
2011 Taipei Summit – ICT and Green Energy
Applications in Architecture

Energy Application, Create New
Opportunities

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中美矽晶製品股份有限公司
SINO-AMERICAN SILICON PRODUCTS INC.

Outline

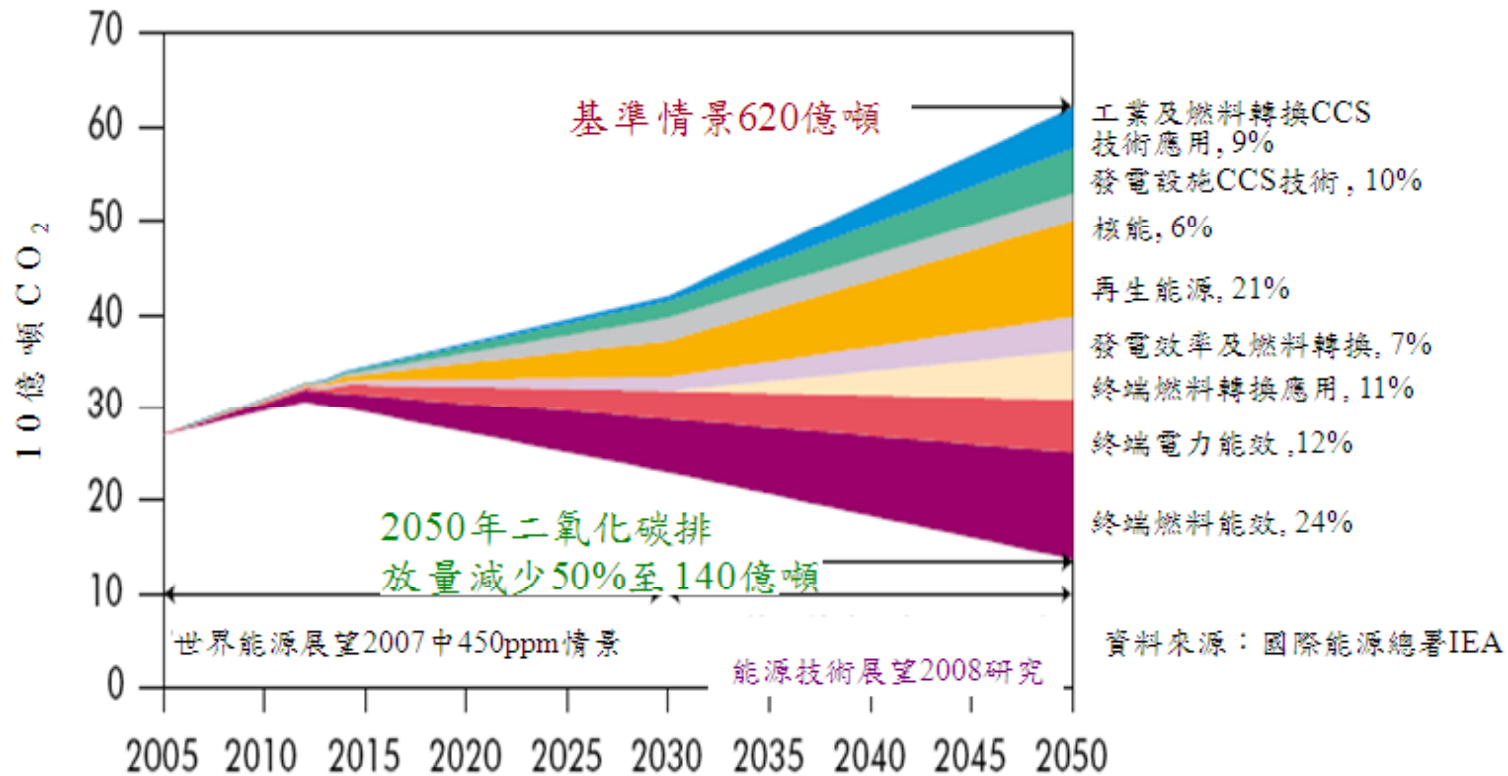
1. The importance of renewable energy
2. Development opportunities for Taiwan in green energy industry
3. The future of PV
4. Challenges and opportunities of the PV industry in 2012
5. Application of green architecture



