

With the support of the PV Market Alliance

The PV Market Alliance



# APVIA Q1 2017 Market Report

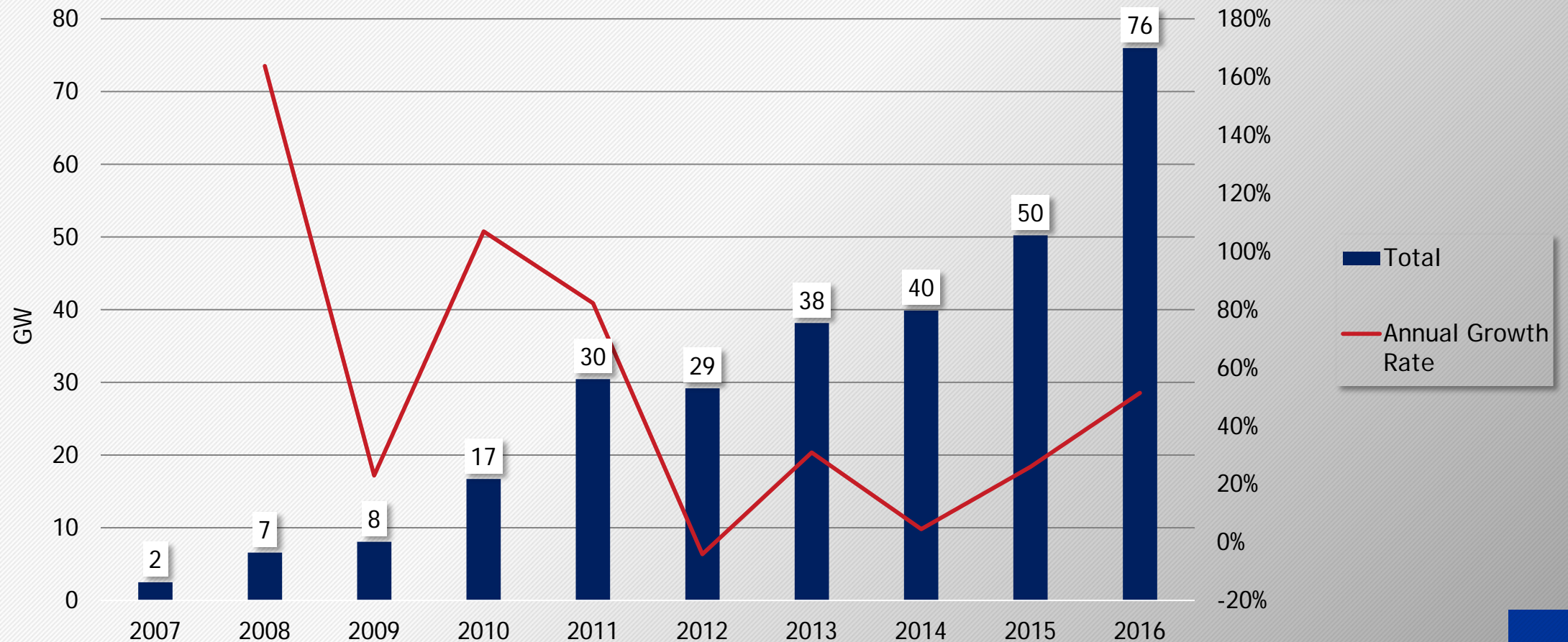


# Introduction



- This first edition of the APVIA quarterly PV market report intends to present the most important evolutions in the PV sector in the last quarter.
- This report focuses on the last quarter of 2016 and highlights the trends during the first quarter of 2017.
- It has been prepared with information from the PV Market Alliance and especially Becquerel Institute and Asia Europe Clean Energy (Solar) Advisory Co. Ltd. (AECEA)
- All information collected are valid at the time of publication but could evolve in the future according to updates in statistics. The data published do not engage the responsibility of APVIA, AECEA or Becquerel Institute and should be considered with all due caution and are for informational purposes only.

