TRENDS 2016

IN PHOTOVOLTAIC APPLICATIONS

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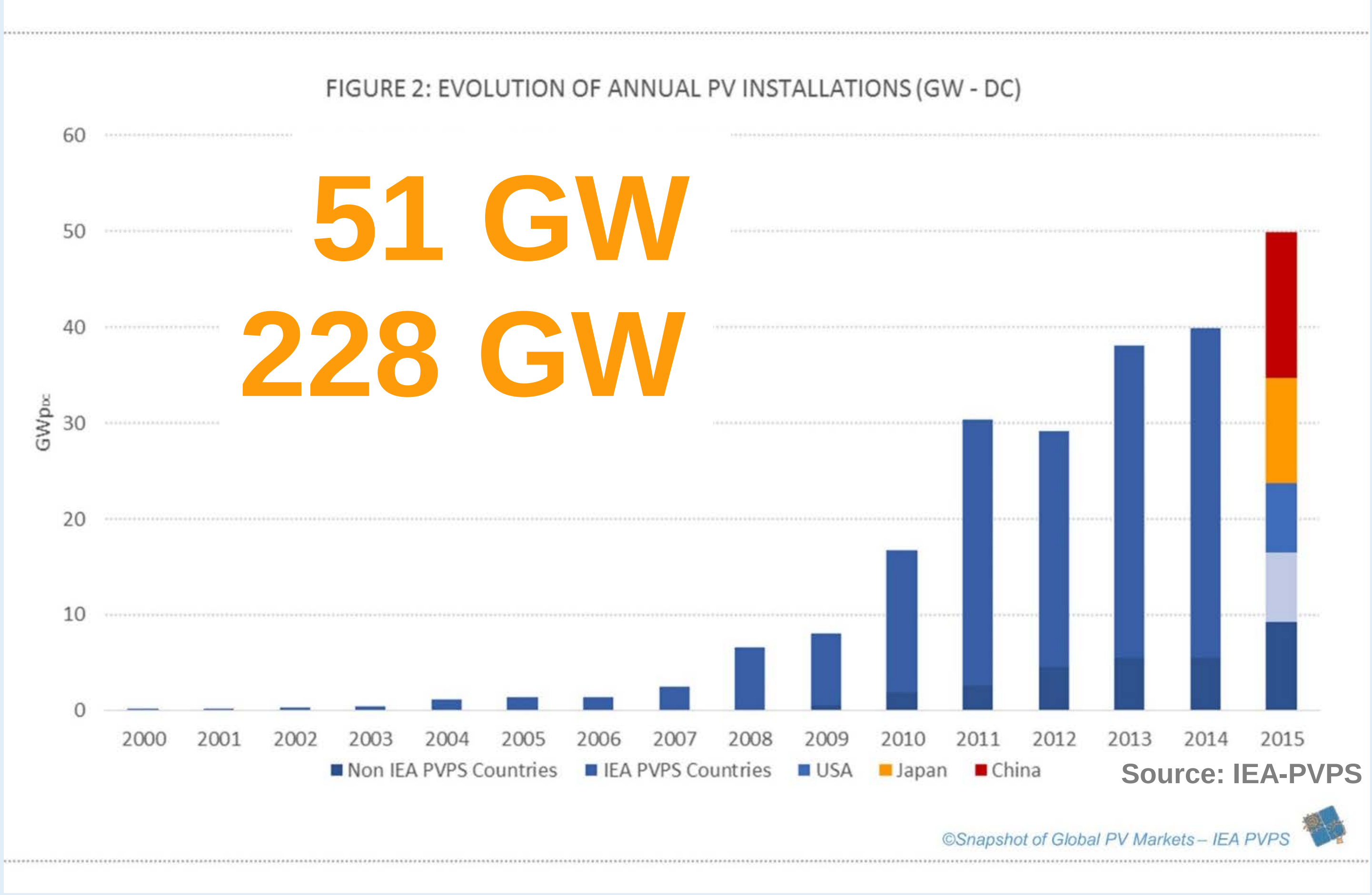
PVPS

What is IEA PVPS?

- Implementing Agreement from International Energy Agency – Technology Collaboration Program
- Established in 1993
- 30 members: 25 countries, European Commission, 4 associations
- South-Africa is the 30th member.
- Strategy 2013-2017: "*To enhance the international collaborative efforts which facilitate the role of photovoltaic solar energy as a cornerstone in the transition to sustainable energy systems*"


