The State of the PV Market
from IEA PVPS Trends Report

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51st Task 1 meeting, Brussels, 19th September 2018
Contents

• **Highlights from IEA PVPS Trends report**
  – Market & Industry

• **Issues and opportunity**
  – Chinese policy announced 31 May 2018
  – Trade conflicts

• **Summary**

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• More trends of the PV industry will be presented in the Solar Industry Forum at 13:30 on Tuesday
• G. Masson, et.al., “A Snapshot of Global PV Market”, 7DO.3.1 on Thursday
Annual market evolution

FIGURE 1: EVOLUTION OF ANNUAL PV INSTALLATIONS (GW - DC)
ASIA is leading

FIGURE 4: EVOLUTION OF REGIONAL PV INSTALLATIONS (GW - DC)
### Table 1: Top 10 Countries for Installations and Total Installed Capacity in 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Annual Installed Capacity (GW)</th>
<th>Cumulative Installed Capacity (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>53.1 GW</td>
<td>131.1 GW</td>
</tr>
<tr>
<td>2</td>
<td>USA</td>
<td>10.6 GW</td>
<td>51 GW</td>
</tr>
<tr>
<td>3</td>
<td>India</td>
<td>9.1 GW</td>
<td>49 GW</td>
</tr>
<tr>
<td>4</td>
<td>Japan</td>
<td>7.0 GW (7.5 GW)</td>
<td>42.8 GW</td>
</tr>
<tr>
<td>5</td>
<td>Turkey</td>
<td>2.6 GW</td>
<td>19.7 GW</td>
</tr>
<tr>
<td>6</td>
<td>Germany</td>
<td>1.8 GW</td>
<td>18.3 GW</td>
</tr>
<tr>
<td>7</td>
<td>Australia</td>
<td>1.3 GW</td>
<td>12.7 GW</td>
</tr>
<tr>
<td>8</td>
<td>Korea</td>
<td>1.2 GW</td>
<td>8.0 GW</td>
</tr>
<tr>
<td>9</td>
<td>UK</td>
<td>0.9 GW</td>
<td>7.2 GW</td>
</tr>
<tr>
<td>10</td>
<td>Brazil</td>
<td>0.9 GW</td>
<td>5.6 GW</td>
</tr>
</tbody>
</table>

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7EO.3.3 Koichi Sugibuchi, RTS Corpotaion
“PV 150: Towards 150GW PV in Japan”
2015 to 2017

2015-2016 GROWTH PER REGION

Market dev outside China

Market dev emerging countries

China
United States
Japan
European Union
Developed countries
India
Developing countries

SOURCE IEA PVPS & OTHERS.
PV module production and capacity

- Production: 2016: 80GW → 2017: ~105GW
- Capacity: 2016: 106GW → 2017: ~133GW
Production share by country

No1: China
No.2: Taiwan
No.3: Malaysia

No1: China
No.2: South Korea
No.3: Malaysia

Source: Trends Report 2017 (before printing)
Issues

- China 5.31 issue
  - Where excess of manufacturing capacity goes?

- Trade conflicts
  - Increase of PV module price with safe guard tariffs gives negative impacts on specific PV markets (USA and India)
Stock prices after May 31 2018

JinkoSolar Holding Co., Ltd.
NYSE: JKS
13.77 USD +0.79 (3.09%) ↑
Closed: Jul 24, 5:04 PM EDT - Disclaimer
Pre-market 13.75 -0.020 (0.15%)

Canadian Solar Inc.
NASDAQ: CSIQ
13.04 USD +0.48 (3.82%) ↑
Closed: Jul 24, 4:11 PM EDT - Disclaimer
Pre-market 12.00 -0.14 (1.04%)

GCL-Poly Energy Holdings Limited.
HKG: 3800
0.73 HKD 0.00 (0.00%)
Jul 26, 11:59 AM GMT+8 - Disclaimer

LONGi Green Energy Technology Co Ltd
SHA: 601012
15.54 CNY -0.11 (0.70%) ↓
Jul 26, 11:30 AM GMT+8 - Disclaimer

