

How dangerous is the Chinese Dragon really?

A mid-term outlook on the Crystalline Photovoltaic market



August 2010

The choice of the right battlefield is key to mid term success in a highly competitive environment for both Chinese and international crystalline solar players

Executive Summary

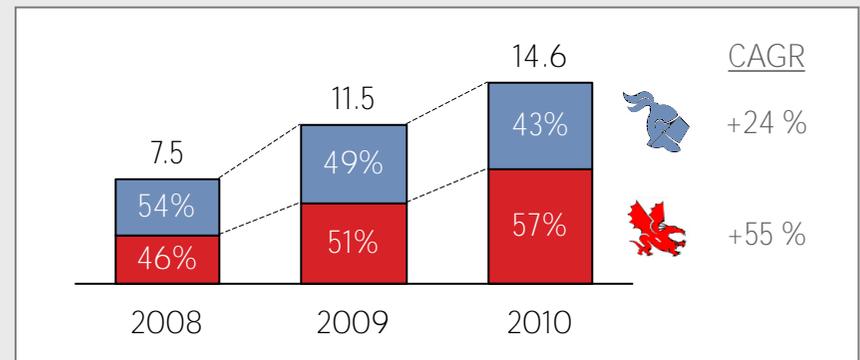
- Is the competition in the crystalline solar market already decided? Stock markets draw a picture of Chinese dominance with Chinese players significantly outperforming international players.
 - goetzpartners has analyzed the capabilities of Chinese and international players along the four success levers that will determine the course of the ongoing battle in the global crystalline solar market :
 1. Production cost – Chinese players have a clear cost advantage of roughly 30% over the international players
 2. Internationalization – Chinese players are favored by shifting market demand from Europe to new growth markets in the United States and Asia
 3. Organization – High organizational maturity of international players allows redefinition of their business models while Chinese players have to focus on organizational structures
 4. Sales & Marketing – Required expertise, such as branding and customer retention, is more established at international players
- A first result shows: the battle is still open between international **“knights”** and Chinese **“dragons”**, as both parties have different strengths and weaknesses with respect to the outlined success levers.
- A closer look into cost/quality ratio, bankability and reliable processes when considering customer segments shows a disfigured solar merit order with international players currently still benefiting from globally tight supply of bankable modules
- A second result shows: Chinese have advantages within the residential, international players within the EPC market
- In conclusion, **“dragons”** and **“knights”** will continue their fight. Both must select the battlefield according to their individual strengths in order to succeed. goetzpartners identified roadmaps for both parties along the three steps of **“realizing quick wins”**, **“strengthening the strengths”** and **“transforming weakness into strength”**

Chinese players are outperforming international players at the stock market – their main drivers are tremendous production ramp-up and favorable production costs

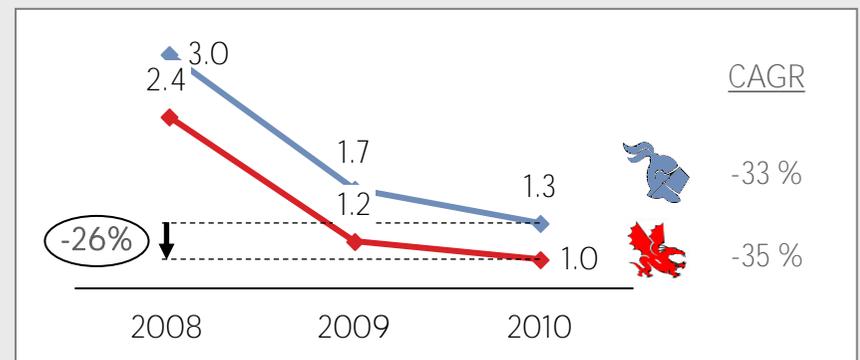
Competitive Clusters



1 Production volume for Si-PV modules [GW]



2 Average production costs Si-PV modules [EUR/Wp]



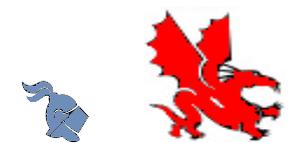
Two competitive clusters Chinese and International players are to be analyzed

Competitive advantage in the global solar market is driven by four success levers