B. Rich
HEDGEYE
OIL
HELP! I'VE FALLEN AND I CAN'T GET UP

From 1.1 to 50 GW in 11 years



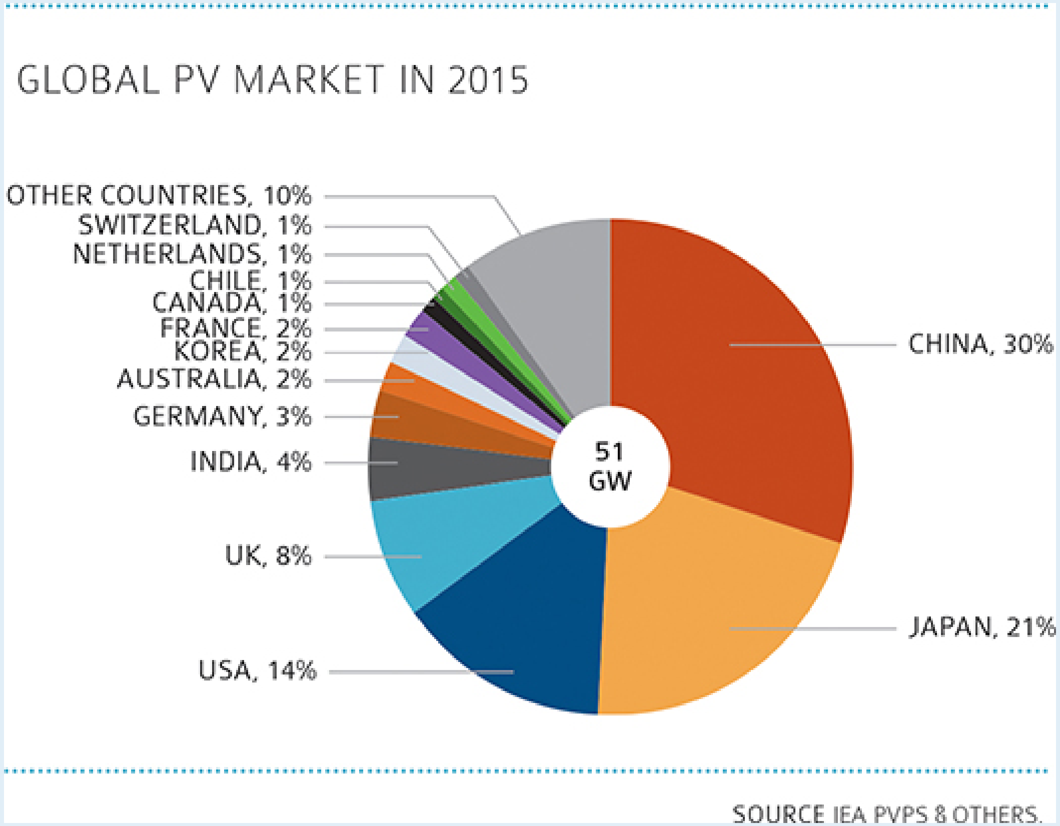
51 GW

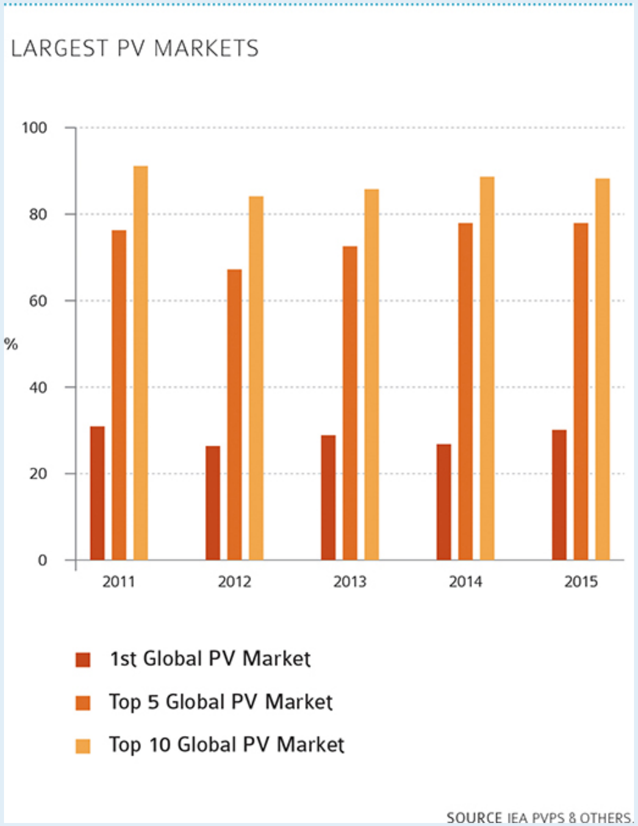
228 GW

Source: IEA-PVPS 2015

PV Market development

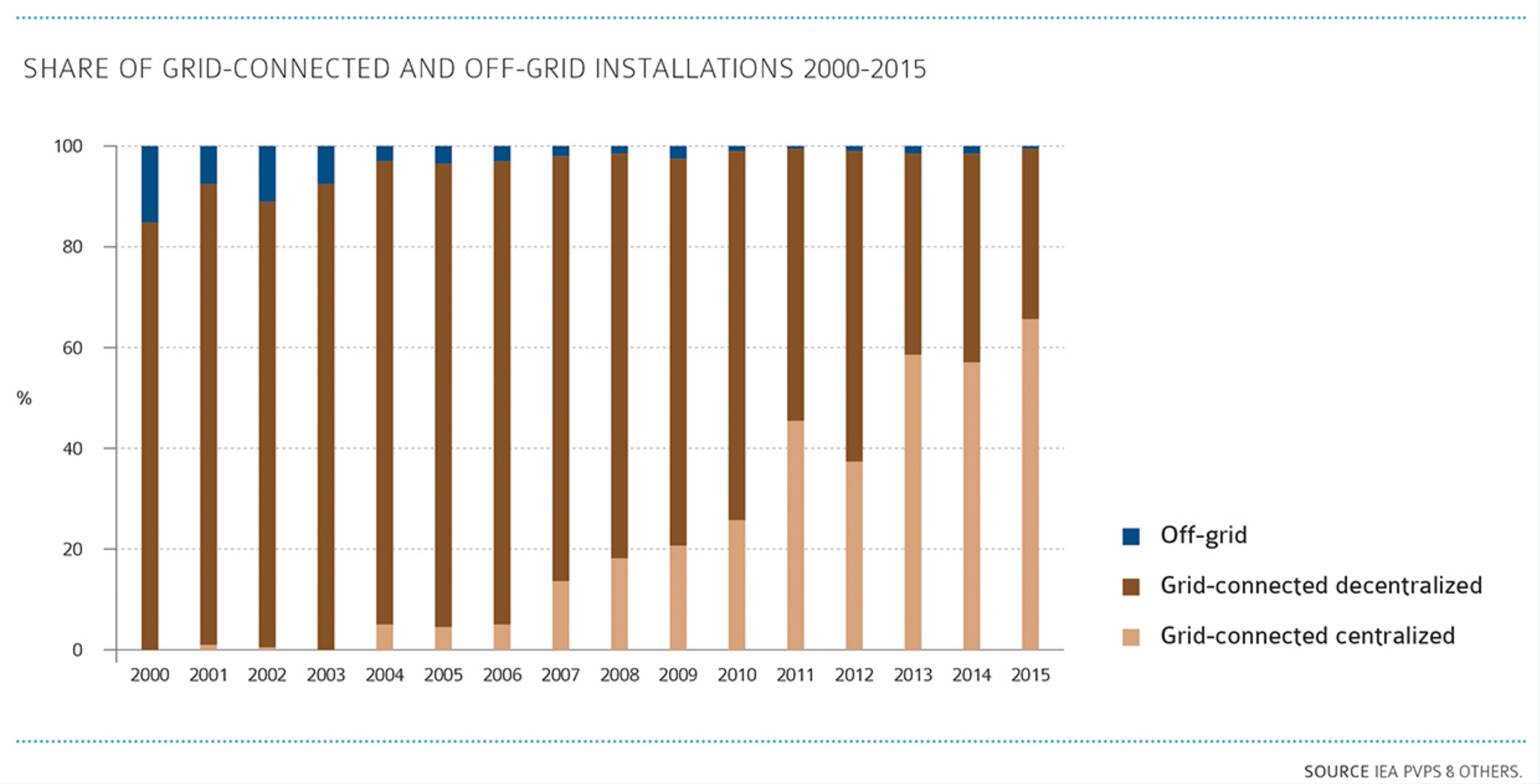
