

# PRISMARK PRESENTATION

PREPARED FOR:

IPC APEX 2011

## SOLAR PV: CHALLENGES AND OPPORTUNITIES FOR THE ELECTRONICS ASSEMBLY INDUSTRY

April 2011

## SOLAR PV BUSINESS OUTLOOK

PREPARED BY:

J. PHILIP PLONSKI, MANAGING PARTNER

PRISMARK PARTNERS LLC

130 Main Street Cold Spring Harbor NY 11724

Tel: 631 367-9187 Fax: 631 367-9223

e-mail: [partners@prismark.com](mailto:partners@prismark.com)



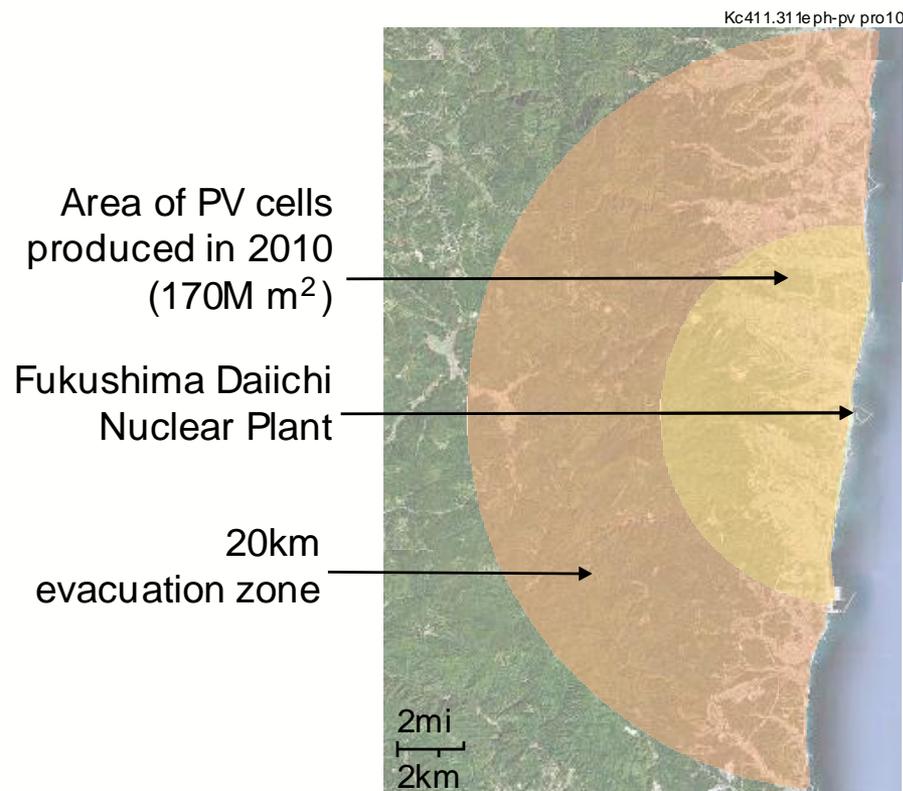


## PV PRODUCTION 2010

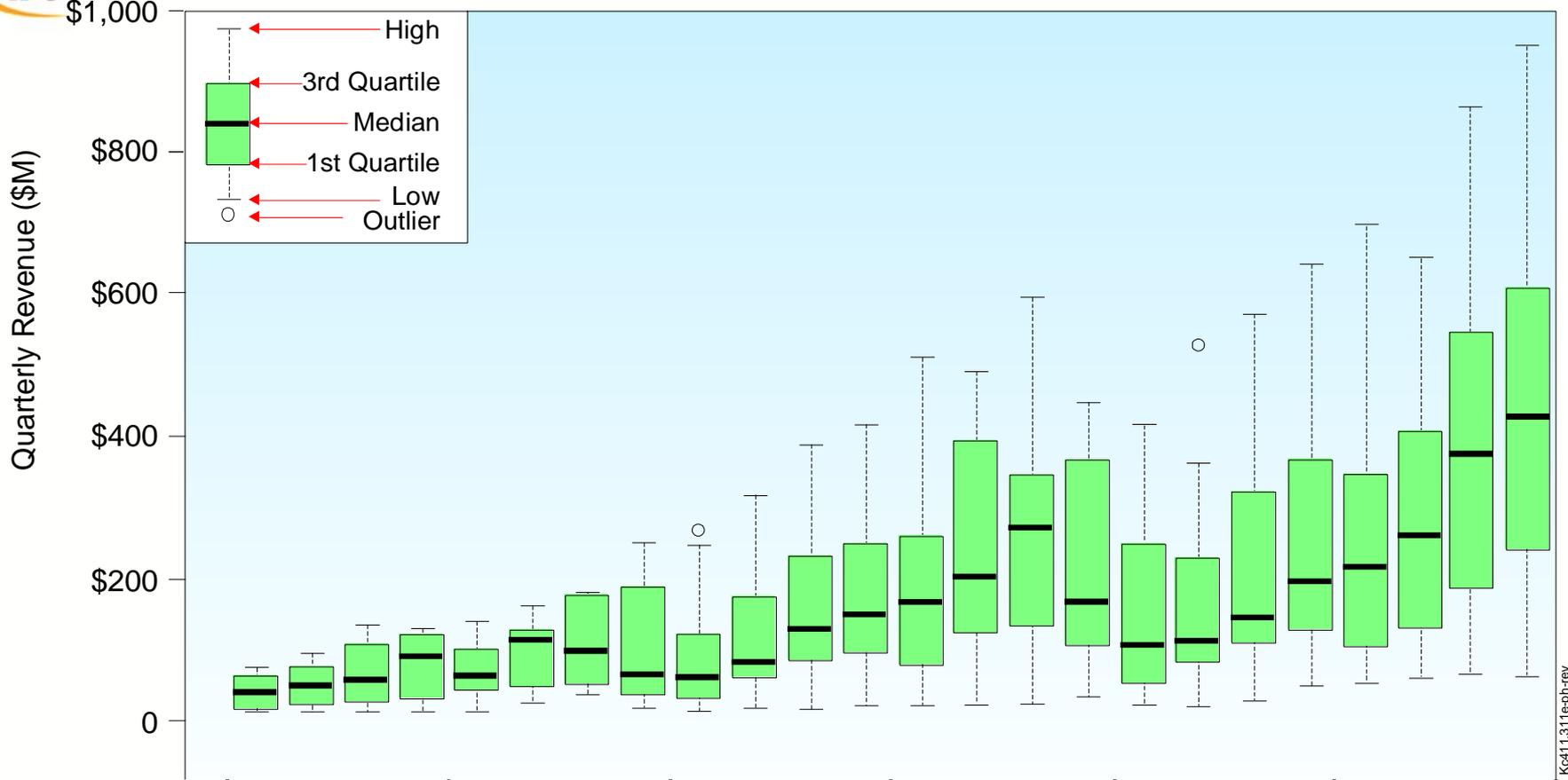
- 2010 turned out to be an unexpectedly strong year: > 130% growth in both cell production and installations over 2009
- 24GWp cell production
- All leading suppliers are expanding production capacities at a high rate
- Differentiated, high-efficiency PV cell products are being introduced by all leading suppliers
- CIGS thin-film modules are progressing toward high-volume production, with efficiencies approaching that of c-Si modules
- Thin-film technologies were unable to gain further production share over 2009, due to greater difficulty in expanding manufacturing capacities
- Production is now clearly dominated by Asia, with Europe and Japan continuing to lose importance
- Module price reductions and new incentive programs are leading to greater geographic diversity in installations
- PV installation market is becoming more robust—no longer completely dependent on Germany

## PV PRODUCTION 2010

- 24GWp of PV cells
- At 15% capacity factor, these will produce about 31Bn kWh per year
- For comparison: a nuclear plant rated at 4.7GW and 85% capacity factor produces about 34Bn kWh per year

