

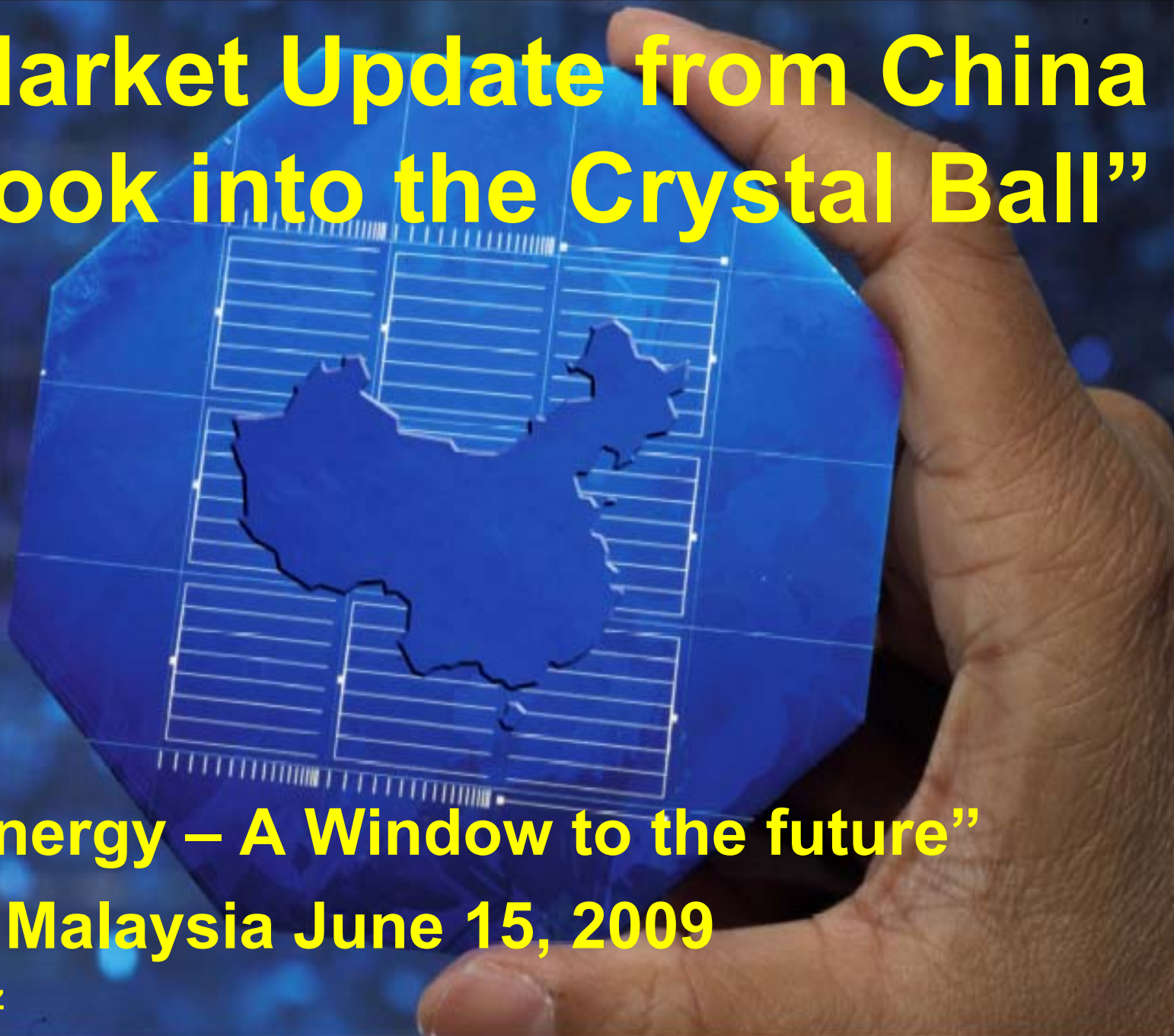
“PV Market Update from China and Look into the Crystal Ball”

Seminar

“Solar Energy – A Window to the future”

