

# China Solar Market Analysis



**Eilat-Eilat Renewable Energy 5<sup>th</sup> International  
Conference & Exhibition Nov. 2012**

**Anna Wang - Sales Manager  
(Southern Europe & LaTam)**



## China Overview

- About China

- Chinese Communist Party's 18th National Congress

- Overview of leadership within the Chinese Government

- Economy & Energy

## China PV Market Review

- Historical PV Market Demand

- Quarterly Market Segmentation

- Regional Distribution

## China PV Market Footprint

## Incentive Policies

- China FIT-Projects Economics

- China "Golden Sun Project Plan"

- China Solar 12<sup>th</sup> 5 Years Plan

## China Solar Power Plant Investment

## CSUN Introduction

- Company Snapshot

- New Products - innovative module types

- CSUN Project References

- Worldwide- As Module Supplier

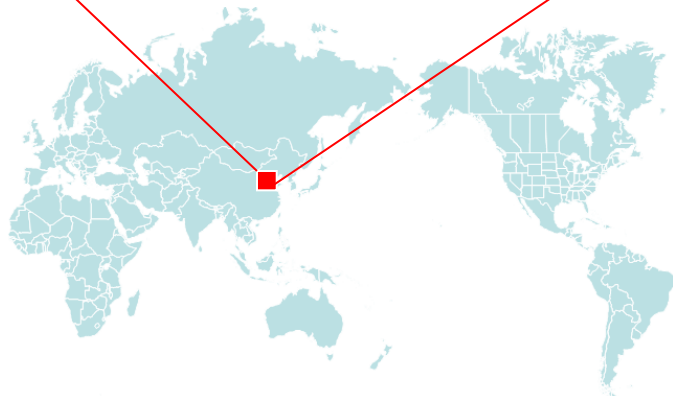
- Nanjing, China, as EPC & Module Supplier