# Global PV Market Evolution

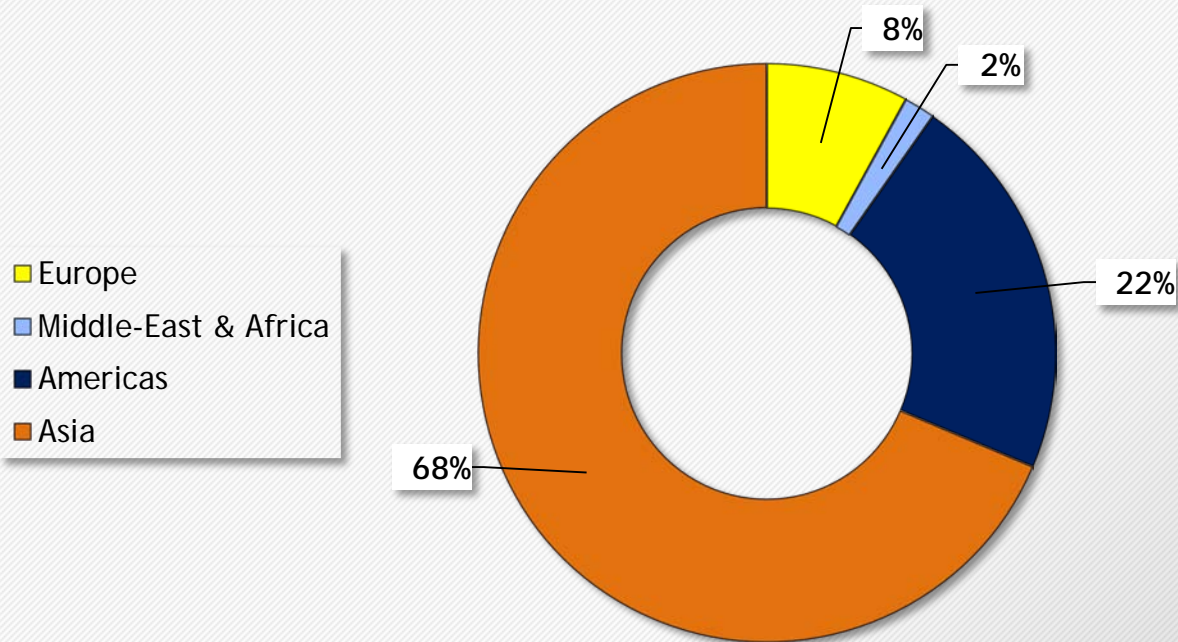


# 2016 PV Market Evolution

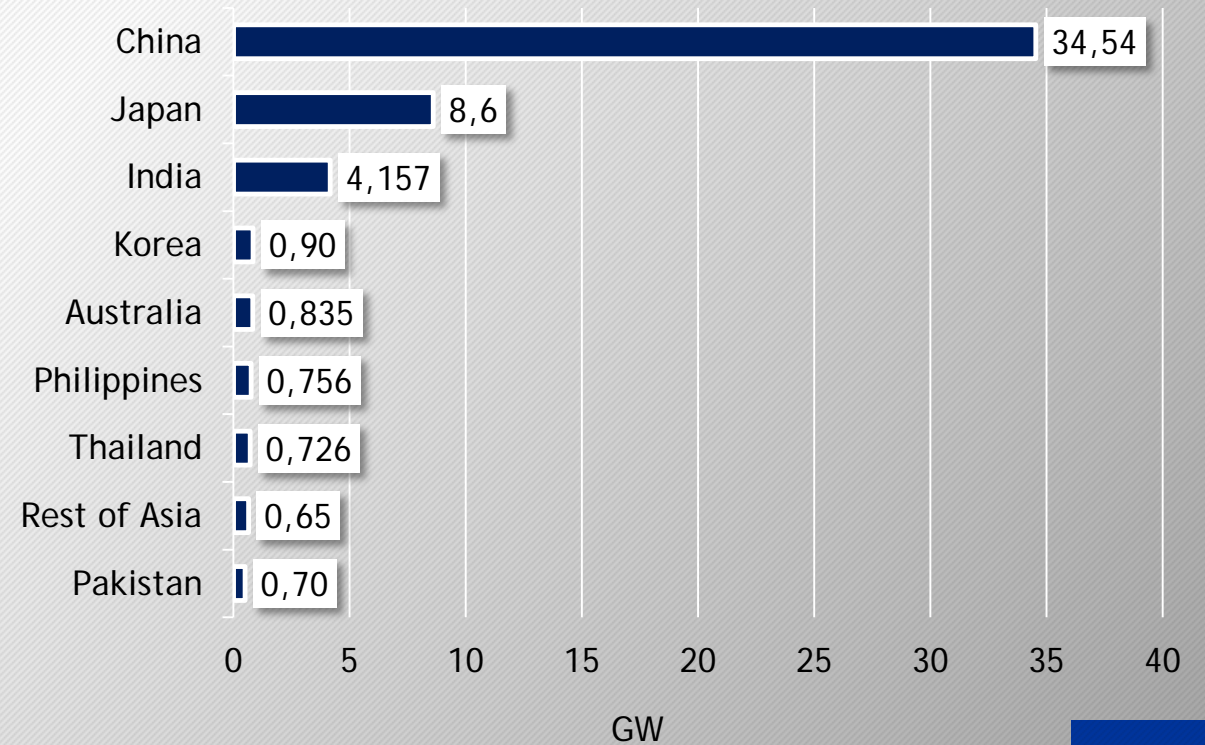
- The global PV market grew from 50 to 76 GW in 2016, a 52% growth rate.
- This growth came mainly from China, the USA and India.
- Japan and Europe experienced a slow down with little consequences on the global PV market due to the major developments in China and USA.
- The global PV market minus China grew from 35 to 41 GW in 2016, a 17% growth rate YoY.
- This major development in China and the USA shows that the global PV market can grow with enough development in key regions, even if some countries are declining.
- The total installed capacity has reached at least 303 GW at the end of the year 2016, with China at 78 GW, followed by Japan, Germany and the USA each above 40 GW. Asia is the first region ahead of Europe and the Americas with regard to the total installed PV capacity.
- 2016 can be summarized as a very positive year for the global PV market that saw the slowdowns in Japan and Europe being more than compensated by the growth in other countries. The size of the Chinese PV market making up approx. 40% of 2016 drives now the global PV market as Germany used to do from 2010 to 2012.