1. The Importance of Renewable Energy

Solution of global warming (From IEA)

- ◆ 為了將全球溫度的平均升高值限制在最大 2°C 的範圍內，大氣中溫室氣體的濃度需要穩定在450ppm左右。
- ◆ 這將需要在2050年把與能源有關的二氧化碳排放量削減480億噸。

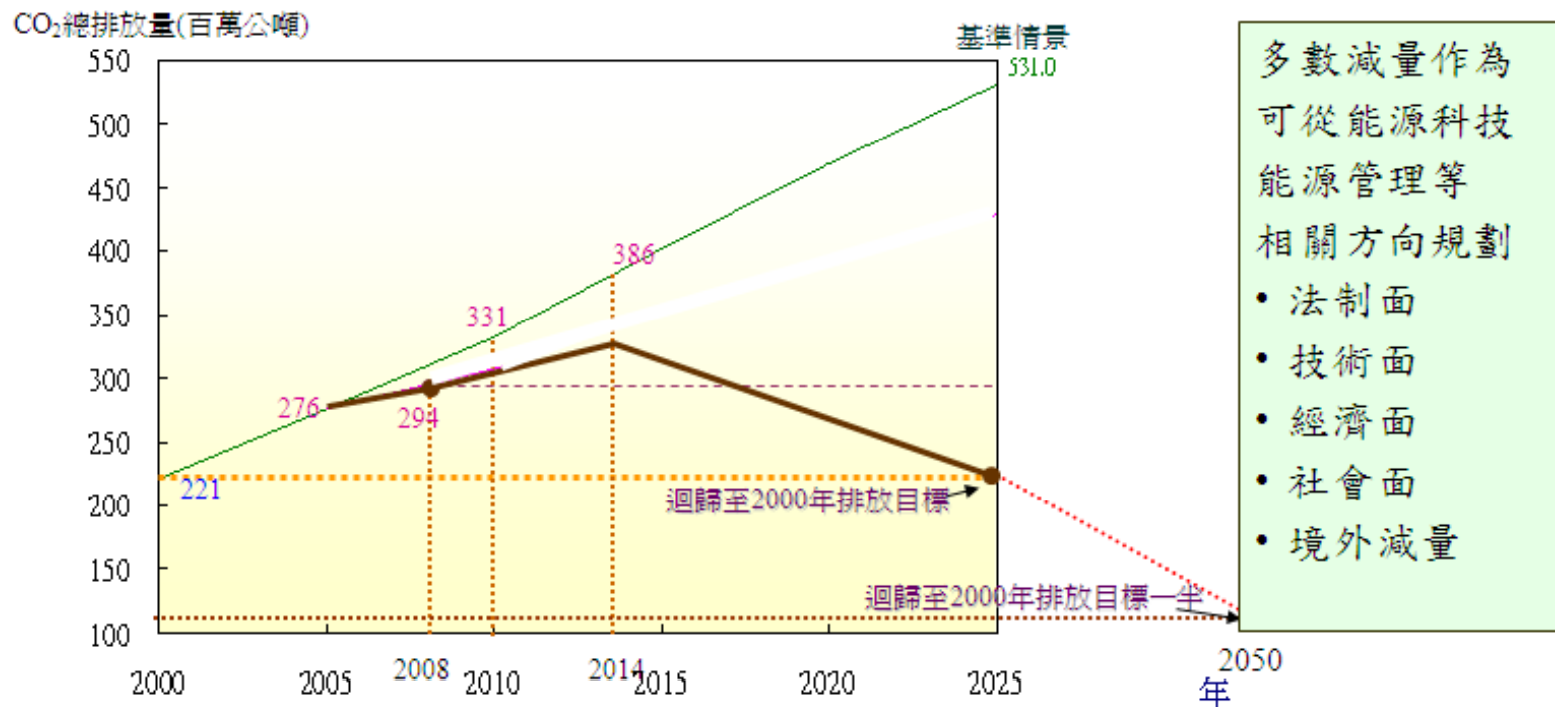


1. The Importance of Renewable Energy