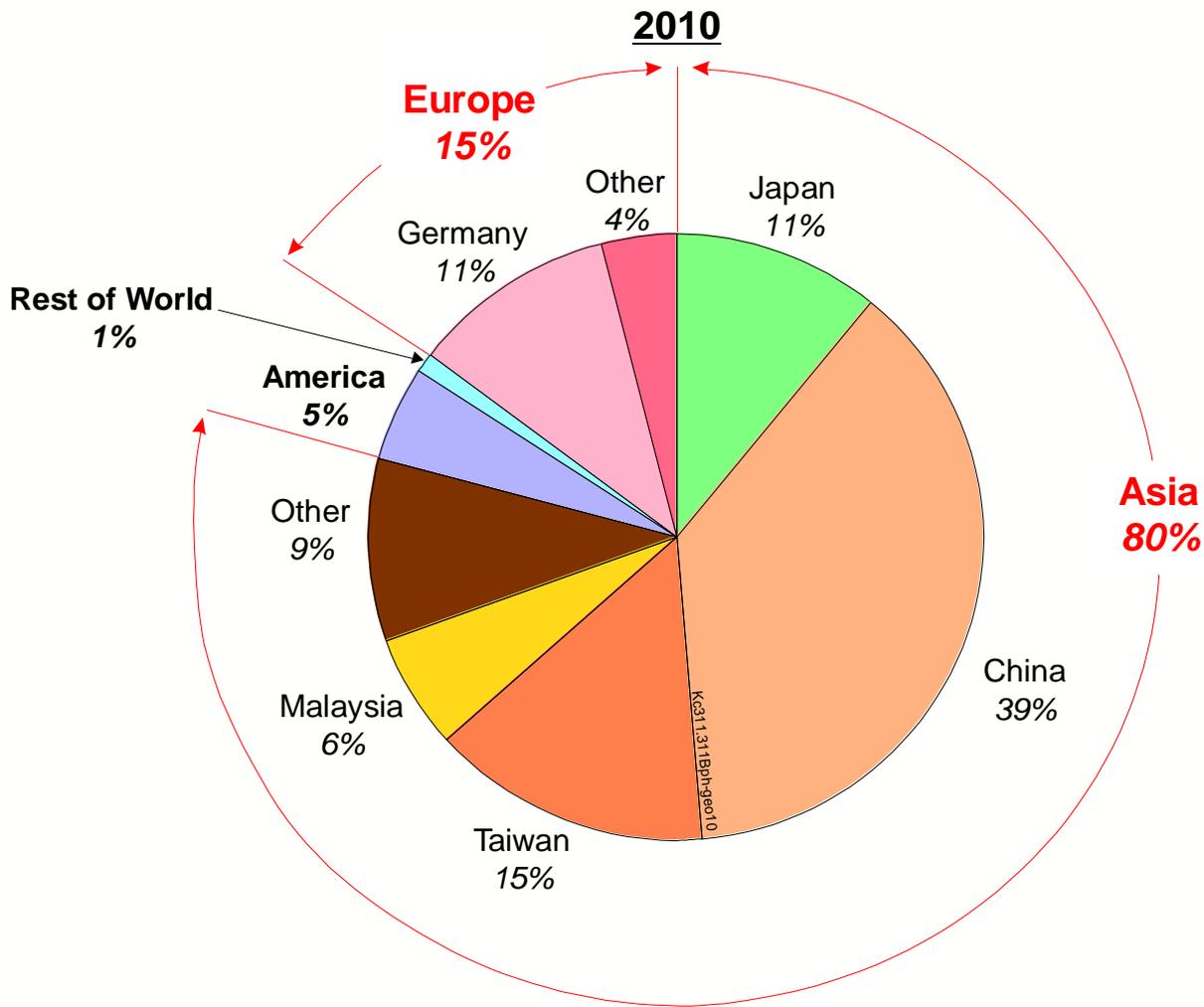


# PV COMPANY QUARTERLY REVENUE



Cumulative \$Bn	0.3	0.4	0.5	0.7	0.6	0.8	1.0	1.6	1.8	2.6	3.3	3.9	4.6	5.9	6.5	5.2	3.5	4.2	5.5	7.0	6.4	7.6	9.8	11.3
Mean Revenue \$M	40	49	65	73	70	94	110	99	89	124	157	187	192	244	269	219	147	168	229	278	258	302	391	453
Sample Size	8	8	8	9	9	9	9	16	20	21	21	21	24	24	24	24	24	25	25	25	25	25	25	25
	Q1	Q2	Q3	Q4																				
	2005				2006				2007				2008				2009				2010			

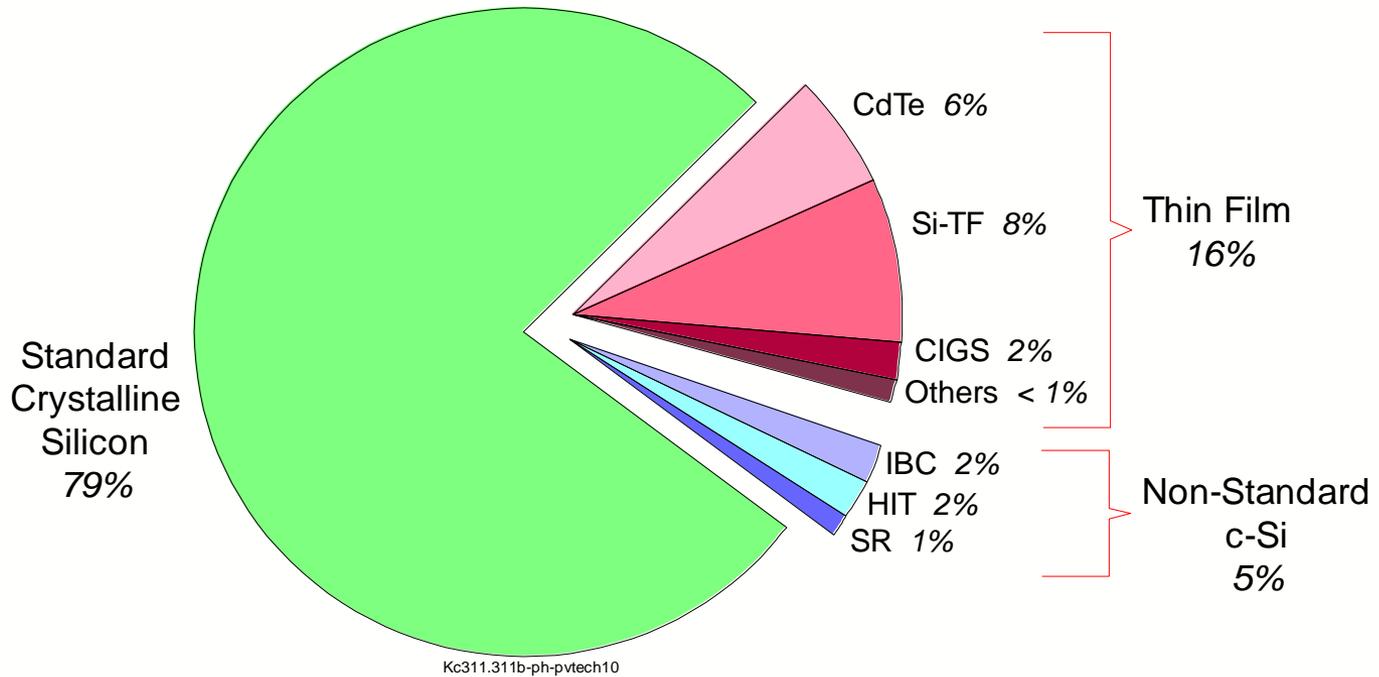
# PV CELL PRODUCTION: GEOGRAPHIC DISTRIBUTION