Success levers

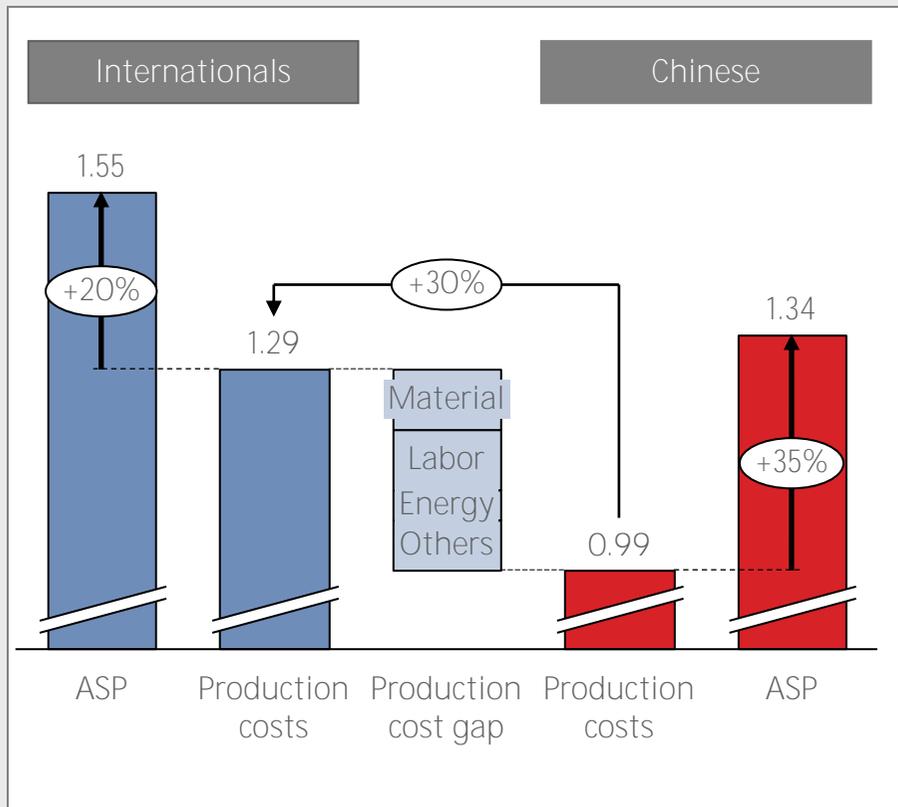


Chinese players have a clear production cost advantage of roughly 30% over international players with production volume shifting towards Asia



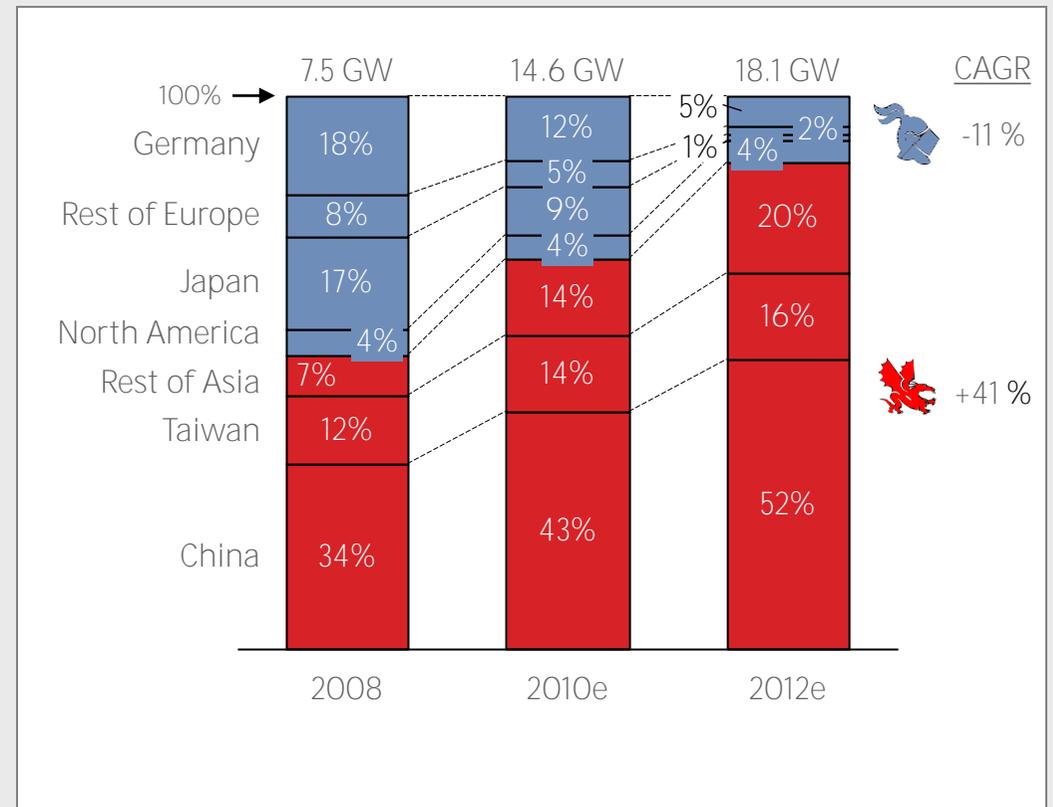
1 Production costs

Production costs comparison 2010 [EUR/Wp]



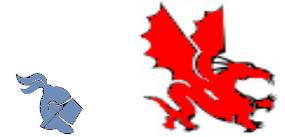
➔ Chinese players with sustainable cost advantage

Regional production split 2008 – 2012 [%]



