

A hand is holding a blue, octagonal solar cell. Overlaid on the solar cell is a white map of China. The background is dark blue with a grid pattern and some faint text.

***“China’s Future Domestic Policy
Support Mechanisms and its Impact
on the Domestic and Global Markets
until 2020”***

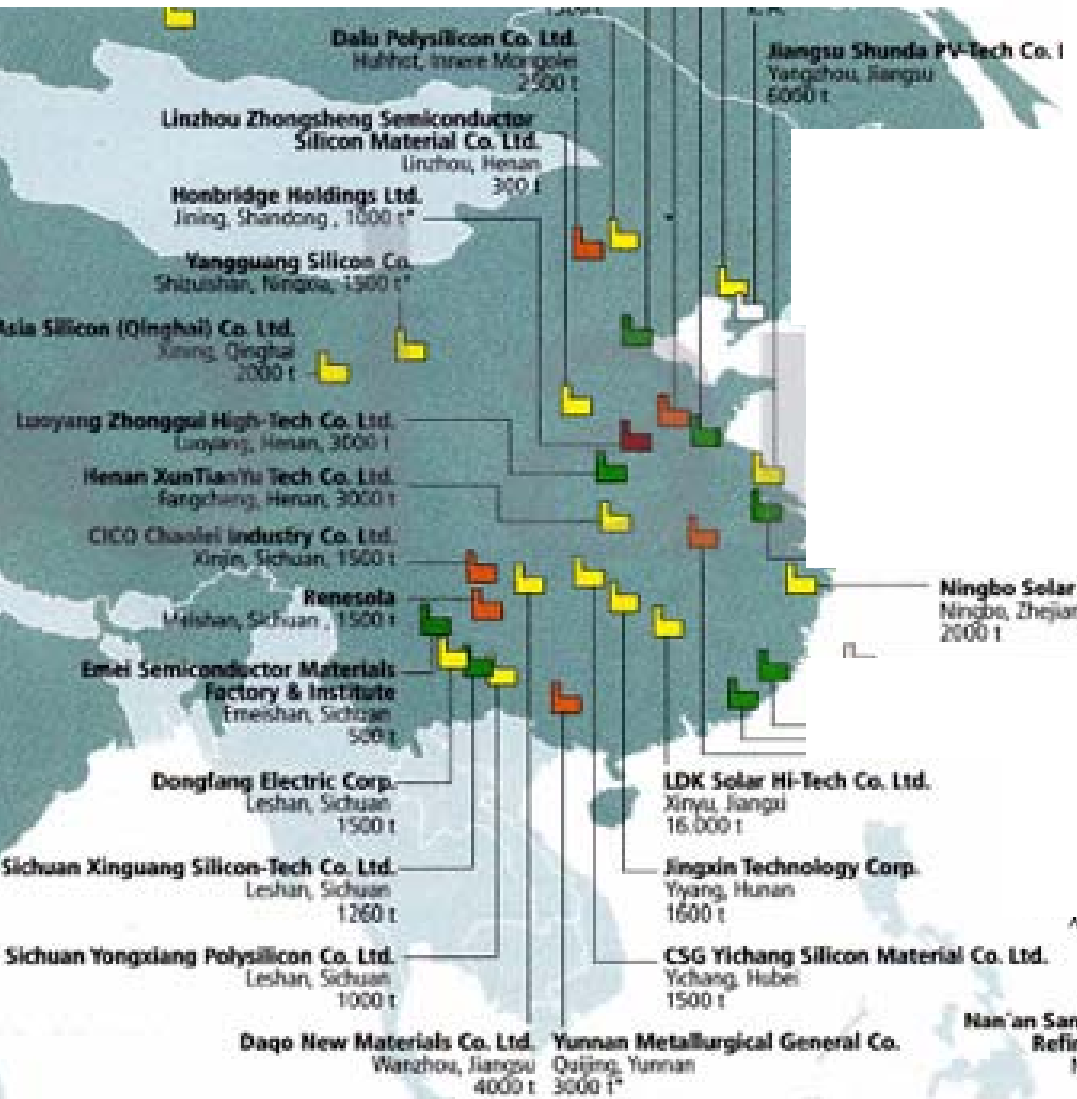
10th Forum Solarpraxis

Berlin, Germany, Nov 19-20, 2009

Frank Haugwitz

China Dynamics

– A Snapshot



≈ € 10 bn. investment

≈ 55 companies

≈ 100.000 t under construction

2008: ≈ 4500 t output;
total demand ≈ 15000 t

May 09: Ø US\$ 48 kg

09/2009 NDRC warned about over-capacity

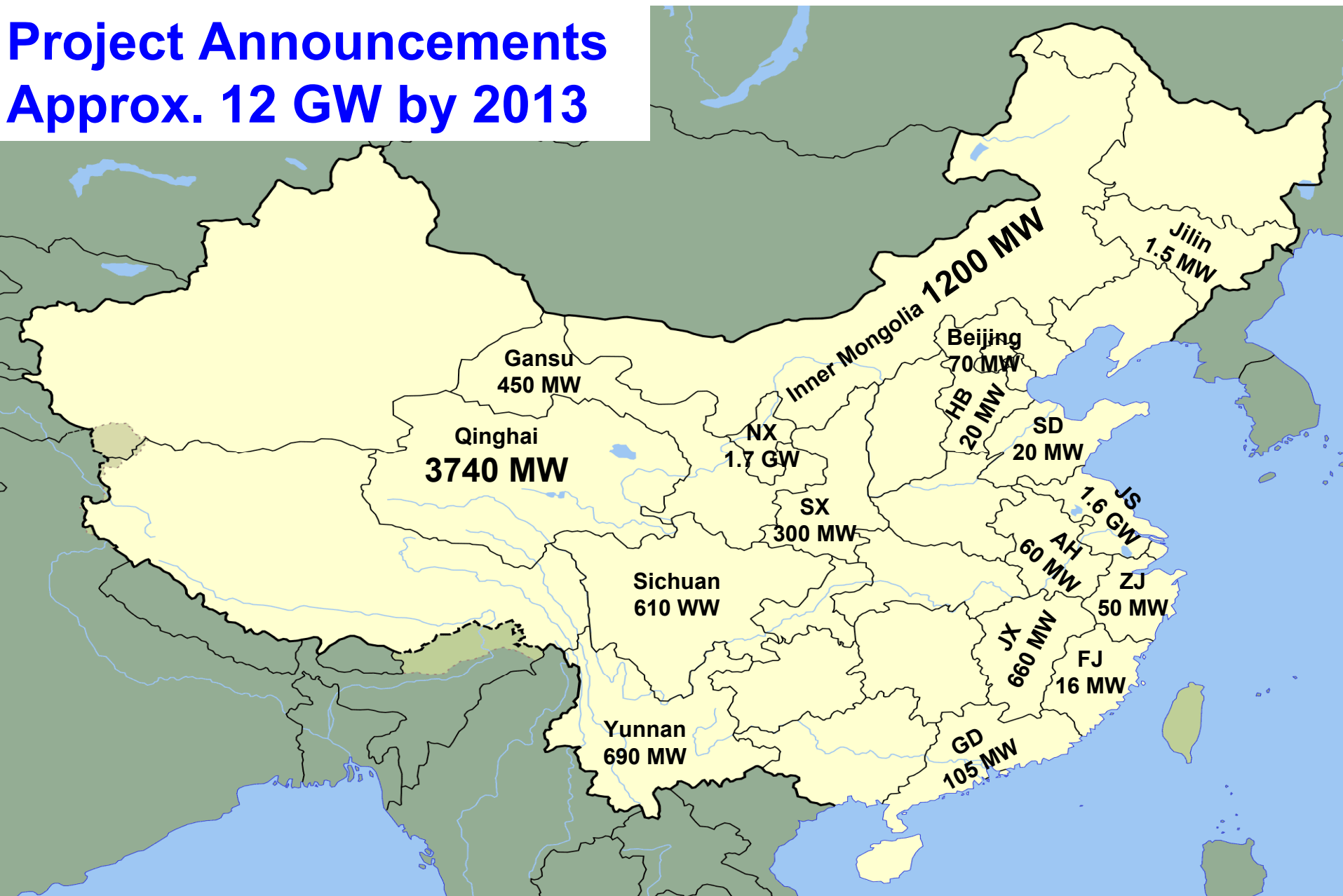
China Dynamics – A Snapshot

- Hunan: 1 GW module cap.; 30.000 t UMG-Si; 10.000 t polysilicon; 200 MW mono-si wafer, 1 GW poly-si wafer by 2012
 - Jiangsu: By 2011: Target of 10 GW prod.-cap (module and cells)
 - Shandong: € 1bn. Poly/Cell/Module Prod.-Cap.
 - Jiangsu.: € 60 Mio invest.: 200 MW thin-film cell prod.
 - Zhejiang: € 300 Mio invest.: 1 GW thin-film cell prod.
 - Qinghai: € 6 bn. Solar Dev. Plan until 2015
 - Gansu: € 2.7 bn. 500 MW-Cell/1 GW-Module
 - Mongolia: € 450 Mio Poly/Cell/Modules
 - Henan: € 1.7 bn. Poly/Cell/Modules
 - Gansu: € 2 bn. not defined yet
- Feb-Oct 2009**
Invest. € 18-20 bn.
in Prod.-Capacities

