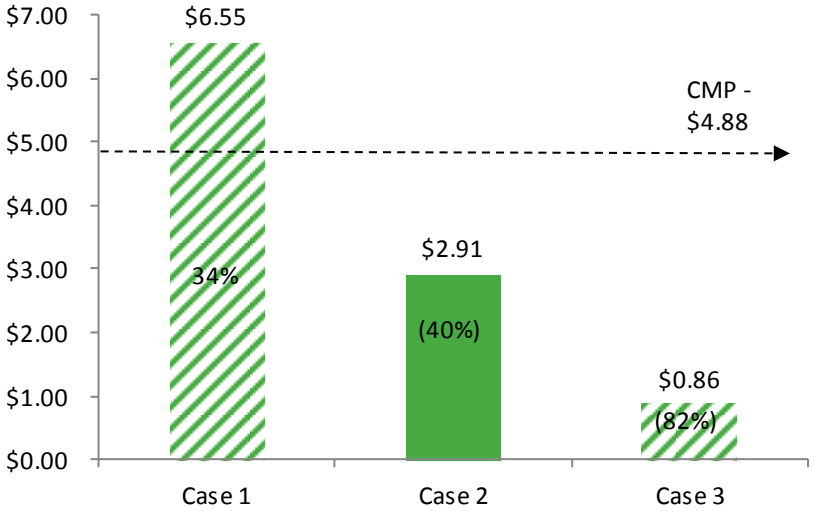
XXX RESEARCH RECOMMENDATION = SELL above $2.91, accumulate under $2.18

- **Price Target**: We arrive at a target price of $2.91 based on DCF. Our valuation stems from a) sale of modules with CAGR till FY '20 in i) America: 6.7% (10% and 7.5% for FY '13 and FY '14 respectively); ii) EMEA: 2.6% (5.8% and 3.2% for FY '13 and FY '14 respectively); and iii) APAC: 17.2% (25.7% and 20.9% for FY '13 and FY '14 respectively); and b) revenue to increase at a CAGR till FY '20 for i) America by 2.6% (23.2% and -1.0% for FY '12 and FY '13 respectively); ii) EMEA by -5.6% (-21.1% and -4.8% for FY '12 and FY '13 respectively); and iii) APAC by 9% (11% and 13% for FY '12 and FY '13 respectively). This implies EBITDA margin to reach 8% by FY '20 from 5.5% in FY '12.
    - Recommendation: Risk reward ratio is not compelling for a long trade, but would consider selling above $2.91 a week prior to the next quarterly earnings release. We would consider a fundamental long position if the short-thesis is "over-confirmed" (if shares drops below $2.18).
- **Stock should move after…** a) Q3 '12 earnings (11/2/12); b) subsidy announcements in emerging solar markets.

1) Based on closing share price of $4.88 as of 9/19/2012.

SunPower [CONTINUED]

Target Price Scenarios



KEY ASSUMPTIONS IN ORDER OF SENSITIVITY

- ASPs: America - $3.26/W in FY '12 to $2.58/W in FY '18; EMEA - $1.76/W in FY '12 to $1.07/W in FY '18; $1.76/W in FY '12 to $1.14/W in FY '18
- Change in working capital as a % of sales impacting the FCF

Q3 2012 and FY '12 Projections

Particular	EnerTech View	Company Guidance	Consensus Estimate
Revenue (in mm) FY '12	$2,517.5	$2,600-$2,800	$2,560.0
Revenue (in mm) Q3 '12	$661.3	$550-$625	$600.9
EPS FY '12	($0.30)	>$0	($0.01)
EPS Q3 '12	($0.13)	($0.20) to ($0.05)	($0.11)

Enertech vs.	Guidance	Consensus
Revenue FY '12	(6.8%)	(1.7%)
Revenue Q3 '12	11.6%	10.0%
EPS FY '12	NM	NM
EPS Q3 '12	1.5%	12.2%

Liquidity

Avg. Daily Trading Volume	0.649
Shares Outstanding	119.000
Free Float	30.140
Free Float - %	25.3%
Short Interest	4.431
Short Interest as a % of Float	14.7%
Short Interest Growth Over 4 Months	45.9%

(1) Source: Bloomberg, Company Reports, NASDAQ Website.

(2) Case Assumptions: Case 1: Chinese government reduces support for unprofitable domestic players, resulting in a moderation of ASP declines; Case 2: Industry approached grid parity starting 2014, but oversupply persists until 2017; and Case 3: Meaningful oversupply continues to plague solar market.

For questions and comments, please contact:

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