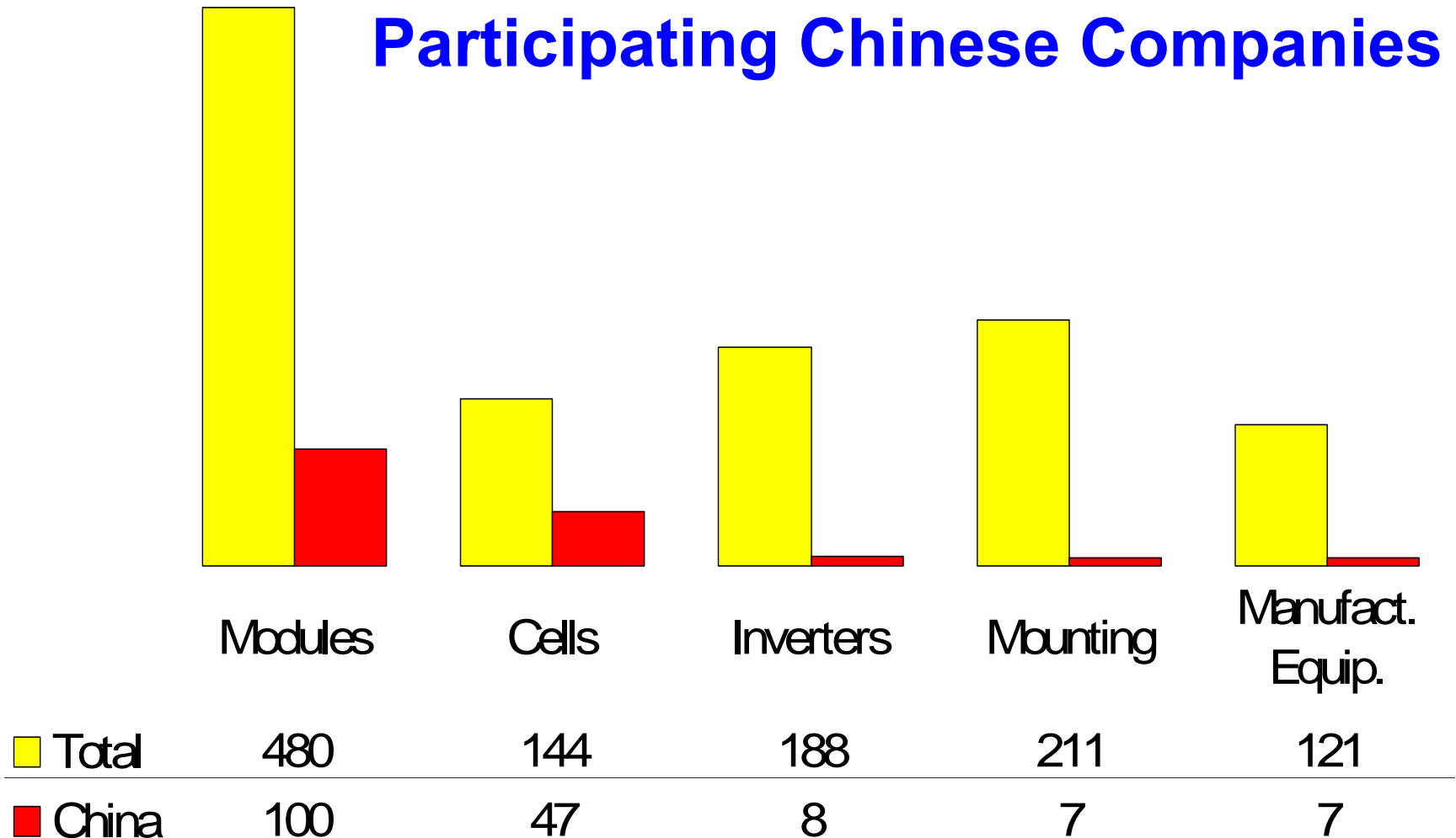
Penang, Malaysia June 15, 2009

Frank Haugwitz



China Dynamics – Snapshot 1

Intersolar Munich 2009 – Participating Chinese Companies



China Dynamics – Snapshot 2

- Hunan Prov.: 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
- Jiangxi Prov.: € 400 Mio invest.: 3 GW module cap.; 3 GW cell cap.; 1 GW wafer cap.
- Zhejiang Prov.: ReneSola will construct a combined 5 MW BIPV
- Jiangsu Prov.: By 2011: Target of 10 GW prod.-cap (module and cells)
- Shandong Prov.: € 130 Mio for Cell and Module Prod.-Cap.
- Jiangsu Prov.: € 60 Mio invest.: 200 MW thin-film cell prod.
- Zhejiang Prov.: € 300 Mio invest.: 1 GW thin-film cell prod.
- Jiangsu Prov.: 1,5 MW Roof-Top project (Suntech)
- Qinghai: € 6 bln. Solar Dev. Plan until 2015
- Hubei Prov.: € 100 Mio invest.: 30 MW plant
- Jiangxi Prov.: Q-Cells & LDK Joint Venture
- Qinghai Prov.: 10 MW plant announced
- Yunnan Prov.: 200 MW Roof-Top Prog.
- Fujian Prov.: 16 MW plant
- Jiangxi Prov.: 30 MW plant