24.15 CNY May 31, 2018
New policy announced on 31\textsuperscript{st} May 2018

- NDRC and NEA and MOF announced “2018 Solar PV Power Generation Notice”
  - DG projects: 10 GW cap in 2018 (\sim 20 GW in 2017)
  - FIT reduced from June 2018
  - Utility scale target was abolished and provinces are instructed to stop projects seeking 2018 FIT

- Chinese market may shrink to 30 GW to 40 GW???
- Announce capacity expansion: +15 GW in global

\begin{center}
\begin{tikzpicture}
\begin{axis}[
    width=\textwidth,\]
\addplot coordinates {\(\text{2016: 0.98} \quad \text{2017: 0.88} \quad \text{2018/01: 0.85} \quad \text{2018/06: 0.75}\)};
\addplot coordinates {\(\text{2016: 0.8} \quad \text{2017: 0.75} \quad \text{2018/01: 0.7} \quad \text{2018/06: 0.6}\)};
\addplot coordinates {\(\text{2016: 0.42} \quad \text{2017: 0.42} \quad \text{2018/01: 0.37} \quad \text{2018/06: 0.32}\)};
\end{axis}
\end{tikzpicture}
\end{center}
Capacity, production & exported volume in 2017

- Capacity: 105.4 GW
- Production: 75.0 GW
- Domestic installed capacity: 52.6 GW
- Export: 31.5 GW

Source: China Photovoltaic Industry Association (CPIA), May 2018
Price trends

Source: PV insight, compiled by RTS
Trade conflicts over PV

There are trade conflicts related to polysilicon and PV cell/module. In addition, PV system related products are included in the safeguard measure and sanction regarding trade conflict between the USA and China in 2018. This may affect the markets around the world.

- PV cell/module manufactured in China (concluded September 3, 2018)
- PV cell/module from Taiwan and Malaysia (concluded September 3, 2018)
  *Concluded a minimum import price (MIP) with Chinese companies to be exempted from AD, CVD (concluded September 3, 2018)
- Glass for module manufactured in China

- PV products manufactured in China, Malaysia, and developing countries
- EVA for encapsulant (under research)
- Tempered glass manufactured in China (under research)
- Tempered glass manufactured in Malaysia (under research)
- Filed a complaint to WTO regarding support measures of 8 states of the USA (Washington, California, Montana, Massachusetts, Connecticut, Michigan, Delaware and Minnesota)

- Retaliatory measures against sanction towards China based on Section 301 of the Trade Act of the USA
- Polysilicon manufactured in Europe (scheduled to be concluded on October 31, 2018)
- Polysilicon manufactured in Korea

- Sanction towards China based on Section 301 of the Trade Act
- Safeguard measures towards steel and aluminum based on Section 232 of the Trade Expansion Act
- Safeguard 201 for imported PV products (enforced in 2018)
- PV cell/module manufactured in China and Malaysia (2012, enforced 2015)

Source: Materials from press release, etc., compiled by RTS Corporation
Share of major markets
Prospects of Chinese policy

A stamp issued for 19th National Congress of the Communist Party of China, in October 2017
Longterm outlook and One Belt One Road

China Renewable Energy Outlook published in 2017 proposed 1,000 GW by 2030

<table>
<thead>
<tr>
<th>Below 2 °C</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>15 %</td>
<td>22 %</td>
</tr>
<tr>
<td>Solar</td>
<td>11 %</td>
<td>15 %</td>
</tr>
<tr>
<td>Bio</td>
<td>1 %</td>
<td>2 %</td>
</tr>
<tr>
<td>RE (incl. hydro)</td>
<td>46 %</td>
<td>58 %</td>
</tr>
</tbody>
</table>

Chinese initiative: One Belt One Road creates new growth of the PV market
Lowering PV module price will accelerate growth of new markets

- International Solar Alliance proposed 1,000GW by 2030
- Softbank announced to construct 200 GW in Saudi Arabia
Summary

- Chinese policy change gives negative impacts on the global PV market in 2018
- Trade conflicts in US and India affects their markets
- Lower PV module price will increase PV competitiveness → new market will open !!
- Solar winter for upstream players but downstream sectors benefitted from lower price
- Negative impacts are short-term and growth of new markets are expected
Thank you for your kind attention!

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For further information of IEA PVPS, visit D6 booth in the exhibition.

Acknowledgement for the support of PVPS activities

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