**TOTAL: 24GWp**

# PV TECHNOLOGY SHARES

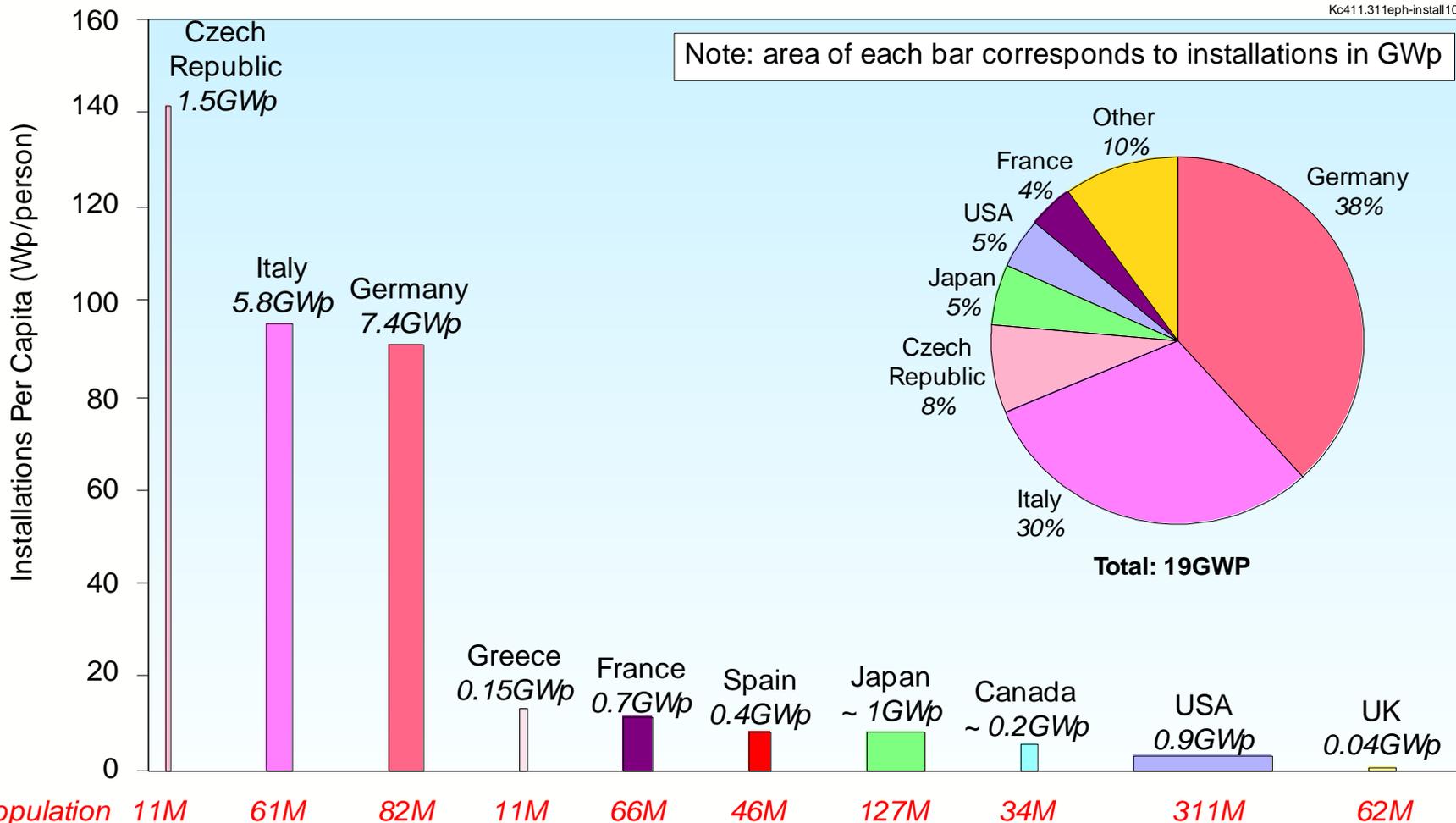
2010



**TOTAL: 24GWp**

# PV INSTALLATIONS 2010

Kc411.311eph-install10



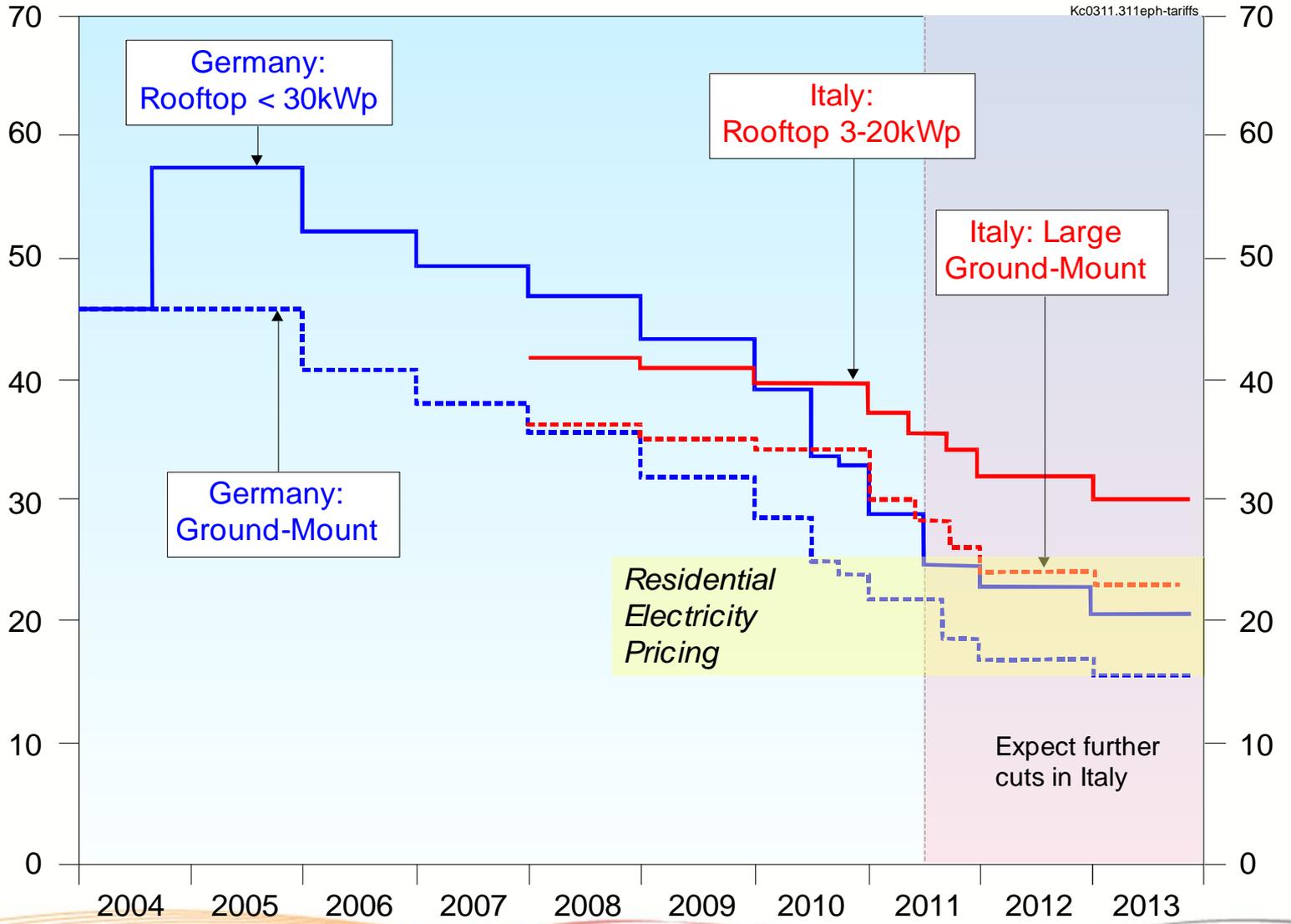
Data Sources: Regulatory Agencies,  
PV Industry Associations,  
Prismark Estimates

## PV TRENDS FOR 2011 – DEMAND

- PV market still depends on subsidies
- Incentive reductions or market caps
  - Germany
  - Italy
  - Czech Republic
  - France
  - Spain
- Potential for market growth
  - USA
  - Japan
  - China
- Demand expectation
  - 17GWp baseline
  - 24GWp optimistic