# 2016 Regional PV Market Split

## 2016 Regional PV Market



## Asian PV Market 2016

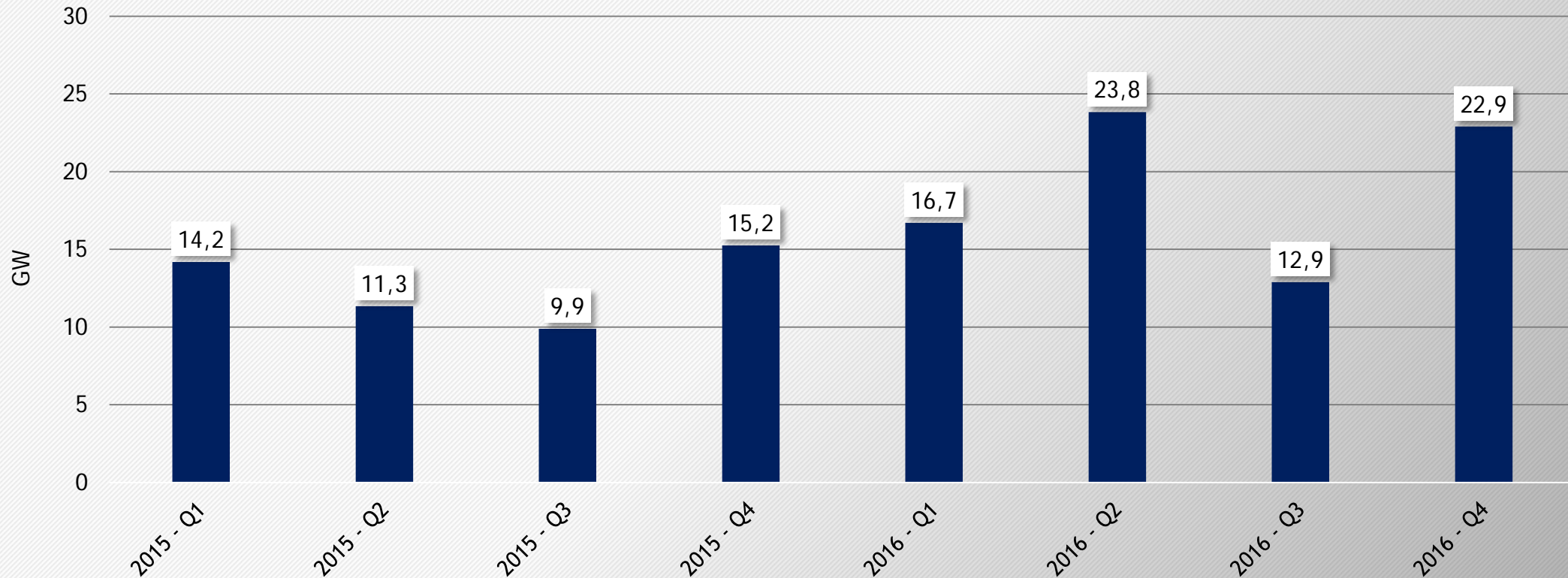


# 2016 Regional Market Split

- Today, Asia represents more than 65% of the global PV market.
- China alone with 34.5 GW, ahead of Japan with 8.6 GW and India with 4.1 GW are leading the global PV market and Asia as well. Behind these three leaders, Australia, Korea, the Philippines and Thailand have contributed significantly with installations between 725 and 900 MW. Smaller markets such as Chinese Taipei, Malaysia, Vietnam and Indonesia could significantly contribute in future. Pakistan develops fast and installed approx. 700 MW in 2016.
- The Americas region is mainly driven by the US market, but other countries are expected to contribute significantly in the coming years, such as Mexico or Brazil. Chile and Canada were the two other main markets in the Americas region in 2016.