May 14-30, 2009

Investment € 7 bln

Prod.-Capacities

10.000 t poly-silicon

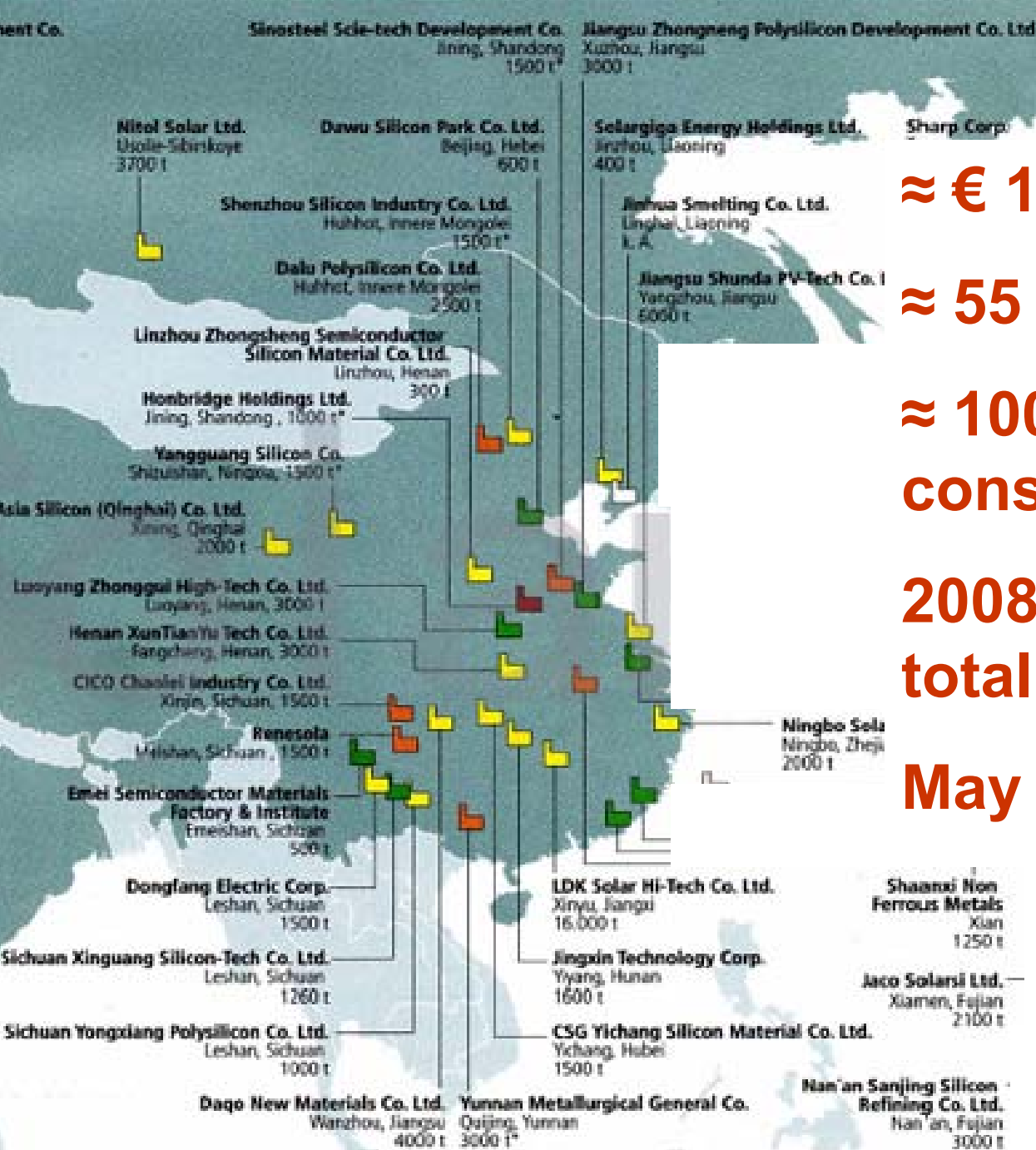
30.000 t UMG-Si

4 GW Module

2 GW Wafer, 3 GW Cell

1,2 GW Thin-Film Cell

Installations: approx. 300 MW



≈ € 10 bln investment

≈ 55 companies

≈ 100.000 t under construction

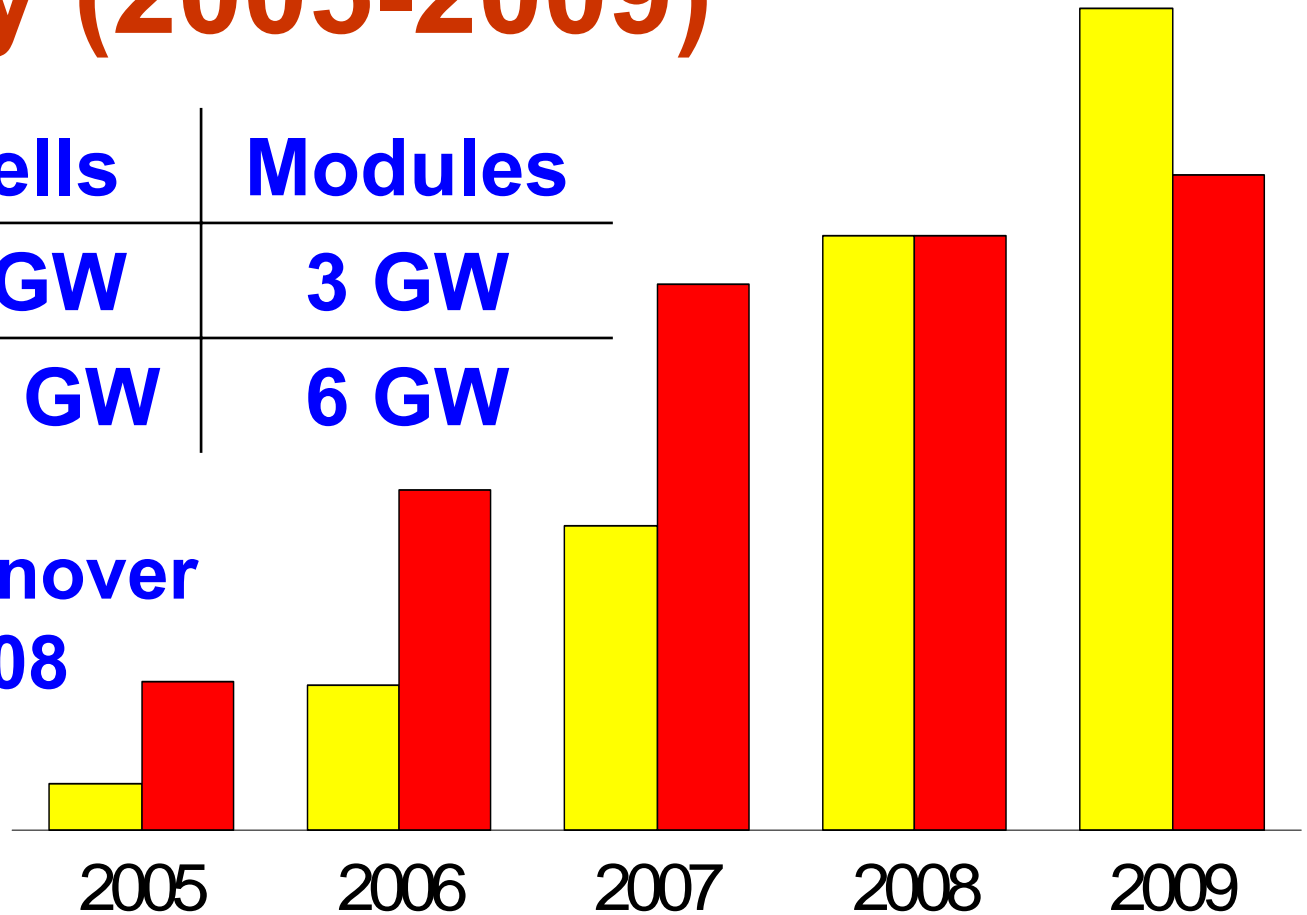
2008: ≈ 4500 t output; total demand ≈ 15000 t