Taiwan responds to the global vision of carbon reduction

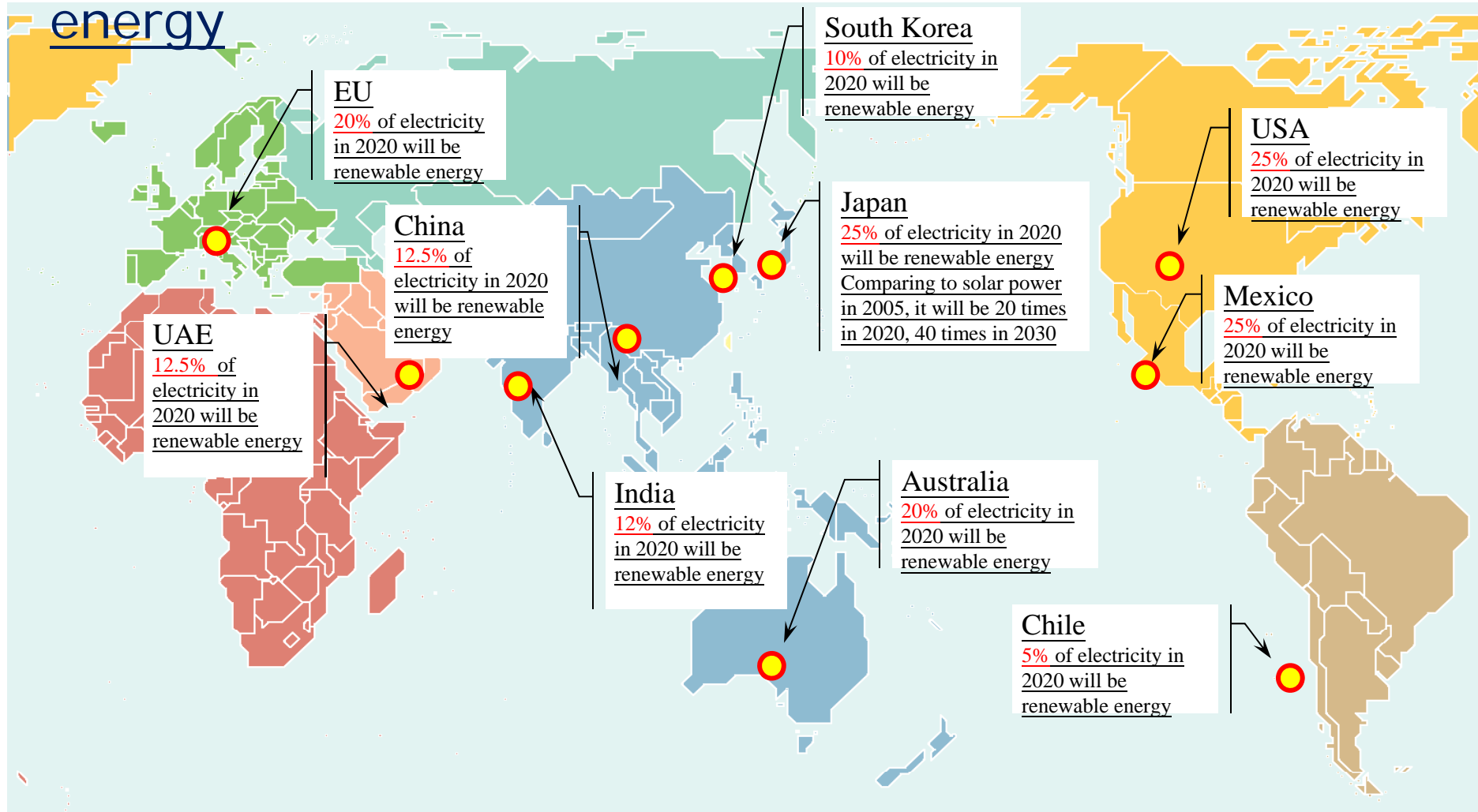
二氧化碳減量目標

- ✚ 短程：2016-2020年間排放量回歸2008年水準
- ✚ 中程：2025年排放量回歸2000年水準(→2020回歸2005)
- ✚ 長程：2050年排放量回歸2000年水準50%(國際積極型~80%)