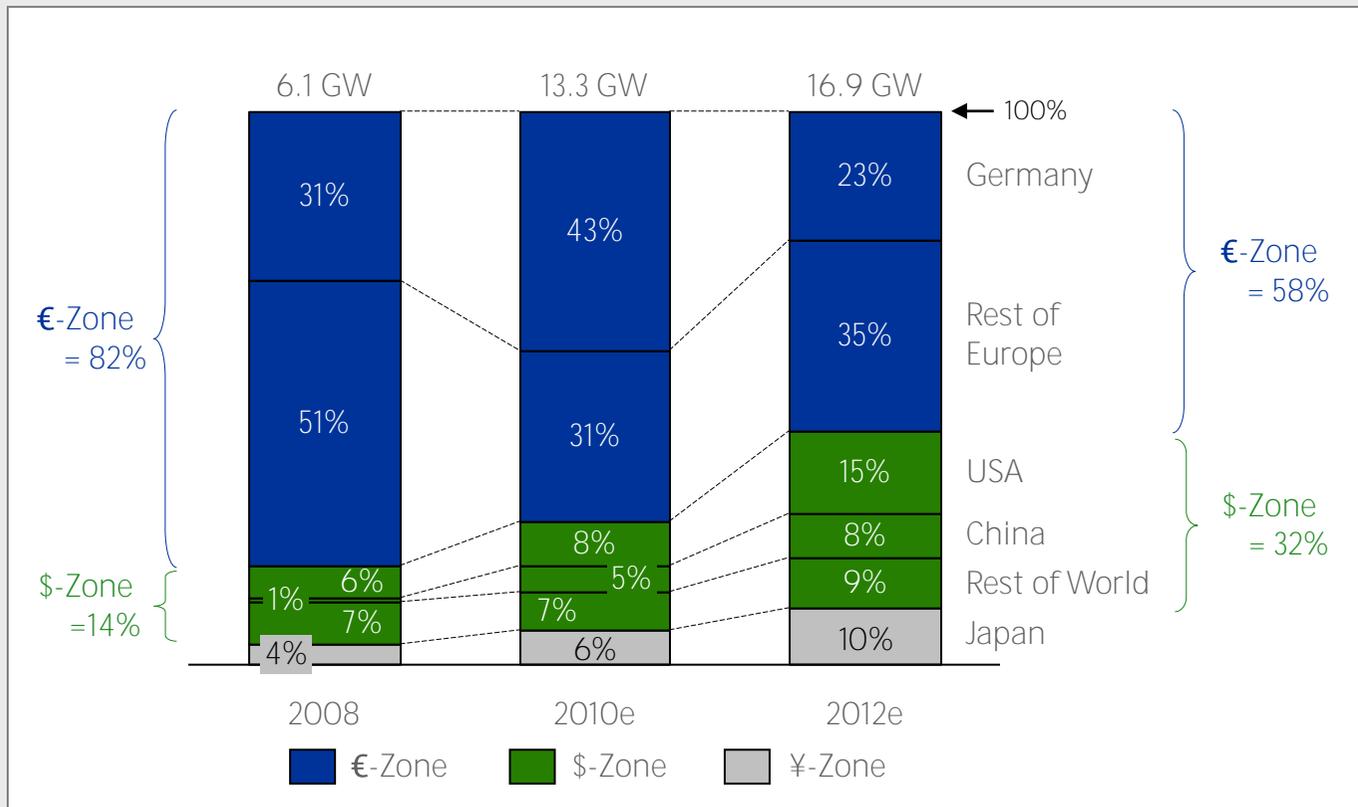
➔ Production increase is driven by growth in Asian countries

As the solar market demand is shifting from Europe to new, mainly US-\$ driven, growth markets in the United States and Asia, Chinese players are favored by logistics and FX-effects



2 Internationalization

Regional demand split 2008 – 2012 [%]