May 09: Ø US\$ 48 kg

Cell & Module Production Capacity (2005-2009)

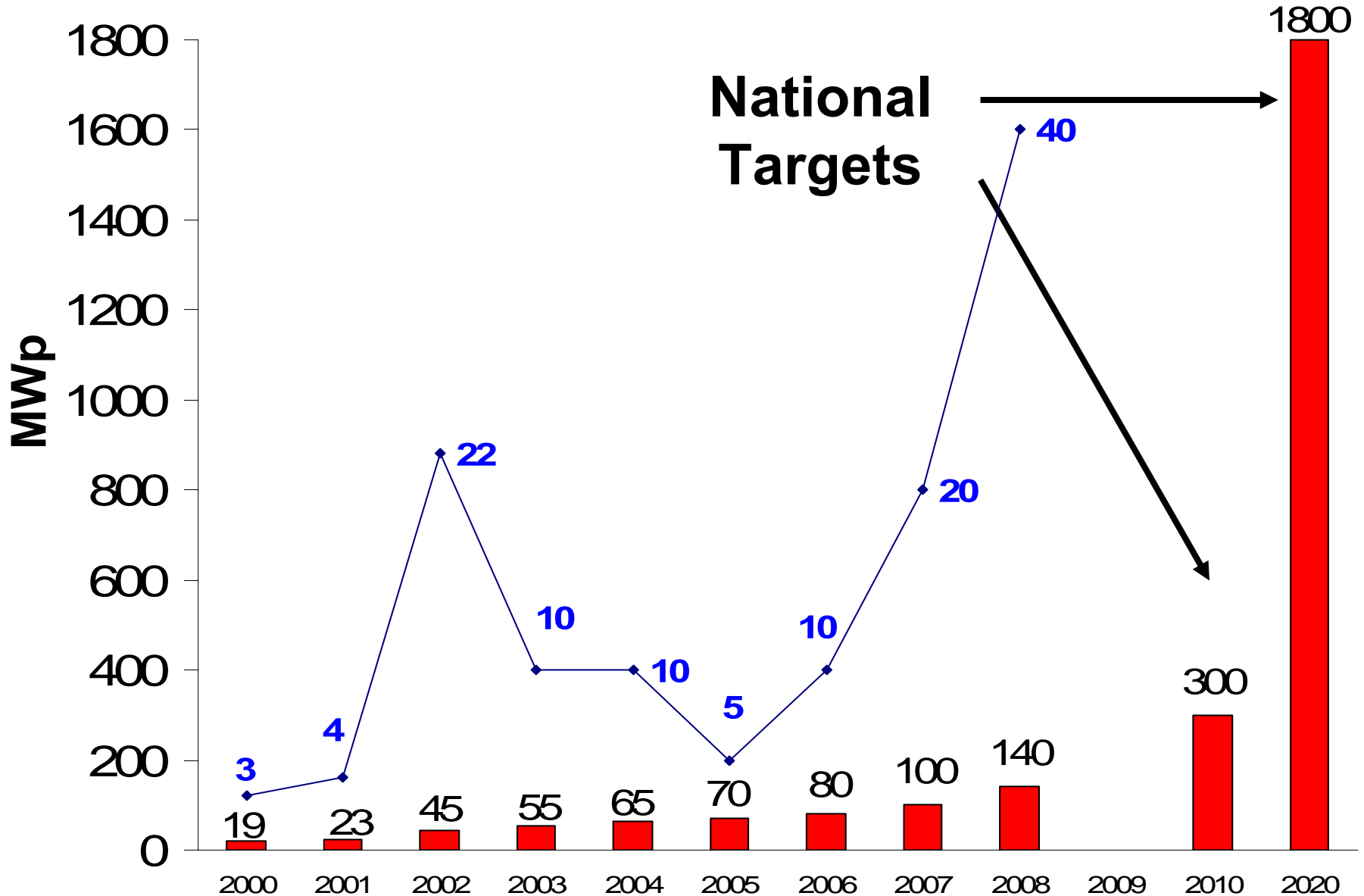
Output	Cells	Modules
2008	2 GW	3 GW
2009 e	4,3 GW	6 GW