1. The Importance of Renewable Energy

Different countries' ambition to develop renewable energy



2. Development opportunities for Taiwan in green energy industry

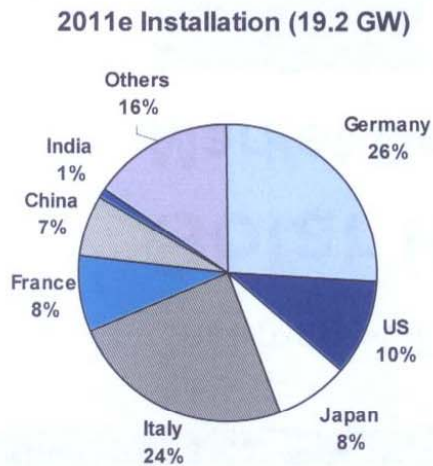
1. PV
2. LED
3. Wind Power
4. EV
5. Smart Grid



3. The future of PV

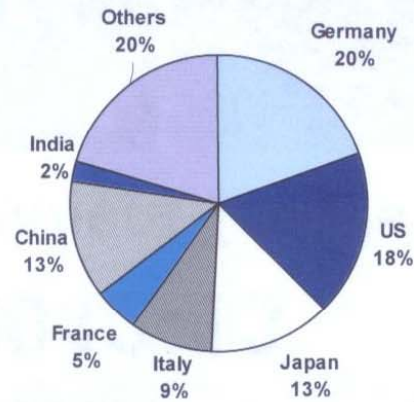
Global Market ...Increasing Breadth

European Consolidation



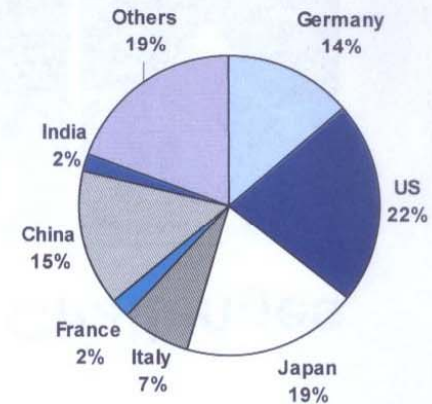
China / Japan Starts

2012e Installation (20.3 GW)



Japan / US Growth

2013e Installation (25.0 GW)

