



REC's Solar Market Insight

Q4 2015 and Full Year 2015



ENERGIZING LIFE TOGETHER

February 23, 2016

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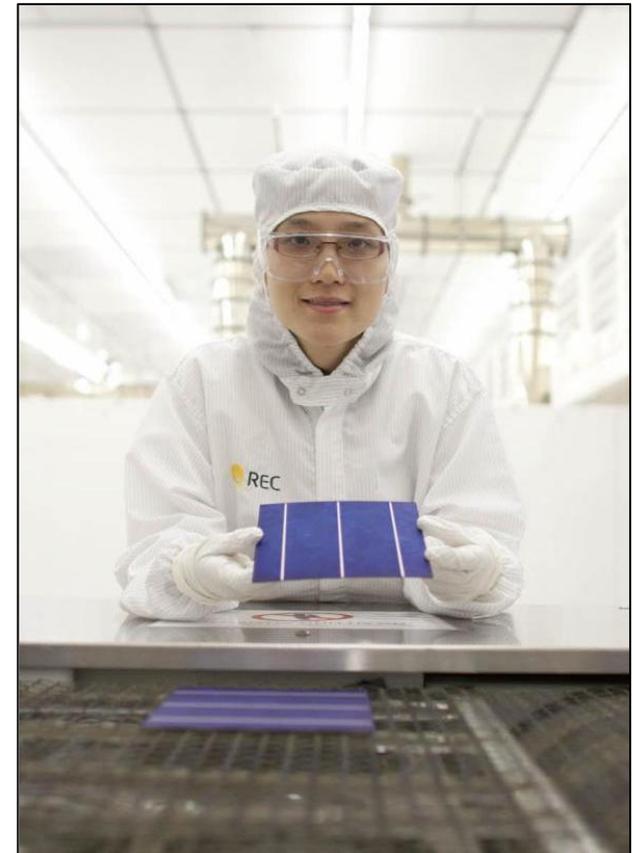
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Major highlights from 2015

- Acquisition of REC and integration with Norway-based Elkem Solar
- All-time-high quarterly sales of 361 MW and record revenues in Q3 2015
- Production expansion on track with annual capacity of 1.3 GW at end of 2015
- Launch of high-performance REC TwinPeak solar panel with 120 half-cut multicrystalline cells, four bus bars, PERC, and split junction box rated up to 280 Wp
- Intersolar Award for REC TwinPeak in June 2015, only months after start of production
- REC Peak Energy solar panels certified for floating applications under same performance warranty with several projects in Asia, Europe and US in pipeline
- Development of 1,500 Volt product variant for REC Peak Energy 72 Series
- Market entry into Sub-Saharan Africa with new regional sales forces established in Ghana, Kenya and South Africa
- REC ranked as 3rd biggest solar panel supplier for the US residential market
- Notable commercial and industrial PV installations for HEINEKEN's Tiger Beer brewery and a bulk-liquid terminal by Stolthaven in Singapore – both under a Power Purchase Agreement
- Expansion of REC's Solar Professional Program into Japan, India, Philippines and Indonesia

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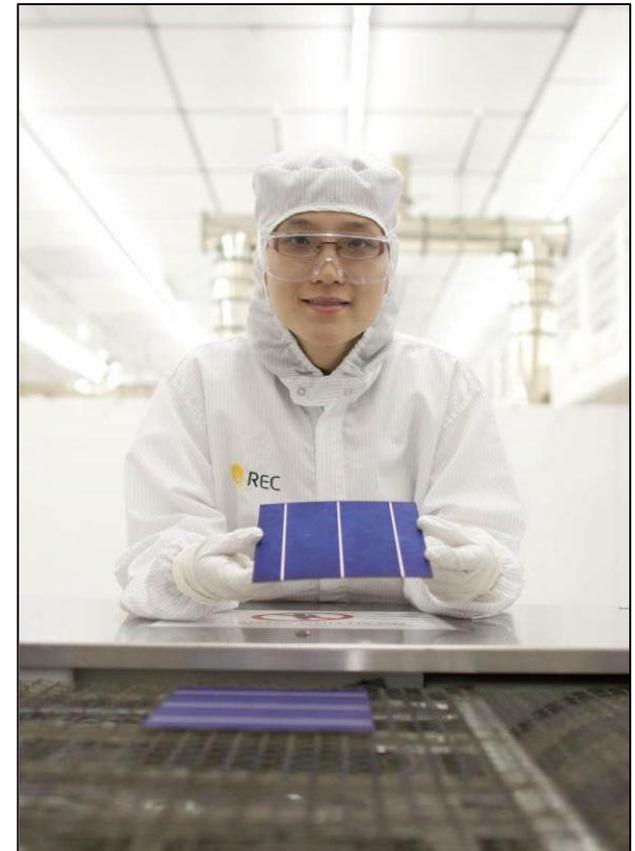
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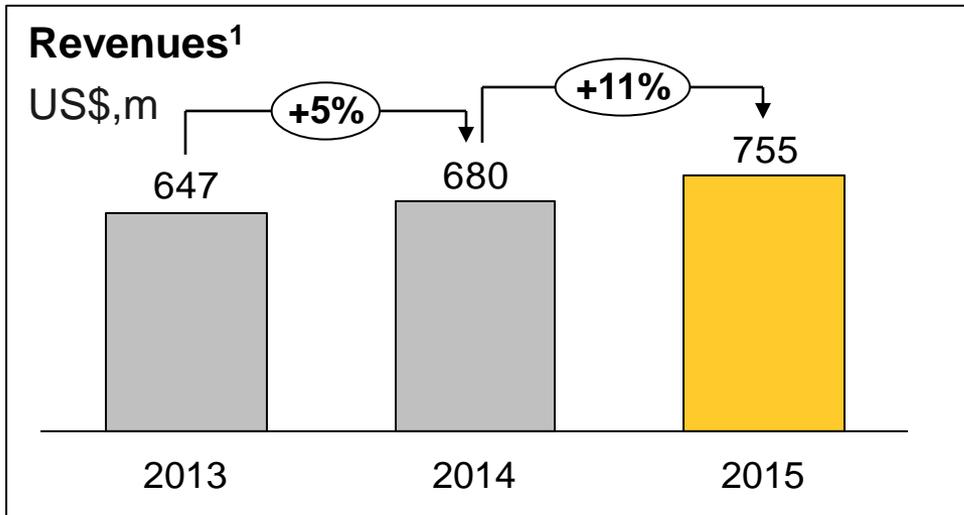
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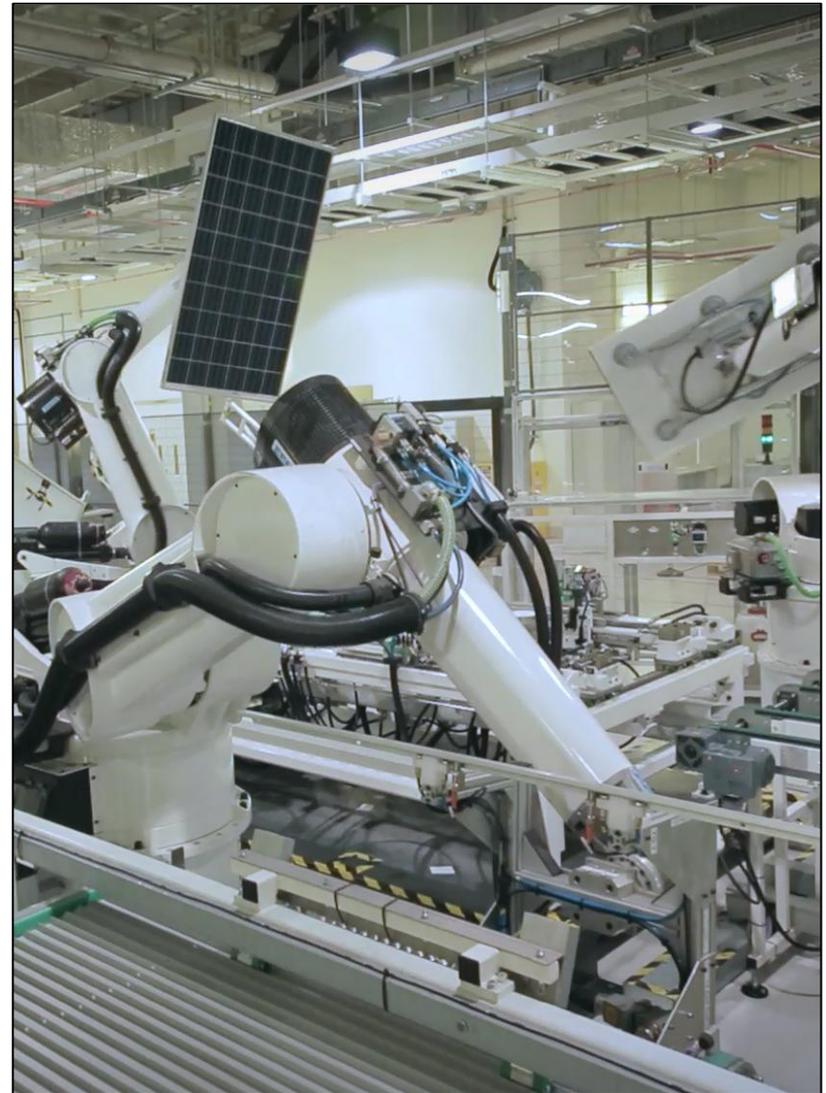
Strong revenue growth on the back of increased production and sales