- The European PV market declined due to the end of the boom in the UK, but other European countries stabilized or increased in 2016. UK installed around 2 GW, Germany 1.5 GW and other countries pushed the total to around 6 GW, a rather low level which confirms the loss of attractiveness of European PV markets.
- Across the Middle-East and Africa, Turkey grew and South-Africa restarted its growth with more than 500 MW installed each. The record-breaking PPAs granted in Dubai or Abu Dhabi have not yet contributed significantly to the market development in terms of actual deployment. However it is anticipated that this will change from 2017 onwards.

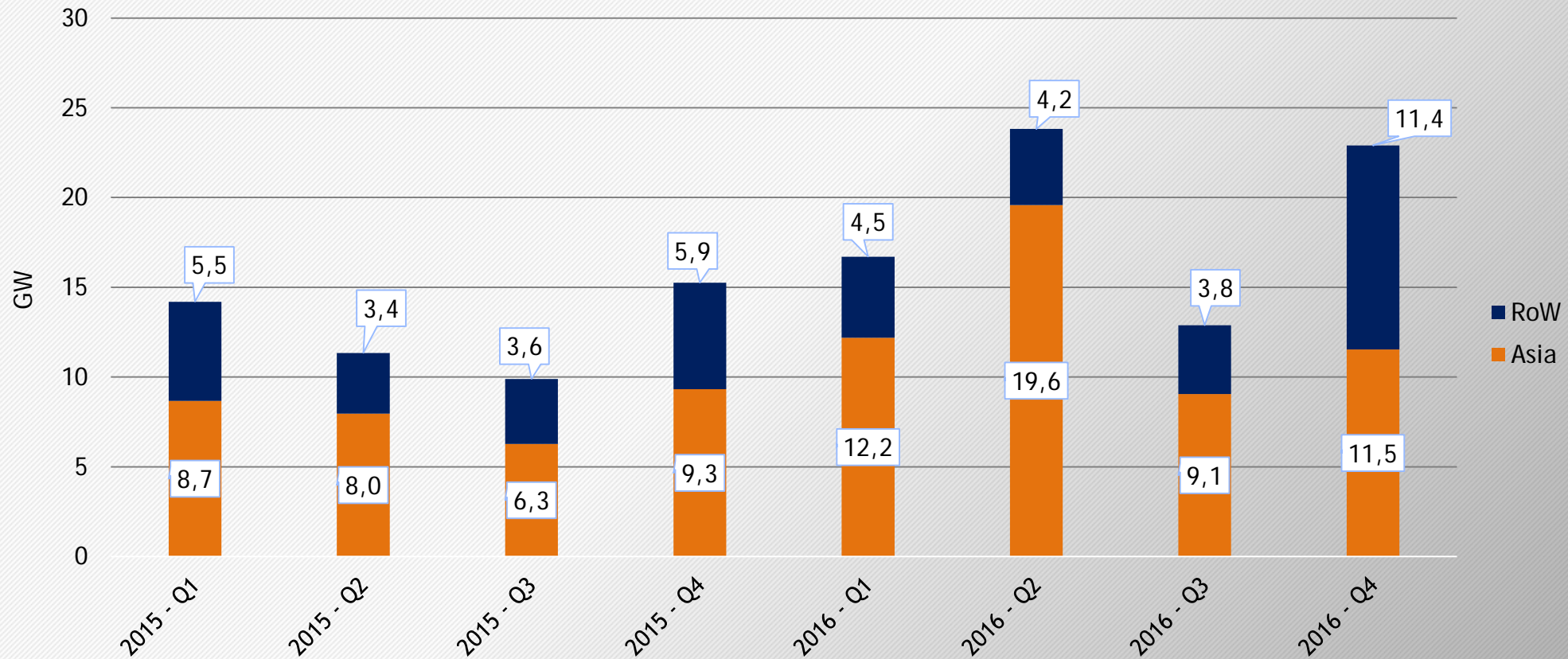
# 2015-2016 Quarterly PV Market Evolution

