



IEA PVPS Workshop at PVSEC 22



中国光伏市场开发中的问题和解决办法 Difficulties and Solutions for PV Market Development in China



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PV Installations in China (2000-2011)

Year	Rural	Com & Ind	Pro	BIPV	LS-PV	Annual	Cumul
	(MWp)	(MWp)	(MWp)	(MWp)	(MWp)	(MWp)	(MWp)
Before	0.7	11.7	3.8	0	0		16.2
2000	2	0.8	0.2	0	0	3	19
2001	2.5	1.5	0.5	0.01	0	4.5	23.5
2002	15	2	1.5	0.01	0	18.5	42
2003	6	3	1	0.07	0	10	52
2004	4	2.8	2	1.2	0	10	62
2005	2	2.9	1.5	1.3	0.2	8	70
2006	3	2	4	1	0	10	80
2007	8.5	3.3	6	2	0.2	20	100
2008	4	5	10	20.21	0.5	40	140
2009	9.8	2	6	34.2	108	160	300
2010	15	6	6	180	293	500	800
2011	10	5	5	680	2000	2700	3500
Total	82.5	48	47.5	920	2402	3500	

Rural.: Rural Electrification

Com. & Ind.: Communication and Industry Sectors

BIPV: PV Building Projects

LS-PV: Large Scale PV Power Plants

LS-PV Installation in China (2011)

2011 LS-PV Installations in Province Level of China

N	Province	2011 New Installed		2011 Cumulative	
		Capacity (MWp)	Projects	Capacity (MWp)	Projects
1	Qinghai	1030	32	1160	38
2	Ningxia	380	27	430	32
3	Gansu	136	11	166	12
4	Hebei	5	1	50	4
5	Jiangsu	76	5	118	6
6	Inner-Mongolia	150	8	170	9
7	Shandong	53	4	78	6
8	Tibet	60	6	70	7
9	Xinjiang	60	3	60	3
10	Hainan	30	1	50	2
11	Yunnan	20	1	40	3
	Total	2000	98	2392	122

2012: Original plan to build 3GW, in fact is only about 2GW.