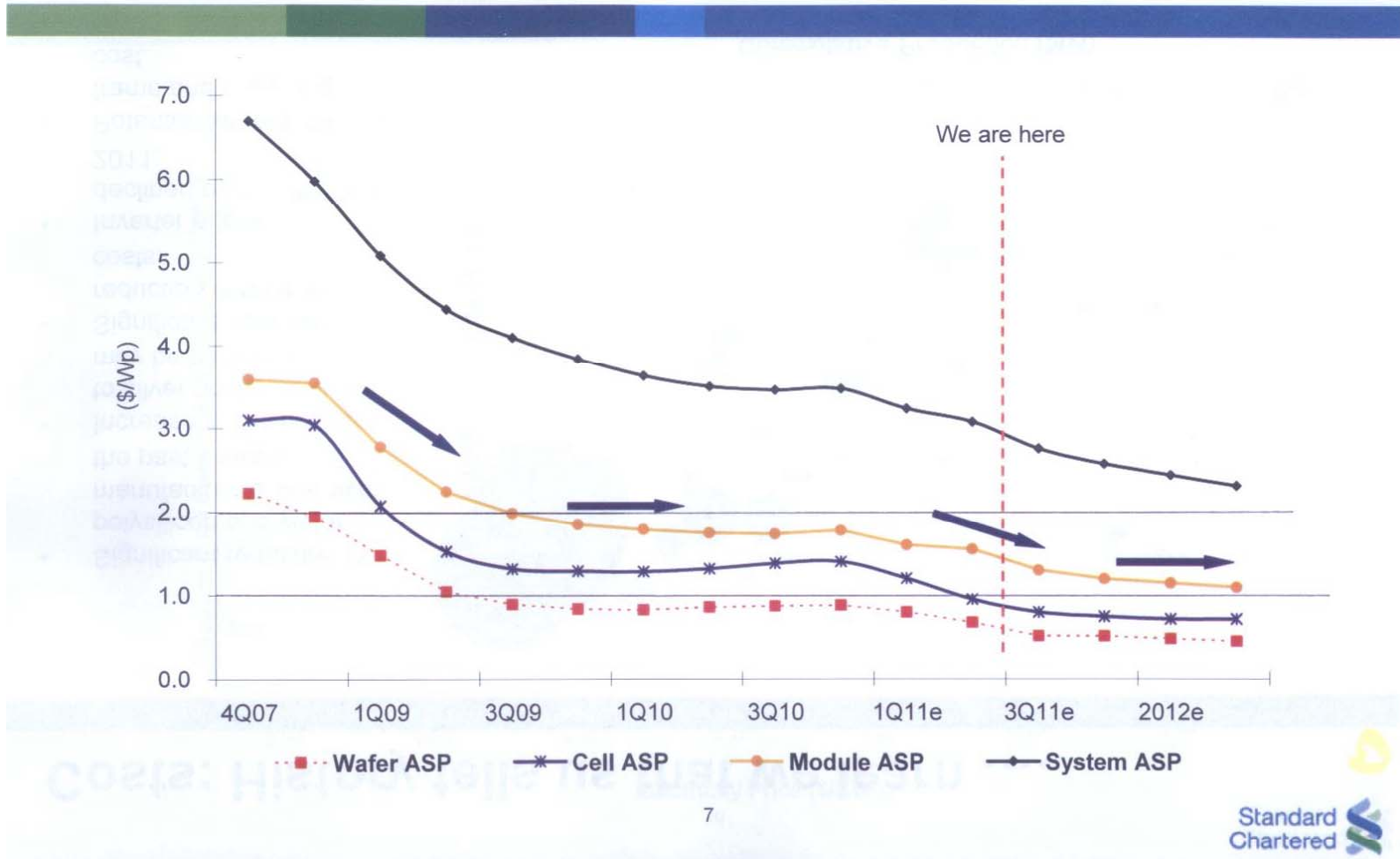


+6%

+23%

3. The future of PV

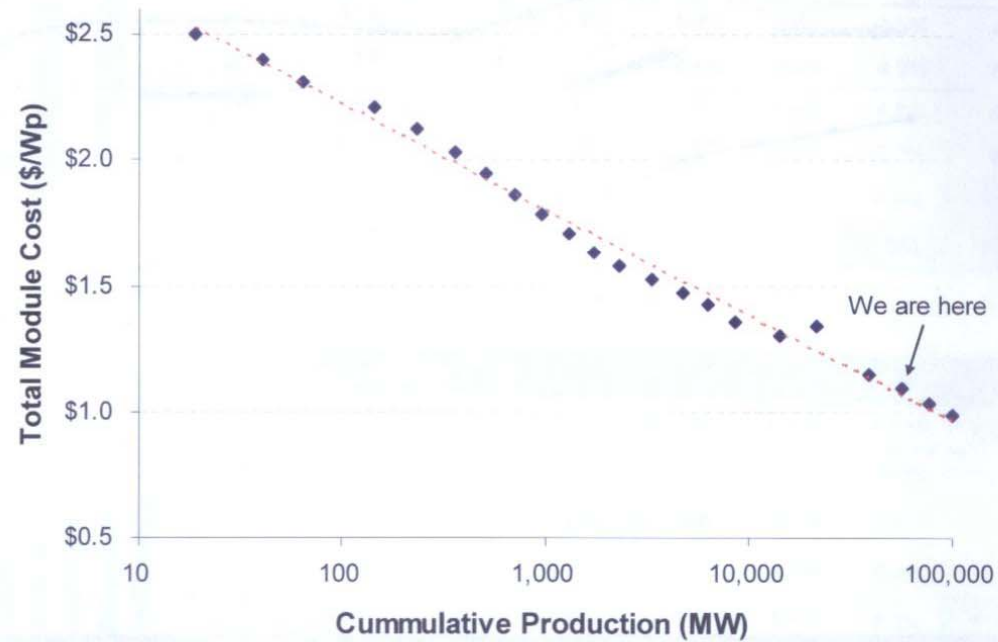
Disruptive Change in Pricing ... What Next?



