The True Costs:

Solar Photovoltaics

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Renewable cost analysis at IRENA

Fills an important gap in knowledge

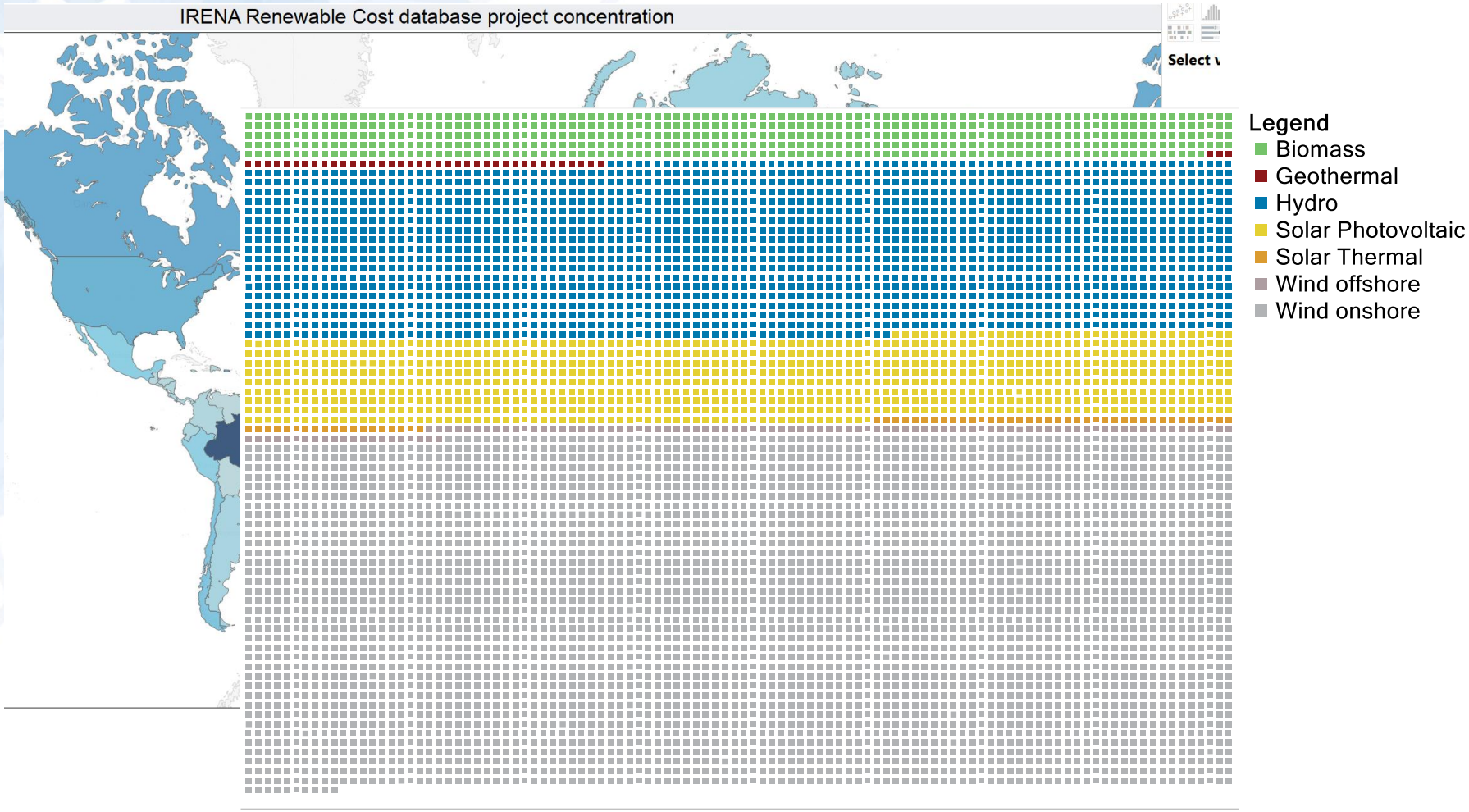
World-class database of costs

Cutting edge analysis, not just data