# PV FEED-IN TARIFFS



## PV TRENDS FOR 2011 – SUPPLY

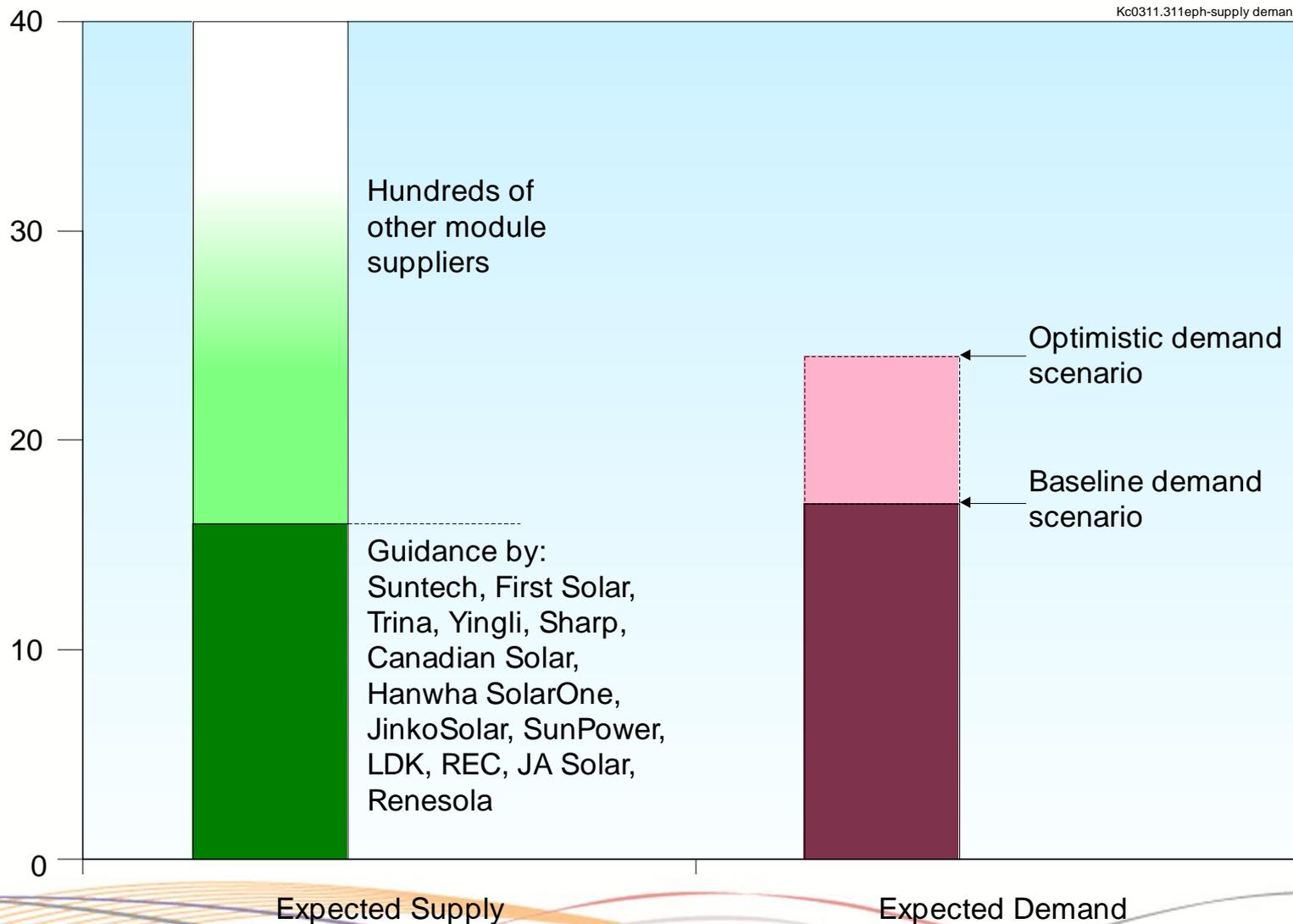
- Cell manufacturing capacity
  - 40GWp/year at beginning of 2011
  - Expansion plans to about 60GWp by year-end
- Manufacturing capacity far exceeds expected demand
- Similar to the situation after Spain cut incentives in 2008
- Expected impact:
  - Strong price erosion
  - Low capacity utilization
  - Delays in capacity expansions