## CSUN Highlights



# China Overview

## About China



**Location:** Eastern Asia, bordering the East China Sea, Korea Bay, Yellow Sea, and South China Sea

**Area:** 9,596,961 sq km

**Population:** 1,343,239,923 (July 2012 est.)

**GDP (purchasing power parity) :** \$11.3 trillion (2011 est.)

**GDP per Capital (PPP):** \$8,400 (2011 est.)

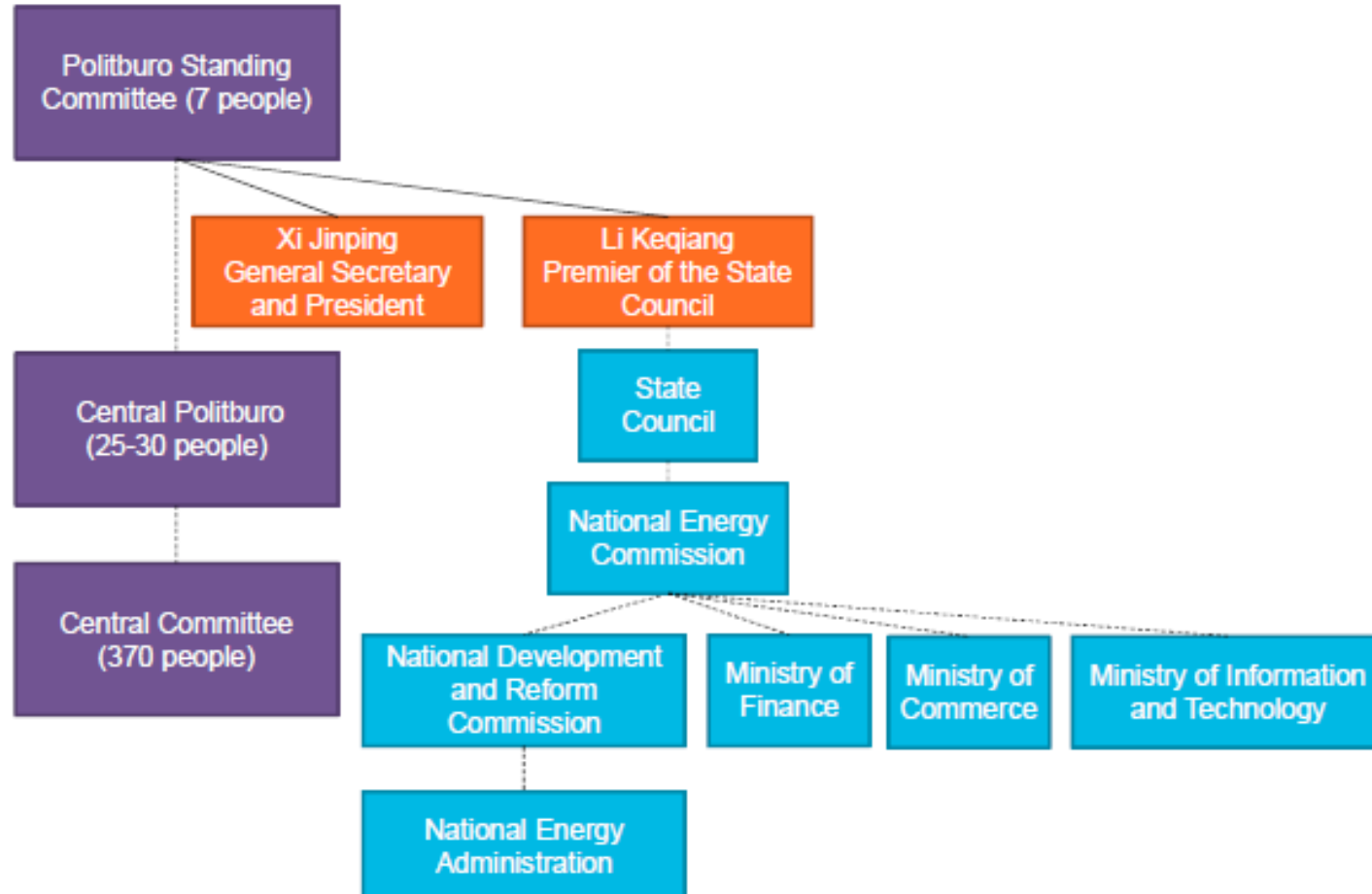
**Inflation Rate:** 5.5 % (2011,est.)

*Source: CIA, 2012*



## Chinese Communist Party's 18th National Congress

### — Overview of leadership within the Chinese Government



Source: Bloomberg New Energy Finance Note: Communist Party is indicated in purple, where departments within the governments are highlighted in blue.



## Chinese Communist Party's 18th National Congress

### — Economy & Energy

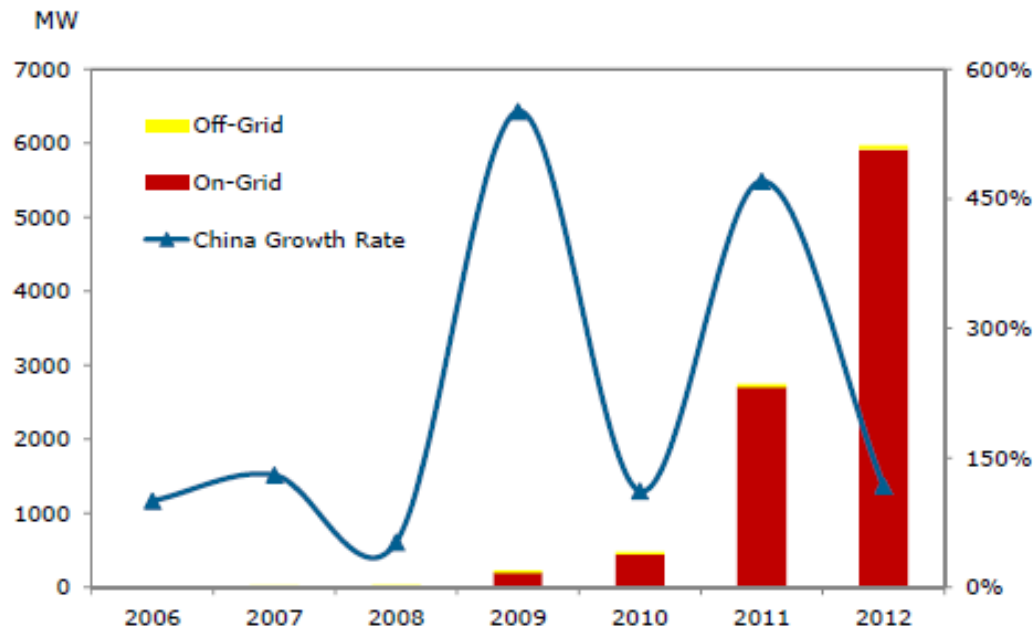
The leadership change comes at a time when China's economy is slowing down. Sustaining economic growth is one of the main tasks when Xi and Li take over the leadership of China. As part of this effort, we believe both will continue to support the country's seven strategic emerging industries as growth pillars. Related to the energy sector these include energy conservation and environmental protection (clean energy technology), new energy (renewable energy and nuclear), and new energy vehicles (electric vehicles, batteries) and to some extent new materials (rare earths).