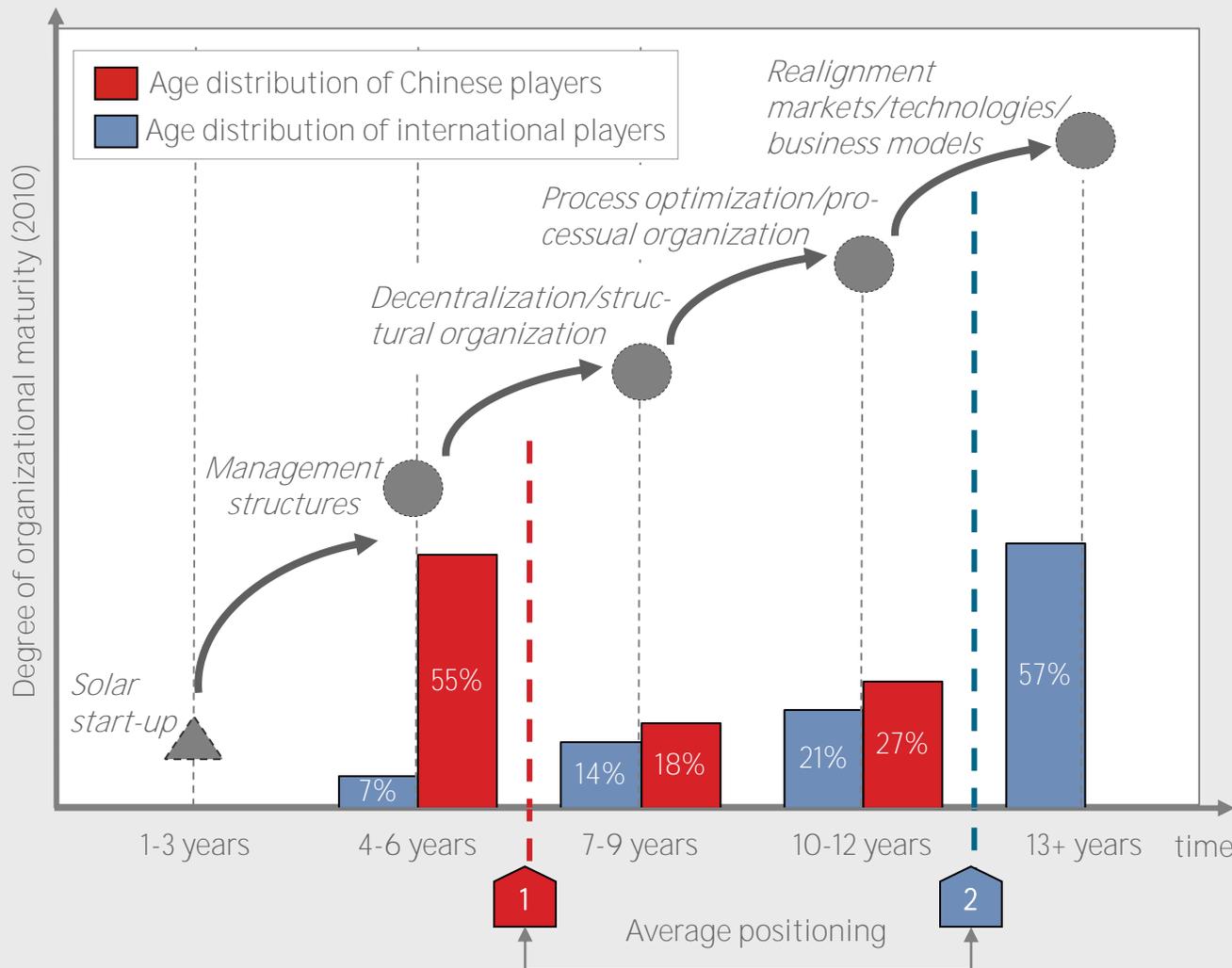
- Drivers for market demand
- Globally increasing environmental awareness and the introduction of policies favoring renewable technologies
 - Strong governmental support for solar announced in Asia (esp. China, India) and the US
- Implications on competitiveness
- Due to already existing market presence, Chinese players possess favorable logistics regarding markets outside the €-Zone
 - Shift from Euro to US-\$ driven demand markets has positive FX-effect for players with production located mainly in the US and Asia

➔ Diversification of geographic markets and presence in key growth markets is essential

International players clearly benefit from their high organizational maturity allowing the redefinition of business models according to market dynamics



3 Organization



- 1** Chinese players:
- Growth management as strategic target by top players
 - Increased management capability is one key concern
 - ➔ HOW can a professional and structured setup be established

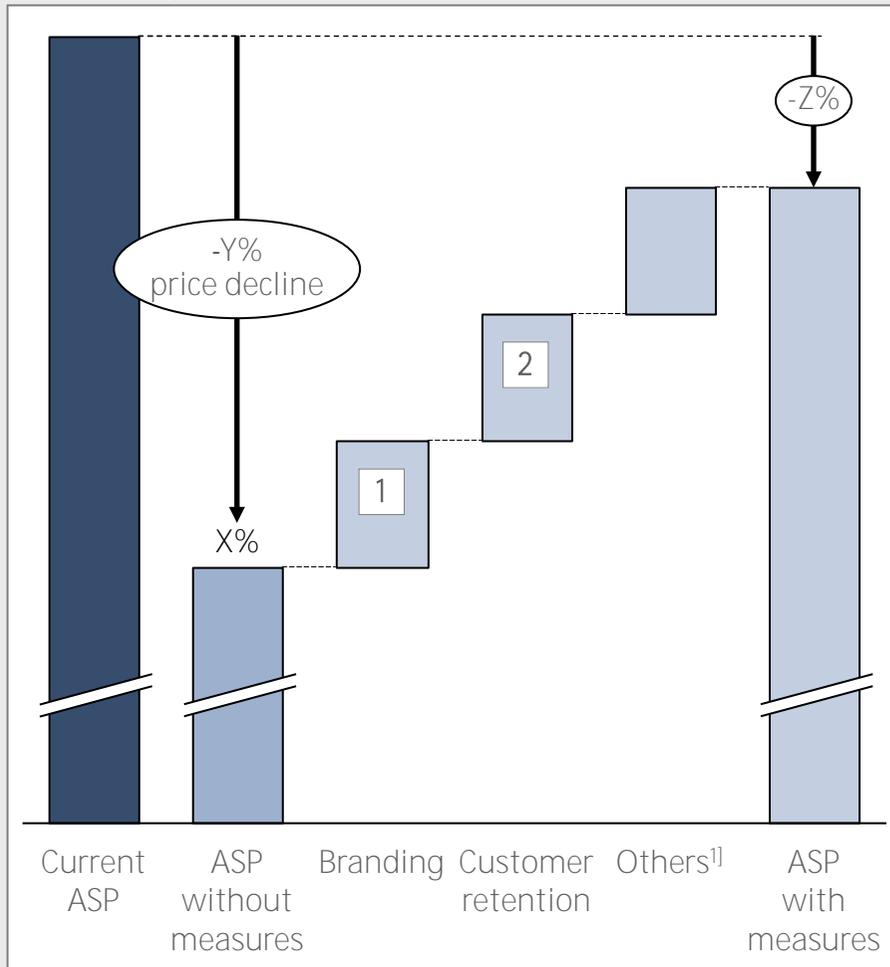
- 2** Established players:
- Performance indicators established in the past 2 years
 - Transformation and total change in business model as key focus of strategy
 - ➔ WHAT is the appropriate business model for further growth