Industry Turnover
€ 2 bln in 2008

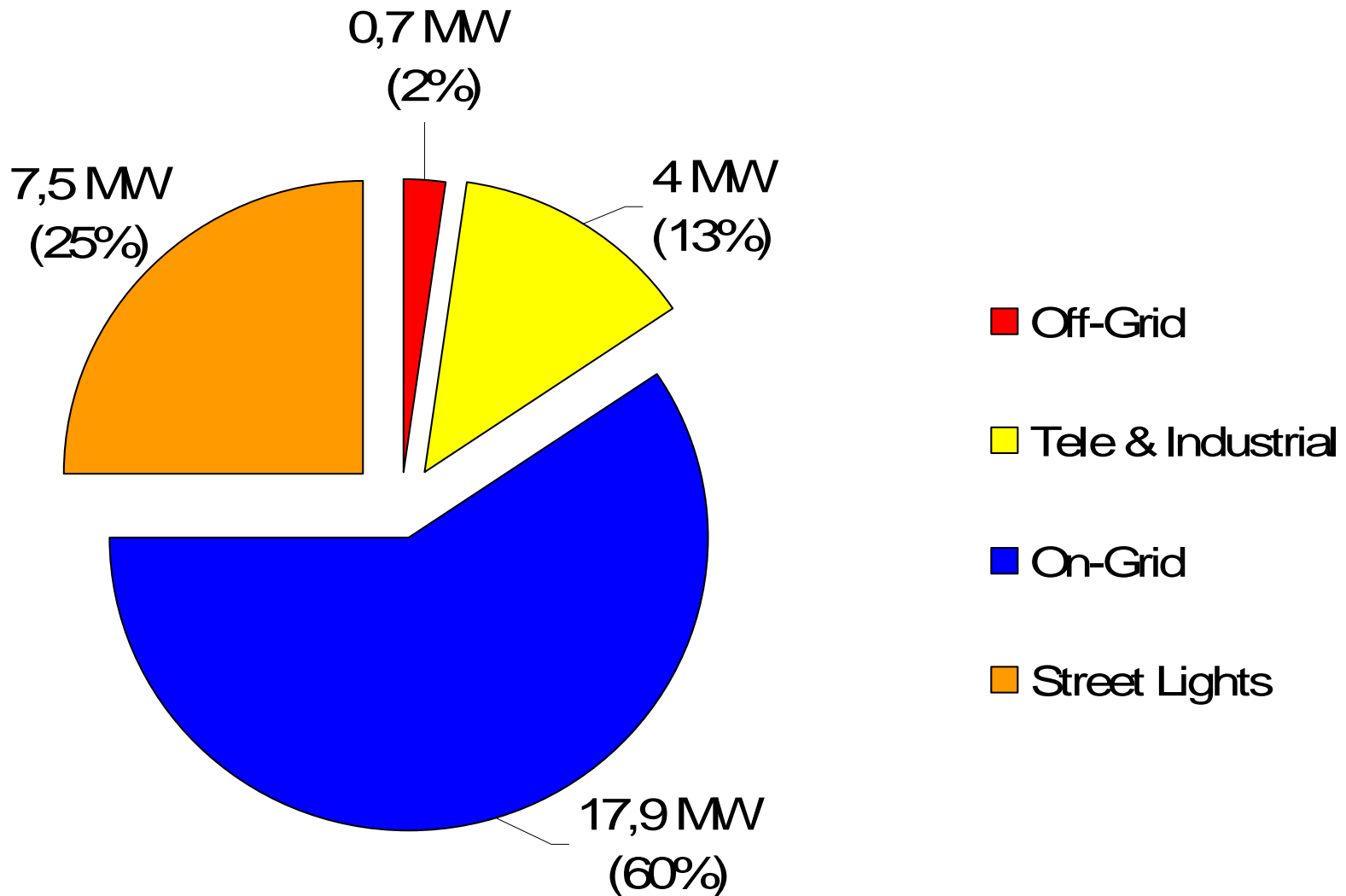


■ Cells (MM)	388	1221	2549	5000	6900
■ Modules (MM)	1250	2850	4580	5000e	5500e

Market Development 2000-2020



Market Development 2008 (in total 40 MW)



Political Framework

- January 06 RE-Promotion Law came into effect
 - PV is a priority – strategic energy resource
- Sept. 07 Mid & Long-Term Dev. Plan released (NDRC)
- Govt. Investment in larger PV-Systems 5-10 MWp announced – Focus Western Provinces
- CAS released a Solar Development Plan until 2050
- March 23, 2009 – Subsidy Prog. announced by MoF

Ministry of Finance - Subsidy-Prog.