- China / Japan / Europe / USA





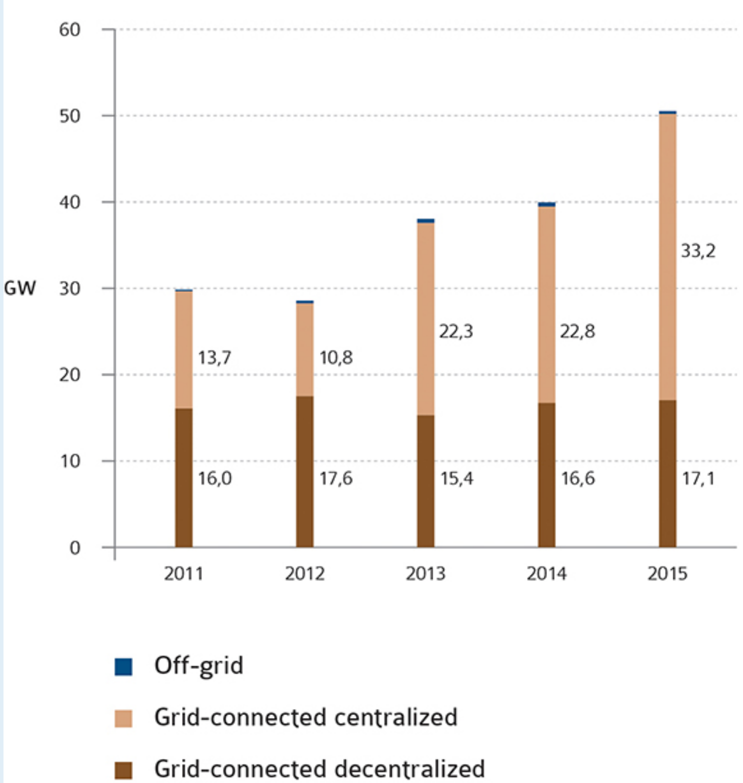
PV Market development

- Utility-scale dominates signficantly



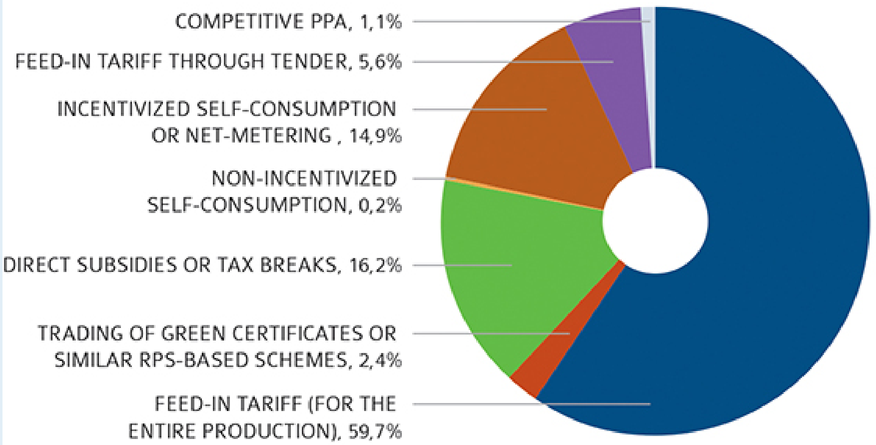
PV Market development

SEGMENTATIONS OF PV INSTALLATION 2011 - 2015



SOURCE IEA PVPS & OTHERS.