3. The future of PV

Costs: History tells us that we learn

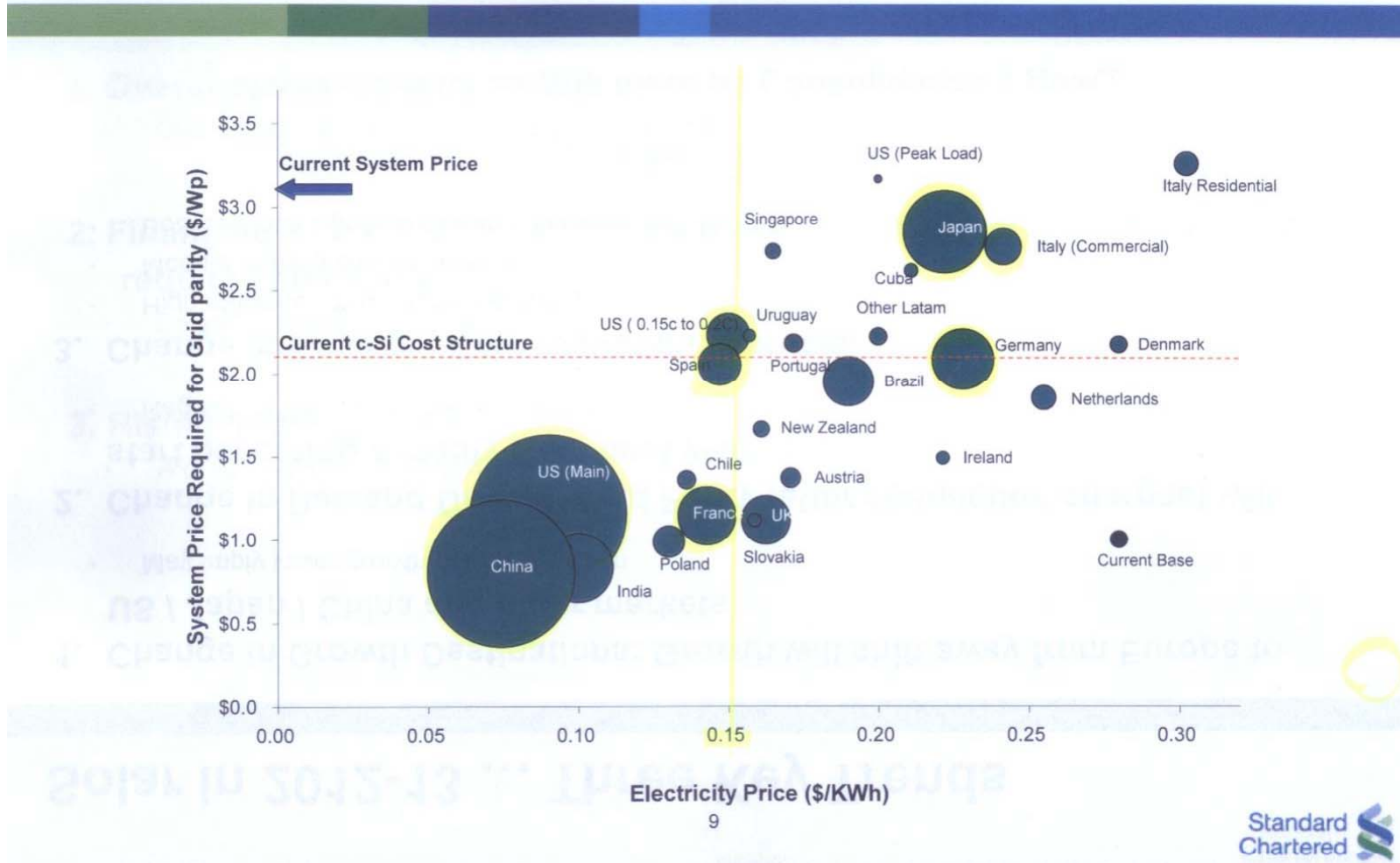
- Significant reduction in polysilicon and wafer manufacturing cost over the past 2 years.
- Increase in cell cost due to silver prices ... worst may be behind us.
- Significant potential for reduction in module costs.
- Inverter prices have declined by 10%-15% in 2011.
- Potential for reduction in frame and mounting cost.