As outlined in the 12th five-year plans, Xi and Li will continue China's effort in pursuing diversified energy production and actively addressing climate change at least until 2015. Even beyond, China is expected to continue these efforts as the underlying drivers of energy security, environmental pollution and economic diversification remain in place. China aims to increase its non-fossil energy consumption to 15% by 2020 and China's top leaders are still determined to turn China into the clean energy leader in the world.



## Historical PV Market Demand

China PV Market Demand



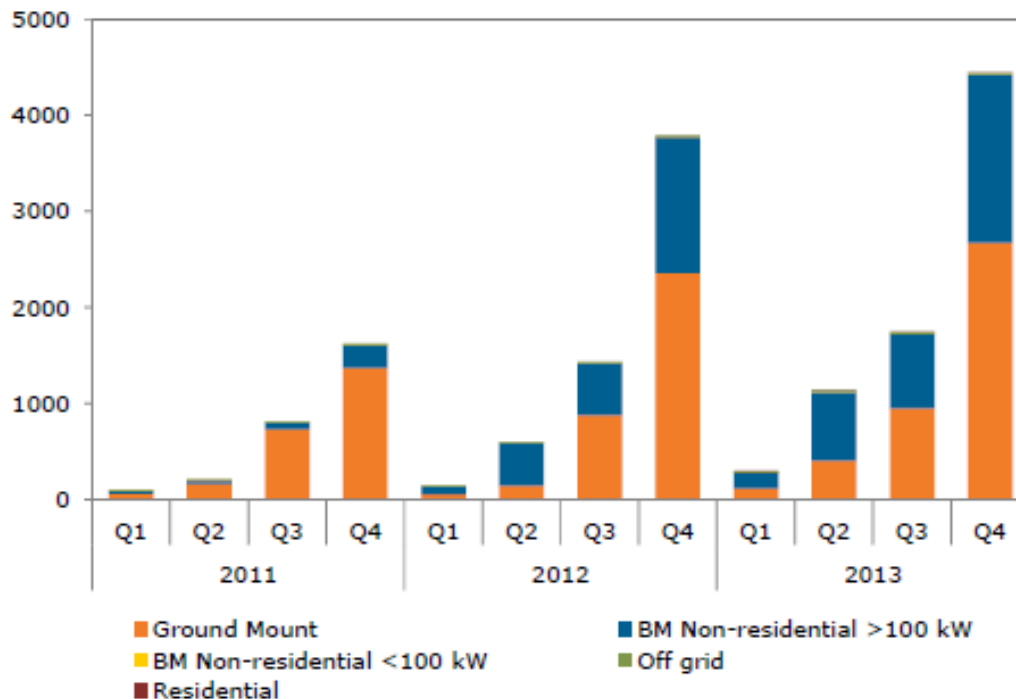
Source: NPD Solarbuzz Asia Pacific Major PV Markets Quarterly.