Government Sponsored Distribution PV

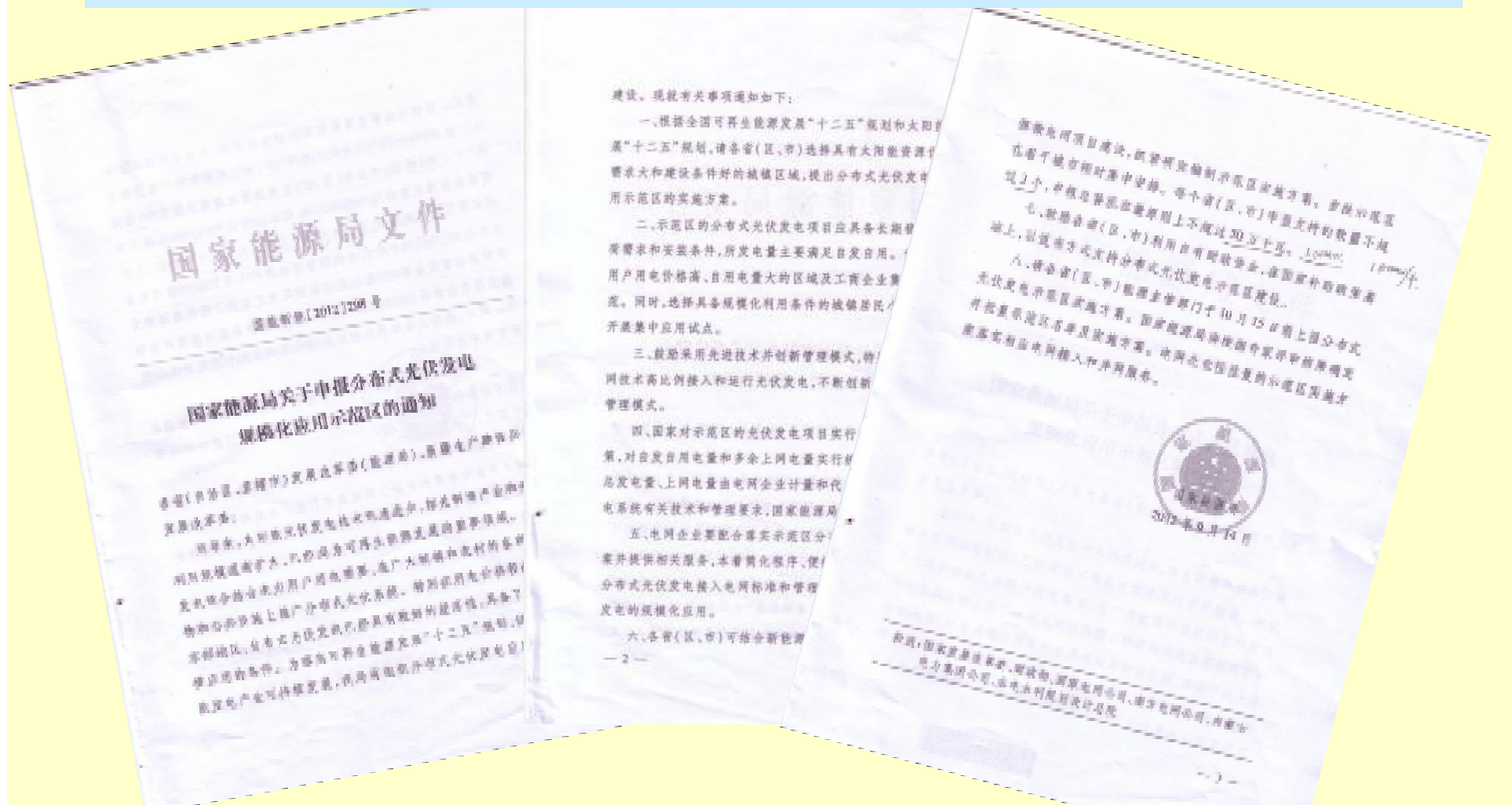
PV Building Project		
Phases	Approved Capacity	Subsidy to Capital (Yuan/W)
1st phase, 2009	111 projects, 91MW	BIPV 20, BAPV 15
2nd Phase, 2010	99 projects, 90.2MW	BIPV 17, BAPV 13
3rd phase, 2011	106 projects, 120MW	BIPV 12元/W
4th phase, 2012	300MW	BIPV 9, BAPV 7.5
Total (till 2012)	About 600MW	
Financial Source	Special Fund for Renewable Energy	
Golden Sun Demonstration		
Phases	Approved Capacity	Subsidy to Capital (Yuan/W)
1st Phase 2009	98 projects, 201MW	PV Building 14.5, off-grid 20
2nd Phase 2010	50 projects, 272MW	PV Building 11.5, off-grid 16
3rd Phase 2011	140 projects, 690MW	C-Si 9.0, a-Si 8.5
4th Phase 2012	167 projects, 1709MW (1GW)	PV Building 5.5, off-grid >7.0
Total (till 2012)	2100MW	
Financial Source	Special Fund for Renewable Energy	

By the end of 2011, distribution PV is 920MW and additional installation in 2012 is about 2GW, totally the cumulative distributed PV is nearly 3GW by the end of 2012.

50-70% of capital investment will be subsidized by MOF and allowing self consumption to balance the left cost.

National Energy Administration (NEA) issued the document to start the largest PV project in China in following few years : **“PV Distribution Generation Scaled-up Program”** : 500MW PV in each province and total about **15GW** will be installed 2013-2015.

Encourage **“Self Consumption”** and give fixed subsidy to the retail price.



国家能源局文件

国能新能[2012]194号

国家能源局关于印发太阳能发电发展 “十二五”规划的通知

各省、自治区、直辖市、新疆生产建设兵团发展改革委(能源局),
国家电网公司、南方电网公司,各有关能源企业,水电水利规划总
院,各可再生能源学会、协会:

为促进太阳能发电产业持续健康发展,国家能源局根据《可
再生能源发展“十二五”规划》,组织编制了《太阳能发电发展“十
二五”规划》,现印发你们,并就有关事项通知如下:

一、加强规划指导,优化建设布局。各地能源主管部门根据本
规划要求,完善本地区太阳能发电规划目标、布局 and 开发时序,有
序推进太阳能发电项目建设。

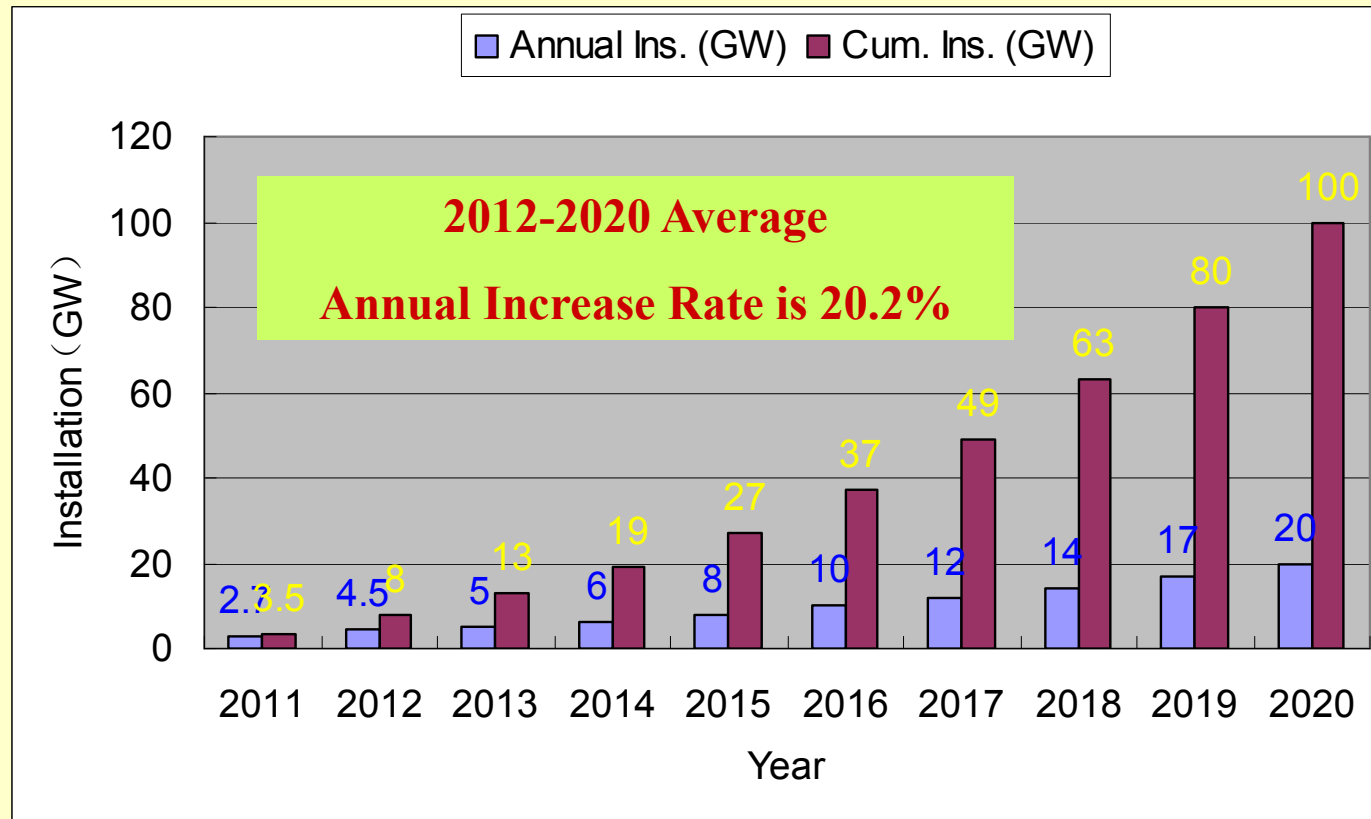
二、立足就地消纳,优先分散利用。太阳能发电项目开发要综
合考虑太阳能资源、承载物(或土地)资源及并网运行条件等,所

The 12th 5-year Plan (2011-2015) for Solar Power Generation

By NEA

- 1、Rural Electrification for Un-electrified people;
- 2、100 New Energy Cities;
- 3、200 Green-Energy Demonstration Counties;
- 4、10GW PV for DG (Distribution Generation);
- 5、10GW for LS-PV.