## Global Quarterly PV Installations



# 2015-2016 Quarterly PV Market Evolution

## Asia Quarterly PV Installations





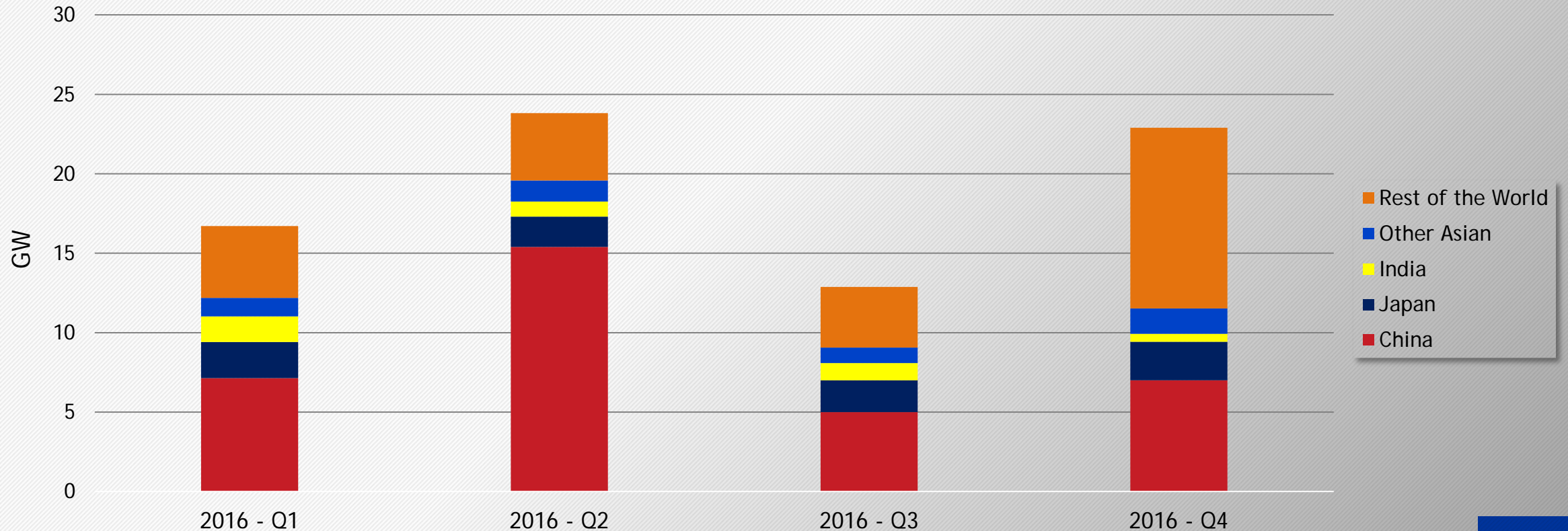
# 2015-2016 Quarterly PV Market Evolution



- Q4 2016 was the second highest quarter ever for the PV market, following Q2 2016.
- The contribution of Asia was less important in Q4 2016 while the growth of the US market plus some additional markets in Europe showed a larger contribution in Q4.
- A two-year perspective on quarterly PV market installations confirms the scale change between 2015 and 2016.
- The influence of policy decisions in several key markets continues to shape the quarterly PV installations. The rush during Q2 was mainly caused by the Chinese FiT decline while the Q4 rush outside of Asia came from the US market boom. In Europe, UK contributed more during Q1 before collapsing while this is not anymore visible on the global PV market installation level.
- Q3 was obviously the lowest quarter in Asia (and globally) in 2016, in the same way as in 2015. However, the influence of Q2 in 2016 was much more significant due to the boom of installations in China.
- The PV market continues to be shaped on a quarterly basis by these policy decisions, due to the high impact of FiTs changes in China and Japan, or the influence of potential tax credit changes in the US market.