- Prior to 2008, most PV installations in China had been off-grid systems
- In 2009 >500% YoY growth rate due to rebate programs release
- In 2011 another >500% YoY growth rate due to National FiT release
- Government will continue to support PV market development



## Quarterly Market Segmentation

China Quarterly Market Segmentation



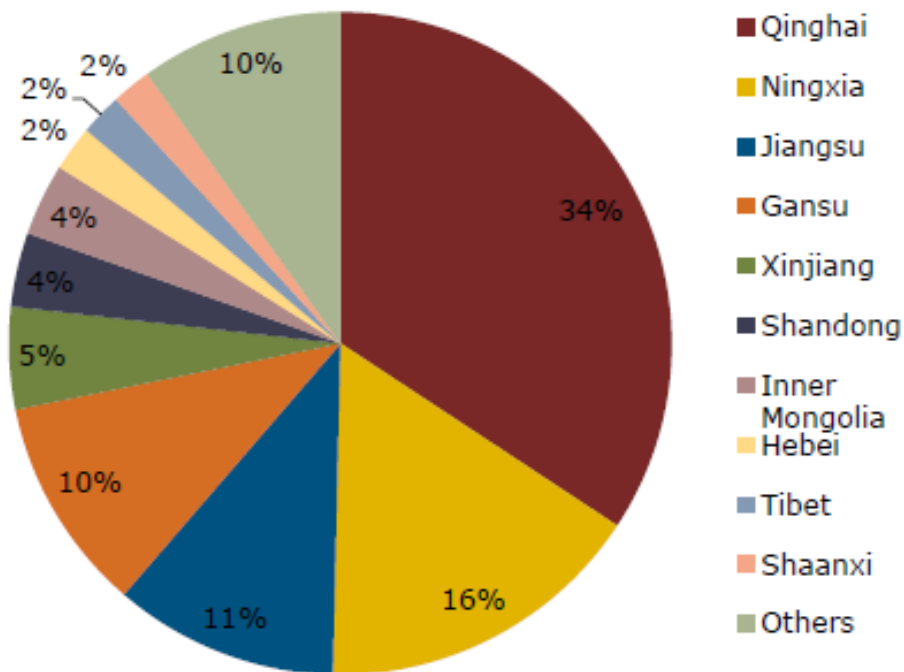
- Very strong seasonality
- Ground mount projects wait for NDRC approval in 1H
- Most projects are either ground mount or large non-residential building mount

Source: NPD Solarbuzz Asia Pacific Major PV Markets Quarterly.



## Regional Distribution

2011 Top 10 Provinces in China



- Northwest provinces had largest market shares
- Qinghai province accounts for 34% of total demand in 2011
- 1,003 MW were connected to grid successfully by the end of 2011.

Source: NPD Solarbuzz *China Deal Tracker*, July 2012.





# China PV Market Footprint

## Phase 1 — 1990 ~ 1995

Show Case projects supported by China government, mainly apply in special field, such as telecommunication, petroleum pipeline monitoring, rural area residential application, etc.

From 1990 to 1995, China PV installation capacity reach to 6.63MW

## Phase 2 — 2002 ~ 2003

China Government launched “West China Powerless Villages Care Plan”, PV application jump from 45MW to 60.3MW.

## Phase 3 — 2006 ~ 2007

In 2006, China Government launch 《Renewable Energy Law》 , yearly PV installation capacity reach to 20MW, total 100MW.