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：

为贯彻实施《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

Ministry of Finance - Subsidy-Prog.

- Key Features

- Subsidy €2 / US\$ 2,93 / Wp installed
- Priority BIPV (public buildings) incl. simple roof-top
- Minimum capacity 50 kWp systems
- Eligibility: cell type (mono, poly, thin) must have a minimum efficiency of 16, 14, and 6% respectively
- Cap (Budget / Capacity) unknown
- 2009 is a trial period (learning process)
- Submission deadline 1) May 15 2) August 30, 2009

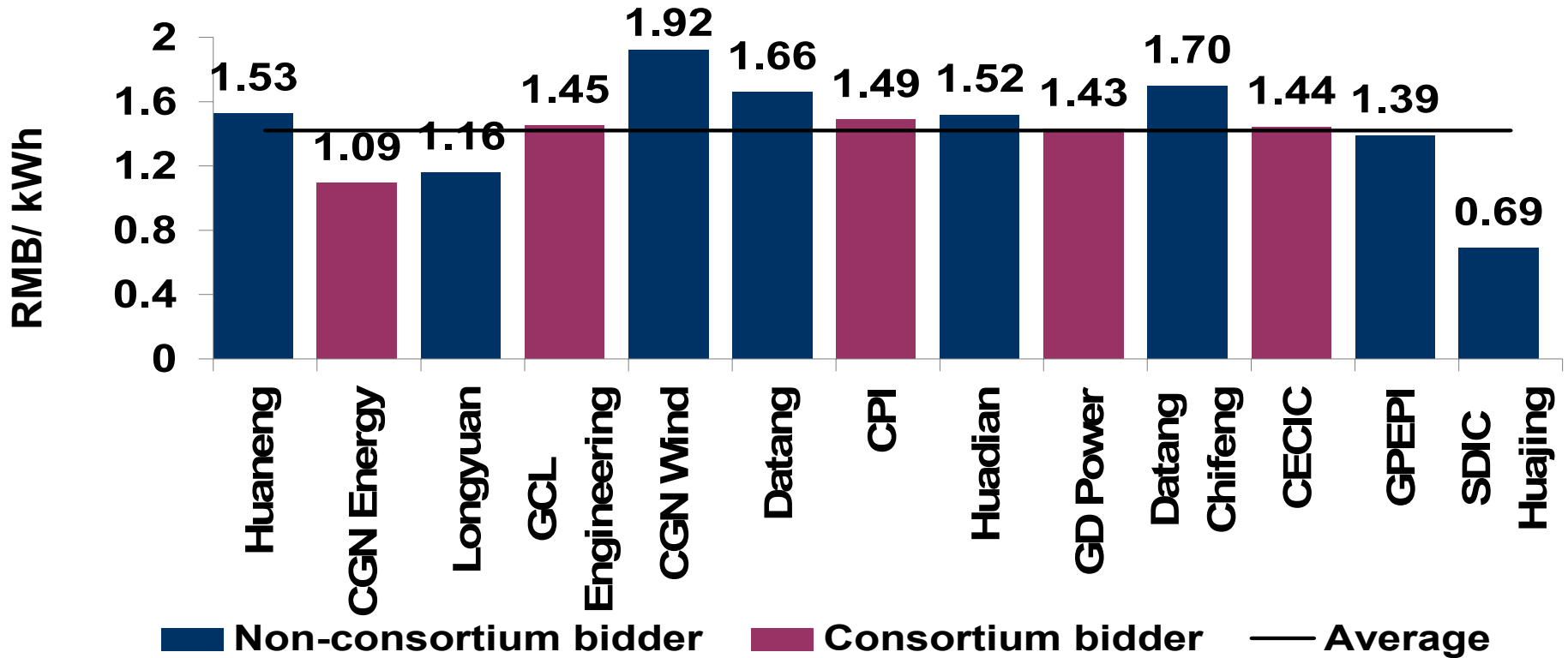
By May 15 submitted applications amounted to approx. 750 MW ! By August 30 ... GW !!!