# Quarterly PV Market in 2016 - Asian Focus

Quarterly PV Market in 2016

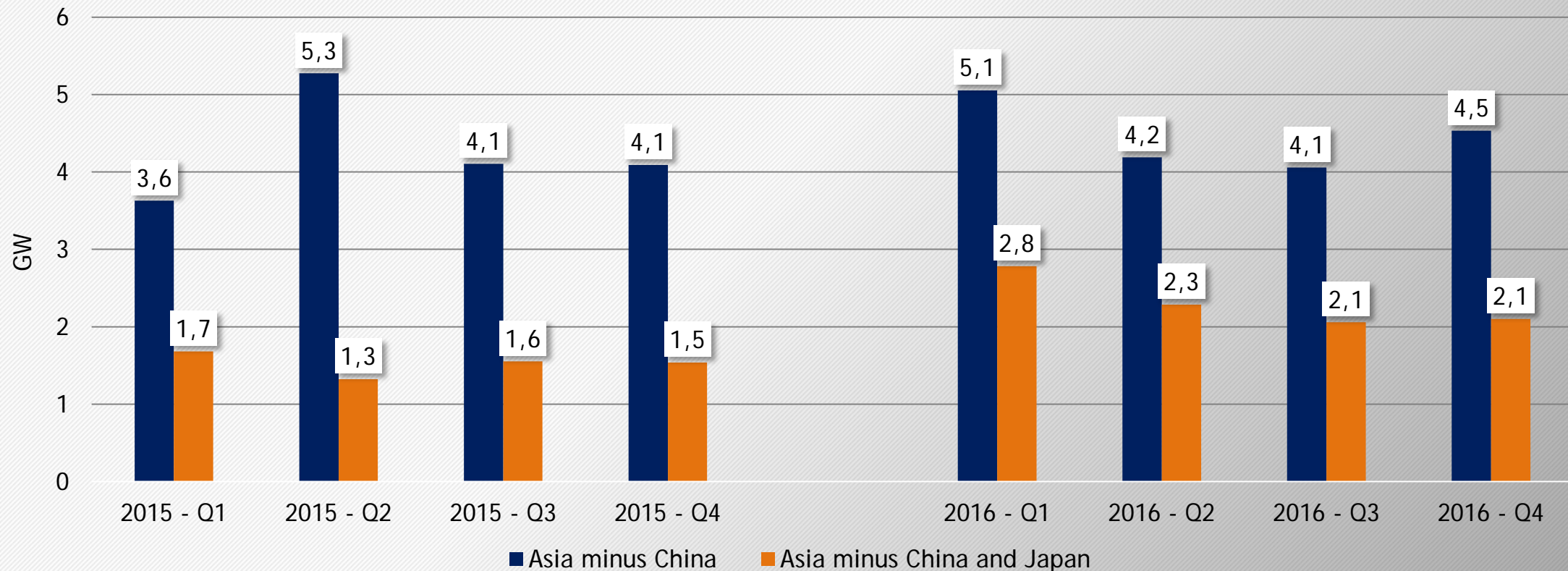


# Quarterly PV Market in 2016 – Asian Focus

- The PV market in Asia during the year 2016 was significantly influenced by the evolution of the Chinese PV market.
- From Q1 to Q3, the installations in other Asian countries than China established themselves at a level comparable with the rest of the world (Americas, Europe, Middle-East and Africa).
- Q4 2016 was an exception to the rule due to a significant market development outside of Asia, driving the demand high.

# 2015-2016 Tier 2 - Asian PV Markets

Tier-2 Asian PV Market



# 2015-2016 Tier 2 - Asian PV Markets



- Tier 1 Asian countries refer to China and Japan, which are driving the market for several years already. India could join this league in the coming months, but for the time being is still considered as a Tier 2 market.
- Tier 2 Asian countries comprise India, far above Australia, Korea, Pakistan, the Philippines and Thailand.
- These Tier 2 markets offered a rather stable demand in 2016, because during all four quarters deployment amounted to approx. 2 GW.
- Adding the Japanese PV market, these quarterly PV installations established themselves around 4 GW per quarter, a rather stable perspective again.
- Given the significant installation volumes in the Chinese PV market, these views showing the « rest of the Asian PV Market » allow to better understand and forecast the direction of the PV market in Asia, which offers more stability.
- The expected growth of the Indian PV market in the coming years should place it among the Tier 1 markets and reduce the volume of the other Asian markets to around 1 GW per quarter, a significantly smaller market, but still fairly attractive. This market should continue to grow, with more positive perspectives ahead for the other countries in the region.
- Middle-East countries are not counted in Asia, but represent also an important potential for growth with GWs of projects already planned and more to be deployed in the years to come.

# Q1 2017 Highlights

- While no official numbers have been published yet in most Asian countries, the first quarter of 2017 seems to already compete with the first quarter of 2016 and could deliver even higher installation numbers in China.
- Most companies report a higher level of installations in China due to the expected FiT decline in June which drives the installations up.
- Given the nature of the PV market, this high level of installations in China will be spread over the two first quarters of 2017.
- In other Asian countries, the steady growth continues as in India, but slightly slower than initially expected. After 4.1 GW installed in 2016, the Indian PV market could expect to continue growing this year, possibly even doubling, thus reaching 8-9 GW.