## Phase 4 — 2009 ~ 2012

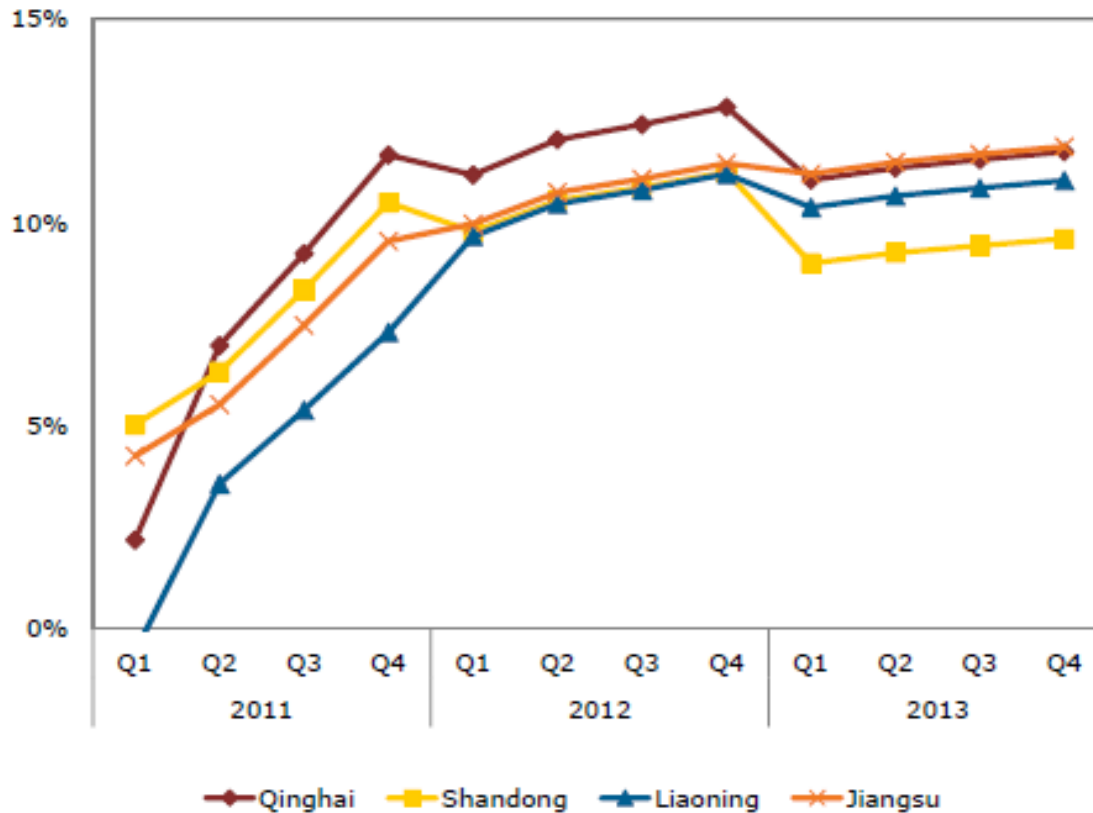
In 2009, China Government launched “Golden Sun Project Plan”, which highly stimulate market growth. Up to 2012, planned installation capacity will reach to 1.7GW, cover 29 provinces.

In 2011 and 2012, China government reinforce solar power on grid policy, which will highly accelerate domestic market growth.



IRR

**China: Project IRR of 10MW Ground Mount c-Si System in Four Provinces**



- Although the FIT rate decreased to 1.0 from 1.15 in 2012, project IRRs in these provinces are still profitable.
- Low system costs will keep most project IRRs above 10% in 2012

Source : NPD Solarbuzz Asia Pacific Major PV Markets Quarterly.



# China “Golden Sun Project Plan”



## Project Background

- In July, 2009, supported by China Ministry of Finance, Ministry of Science and Technology, National Energy Board, the project was launched.
- From 2009 to 2011, The plan has support 1.2GW (300MW in 2009, 200MW in 2010, 700MW in 2011) with US\$ 2 billion finance subsidy.