National Energy Administration

Gansu Prov., Dunhuang, 10 MW

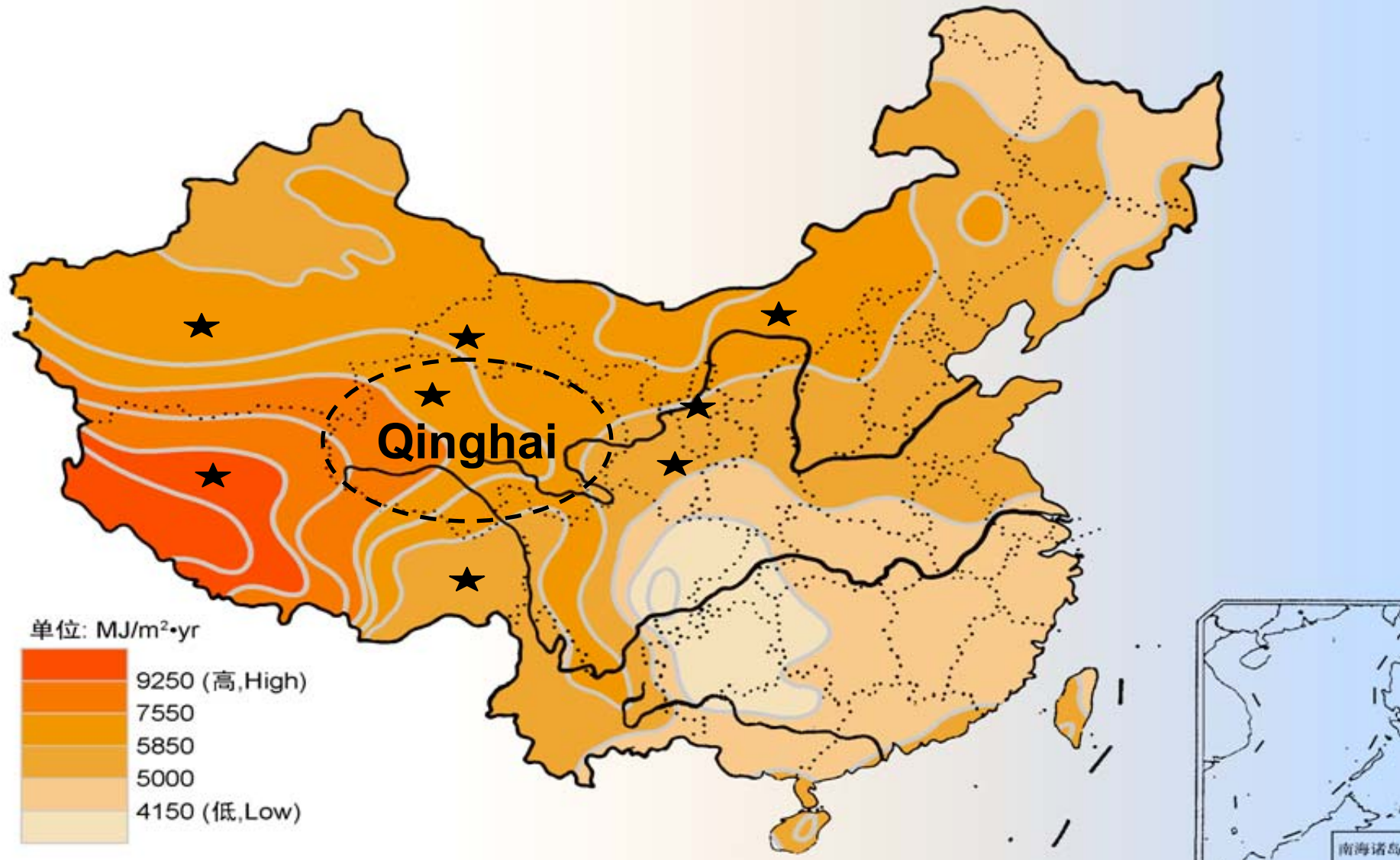
- Key Features
 - Released on December 10, 2008
 - Competitive Bidding Procedure
 - Winners tariff guaranteed for 25000 kWh, beyond re-negotiated
 - Tariff above € 0.40 won't be accepted
 - Operation Time 25 yrs
 - Local Content Requirement 80%
 - Construction Time 1.5 yrs
 - Evaluation Criteria – lowest bid/tariff wins
 - March 20, 18 Chinese Co. submitted quotations