2 GW Wafer, 8.4 GW Cell 6.3, GW Module
Anticipated Revenues € 33 bn. in 2-3 years

China Dynamics – A Snapshot

Project Announcements
Approx. 12 GW by 2013



China Political Framework

- January 06 RE-Promotion Law came into effect
 - Amendments are currently under preparation
- September 07 Mid & Long-Term Dev. Plan (NDRC)
 - Unofficial New Targets for PV released in Mid May 2009
 - 2 GW by 2011 and 20 GW by 2020
- May 09 Long-Term Solar Dev. Plan (State Council)
Proposed Targets:
 - 2010 (3.5 GW) 2020 (50 GW) and by 2050 (500 GW)

Ministry of Finance – Subsidy Prog.

March 23, 2009 Announcement

- Subsidy of up to € 1.5 - 2 / Wp
- Priority: Roof-Top & BIPV
- Minimum capacity 50 kWp
- Public buildings targeted
- Eligibility: cell type (mono, poly, thin) must have a minimum efficiency of 16, 14, and 6%
- Cap (Budget / Capacity) unknown
- 2009 is a trial period
- Submission deadlines
 - a) May 15
 - b) August 30, 2009



关于印发《太阳能光电建筑应用财政补助 资金管理暂行办法》的通知

财建[2009]129号

各省、自治区、直辖市、计划单列市财政厅(局), 新疆生产建设兵团财务局:

为贯彻落实《可再生能源法》, 落实国务院节能减排战略部署, 加快太阳能光电技术在城乡建筑领域的应用, 我们制定了《太阳能光电建筑应用财政补助资金管理暂行办法》。现予印发, 请遵照执行。

财政部

二〇〇九年三月二十三日

By May 15 applications approx. 600 MW !

By late October approx. 91 MW (€ 130 Mio) approved!

Province of Jiangsu PV Policy

On Grid Purchase Price (€cents/kWh)

Year	Ground-Mounted	Roof-Top	BIPV
2009	21.5	37	43
2010	17	30	35
2011	14	24	29
Cap (MW)	130	260	10

Company	Quota (MW)
Suntech Power	80
Trina Solar	30
Sunergy	20
JA Solar Holdings	20
ET Solar	20
Total	170

June 19, 2009 the Provincial Govt. of Jiangsu announced a Feed-in-Tariff based support scheme for up to 400 MW by 2011.