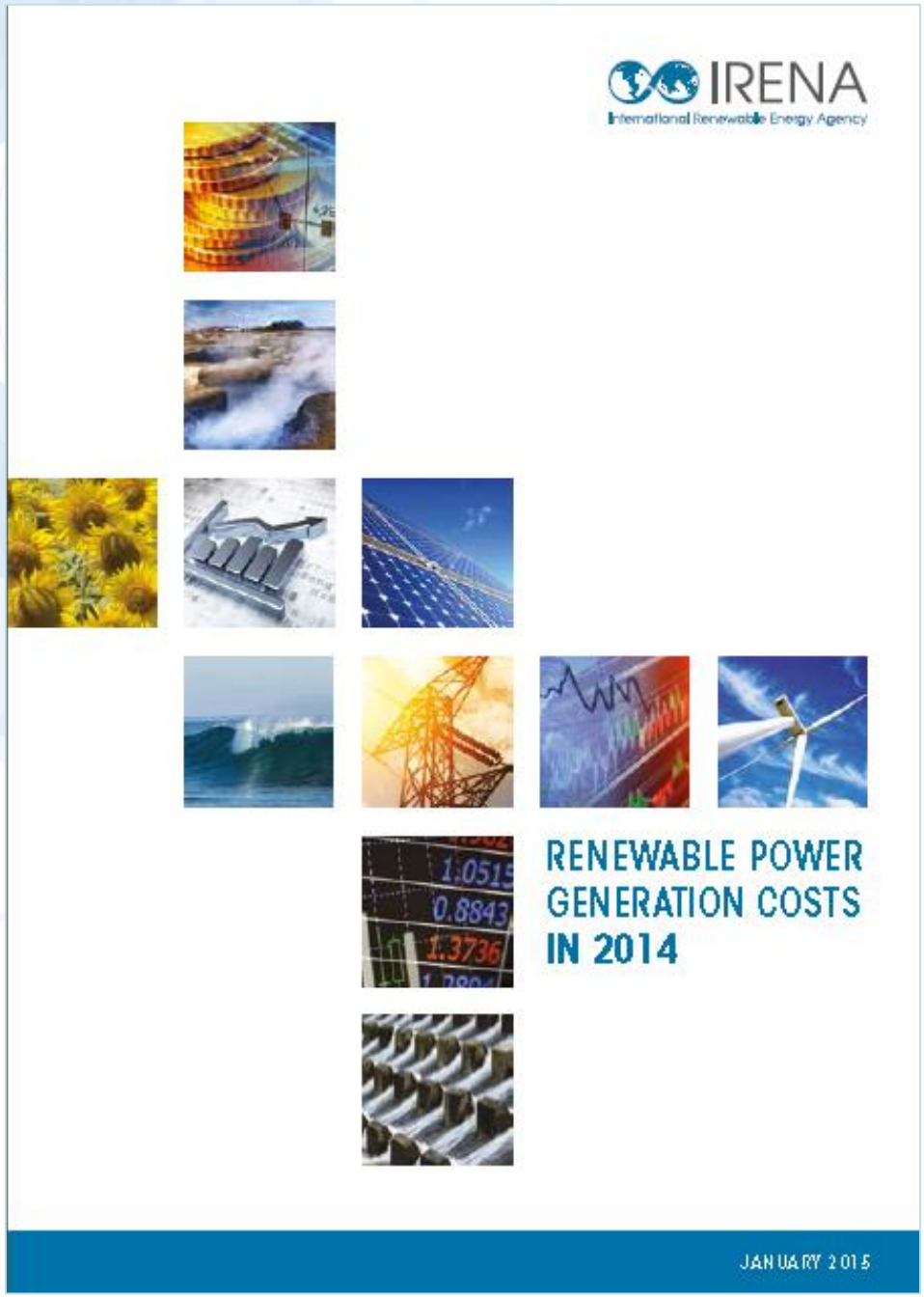
More products and analysis coming

Costing Alliance deepens engagement

Power generation database



15000 utility-scale projects, 9000 with LCOE data



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Renewable Power Generation Costs in 2014