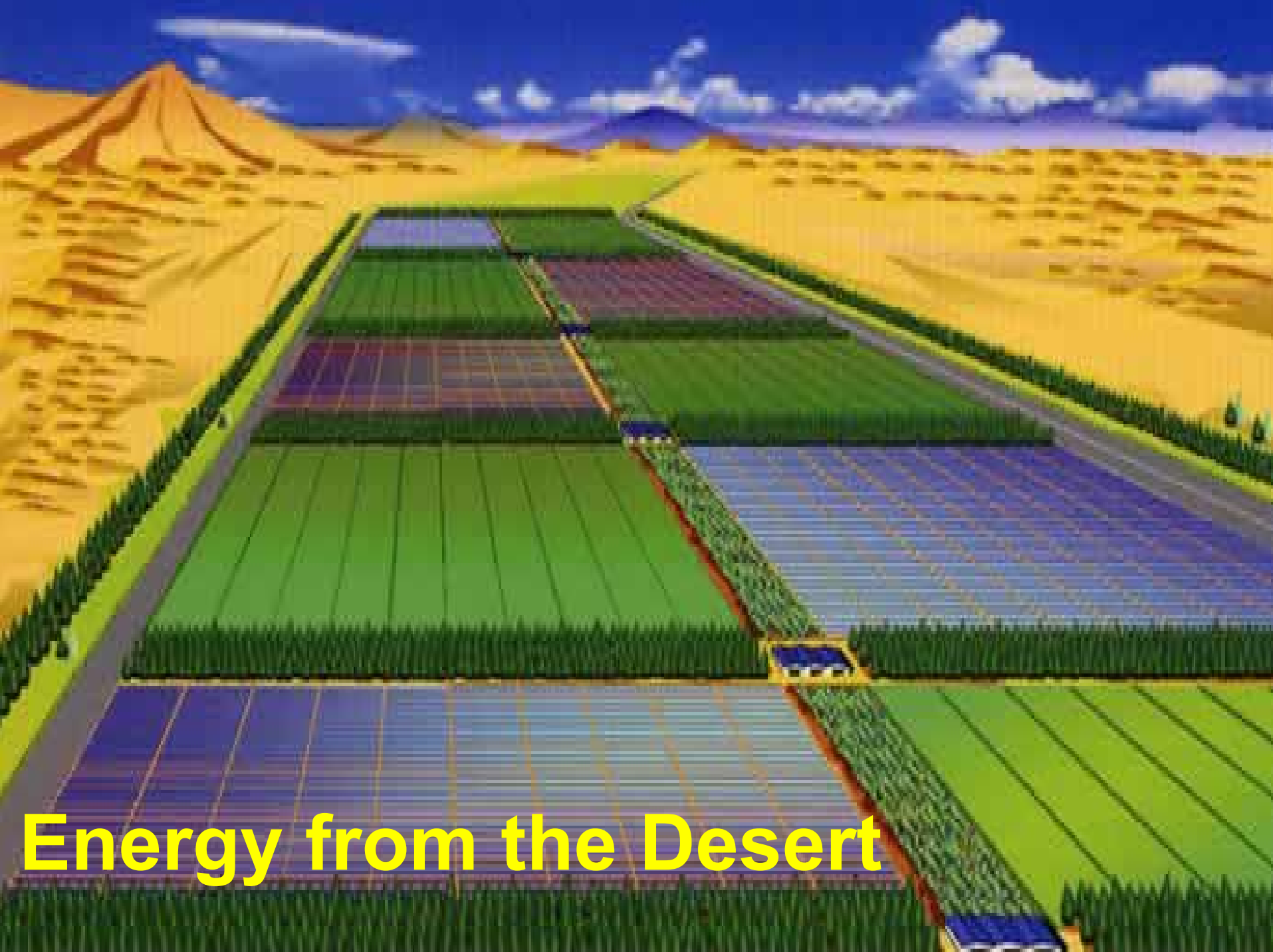
National Energy Administration Gansu Prov., Dunhuang, 10 MW



Winner (?) China Guangdong Nuclear Power Energy
2nd lowest bid \$ 0.16 or € 0.10 // kWh !

National Energy Administration Gansu Prov., Dunhuang, 10 MW





Energy from the Desert

National Energy Administration Feed-in-Tariff

国家发展和改革委员会文件

发改价格[2008]1868 号

国家发展改革委关于内蒙古鄂尔多斯、上海崇明 太阳能光伏电站上网电价的批复

内蒙古自治区、上海市发展改革委：

报来的《关于内蒙古伊泰集团有限责任公司 205 千瓦太阳能聚光光伏电站上网电价的请示》（内发改价字[2008]422 号）和《关于核定上海崇明前卫村太阳能光伏电站上网电价的请示》（沪发改价公[2007]004 号）均悉。经研究，现批复如下：

一、核定内蒙古鄂尔多斯伊泰集团 205 千瓦太阳能聚光光伏电站和上海崇明前卫村太阳能光伏电站上网电价为每千瓦时 4 元（含税）。

二、以上电价自光伏电站投入商业运营之日起执行，高出当地脱硫燃煤机组标杆上网电价的部分纳入全国分摊。若项目运行成本高于核定的上网电价水平，当地政府可采取适当方式给予补贴，或纳入当地电网销售电价统筹解决。

国家发展改革委

二〇〇八年七月二十一日

主题词：能源 太阳能 电价 批复

Nationwide 2
projects receive FiT

Shanghai
Chongming Island:
1 MW

Inner Mongolia:
205 kW

FiT: € 0.40 / kWh

Duration: unclear

National Energy Administration

Latest Developments

- NDRC/NEA submitted an “Energy Stimulus Programme” to the State Council late May 09
- Target: 18-20 % of total energy supply from renewable energies by 2020
- Main driver: National Energy Security Concern
- Total Investment: € 140 – 430 bln
- PV relevant indications suggest:
 - New Natl. Target: 10-20 GW by 2020
 - Ground Mounted Program 3-5 GW by 2015
- FiT-Tariff of € 0.10 / kWh (Dunhuang reference)

Summary & Outlook

Political Framework Conditions

- Targets, Programmes & Investments confirms the political commitment to promote the deployment of PV
- Previous focus on rural electrification replaced by on-grid application
- Stimulus Package for domestic economy facilitates finance / funding
- Net-Metering could serve as an additional driver to spur domestic market
- Support for Thin-Film because poly-crystalline considered as sufficiently mature

Industrial Development

- Potential to become the Future Global Centre of Production
- Compliance with intl. quality standards has a high priority
- 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
- Focus on EU / US Markets will remain unchanged, recent announcements to establish national and regional sales offices abroad
- Opportunities for foreign companies as equipment supplier / installer



Thank you for your attention !

Contact

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