Irradiation: 1050-1400 kWh/m²

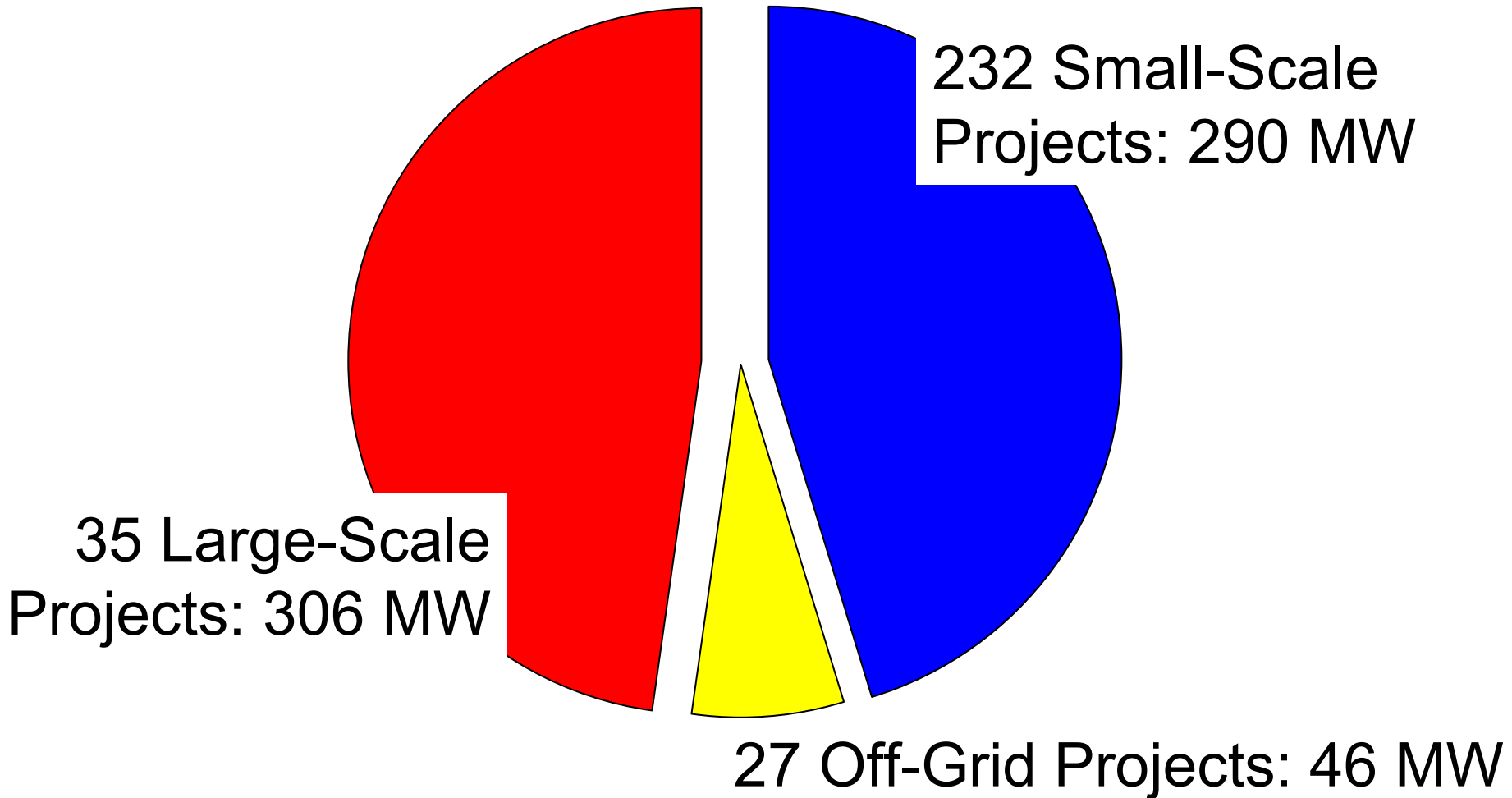
Golden Sun Programme (MoF, MoST, NEA)

July 21, 2009 -- Announcement

- Duration the next 2-3 years (2011/12)
- Supports all types of demonstration projects up to 500-600 MW or 20 MW cap per province
- Minimum System Capacity 300 kW
- Subsidy 50% for on-grid // 70% for off-grid systems
- Construction Period 1 year
- 20 years of operation, 30% equity required
- Deadline to apply for subsidy support Nov 30, 2009

On Nov 13, 2009: 642 MW approved // € 2 bn.

Golden Sun Programme (MoF, MoST, NEA)



China's Solar Energy Resource Distribution Map - Reference for a National Feed-in-Tariff (FiT) Scheme (?)