1 Includes module and system revenue

Source: REC

- ➔ Annual revenue growth of 11% in 2015 outpacing revenue growth of 5% in previous year
- ➔ Module shipments 2H 2015 running at full annual production capacity of 1.3 GW
- ➔ At end of 2015, REC sold out

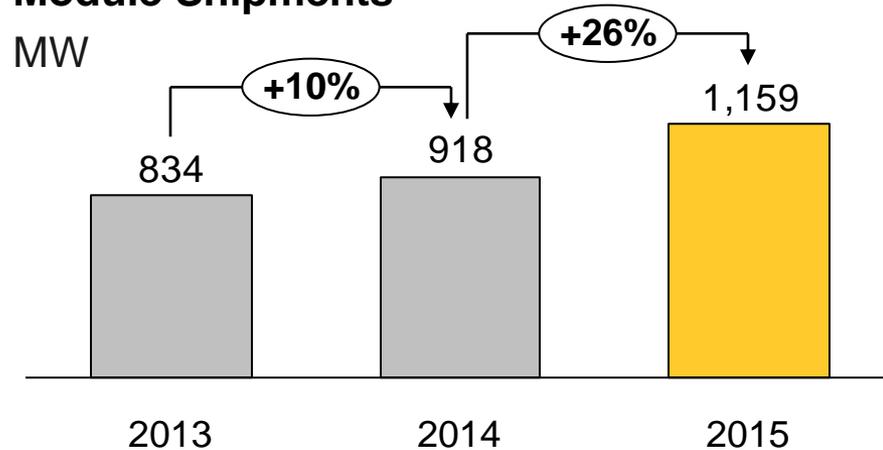


Capacity additions and operational improvements led to strong 2H 2015



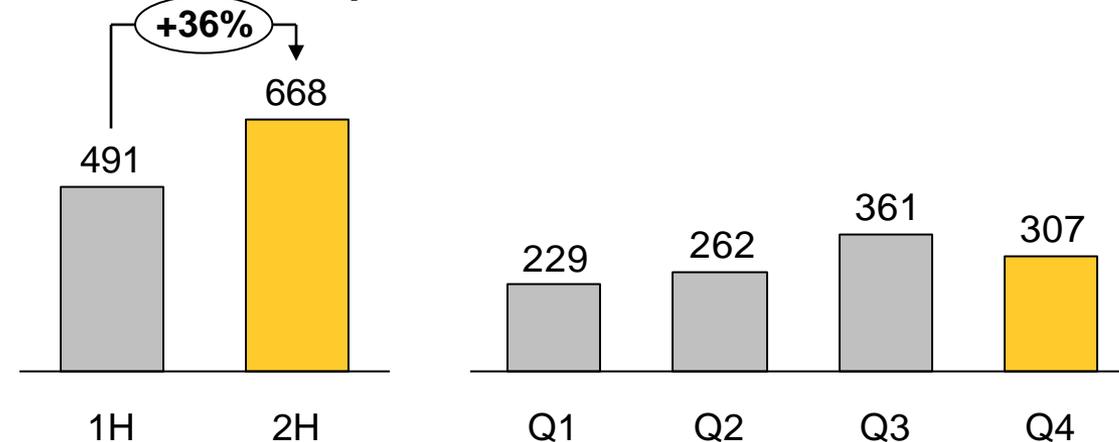
Module Shipments

MW



- Continued strong year over year growth in module shipments
- 26% increase in module shipments vs. 2014 facilitated by the addition of two module lines and higher watt classes

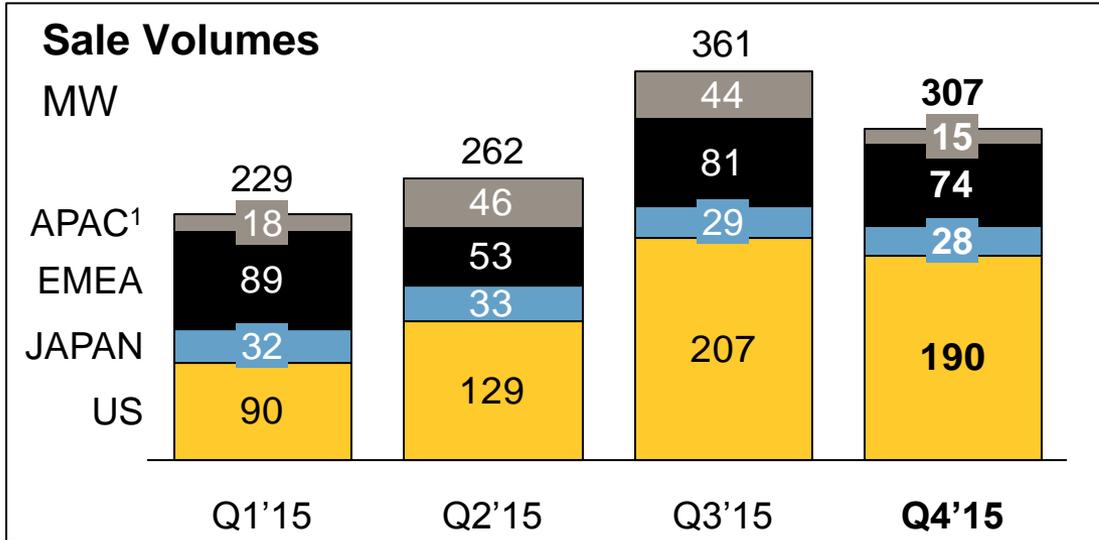
2015 Module Shipments, MW



- Strong growth throughout the year in both module sales and revenues with a record Q3 2015

Source: REC

REC experienced strong demand for its products in the US with record sales in that market



1 excl. China
Source: REC

- ➔ Over 50% of sales in 2015 came from the US market
- ➔ Steady sales in all other regions across all quarters in 2015
- ➔ Strong focus on new markets in APAC and EMEA resulted in growing sales in REC's non-traditional markets