## Government Support Way

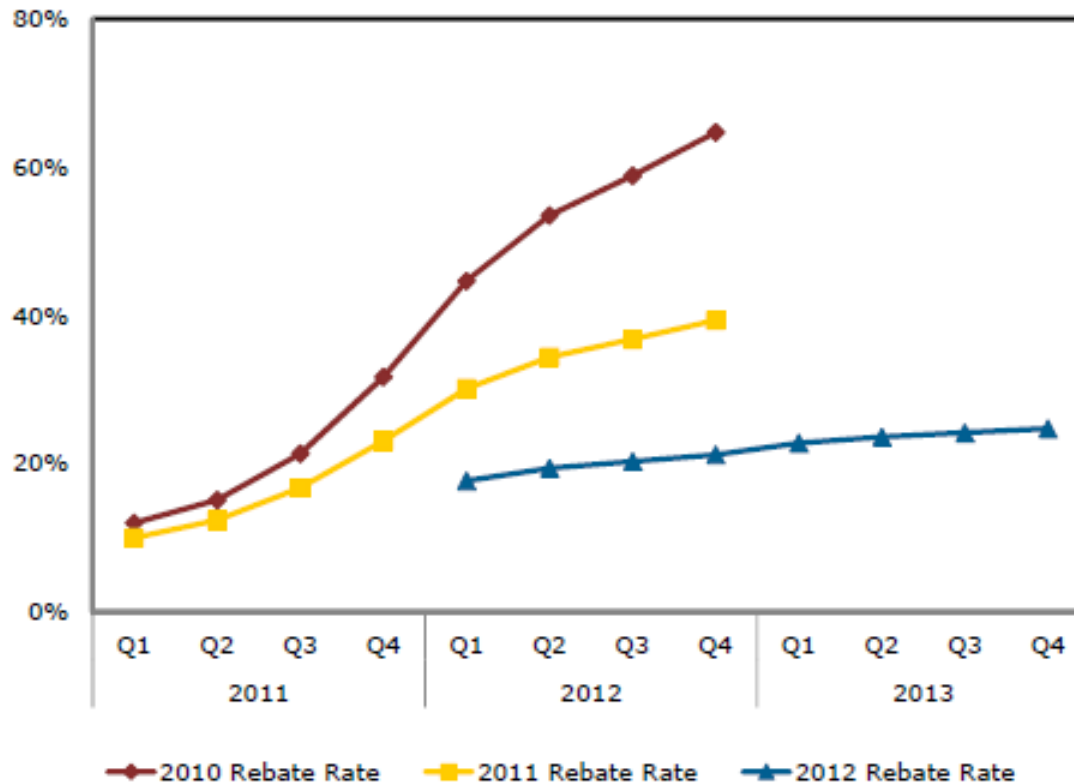
- Mainly aid grid-tied PV project, subsidize 50% CAPEX of solar PV system and supporting power transmission & distribution systems.
- For rural powerless area, subsidize 70% total cost of off-grid system.
- Support PV key technology industrialize projects by subsidy and tax discount.



# China “Golden Sun Project Plan”

IRR

**China: Project IRR of 2MW Rooftop c-Si Golden Sun Programs in Zhejiang**



- Project IRRs for Golden Sun projects are much higher (>20%) than FIT projects
- Projects approved before 2012 are required to be completed by 30 June, 2012; while deadline for those approved in 2012 is 31 December 2012.

Source : NPD Solarbuzz Asia Pacific Major PV Markets Quarterly.



# China Solar 12<sup>th</sup> 5 Years Plan

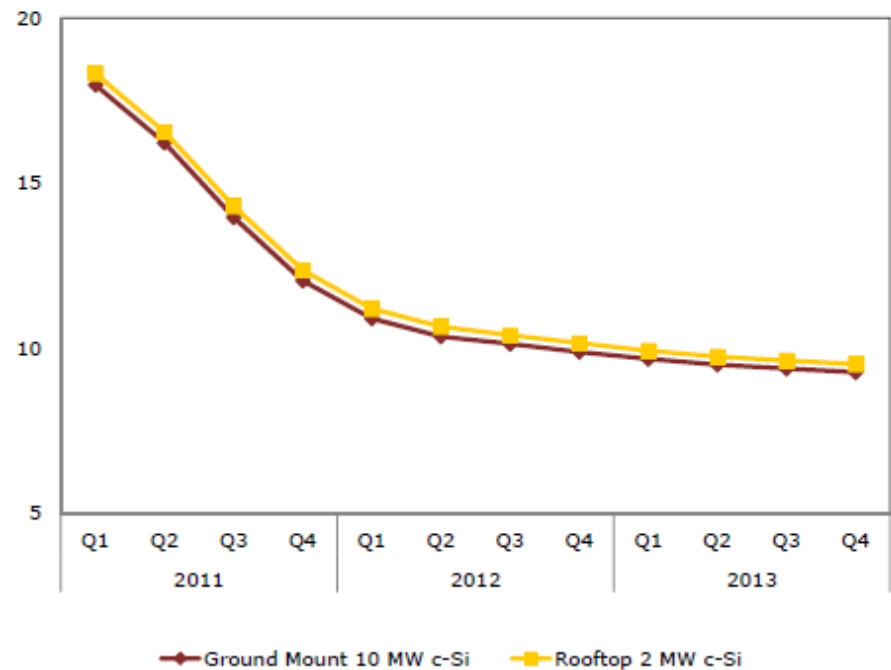
China National  
12<sup>th</sup> 5 years  
Development  
Plan (July,2012)

China Renewable  
Energy 12<sup>th</sup> 5  
years Plan  
(Aug,2012)

China Solar  
12<sup>th</sup> 5 years  
Plan (Sep,2012)

Price  
(CNY/Wp)

China: Pricing of Two System Types



Source: NPD Solarbuzz Asia Pacific Major PV Markets Quarterly.