International players can soften the impact of price decline due to high sales expertise, such as branding and customer retention

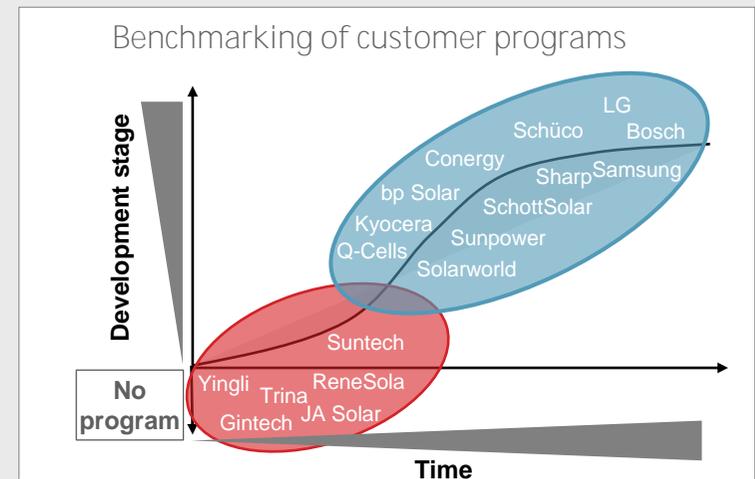
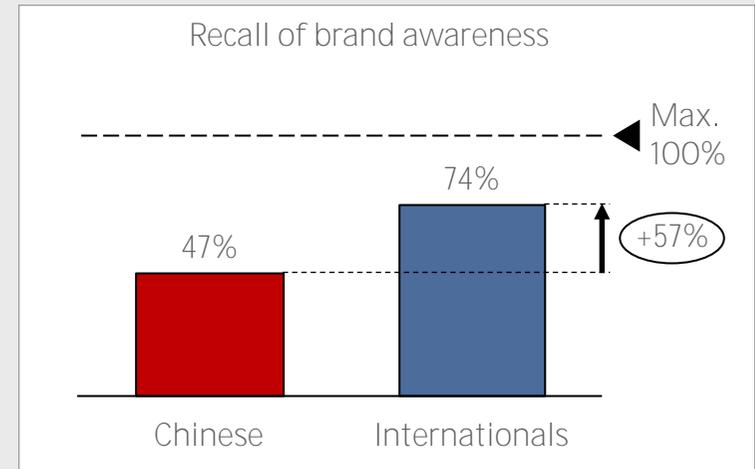


4 Sales & Marketing

Average Sales Price (ASP) – improvement drivers



- 1 Branding and reputation**
 - End-customer marketing through brand value and high quality value proposition
 - Brand recognition significantly higher for Internationals^{2]}
- 2 Customer retention**
 - Overview of customer base and CRM is key to influence buying decision
 - International players have already set up customer programs over the last 1-3 years



1] Others includes Price and Conditions, and After-Sales Services; 2] Aided Brand Awareness for top players in France, Germany, Italy and Spain (n=499) Source: EuPD, goetzpartners

The battle is not decided yet, as Chinese and international players have distinct advantages across success levers

Success levers - Evaluation

Success levers	Rationale	Evaluation
Production costs	<ul style="list-style-type: none"> ■ Clear cost advantage for Chinese players will be sustainable in the future ■ Development towards commodity and mass market favors large scale productions 	
Internationalization	<ul style="list-style-type: none"> ■ Cost and logistic advantage for Chinese players enhanced through decreasing FX-risk ■ Brand “made in Europe” in future growth markets not as powerful as inside Europe 	
Organization	<ul style="list-style-type: none"> ■ Chinese players are challenged by own, fast growth and need to balance management skills & increasing organizational complexity ■ Crucial decision-making point for internationals regarding their future business model 	
Sales & Marketing	<ul style="list-style-type: none"> ■ International players already possess strong sales networks and customer relations ■ Branding and reputation more established at international players 	