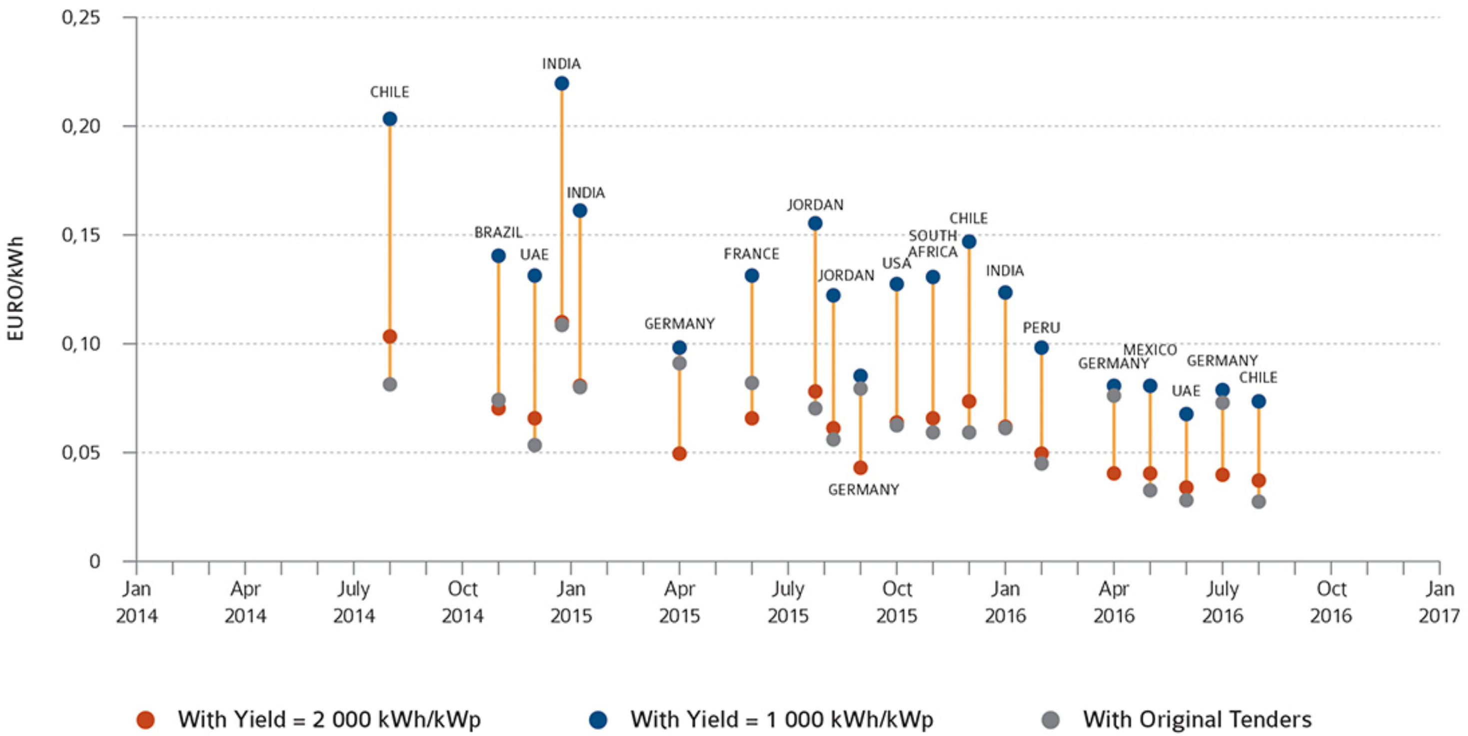
2015 MARKET INCENTIVES AND ENABLERS



SOURCE IEA PVPS & OTHERS.

PV Market development

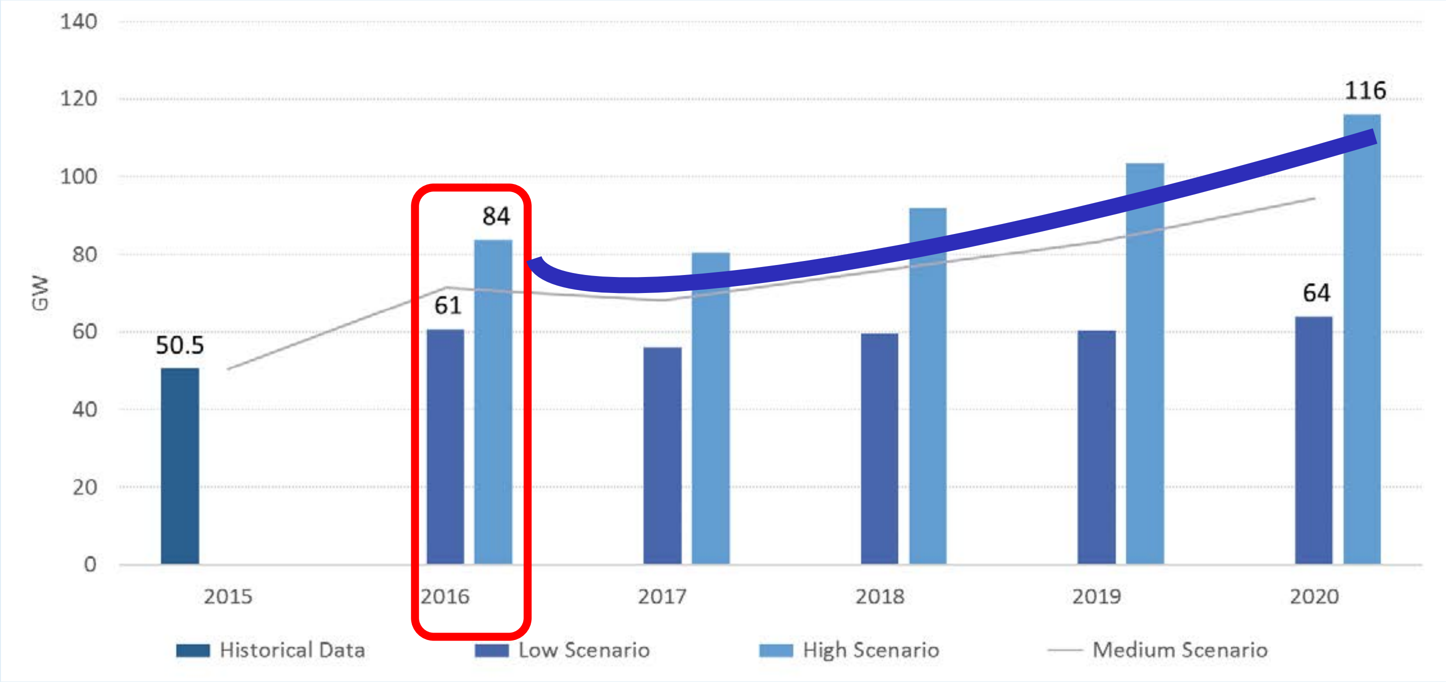
NORMALIZED PPA VALUE FOR RECENT TENDERS



SOURCE IEA, BECQUEREL INSTITUTE.