Domestic PV Market Forecast



Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Annual Ins. (GW)	2.7	4.5	5	6	8	10	12	14	17	20
Cum. Ins. (GW)	3.5	8	13	19	27	37	49	63	80	100

Problems faced by LS-PV

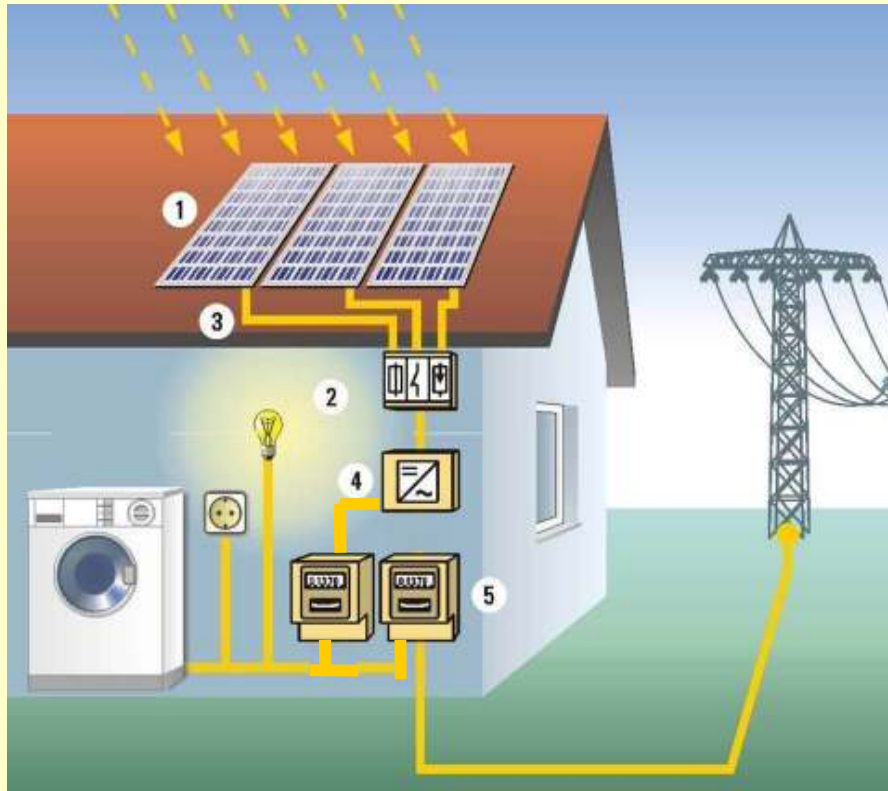
- **Difficulty in Grid Connection:** Waiting for approval, additional payment of transformer station, cut off by grid Co.. Due to the capacity of transmission lines;
- **Land Tax charged by local government:** 2-6 Yuan/m² per year; 10MW project, more than 3 million Yuan (20 years);
- **Subsidy Money Delayed:** Only received the whole-sell basic tariff (0.35 Yuan/kWh).

The most Important issue is the coordination between local government and grid company.

Problems faced by distribution PV

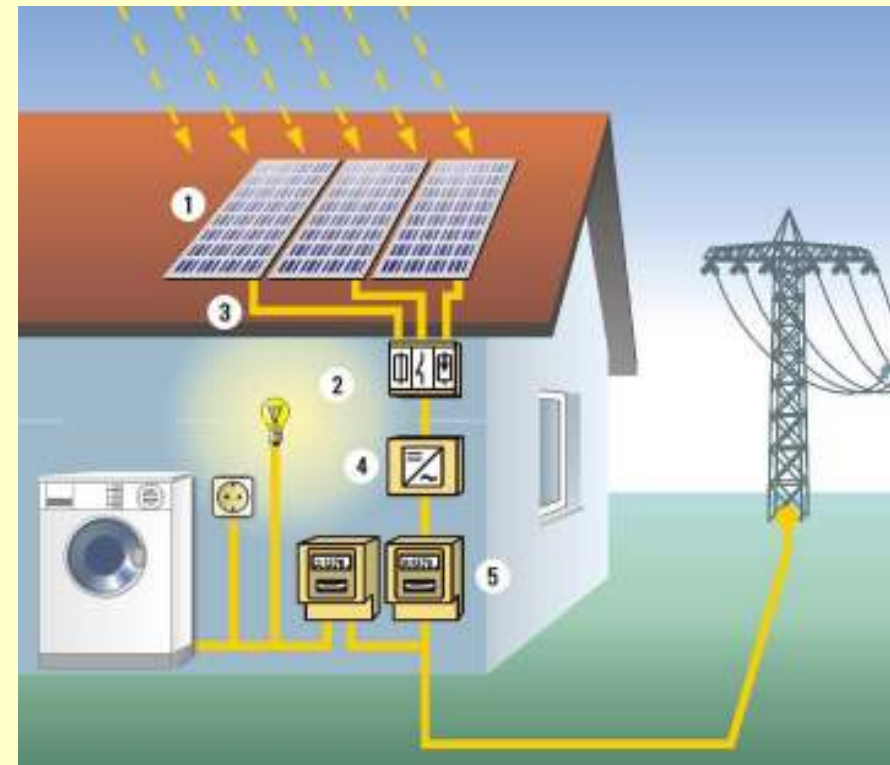
- **Difficulty in User-side grid connection :**
“Self-Consumption” will reduce the revenue of grid Co. ;
- **Difficulty in agreement between PV developer and building owner:** There is no standard rules for this kind business;
- **Difficulty in quality control for “Golden Sun Demonstrations” :** Due to capital subsidy;
- **Various business models.**