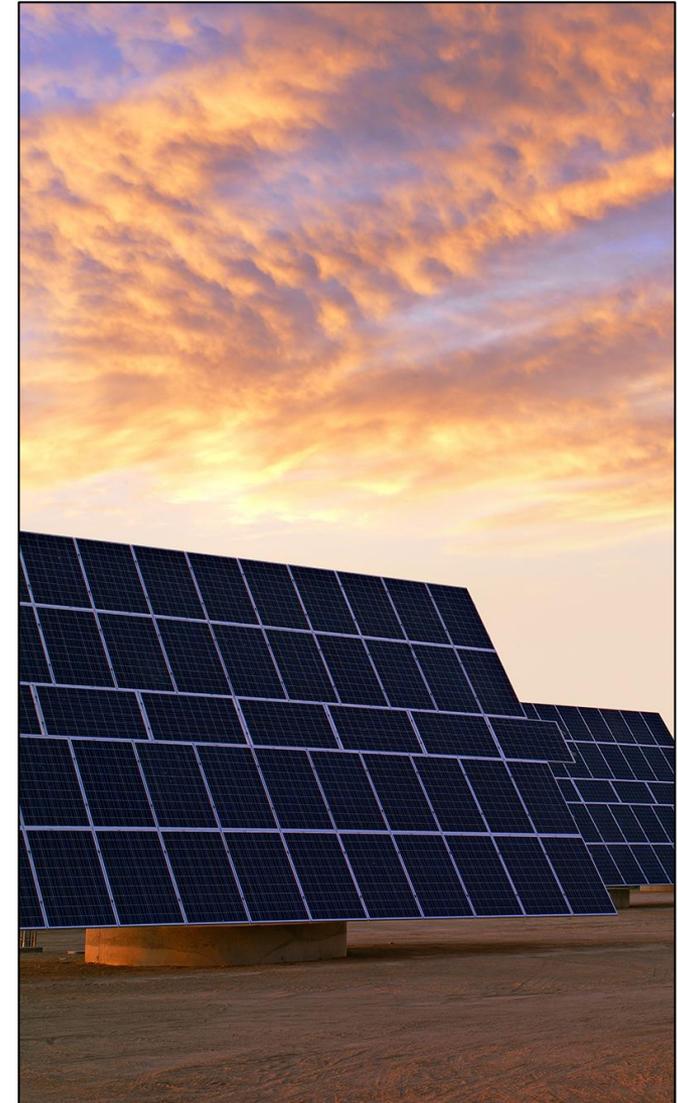


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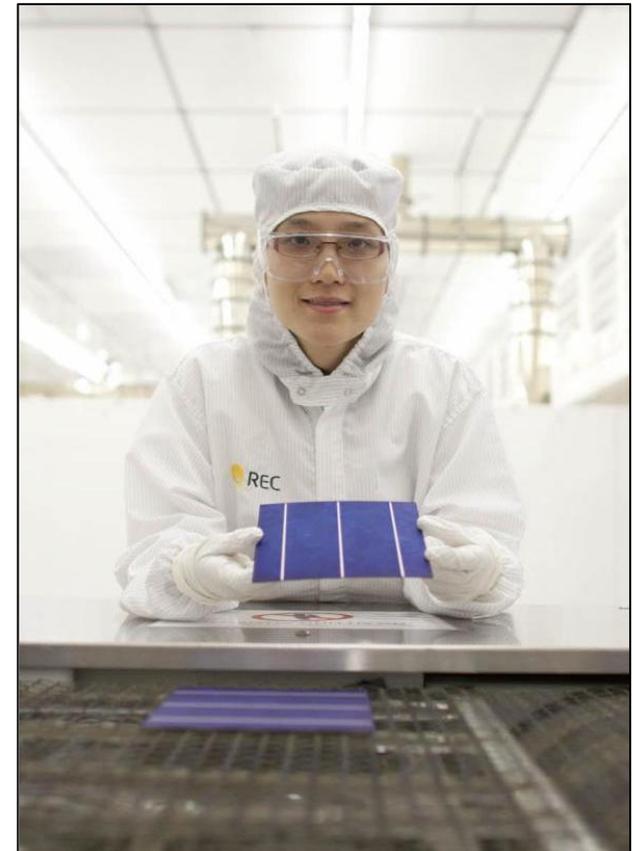
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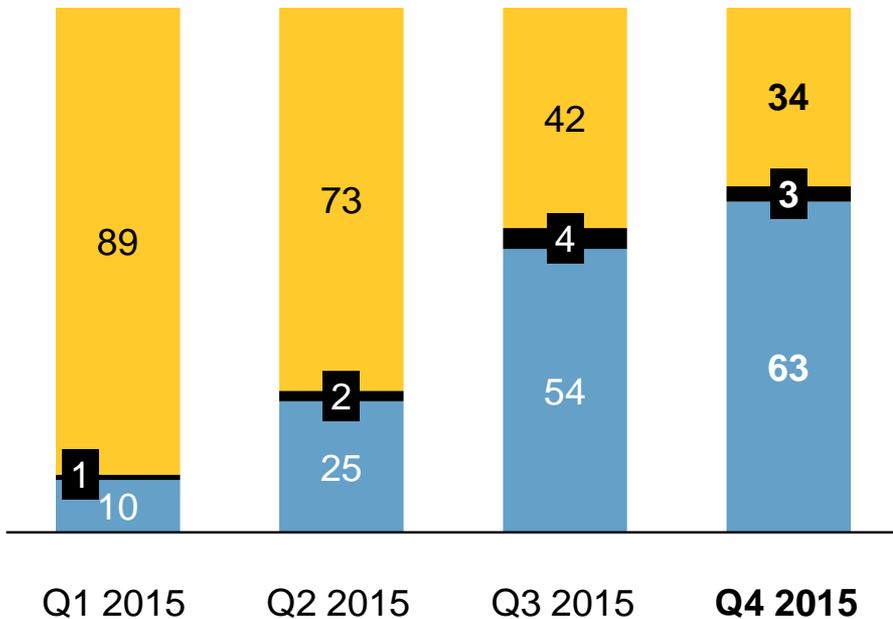
USA: Volumes were dominated by sales in the residential and utility segments



REC Sale Volumes Splits¹

%

- Residential
- Commercial
- Utility



2015 Market Segment Size², GW



- ➔ Strong representation in residential market in the US with REC's award-winning products for this segment
- ➔ Strong demand for REC's 72-cell products in the US utility segment
- ➔ 2017-22 ITC extension is a positive development for future REC expansion within a more sustainable US solar market
- ➔ As in other markets, recent announced serious changes on net metering in Nevada are creating uncertainty and are risking the state's sustainable solar future

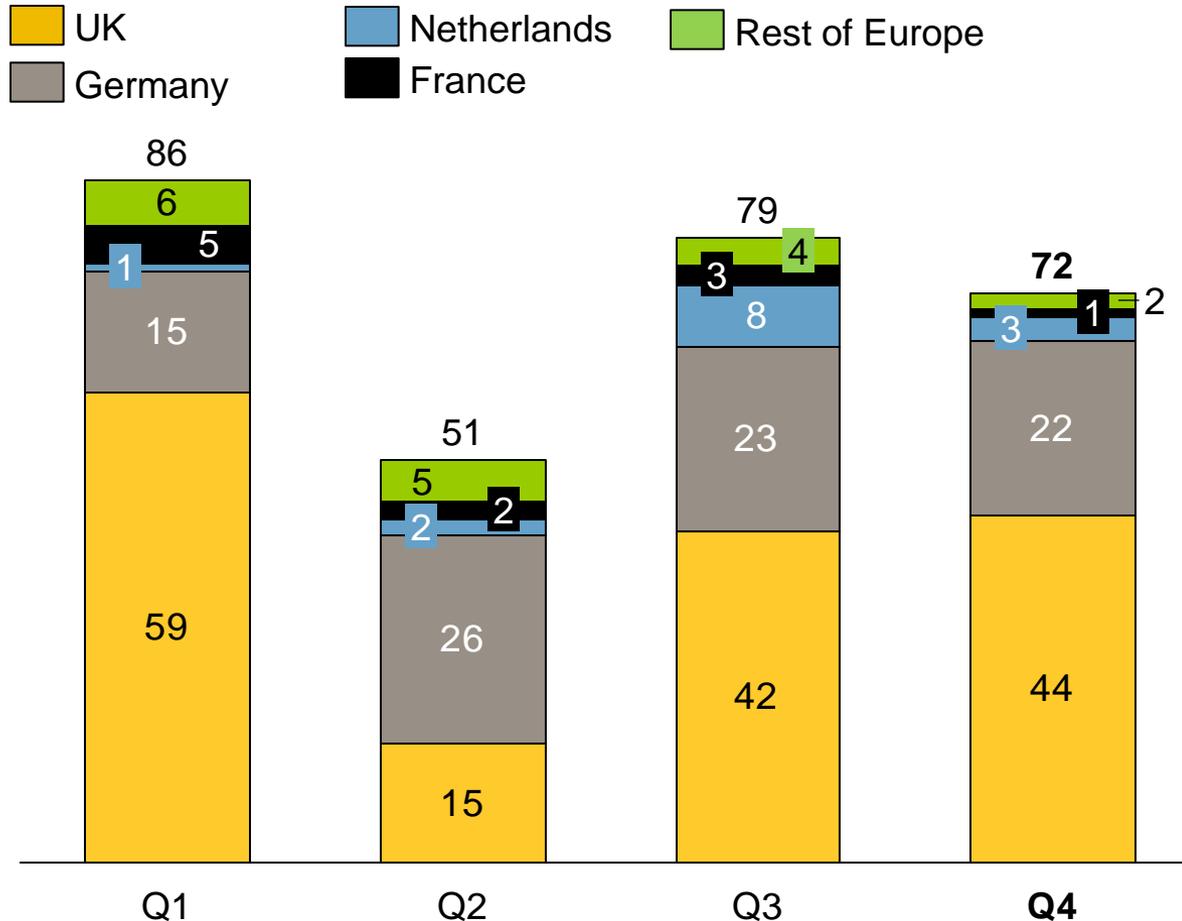
1 REC market segment sale volumes splits are best estimates
 2 <10 kW = residential; 10 kW – 5 MW = commercial; >5 MW = utility
 Source: GTM; REC