# China Solar 12<sup>th</sup> 5 Years Plan

Policy  
Background

- China is Facing Pressure in Energy Supply and GHG Emission
- Factory- gate module price decreased below CNY 5.5/Wp in Q2'12, LCOE dropped significantly.
- US and Europe anti-dumping scheme slows down China's PV products export, thus Chinese government is urged to promote domestic PV products demand.

Installation  
Target

- In propose of complement local electricity supply, to promote Large-scale PV plants in north-west, northern regions, where the irradiation conditions are very favorable.
- Aggressively promote distributed energy in Central and South-east region, specially on public facilities, commercial and industrial zone roof-tops, targeting 10GW total capacity.
- Support development of off-grid systems in remote areas and isolated islands, to solve electricity supply vacancy.



# China Solar 12<sup>th</sup> 5 Years Plan

## Installation targets in figures

Time	2015	2020
Target	<ul style="list-style-type: none"><li>➤ PV capacity to reach <b>20GW</b></li><li>➤ To reach grid-parity in distribution projects.</li></ul>	<ul style="list-style-type: none"><li>➤ PV capacity to reach <b>50GW</b></li><li>➤ To reach grid-parity in large ground-mounted projects.</li></ul>



# China Solar 12<sup>th</sup> 5 Years Plan

From 2010 to 2015, China renewable energy installation capacity will reach **160GW**, support **20%** of total power supply.

The Government encourage PV industry chain manufactures combine and restructure to eliminate weaker, support them to master key technology, and set more stringent threshold to new comer.

1

2

In 12<sup>th</sup> 5 years plan, China solar **PV** new installation capacity will reach to **20GW** , **CSP** new installation capacity will reach to **1GW**.

3

4

For solar PV market, distributed power system will become the most important application field, and will get much more support from government & power grid companies.





# China Solar Power Plant Investment



**Project Preparation**



**Project Approval**

**China Solar Power Plant Project Flow**

**Project Delivery**



**Project Implementation**



- License from national Development and Reform Commission
- License from local DRC
- License from local power grid company

- Site Survey
- Project Design
- Coordinate with local power grid company
- Coordinate with system equipment supplier.
- Site Construction



- Investment Intention
- Environment Analysis
- ROI Evaluation
- Grid Connection Check
- Local Power Digestion Capability Evaluation

- Grid Connection check and adjustment
- Pre-connection to Power Grid
- Formal connection to Power Grid
- PAC & FAC



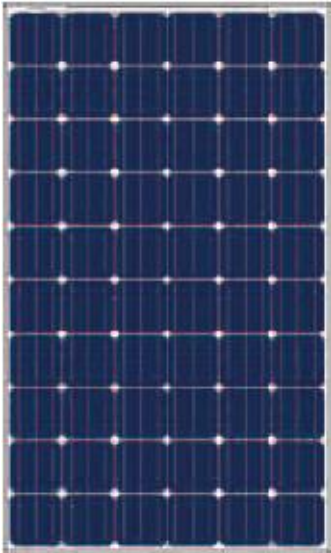
# Company Snapshot

- ✿ Founded in 2004, in Nanjing, China
- ✿ Used to supply cells to European module producers such as Aleo, Solarwatt, Solon etc.
- ✿ Since 2007 focus on module production and supply
- ✿ Listed at Nasdaq (CSUN) since May 17<sup>th</sup>, 2007
- ✿ Module production capacity: approx. 1.2 GW in 2012
- ✿ Production facilities in China and Turkey
- ✿ Almost 1 GW of modules sold since 2007
- ✿ Leading in R&D of cell and module technology
- ✿ First company commercializing selective emitter solar technology
- ✿ Sales offices in Germany, France, Italy, USA, China, India and Australia
- ✿ Module stock in Europe available in our warehouse at the port of Antwerp