# Key Countries Evolution #1

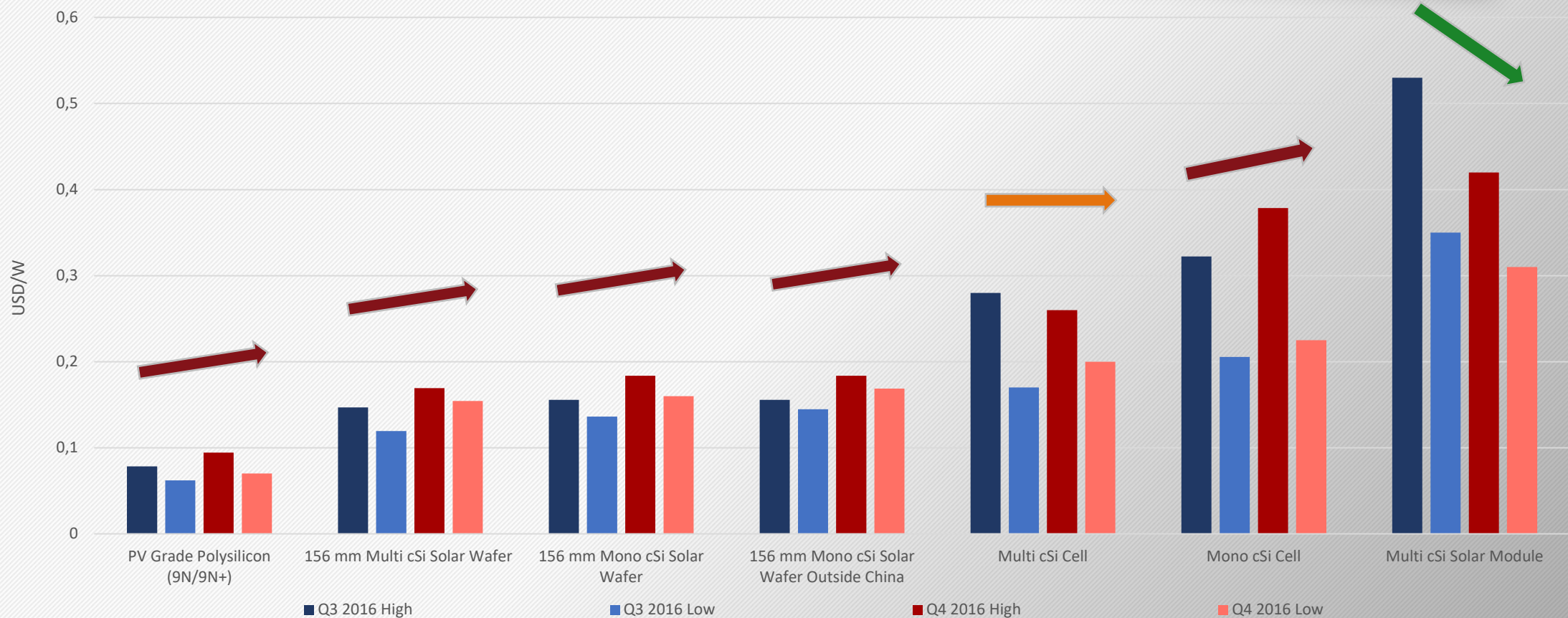
- China
  - Introduced in 2011, the national FiT scheme is the main driver for solar PV deployment in China. In 2016, with 34 GW added, the market grew by 128% YoY. 2017 could witness new installations amounting to approx. 30 GW, a comparable level, with a significant volume expected in the first two quarters. The existing FiT scheme is anticipated to be replaced by a national Green Certificate scheme in 2018, hence future demand is likely to decrease and cause an impact to global PV market.
- Japan
  - After 8.6 GW installed in 2016, down from 11 GW in 2015, the Japanese PV market has entered an era of slower PV development, which still could result in 6 to 8 GW of installations in 2017.
- India
  - In 2016 (calendar year) India managed to install around 4.1 GW, representing an almost 100% increase YoY. Given its momentum, India could install possibly up to 9 GW in 2017. In addition to its National Solar Mission, a National Storage Mission is reported to be launched in summer 2017, driving further demand for solar PV. By Q1 2017, India was home to 12 GW of total solar PV capacity.
- Korea
  - Korea's demand for solar PV is driven by its RPS scheme. In 2016, Korea managed to install approx. 900 MW down 20% YoY. Cumulative installed capacity crossed 4.5 GW in 2016. Its RPS policy was subject to a target increase in 2016 and at the same time a net-metering policy was expanded to up 1000 kW capacities.
- Thailand
  - After more than 700 MW installed in 2016 and more than 2 GW of PV installations online, Thailand continues its PV development policies incentivized with feed-in tariffs and other incentives, including support for PV on official buildings.