# PV MODULE SUPPLY AND DEMAND 2011: POTENTIAL FOR SIGNIFICANT OVERSUPPLY

GWp

Kc0311.311eph-supply demand

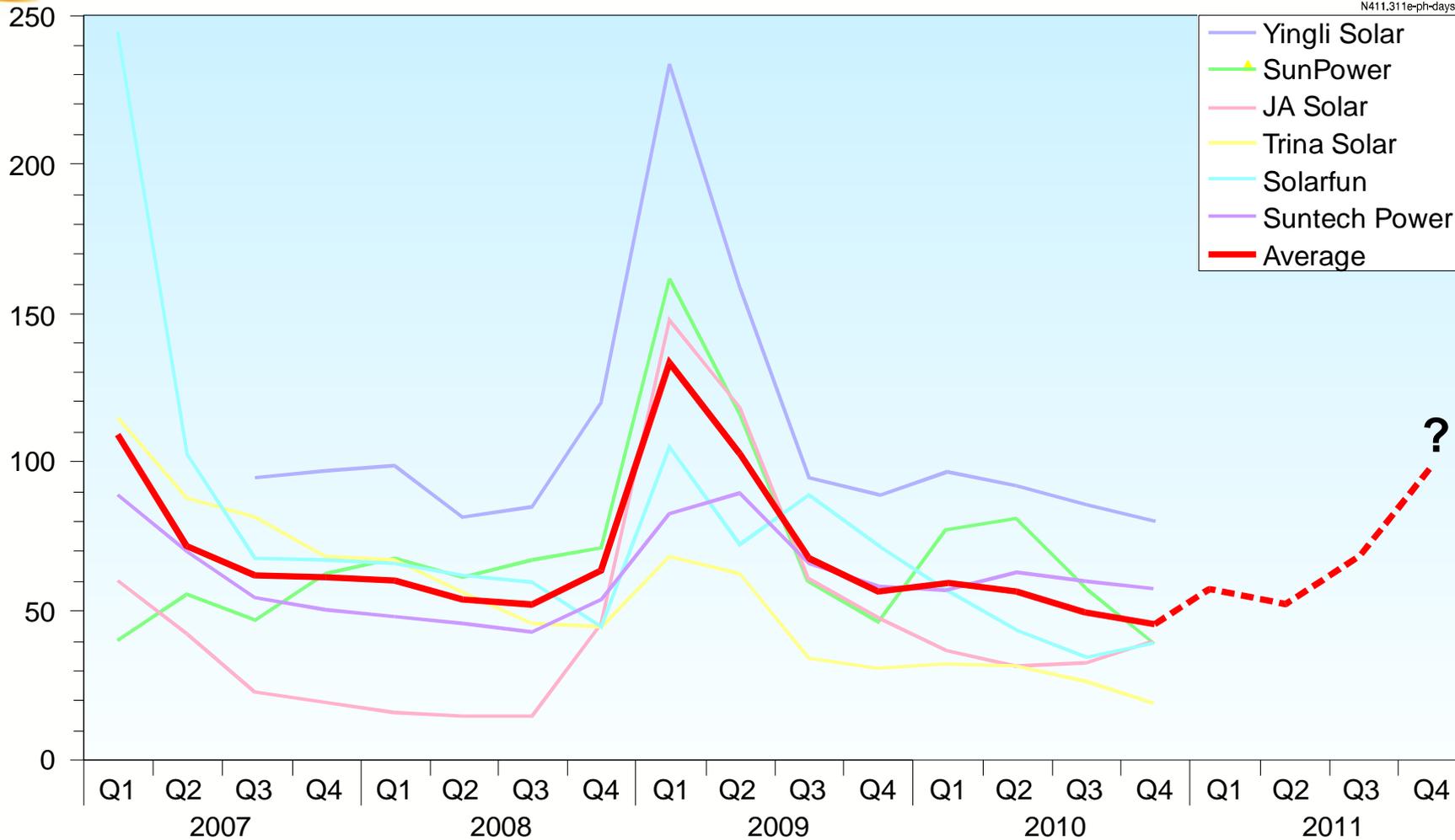


Expected Supply

Expected Demand

# DAYS IN INVENTORY

N411.311e-ph-days2



$$\text{Days in Inventory} = \frac{\text{Average Inventory}}{\text{Average COGS/Day}}$$