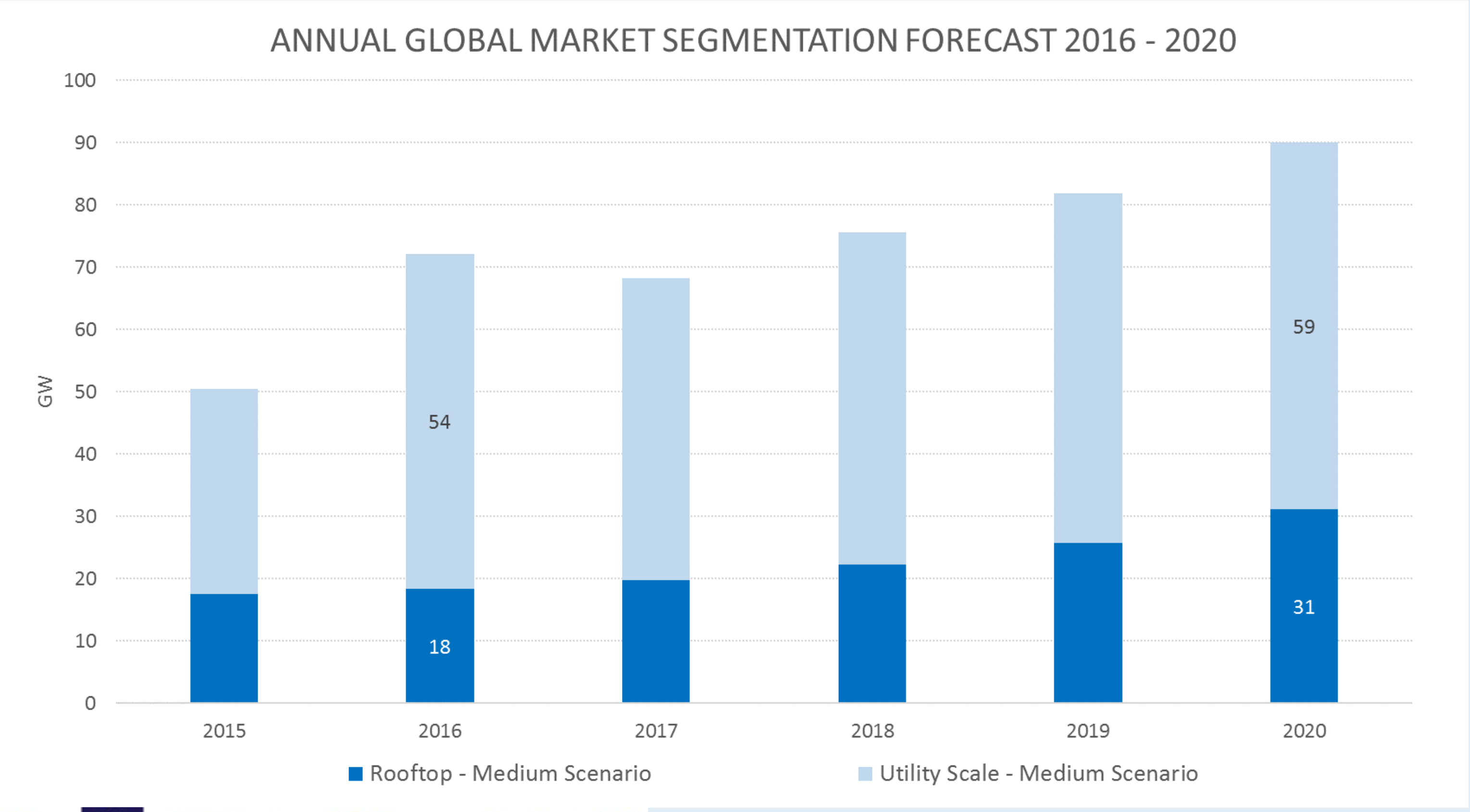
PVPS

Uncharted Territories



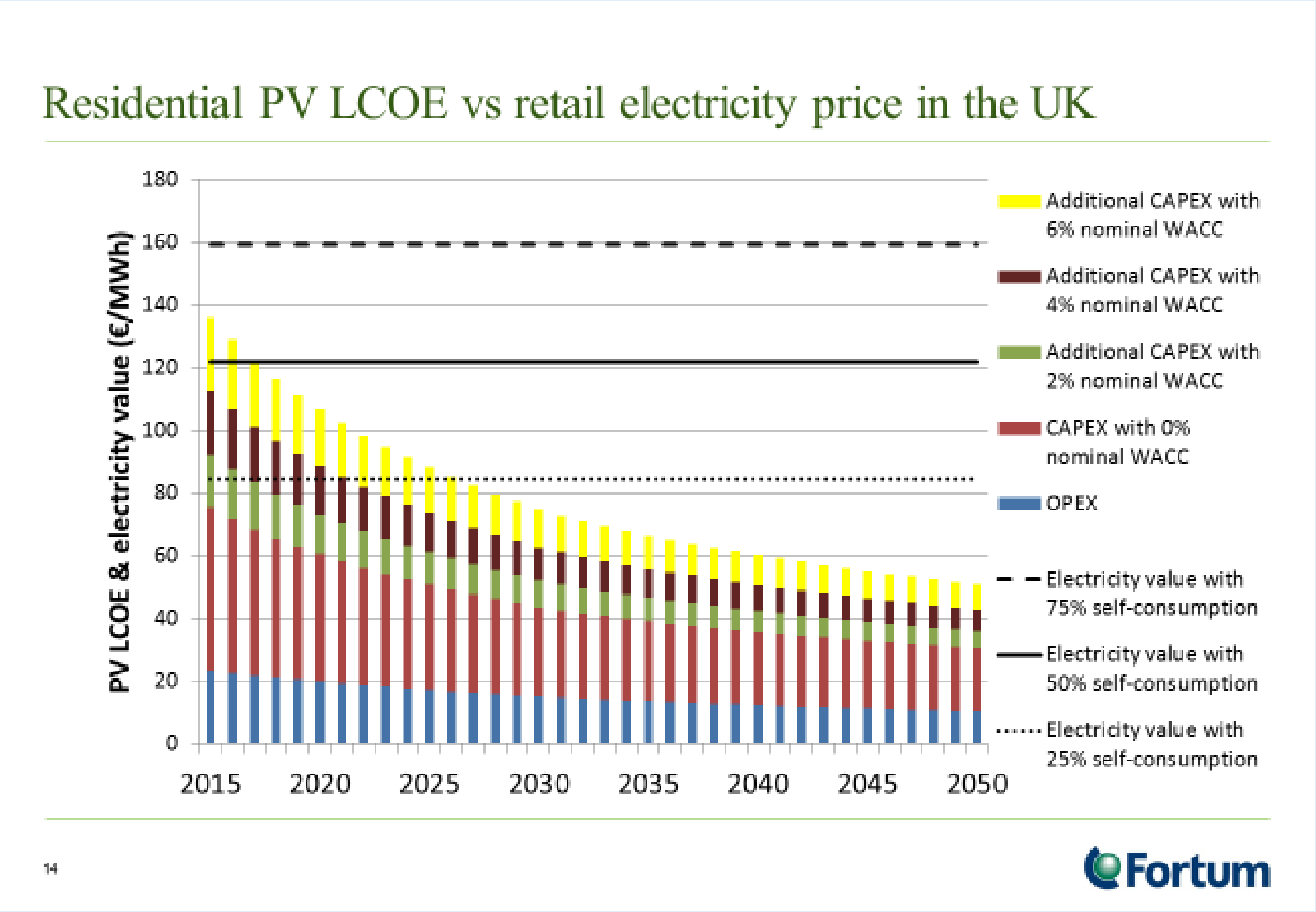
Source: PV Market Alliance – Becquerel Institute 2016

What kind of market ahead?