# Key Countries Evolution #2

- Pakistan
  - Pakistan witnessed the installation of approx. 700 MW in 2016 and is expected to install up to 1 GW in 2017. Favourable framework conditions, significant power shortage, and high levels of solar irradiations will ensure strong growth in the future.
- Philippines
  - With more than 700 MW installed in 2016 and much more in the installation pipeline, the PV market has finally developed in the Philippines and will continue its path in the coming years.
- Chinese Taipei
  - In total more than 300 MW installed and a home to a significant PV industry, the development of PV continues at a regular pace regarding the population and electricity demand. Last year, the govt has set a new long-term target of 20 GW by 2025.
- Singapore
  - Home to dozens of MW installed, PV will remain limited by the size of Singapore and the very dense urban environment. However the potential for building applications remains high and will drive the market in the coming years. Recently, floating PV has been launched.
- Malaysia
  - A market of below 100 MW/a, PV deployment is far from its potential in Malaysia, despite a sound legislative framework in place.
- Vietnam
  - A booming economy is the main driver for solar PV installations in Vietnam. A FiT scheme is in place and recently a number of projects were sanctioned by the central govt. Home to approx. 50 MW only, future growth is expected to significantly increase.



# Price Evolution of PV Components



# Price Evolution of PV Components

- The rapid decrease of PV module prices has continued during Q4 2016 but has stabilized during Q1 2017, especially for the lowest prices.
- At the same time polysilicon, wafers and cells prices went slightly up, showing that the module manufacturing overcapacities are back while the capacities for the other segments of the value chain are more in line with the increased demand.
- A stable or growing demand in 2017 could help stabilize the prices at a level compatible with profit making for industrial PV manufacturers. However, a declining market after Q2 due to a lower Chinese PV market could have important consequences for the prices and put pressure on companies to reduce further their production costs.
- In China, the Top Runner program has created demand for 5.5 GW of high-efficiency cells and modules installations, which allows to support the market for these technologies in a context of low market prices favouring basic PV technologies for utility-scale applications.
- The prolongation of the European anti-dumping taxes against Chinese products should have little consequences on the market due to the limited size of the European markets.

# Industry Evolution – Key Take Overs

- The price decline of PV modules has pushed many companies to reconsider their industrial strategy.
- During Q4 2016, the profit margin of several companies was significantly reduced or went into the red, and this should continue during the first quarter of 2017, possibly even during a larger part of the year.
- Jinko Solar became the first module producer in 2016 with more than 6.6 GW of shipments (in line with its module production capacity at 6.5 GW) and announced possibly 9 GW of shipments in 2017, while others are announcing more than 10 GW of shipments.
- Several companies (SolarWorld, NeoSolar) announced their intention to abandon multi-crystalline module production to focus on mono-crystalline with PERC. For the time being, Canadian Solar will continue focusing on high-efficiency multi-crystalline using PERC.
- SunPower closed one of its factories and disclosed at the same time a joint venture in China to produce up to 5 GW of their p-type modules.
- Many companies announced new production capacity increases, a challenging bet if the market fails to grow significantly after Q2.
- The vertical integration continues, upstream and downstream with GCL and Longi increasing their module capacities while many cells and modules manufacturers announced increased cells and wafers production.
- After years of concentration, the PV industry explores new technology paths, from bifacial modules to zero-white-spaces modules, cells technology improves and explores different paths for efficiency increase and cost decrease while some new options are offered for producing cheaper wafers. In a nutshell, the fast market evolution goes together with a diversification of the technologies, a sign of maturity for the PV industry.

# Conclusions

- Q4 was another strong quarter thanks to a high demand for PV modules outside of Asia.
- However, Q1 2017 should see a rebound of the demand in Asia driven by significant developments in China, India and Japan.
- In a context of low module prices, the potential for further price declines in the short term are limited and after Q2 2017, prices could either increase (if the demand is sufficient) or remain stable (if the demand decreases).
- Asia consolidates its central position in the global PV sector, with industry and market progressing together in many countries.
- On the other hand, the significant volume of the Chinese PV market creates uncertainties for the medium-term future and especially after Q2 2017 in an already stressed PV industry. Growing markets in Asia and especially India could have a major role to play in balancing the future global PV market and allowing a reasonable split of the market burden between China, India, Japan and the rest of the world.

# Courtesy



- Market data have been collected and analyzed by AECEA and Becquerel Institute, members of the PV Market Alliance.
- More information: [info@pvmarketalliance.com](mailto:info@pvmarketalliance.com)
- [www.pvmarketalliance.com](http://www.pvmarketalliance.com)

## The **PV** Market Alliance