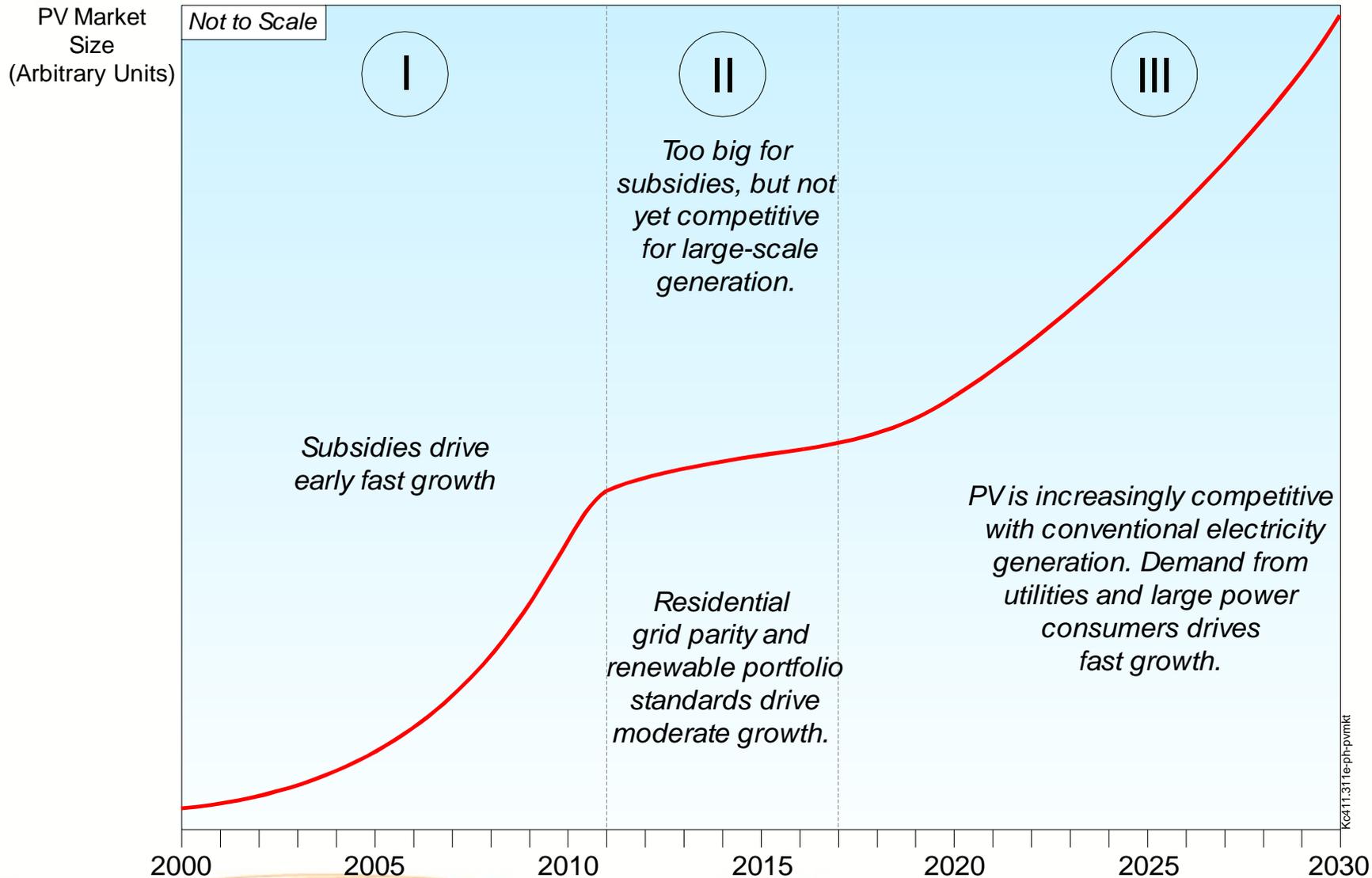


## PV OUTLOOK BEYOND 2011

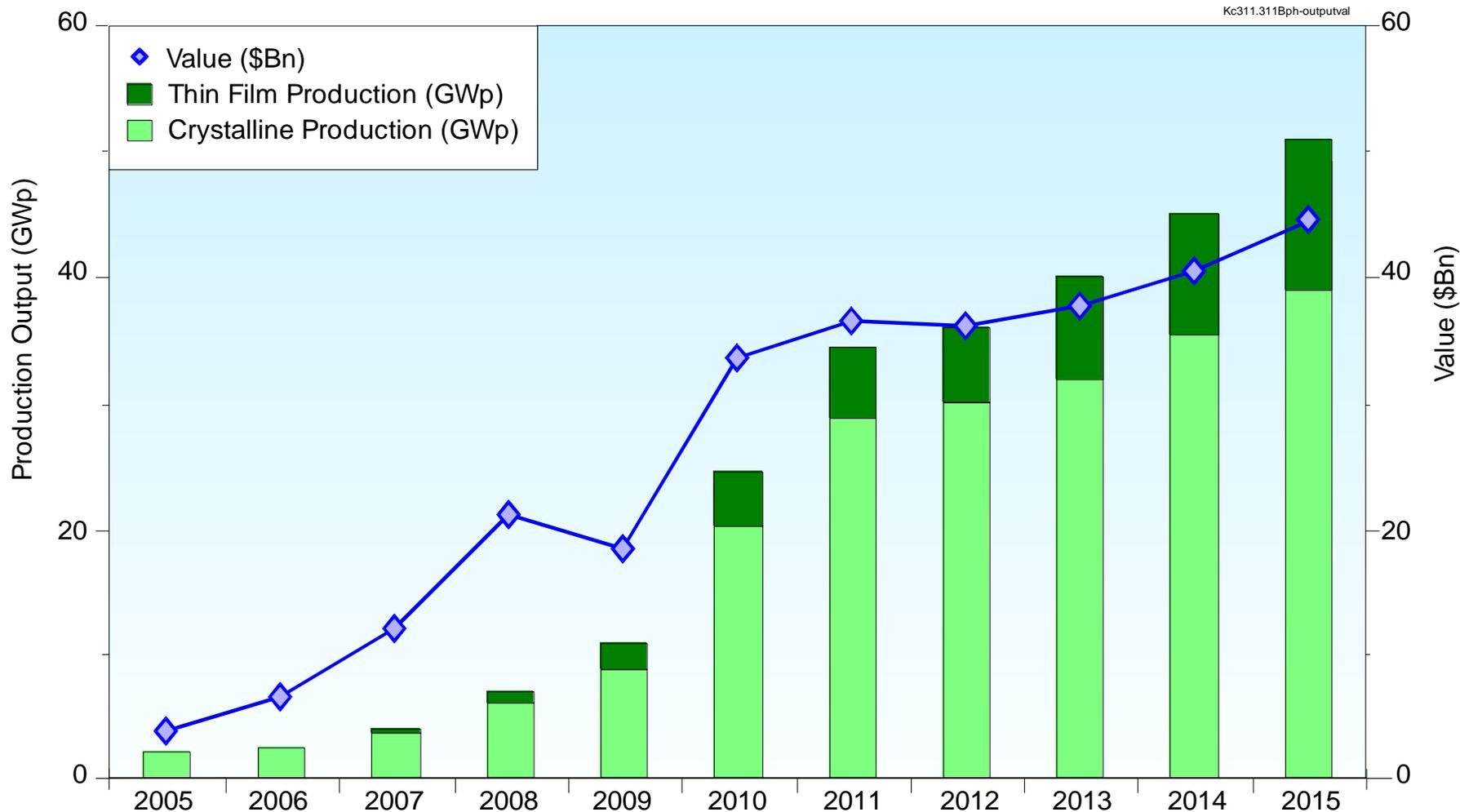
- Overproduction in 2011 may lead to high inventories in 2012
- Price pressure likely to continue
- Incentive reductions will continue
- Price erosion and incentive reduction bring the industry closer to grid parity
- By 2012 or 2013, solar and grid electricity will cost the same to German residential customers
- Fukushima impact:
  - Potentially accelerated adoption of renewables in Germany
  - China raised PV target for 2010 for 20GWp to 50GWp
  - New nuclear plants everywhere likely to face scrutiny (NIMBY)
  - This may accelerate adoption of PV
- Expect strong long-term growth to begin in a few years



# THREE PHASES OF PV MARKET GROWTH



# PV CELLS: PRODUCTION OUTPUT AND VALUE



March 2011

Note: PV cells are defined to include c-Si cells and thin-film modules



# PHOTOVOLTAICS