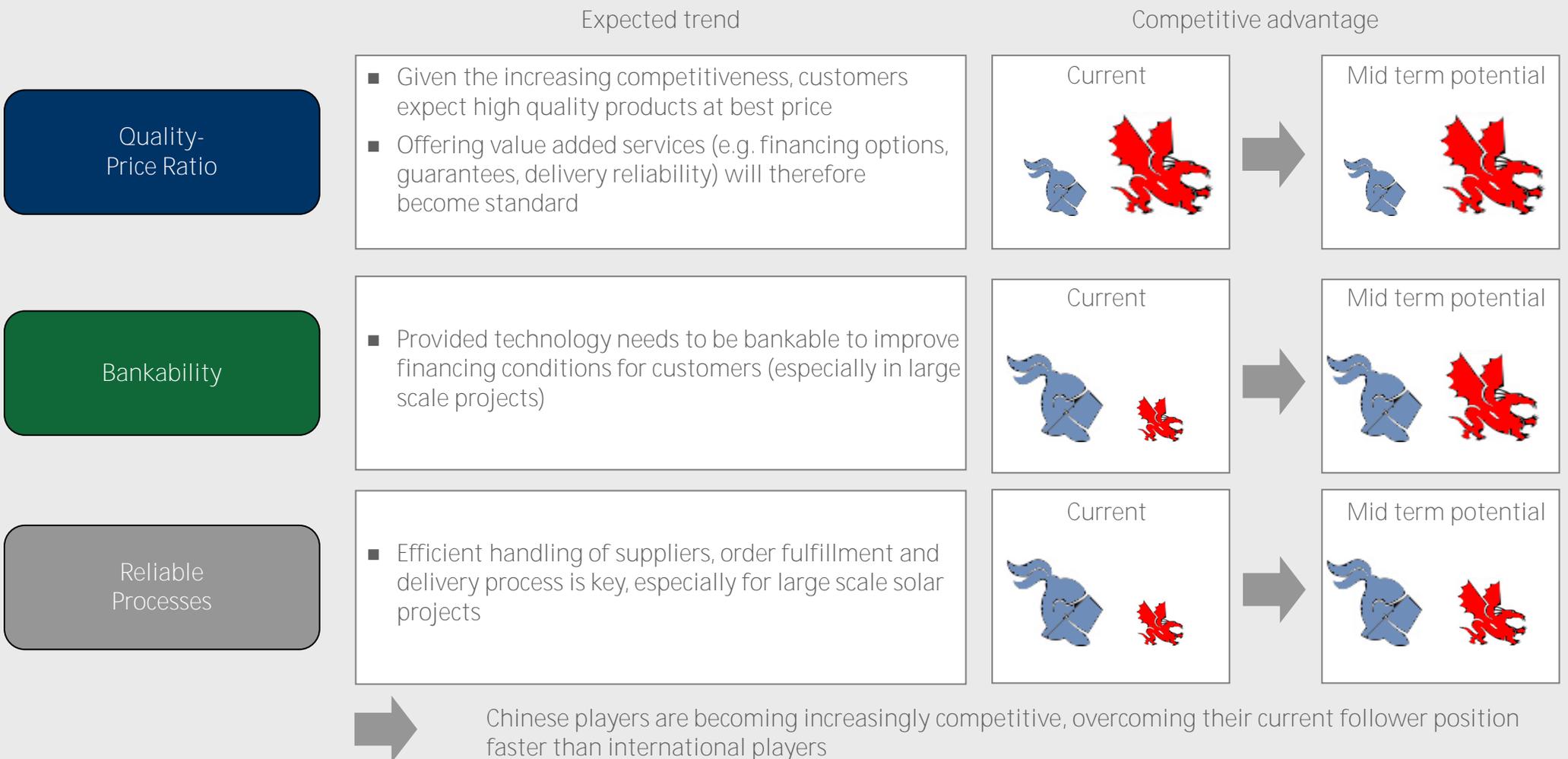


- The battle is still open: Chinese and international players have different strengths and weaknesses
- Shaping company strengths in line with existing customer requirements will make the difference