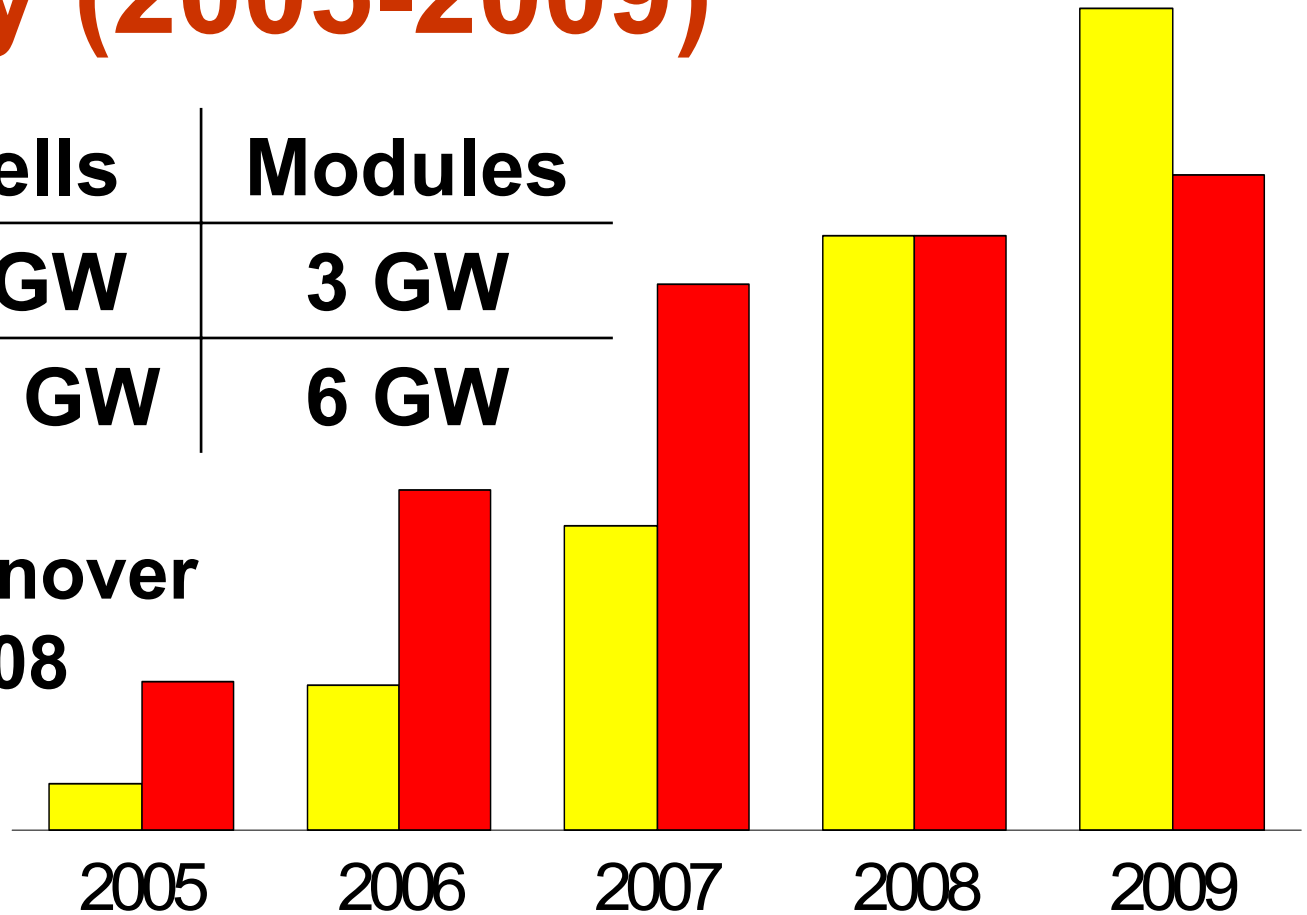
Zone	kWh/m ² /a	Share of Natl. %
I	≥ 1750	17.4
II	1400 ~ 1750	42.7
III	1050 ~ 1400	36.3
IV	< 1050	3.6

**Indicated FiT:
€cents 10-15/kWh
Conditions ?
Introduction ?**

Cell & Module Production Capacity (2005-2009)

Output	Cells	Modules
2008	2 GW	3 GW
2009 e	4,3 GW	6 GW

Industry Turnover
€ 2 bn. in 2008



■ Cells (MW)

■ Modules (MW)

388

1221

2549

5000

6900

1250

2850

4580

5000e

5500e

Present Domestic Strategies

a) Full Vertical Integration Across Value Chain

- Domestic Acquisition Up/Downstream
- If Module + Installation = End Market = Subsidies

b) Further Expansion

- Not rationale, due to oversupply, but ...
- Gain from Economy of Scale Effect, and ...
- Low Interest Loans facilitates this strategy

c) Own Products for Own Projects

- Reduce Inventory
- Establish Reputation by creating track record for own modules → branding
- Downstream + Installation = End Market = Subsidies

Other Drivers & Developments

- Establishment of a “Brand”
- Gain Market Share
- Establishment of Intl. Distribution Networks and Subsidiaries
- Intensify R&D cooperation with foreign partners
- Acquisition of Foreign Companies
- Finance own projects abroad

Advantages of Chinese PV Industry

- Natl. / Prov. / Local Govt. Support
- Basically Unlimited Access to Finance/Funding
- Quality Consciousness well developed
- Low Operational Cost e.g. 0.3-0.5 €cents/kWh plus for labor/rent land/storehouses, etc.
- Working style 24/7/365 at all management levels
- Willingness to operate on low margins
- No long-term supply contracts for poly-silicon
- If invest, in the latest technology
- Distinctive Risk behaviour

Summary & Outlook

Political Framework Conditions

- Targets, Programmes & Investments confirms the political commitment to promote the deployment of photovoltaic
- Stimulus Package for domestic economy facilitates finance / funding

Industrial Development

- Potential to become the Future Global Centre of Production
- Compliance with intl. quality standards has a high priority since years
- Domestic silicon supply will further enhance cost-competitiveness
- Increasing investment in R&D to reduce dependency on foreign know-how

Market Development

- Explosive future domestic market development expected driven by new natl. targets, however installers base is in an infant stage of development, technical standards, procedures for certification & acceptance under development
- Focus on EU / US Markets will remain unchanged
- Opportunities for foreign companies as manufacturing equipment supplier / system design / installer / operation, maintenance & monitoring

***“Thank you for your
attention”***

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