EMEA: The UK and German markets accounted for the bulk of REC's sales



2015 REC Sale Volumes

MW



- Sales in the UK market in 2015 accounted for over half of REC's sales volumes in EMEA
- Except for a slight decline in Q2, sales volumes were relatively constant across all four quarters in 2015
- The drop in Q2 in UK can be addressed to short-term changes on ROC and a very limited grace period, resulting in a rush in Q1
- In 2016, recent changes on ROC and a long grace period are expected to lead to more balanced business in UK in Q1 and Q2 2016 with a small peak in Q2

Source: REC

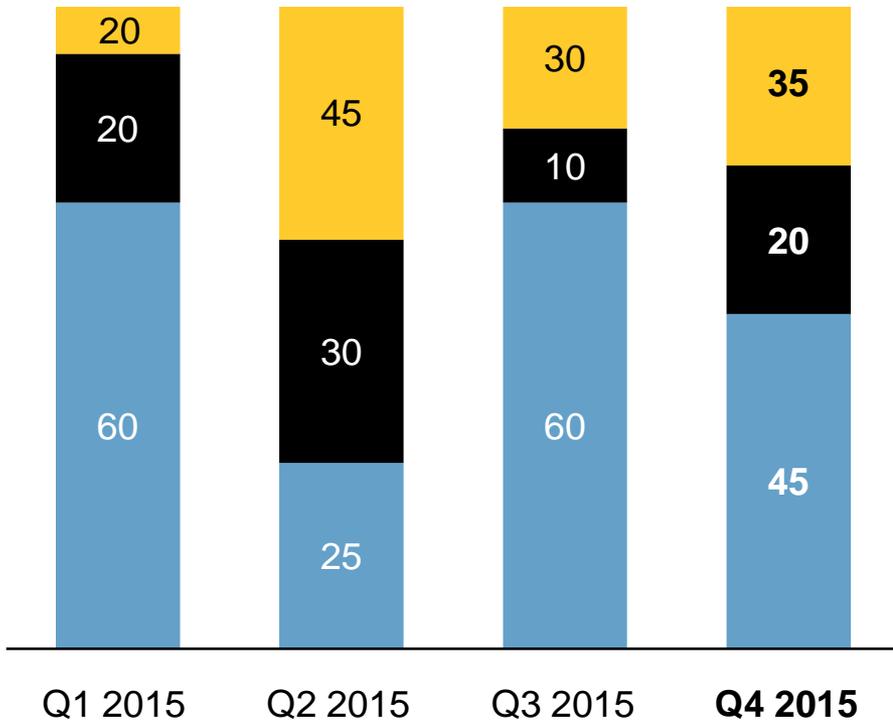
EMEA: Volumes were mainly for sales in the residential and utility segments



REC Sale Volumes Splits¹

%

Residential Commercial Utility



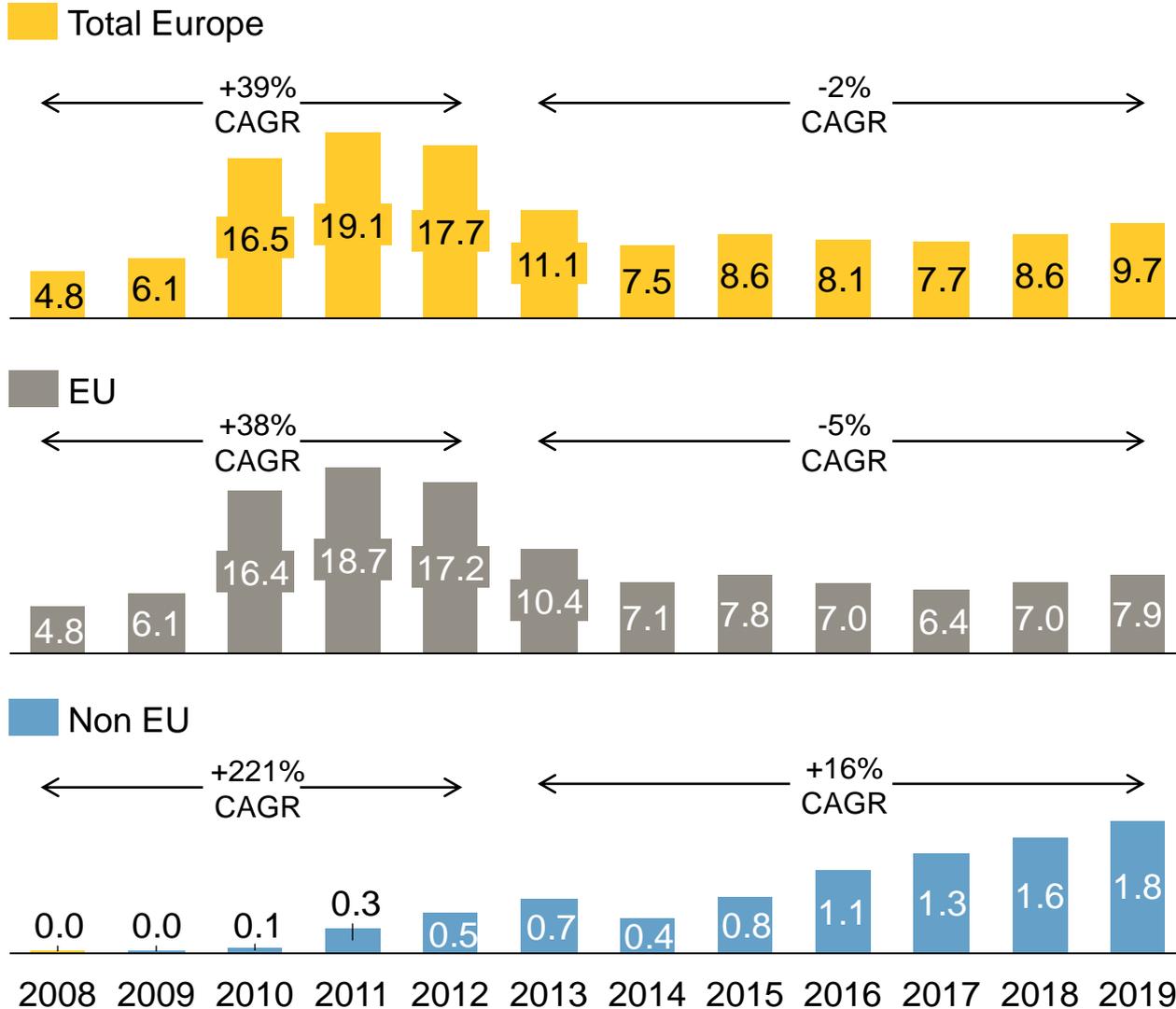
2015 Market Segment Size², GW



→ Strong demand for REC's products across all market segments in Europe

1 REC market segment sale volumes splits are best estimates
 2 <10kW = residential; 10kW – 5 MW = commercial; >5 MW = utility
 Source: GTM; REC

MIP negatively impacting European market



→ A decline in the rate of Europe's installations is seen due to:

- Non-resolution of the Minimum Import Price (MIP) regime
- Anti-subsidy policy positions for clean energy creating negative image for solar
- Market uncertainty triggered by short-term policy changes or reversals like in UK

→ REC expects stronger markets as of 2018 due to storage opportunities

→ United Arab Emirates:

- Increasing clean energy in total energy mix to 24% by 2021
- Increased target for Mohammed Bin Rashid Al Maktoum Solar Park in Dubai to 5 GW by 2030
- Solar on every rooftop in Dubai mandatory as of 2030 - 1.5 GW capacity expected
- Other Emirates set up ambitious solar targets, e.g. Abu Dhabi: min. 1.6 GW by 2020

→ Egypt:

- 2.5 GW FiT program to start in 2016 and be completed by 2020

→ Jordan:

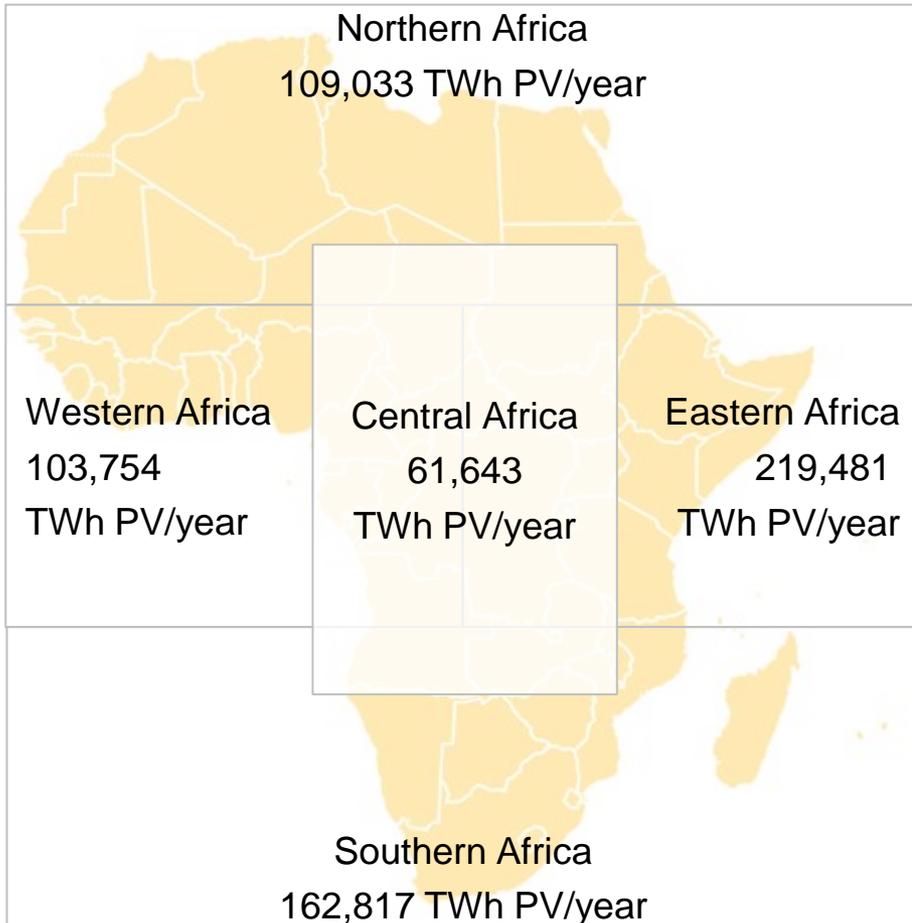
- Commercial rooftop pushed by Net Wheeling and high electricity rates and targeting 1.6 GW by 2018

→ Kingdom of Saudi Arabia:

- No clear strategy but commitment for 42 GW by 2032

About 2.5-3 GW/year total potential for UAE, Egypt, Jordan

Market expectations in Africa



Source: IRENA; PV potential taking into account all suitable areas

- Launch of the African Renewable Energy Initiative (AREI) at UN Climate Change Conference, COP21
- 10 GW of new renewable energy capacity is planned by 2020
- The AfDB (Africa Development Bank) has identified over 11,000 GW of renewable energy potential on the continent

Potential of about 350–380 GW to power up Africa

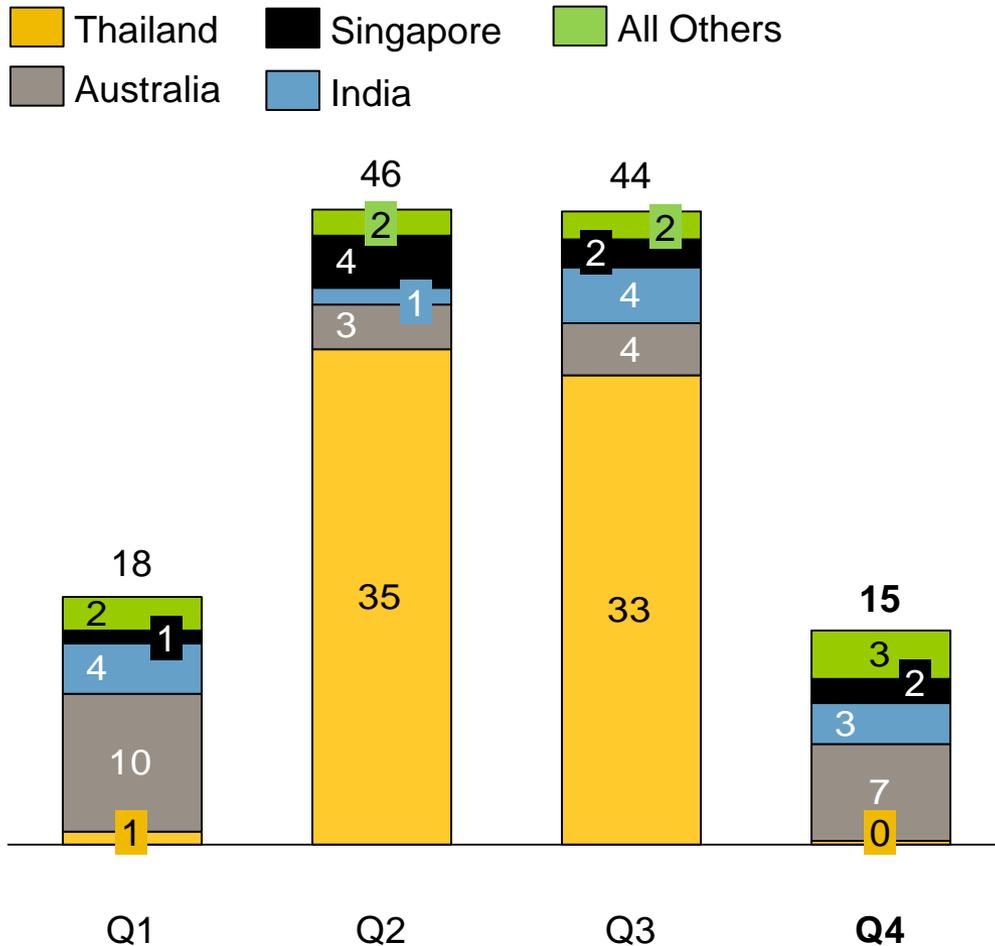
About 5–8 GW/year up to 2020, increasing to 12–15 GW/year up to 2030 possible

APAC¹: Wide presence across nine different emerging markets



2015 REC Sale Volumes

MW



- Sales in Thailand represented over 50% of total sales in the region
- Thailand is emerging as one of the strongest growth markets in Southeast Asia
- However, as an emerging region, APAC is dominated by high growth rates but also strong fluctuations
- Increased focus in 2017 on large growth markets in APAC

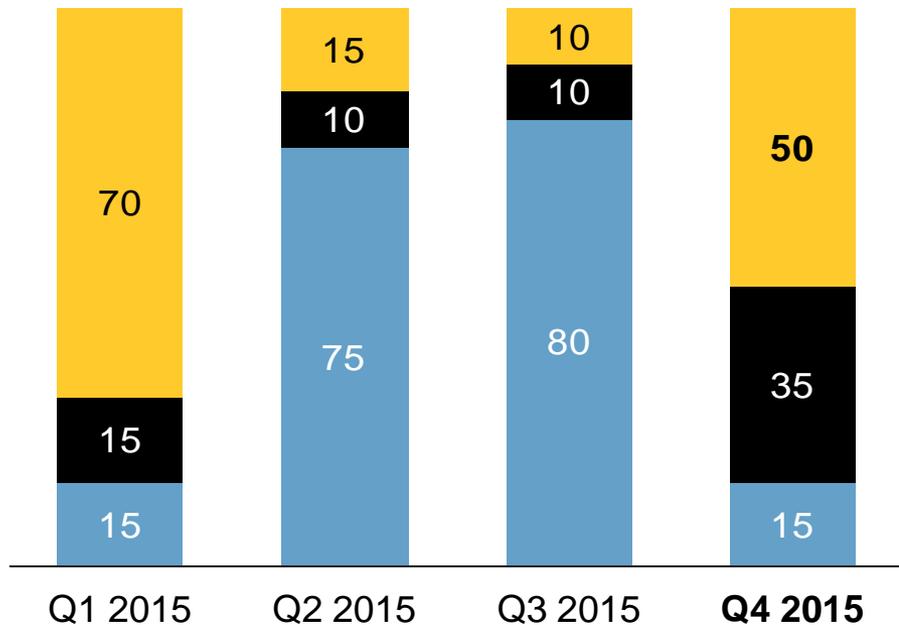
Source: REC
1 excl. China

APAC¹: Volumes mainly for sales in the utility segment



REC Sale Volumes Splits²

%



2015 Market Segment Size³, GW



- Sales in the utility segment dominated particularly in Q2 and Q3
- Solid sales over four quarters in the small but fast-growing residential segment