Three customer requirements influence strategic decisions of solar players

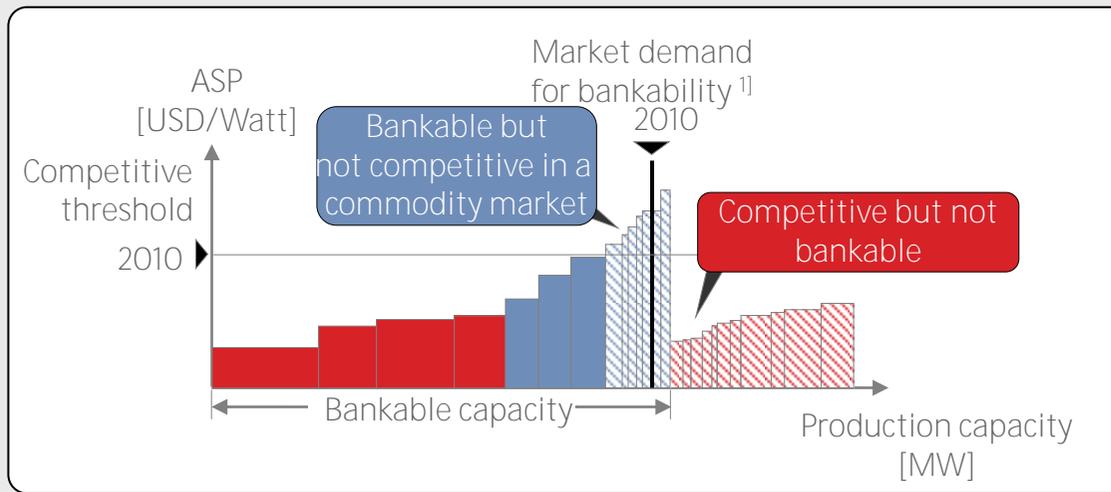
Customer requirements



International players are currently supported by bankability as a criterion for successful sales – but the bankability shield is about to break mid term

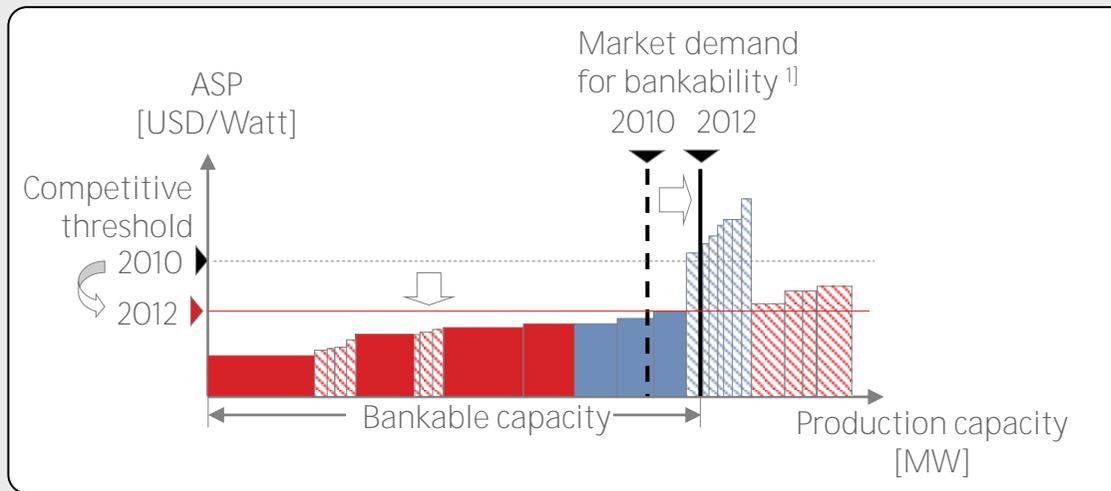
Merit order in solar industry - schematic

2010
Bankability is key criterion in the solar industry



Bankability as a criterion for successive sales ensures competitiveness of international players in Europe and US-markets and represents a barrier for upcoming Asian players