A little bit difference in grid connection will bring big difference in project management.



“Self-consumption”: Subsidy to the retail price:

PV output and load profile must match each other; the user type or building type will effect the income; PV developers dislike the way.



“Feed-in Tariff”: Total sell to grid

Don't need match with load, no relative with retail price, PV developers are happy to invest.

More subsidy required from Gov..



中华人民共和国财政部

Ministry of Finance of the People's Republic of China

关于印发《可再生能源电价附加补助资金管理暂行办法》的通知

财建[2012]102号

各省、自治区、直辖市财政厅（局）、发展改革委、能源局、物价局，新疆生产建设兵团财务局、发展改革委、能源主管部门、价格主管部门，国家电网公司、中国南方电网有限责任公司、内蒙古自治区电力有限责任公司：

为促进可再生能源开发利用，规范可再生能源电价附加资金管理，提高资金使用效率，根据《中华人民共和国可再生能源法》和《财政部 国家发展改革委 国家能源局关于印发〈可再生能源发展基金征收使用管理暂行办法〉的通知》（财综〔2011〕115号），财政部、国家发展改革委、国家能源局共同制定了《可再生能源电价附加补助资金管理暂行办法》，现印发给你们，请遵照执行。

附件：可再生能源电价附加补助资金管理暂行办法

财政部 国家发展改革委 国家能源局

二〇一二年三月十四日

附件：

可再生能源电价附加补助资金管理暂行办法

The problem of **delay** of subsidy money will be **solved**.

RE surcharge (20 billion per year) and the RE special fund now get together to be managed by MOF. Once the subsidy money is not enough, MOF will fill the gap.

Mr. Liu Zhenya' s 6-words: Welcome, Support and Service

国家电网公司文件

国家电网办〔2012〕1560号

国家电网公司关于印发分布式光伏发电 并网方面相关意见和规定的通知

总部各部门、各分部，公司各单位：

为促进和支持分布式光伏发电持续健康发展，公司编制了《关于做好分布式光伏发电并网服务工作的意见（暂行）》、《关于促进分布式光伏发电并网管理工作的意见（暂行）》和《分布式光伏发电接入配电网相关技术规定（暂行）》，现予以印发，请认真贯彻落实。

国家电网公司

2012年10月26日

（此件发至收文单位所属各级单位）

Key Points:

- 1、Support PV projects less than 6MW;
- 2、Grid Co. will provide service of inter-connection design;
- 3、All distribution PV no need to pay backup fee;
- 4、Encourage self-consumption and total purchase the excess PV electricity;
- 5、All services provided by grid Co. , inter-connection design, project evaluation, commissioning test, are all free of charge.

Difficulties and Solutions?

Difficulties:

- Over-capacity of PV
- Low-price competition
- Broken of cash-flow and all losing money
- Anti-dumping
- A lot of problems.

Solutions:

- Domestic Market expansion ;
- Shake-out and encourage re-combination ;
- Very difficult to shake-out due to equalization in quality ;
- Government project start soon, money is ready, no problems in grid-connection, **enough? Far away!**
- How to shake out? **Business Model? Cash-flow for manufacturers? Financing barrier for project developers? Quality control!**



谢谢!

Thank You Very Much!