1 excl. China

2 REC market segment sale volumes splits are best estimates

3 <10kW = residential; 10kW – 5 MW = commercial; >5 MW = utility;

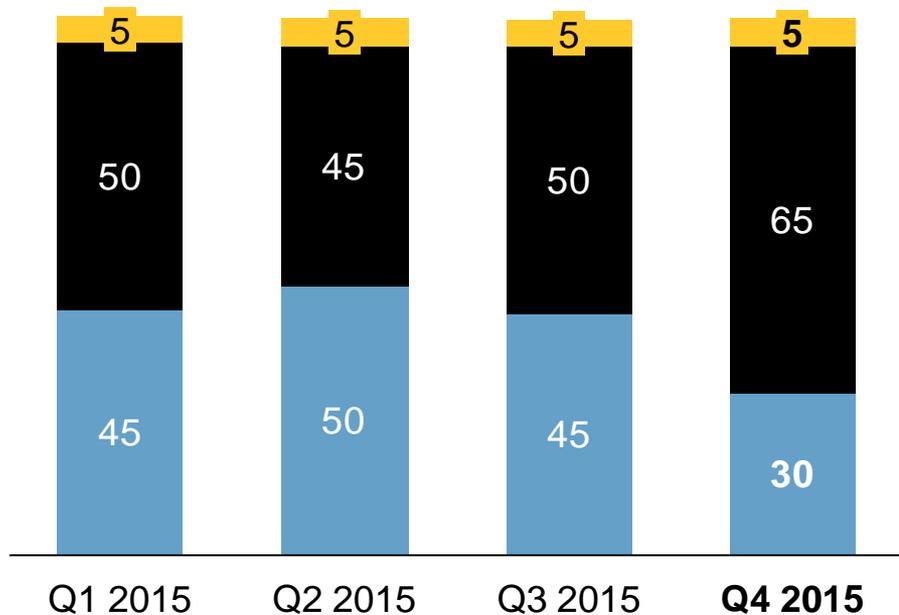
Source: GTM; REC

Japan: Volumes were dominated by sales in the utility and commercial segments



REC Sale Volumes Splits¹

%



2015 Market Segment Size², GW



- Good representation in the commercial segment due to strong match with REC products
- Focus in 2016/2017 will be on the commercial and residential segments

1 REC market segment sale volumes splits are best estimates
 2 <10kW = residential; 10kW – 5 MW = commercial; >5 MW = utility
 Source: RTS; REC

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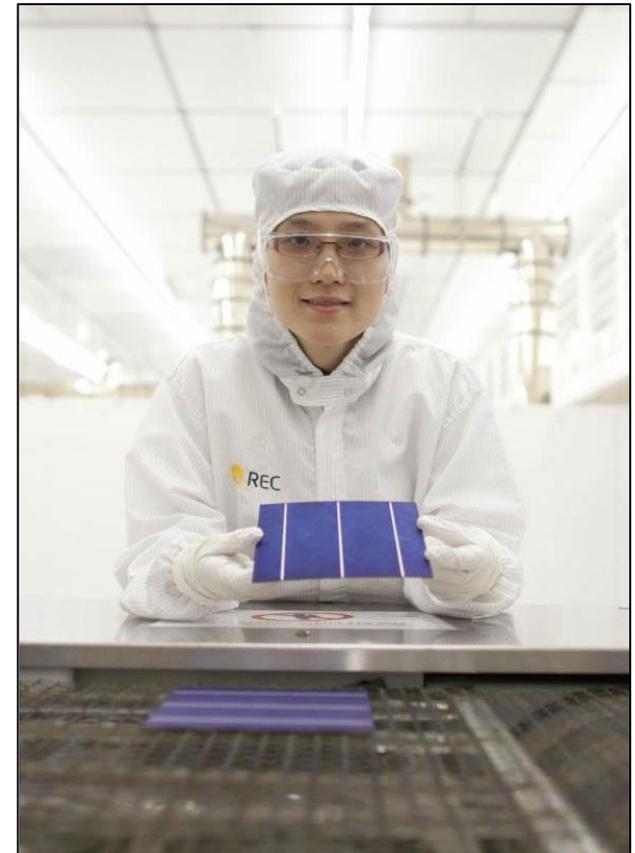
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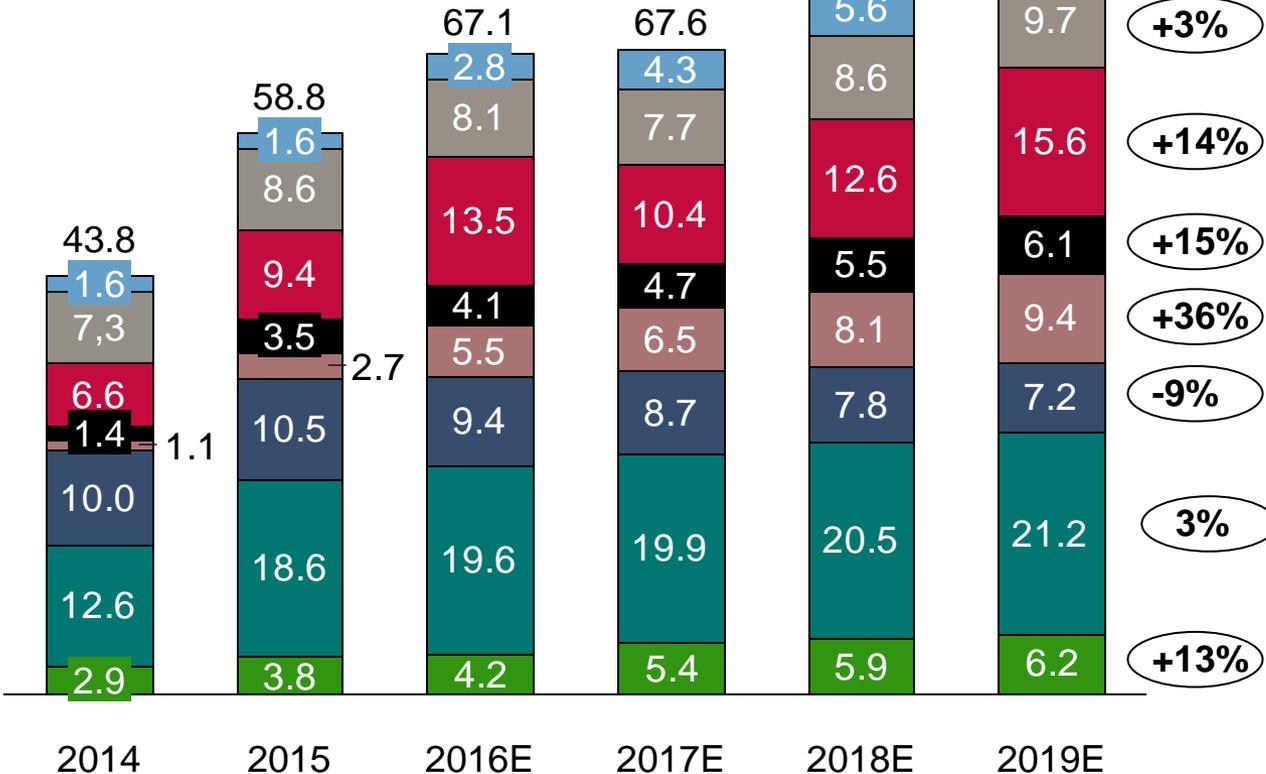