100 GW industry by 2013 !!!

3. The future of PV

New Demand Drivers – Grid Parity Starting 2012



4. Challenges and opportunities of the PV industry in 2012

Challenges

1. European and American debt crisis in 2011, tight control of investment
2. Less and less governmental subsidy budget every year
3. Too much capacity expansion in 2012 and 2011, plus demand freeze, supply exceeds demand in 2011 and 2012, causing solar power price to hit low (module manufacturing cost → \$1.0/Wp)
4. Professional service vs vertical integration
5. Technique innovation and high conversion efficiency

Opportunities

1. Renewable energy policy is supported by different governments
2. Raw material price of supply chains is dropping, it will reach grid parity in different areas in 1-3 years
3. Governments and the industry invest in research and development, helping improve conversion efficiency and technique innovation
4. Japan restarted and reinforced its subsidy policy from 2010
5. The EU set the goal for renewable energy to take 20% in 2020, among which PV takes 12%



5. Application of green architecture

Examples

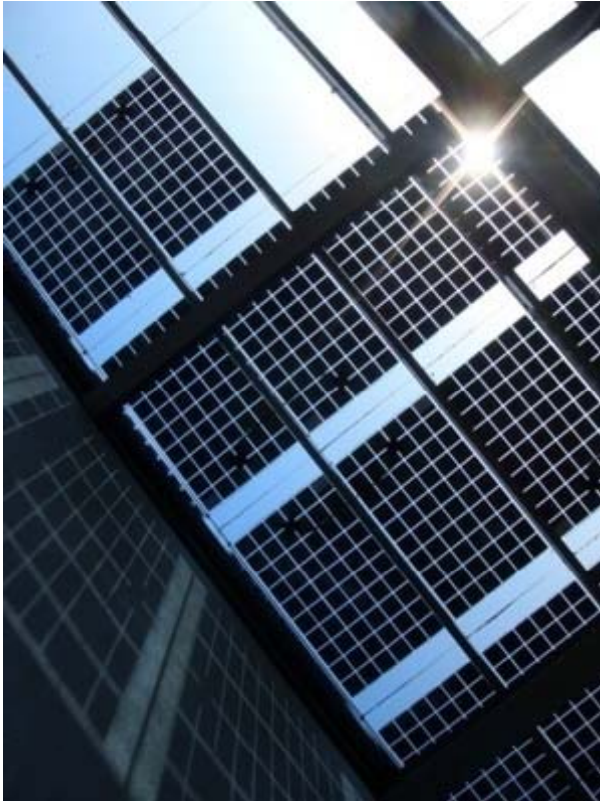
1. Taipei Public Library Beitou Branch
2. Taipei Public Library Wanhua Branch
3. Kaohsiung Main Stadium
4. Taipower South-Visitor Center
5. BIPV Curtain Wall of Tainan County Government and Solar Shield of Green City in Tainan County
6. German PV Module Factory-Solar Fabrik



1. Taipei Public Library Beitou Branch



2. Taipei Public Library Wanhua Branch



3. Kaohsiung Main Stadium



The Kaohsiung Main Stadium is built with recycled and 100% renewable construction materials except for its structure. The rooftop is built with 8844 PV panels; it can not only reach 70% of light shading effect, but also is expected to generate 1.1 million kilowatt-hours every year. It will help reduce 660 tons of CO2 emission every year.



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4. Taipower South-Visitor Center



The beautiful Crystal Garden: 50KW PV system is placed under the sun of Southern Taiwan. The light and the shadow create a heart with PV panels, integrating into the infinite blue view of Kenting.



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5. BIPV Curtain Wall of Tainan County Government and Solar Shield of Green City in Tainan County



The 24KW system generates electricity for the underground parking lot and part of the public facilities.



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6. German PV Module Factory-Solar Fabrik



- Solar Fabrik' s Freiburg factory uses 0 CO2 emission PV system to produce PV modules.



Conclusion

- The meaning of green architecture is to reinforce the mutualism of people and the nature. We should not focus on development only, it will lead to global warming and climate change.
- Besides, because concrete is widely used in Taiwan, it caused excessive removal of stones and further triggered landslide, threatening our living space.
- Green architecture aiming at environmental protection will be in the future. The blueprint of technology development which combines renewable energy will create bigger opportunities for industry development.





Thank you!!



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