2012
Market driven “merit order” has been restored



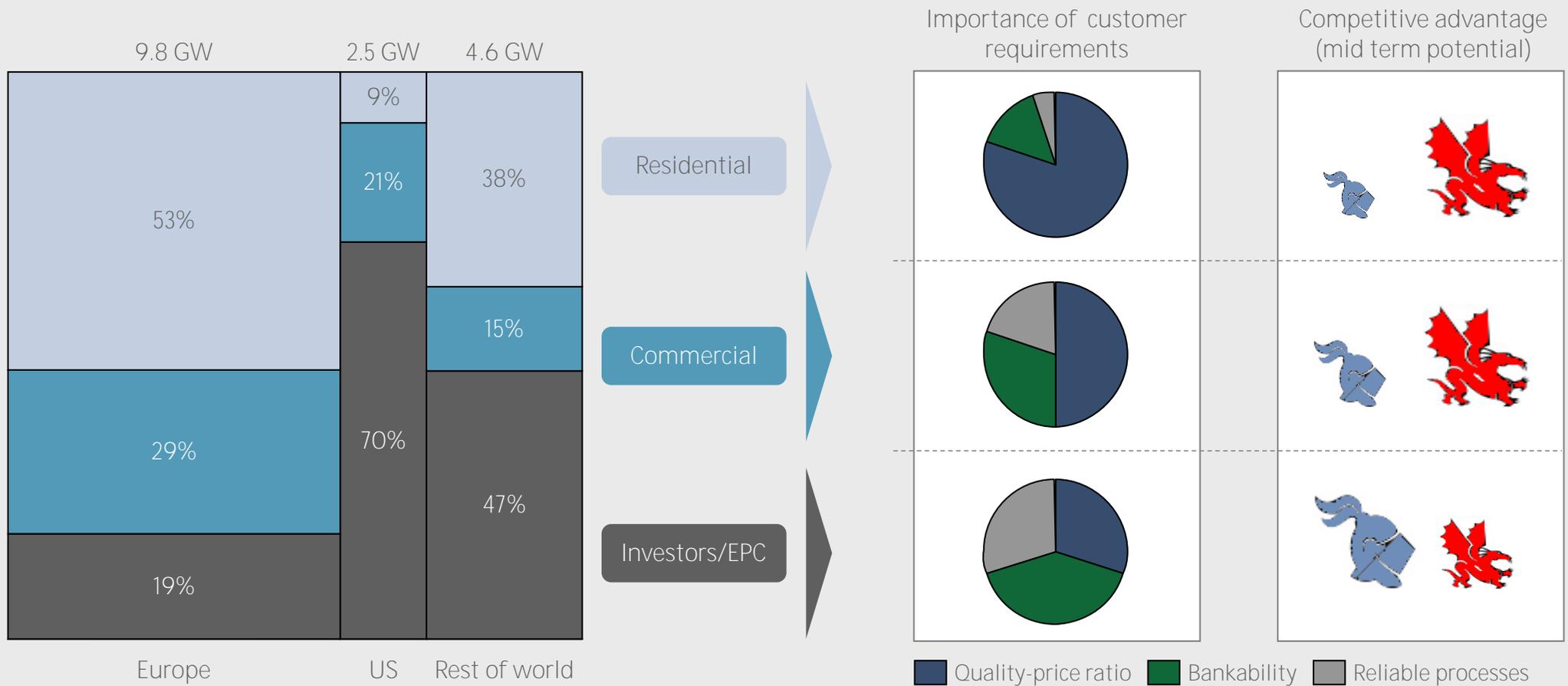
With more and more Chinese players mastering the bankability hurdle, along with decreasing relevance of bankability the competitive pressure on international players is increasing further

■ Bankable Asian players (e.g. JA Solar, Trina, Suntech, Yingli) ■ Bankable international players ■ Upcoming Asians (not bankable in 2010)

1] Bankability relevant for Europe, Japan and US markets; Source: goetzpartners

International players will still beat the Chinese players mainly on “Investors/EPC” battle field until 2012 – Chinese players with clear competitive advantage in residential and commercial segment

Regional customer segmentation 2012e



The international players have to realign their business model towards the future playing field

International and Chinese players have to develop their strategic roadmaps– choosing the right battlefields according to individual strengths and weaknesses is key for success

Strategic roadmaps to win

	1 “Realizing Quick Wins”	2 “Strengthening your strengths”	3 “Transforming weakness into strength”
	<ul style="list-style-type: none"> ■ Internationalize sales activities; piggyback on distributors and installers ■ Strengthen established customer relations ■ Introduce pricing and conditioning system 	<ul style="list-style-type: none"> ■ Maintain innovation, technological and brand-quality leadership to secure premium ■ Develop additional value added services (e.g. delivery reliability and after-sales services) 	<ul style="list-style-type: none"> ■ Consider relocation of production to low-cost countries ■ Evaluate contract manufacturing (high flexibility, low capex requirement) ■ Secure early access to target growth markets
	<ul style="list-style-type: none"> ■ Improve quality perception (e.g. by lighthouse projects, distribution network) ■ Streamline and standardize product portfolio ■ Continue diversification of international sales activities 	<ul style="list-style-type: none"> ■ Ramp-up production capacity effectively ■ Maintain cost advantage over international players (e.g. backwards integration) 	<ul style="list-style-type: none"> ■ Increase delivery reliability through IT, SCM infrastructure ■ Develop backbone for further growth through global organizational setup ■ Build-up network with banks, EPCs, distributors

About goetzpartners

goetzpartners is one of the leading independent advisory firms in Europe, offering M&A (Mergers & Acquisitions), Management Consulting and Interim Management services under one roof. The group stands for an innovative consulting approach and tailor-made solutions that are successfully implemented together with their clients. goetzpartners has offices in Munich, Düsseldorf, Frankfurt, Zurich, London, Paris, Madrid, Moscow and Prague as well as co-operations in New York, San Francisco, Los Angeles, Bangalore, Mumbai and Budapest.

goetzpartners Management Consultants is specialized in the fields of strategy, organization, operational excellence, sales and marketing, restructuring and strategic due diligence. goetzpartners Corporate Finance focuses on M&A advisory services.

goetzpartners was classed a “**Hidden Champion**“ 2009 in the fields of strategic due diligence, financial and merger strategies as well as post-merger integration (result of the latest “**Hidden champion**” study carried out by Professor Fink in collaboration with the magazine “**Capital**“).

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