Continued strong solar PV growth globally will be led by emerging market geographies



Solar PV installations

GW



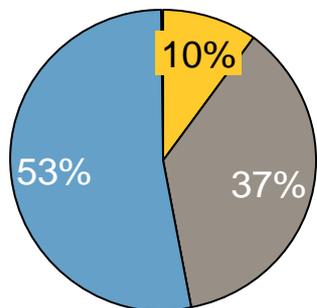
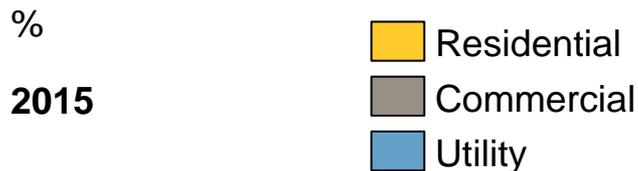
2015-2019 CAGR

%

- Global installations forecast to grow by ~40% over the next four years
- Annual installations in India forecast to rank ahead of Japan and to approach Europe by 2019
- Slight decline in US installations in 2017 compared to 2016 due to impact of previous ITC regime

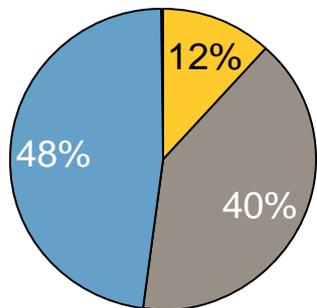
Growth expected to be strongest in the commercial and residential segments

Global Solar PV Installations



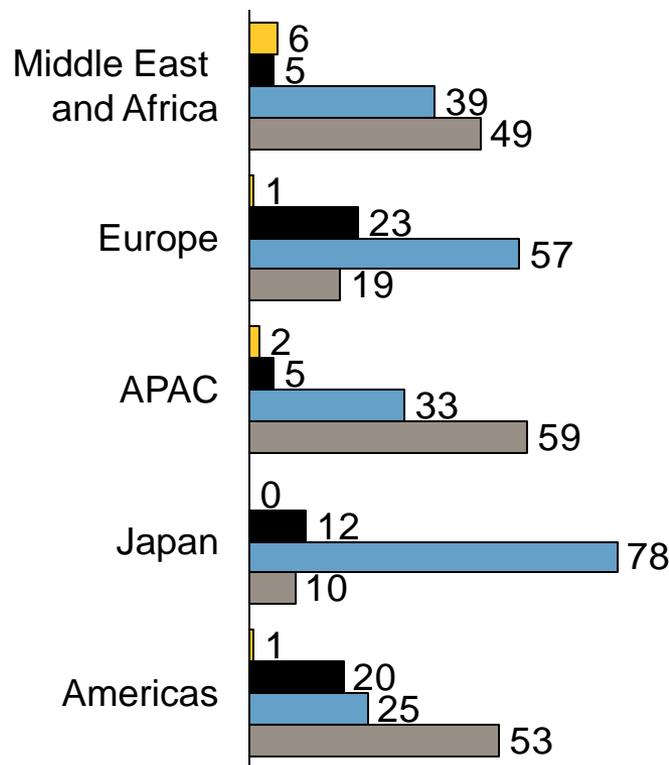
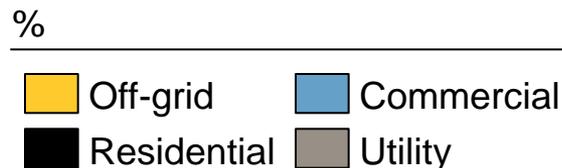
Total = 59 GW

2019



Total = 81 GW

2019 Global Solar PV Installations



- Utility will still comprise the largest sector globally in 2019 but growth will be modest
- By 2019, residential and commercial sectors combined will be larger than the utility sector
- Dominance of market segments will differ significantly by region

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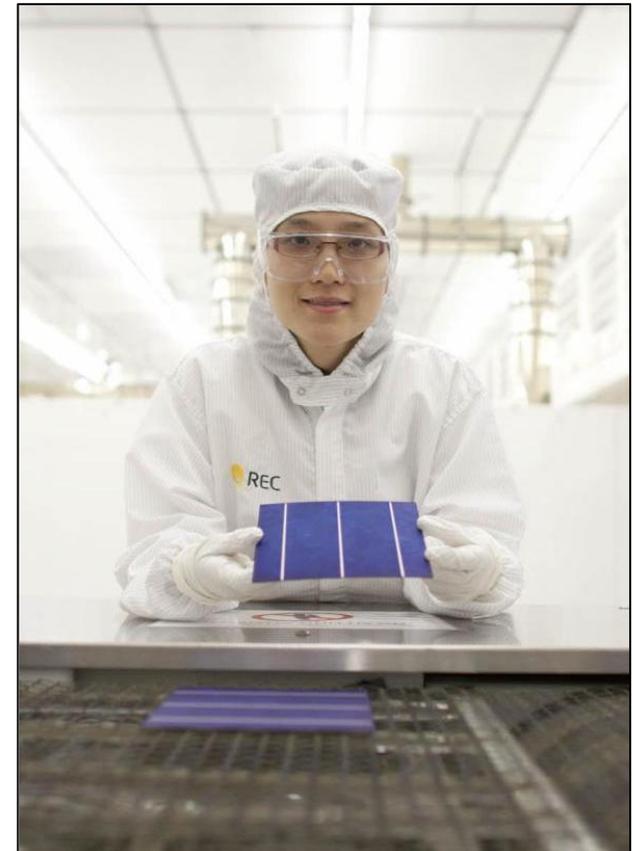
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REC salutes the global agreements reached at the recent COP21 summit in Paris

Observed change in surface temperature 1901–2012

Pledge to limit warming to well below 2°C or even 1.5°C above pre-industrial levels

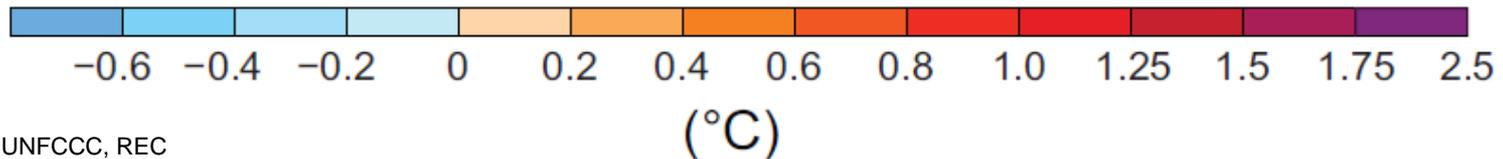
188 countries pledge to reduce or curb emissions

Pledge to achieve net zero emissions between 2050 and 2100

Global review and stocktaking process every five years with enhanced pledges

Mobilize at least \$100 billion a year in climate related financing by 2020

Process to avert, minimize and address loss and damage



COP21 impact: An irreversible transition is on the way

- The **Exxon** case: investigation into whether Exxon misled investors and public on the dangers of climate change
- **Allianz** to cut coal investments and instead double wind energy investments to €4bn
- **Bill Gates and Mark Zuckerberg** launch initiative on clean energy research
- Joint announcement by US and China to provide \$3.1bn to the “**China South-South Climate Cooperation Fund**”
- Launch of **Solar Alliance** between France and India aimed at developing affordable solar power for all
- Call to **phase out of fossil fuel subsidies** by 40 governments, businesses, organizations
- **Peak CO₂ emissions**
- Put a **price on carbon**