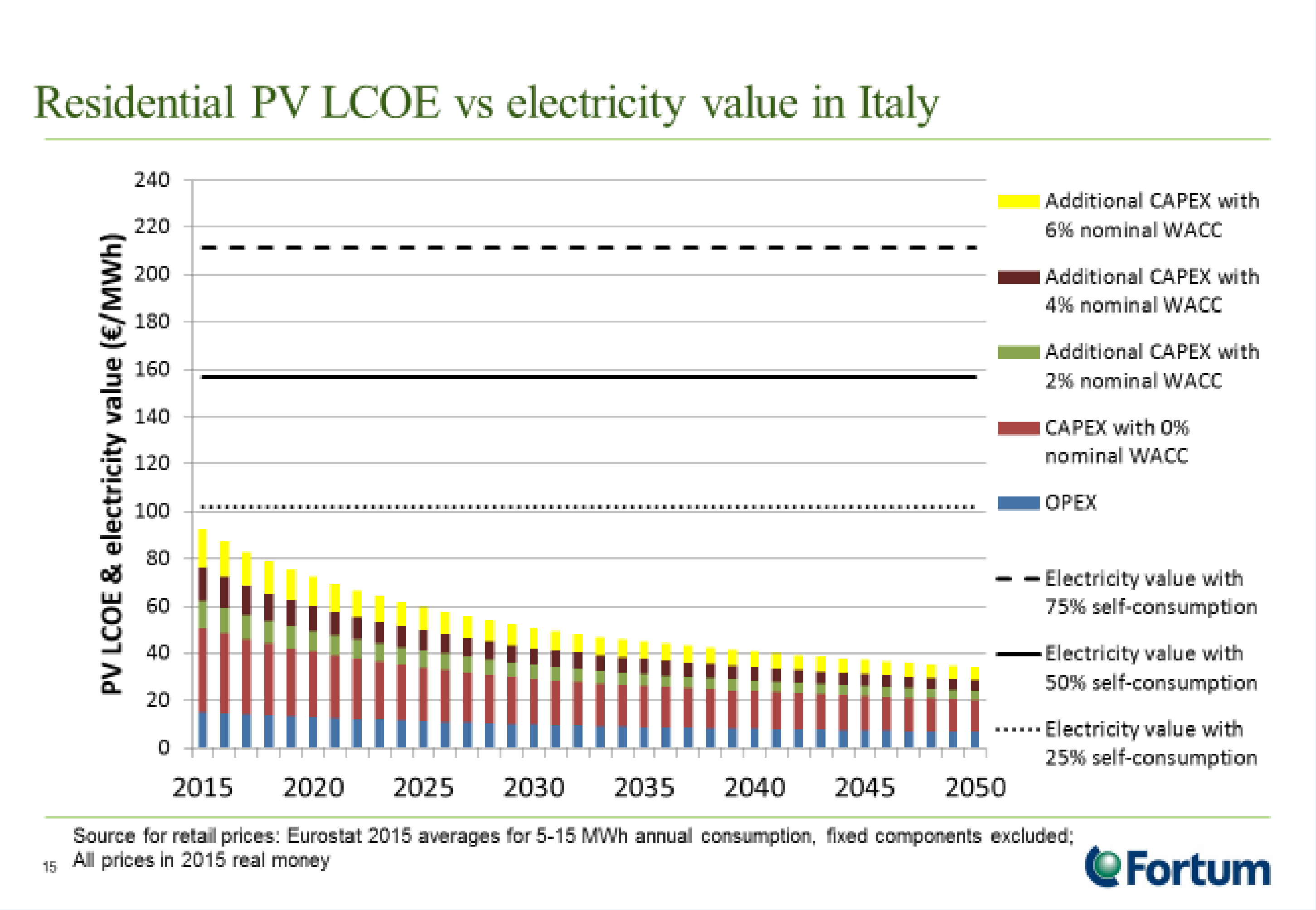


Source: PV Market Alliance – Becquerel Institute 2015

Residential PV LCOE in UK



Residential PV LCOE in italy



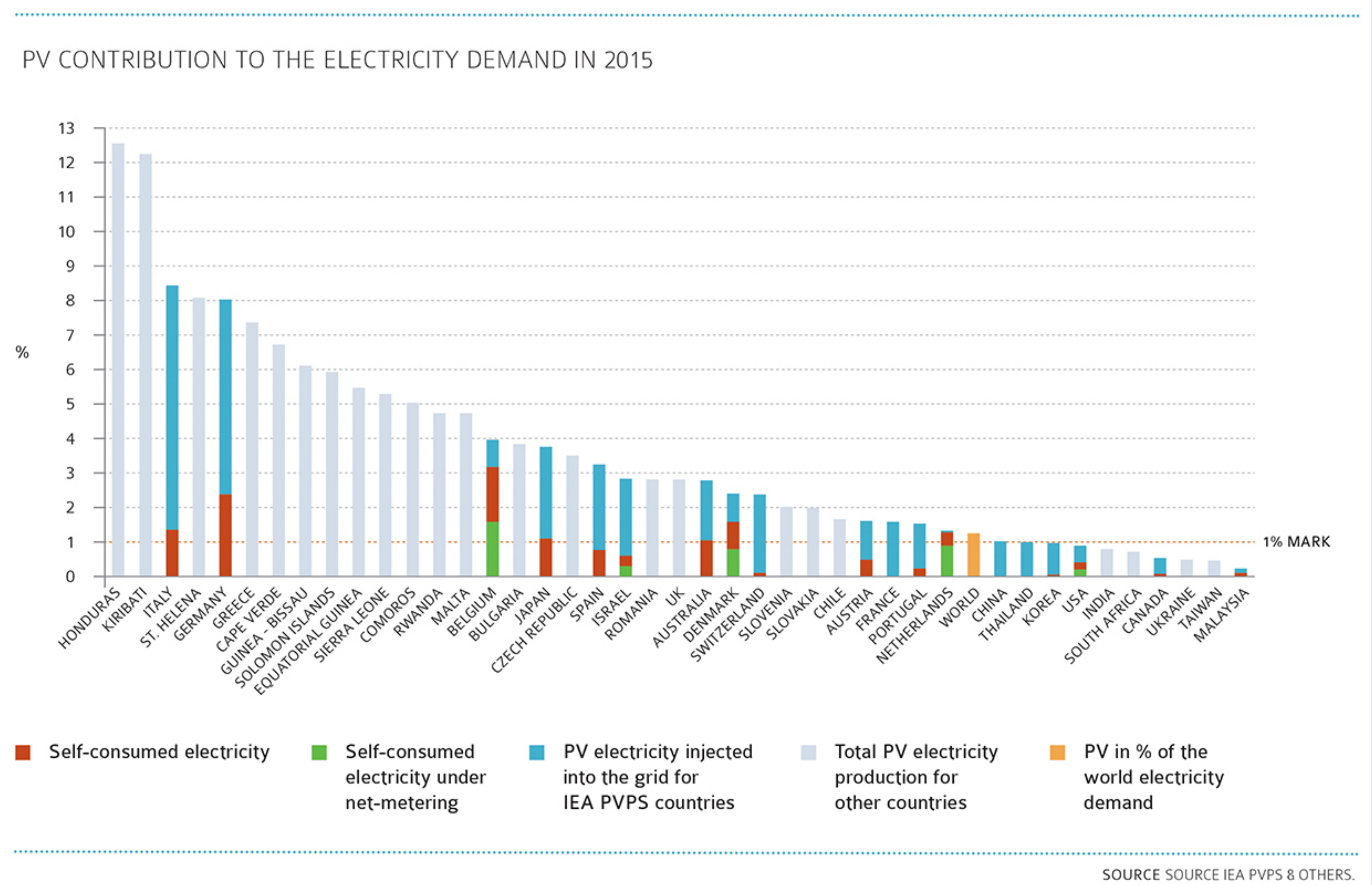
Competitiveness

Summary of when true PV competitiveness is reached with 50% self-consumption in residential segment

Residential	Nominal WACC			
5 kW_p	**0 %**	**2 %**	**4 %**	**6 %**
Stockholm	2020	2025	2032	2040
Helsinki	2019	2024	2030	2038
Amsterdam	Parity	Parity	2019	2023
Paris	Parity	2016	2021	2026
Brussels	Parity	Parity	2018	2022
Istanbul	Parity	Parity	2017	2021
London	Parity	Parity	Parity	2018
Berlin	Parity	Parity	Parity	Parity
Madrid	Parity	Parity	2018	2022
Rome	Parity	Parity	Parity	Parity