# New Products - innovative module types

## SAR The Top Performer



- \* Module Efficiency up to **16.63%**
- \* Cell type: Mono
- \* Available with 60 or 72 cells, each 156\*156 mm

### Product Features:

- \* High power output solar module
- \* Narrow distribution of conversion efficiency
- \* Concentrated current distribution
- \* Less mismatch
- \* Simplified production process
- \* Additional quality control measures

**265-60M**

**315-72M**

## Multi Series – The “4 Wheel-Drive”



- \* **Average Power Rating**  
195, 215, 250 and 300 Wp depending on module size
- \* **Cell type:** multi crystalline
- \* **Module Efficiency**  
up to 15.40%
- \* **Available with:**  
48, 54, 60 & 72 cells in 156\*156 mm

**195-48 P**

**215-54 P**

**250-60 P**

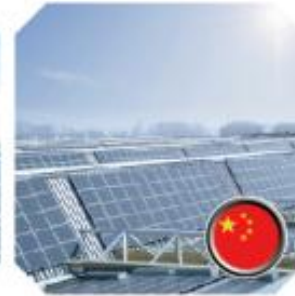
**300-72 P**





# CSUN Projects References

Worldwide- As Module Supplier





# CSUN Project References

**Nanjing, China, as EPC & Module Supplier**

**Module Type: CSUN200-72M&CSUN250-60M**

**System Size: 10.67MW Date Completed: Apr. 2011**



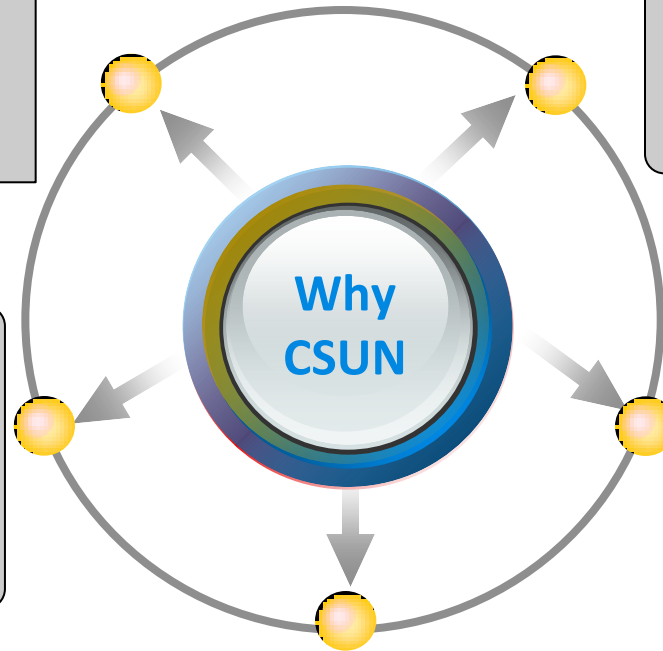
**Roof of Nanjing Railway Station  
The Biggest BAPV project of the world**

## A Liability

- Fully vertical Integrated
- Sustainability report 2011
- D&B 5A1 rating
- Risk rate 1 on a scale of 1-10

## B Products

- Cost-efficiency
- Modules eff. up to 16.63%
- Excellent quality
- Low temperature coefficient



## E Strategy

- Globalization
- Offices in 5 continents
- Glocalization
- China & turkey production bases

## D Down Stream

- Down stream activities
- System solution –
- CEEG Solar Energy Research Institute Co., Ltd

## C Guarantee

- Linear Warranty 25 years
- PowerGuard Insurance
- to guarantee module productibility



Thanks for your kind attention  
תודה על תשומת ליבכם



Tel: +86 25 52766666-6771  
Cell: +86 13851883655 (China)  
[www.chinasunergy.com](http://www.chinasunergy.com)

Fax: +86 25 52766771  
Skype: annoannianna  
[anna.wang@chinasunergy.com](mailto:anna.wang@chinasunergy.com)