BIG OIL:
THE NEW BIG TOBACCO



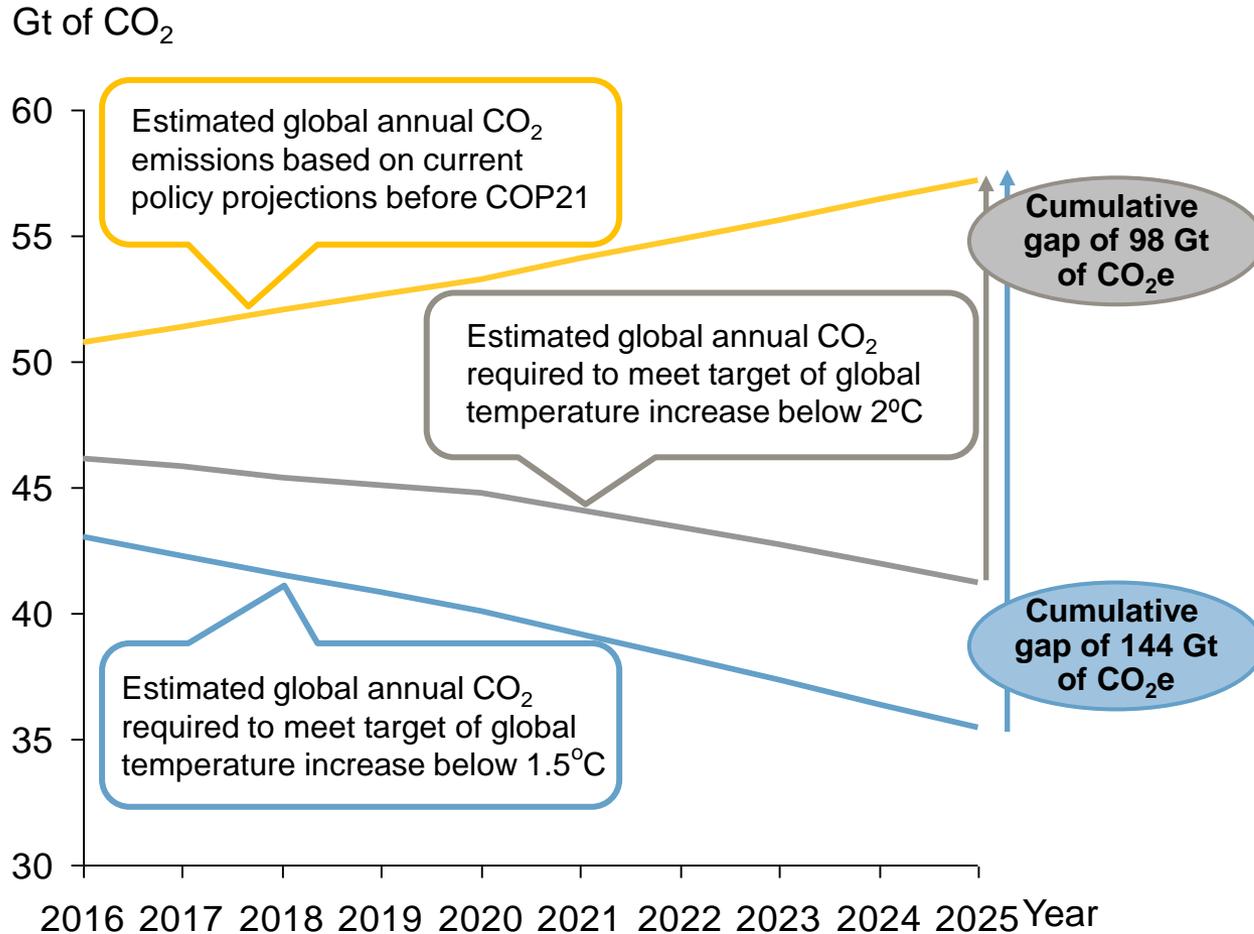
Source: Bloomberg

→ **Increasing momentum for renewables!**

REC believes that solar PV can meet 25% of the required abatement in the power sector



Plot of Global Annual CO₂e emissions before and after COP21
Gigatonnes (Gt)



- Power sector responsible for ~1/3 of the global CO₂e emissions
- Solar PV currently accounts for ~12% of energy generation **from all new annual renewable energy additions**
- REC believes that **solar PV** can close the cumulative CO₂ gap by **25%**
- Considering the set target of a global temperature increase below **1.5°C**, this will require solar PV to generate **17,250 TWh of clean electricity** from 2016 until 2025
- By this, solar PV will **save 12 Gt of CO₂e** over this time frame
- **Increased efforts in all related areas** in addition required: complementary low-carbon energy, regulations, financing, storage, smart grids

The temperature increase targets mean up to 4.8 TW of PV capacity is needed in addition to current trend by 2025

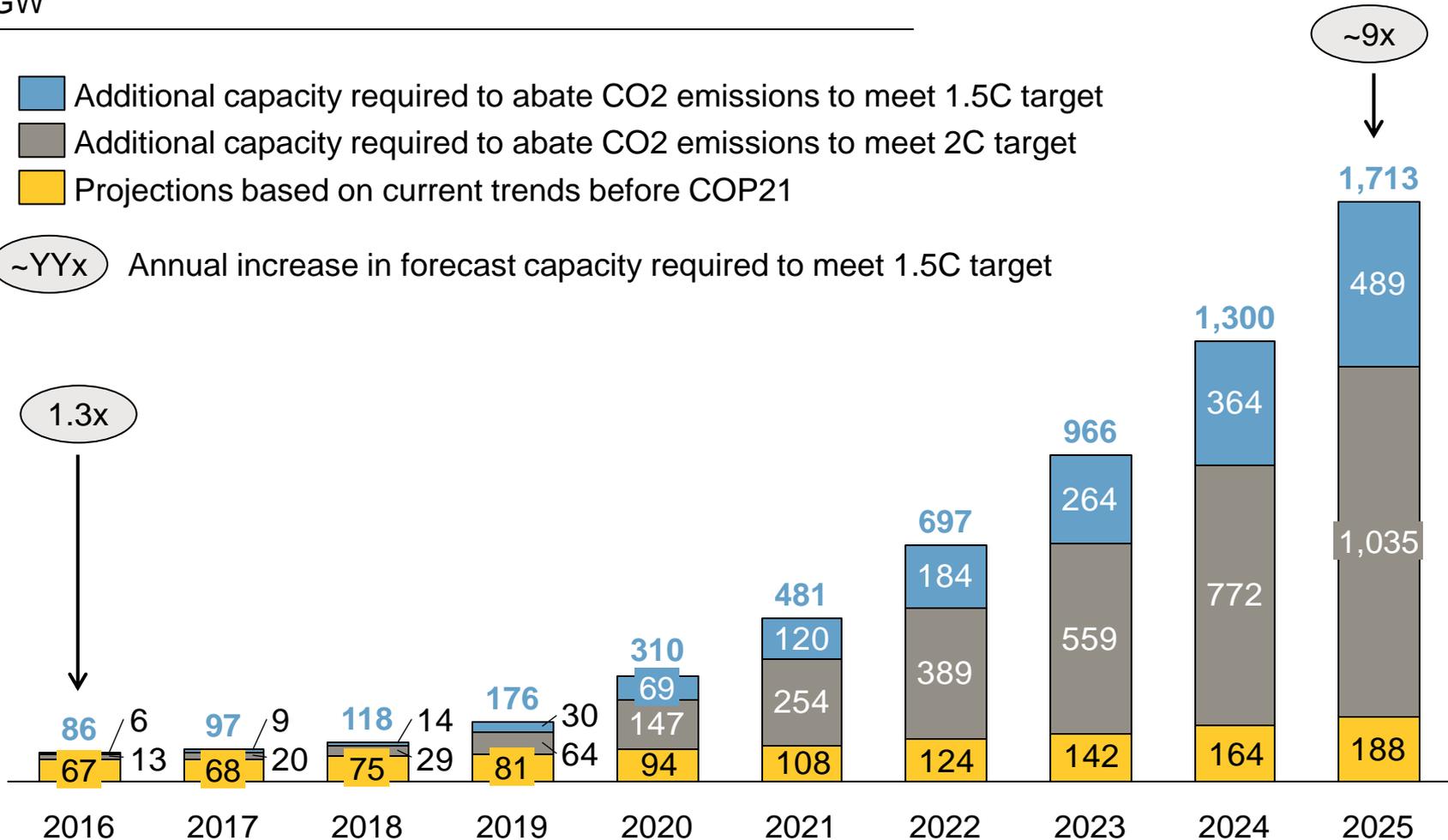


Forecast annual solar PV installations

GW

- Additional capacity required to abate CO2 emissions to meet 1.5C target
- Additional capacity required to abate CO2 emissions to meet 2C target
- Projections based on current trends before COP21

~YYx Annual increase in forecast capacity required to meet 1.5C target



Thank you for your attention.



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