Fortum

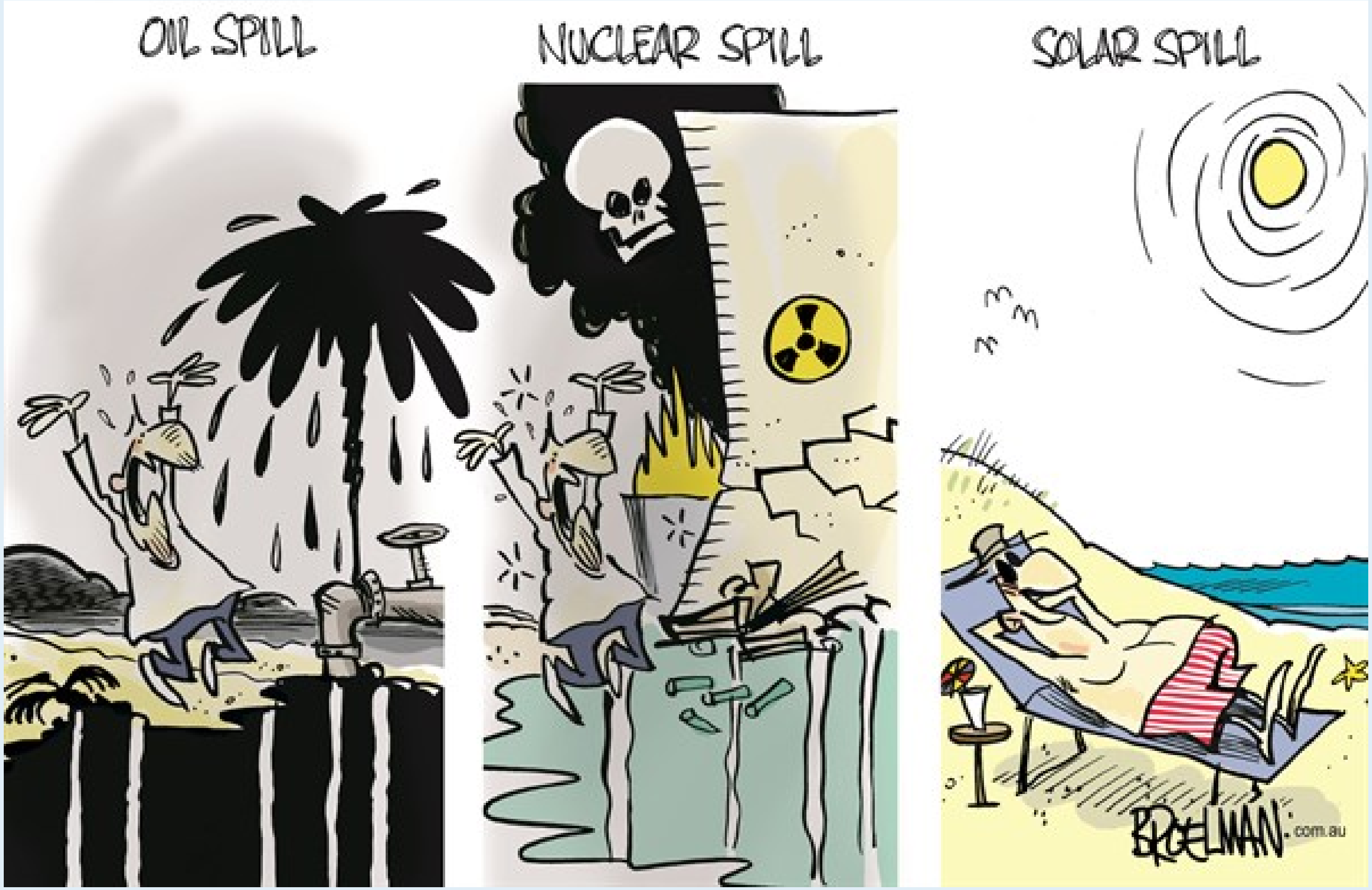
PV penetration in %



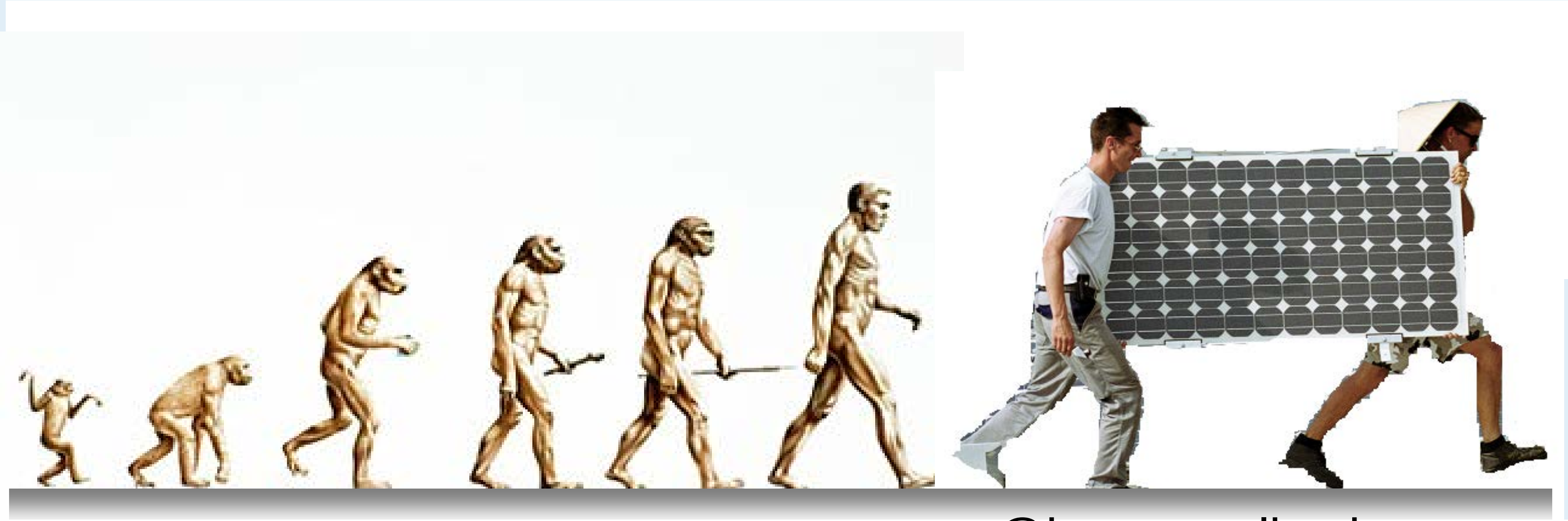
Conclusions

- Utility-scale market driven by competitive prices
- Prosumers should become a driving force but regulations are complex
- Competitive prices are linked to low interest rates and current overcapacities
- Market leaders are at stake (CN, JP, US). Uncertain short term.
- Long term can only be positive, under conditions. But PV is already the cheapest source of electricity.

Time to spill ;-)



THANK YOU FOR YOUR ATTENTION



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