Highlights

The relentless improvement in competiveness continues

Renewables competing head-to-head with fossil fuels

Integrating variable renewables doesn't change the conclusions

Future cost reductions will be more challenging, policy driven

Renewables competitiveness continues to improve

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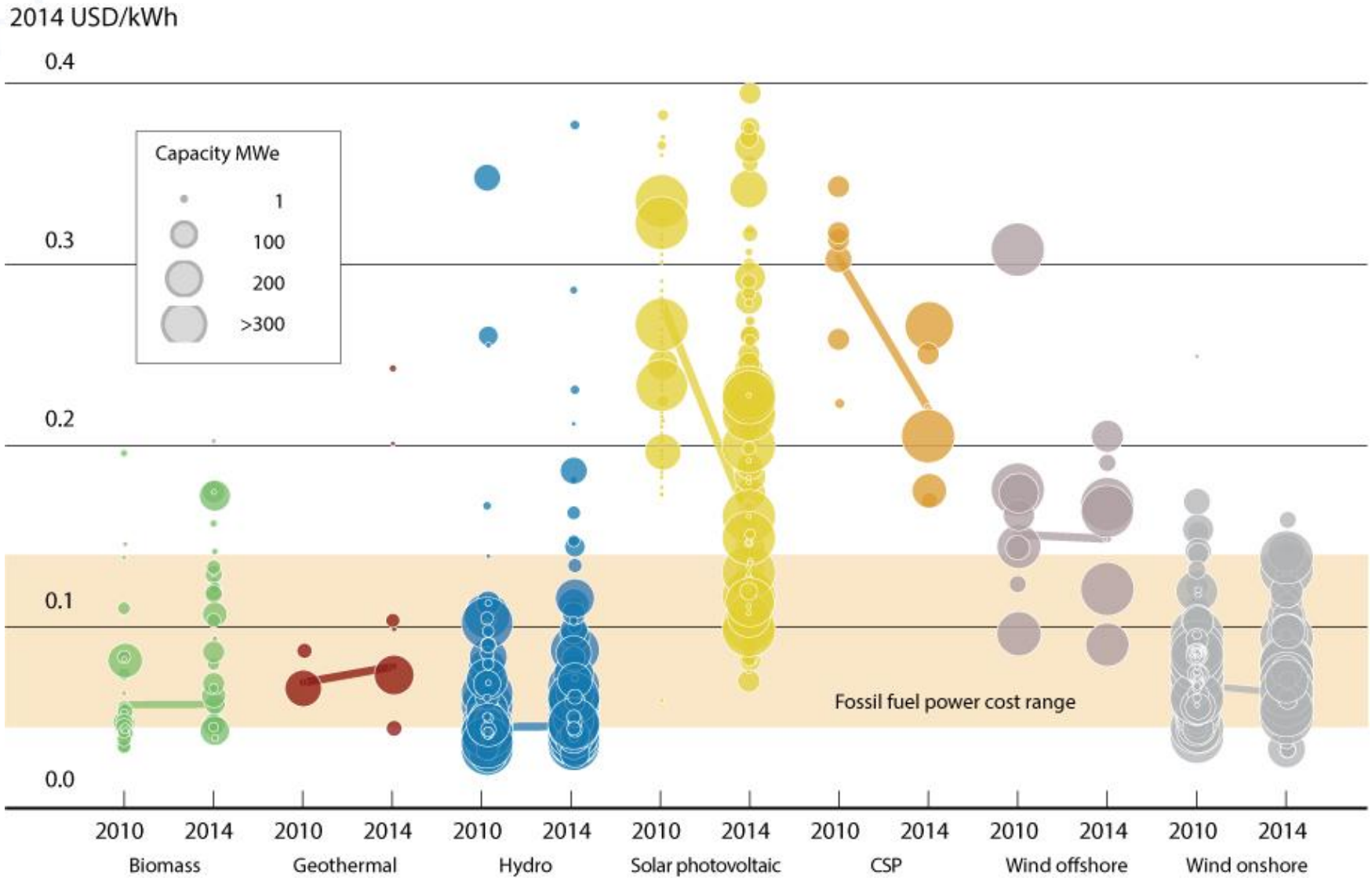
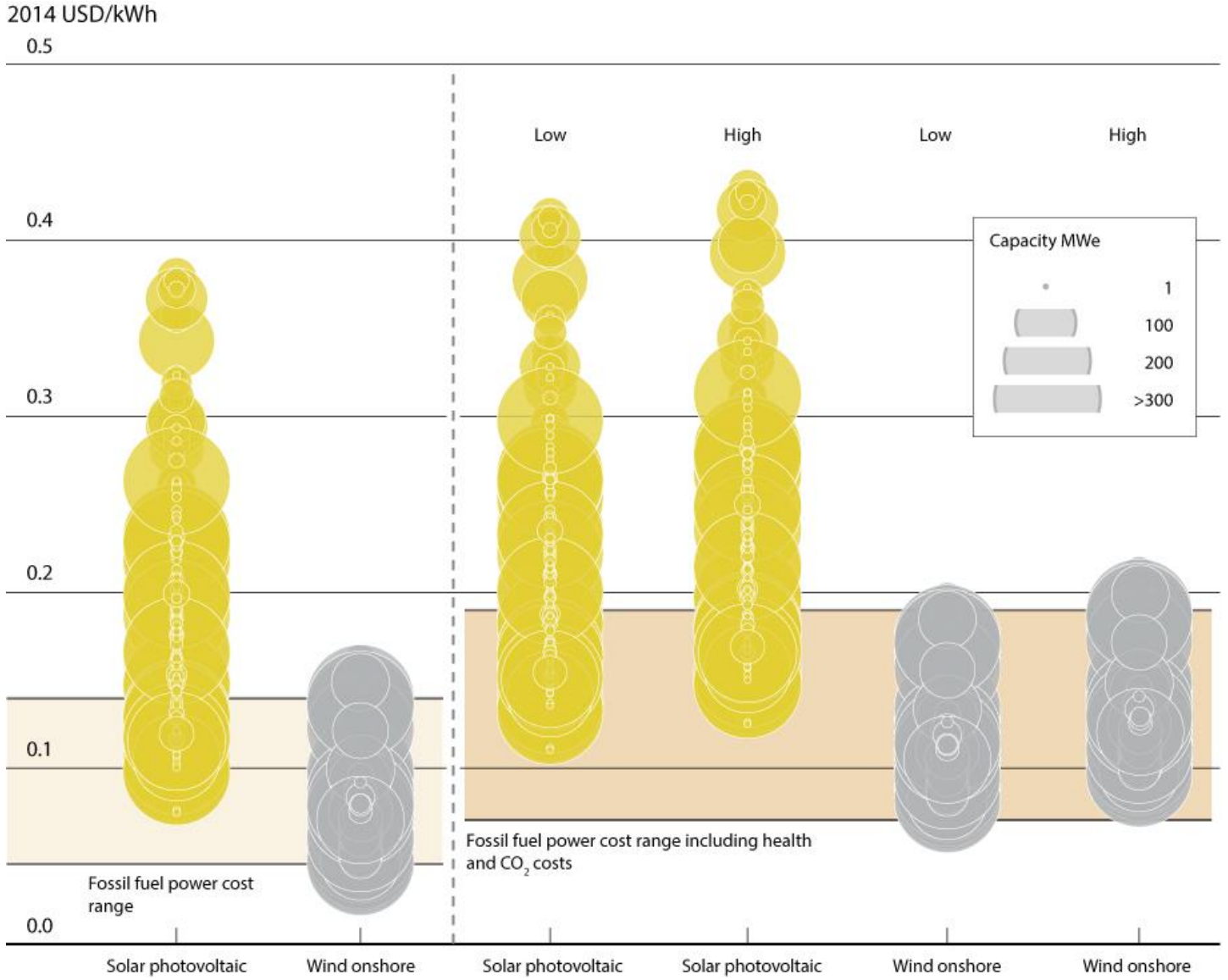
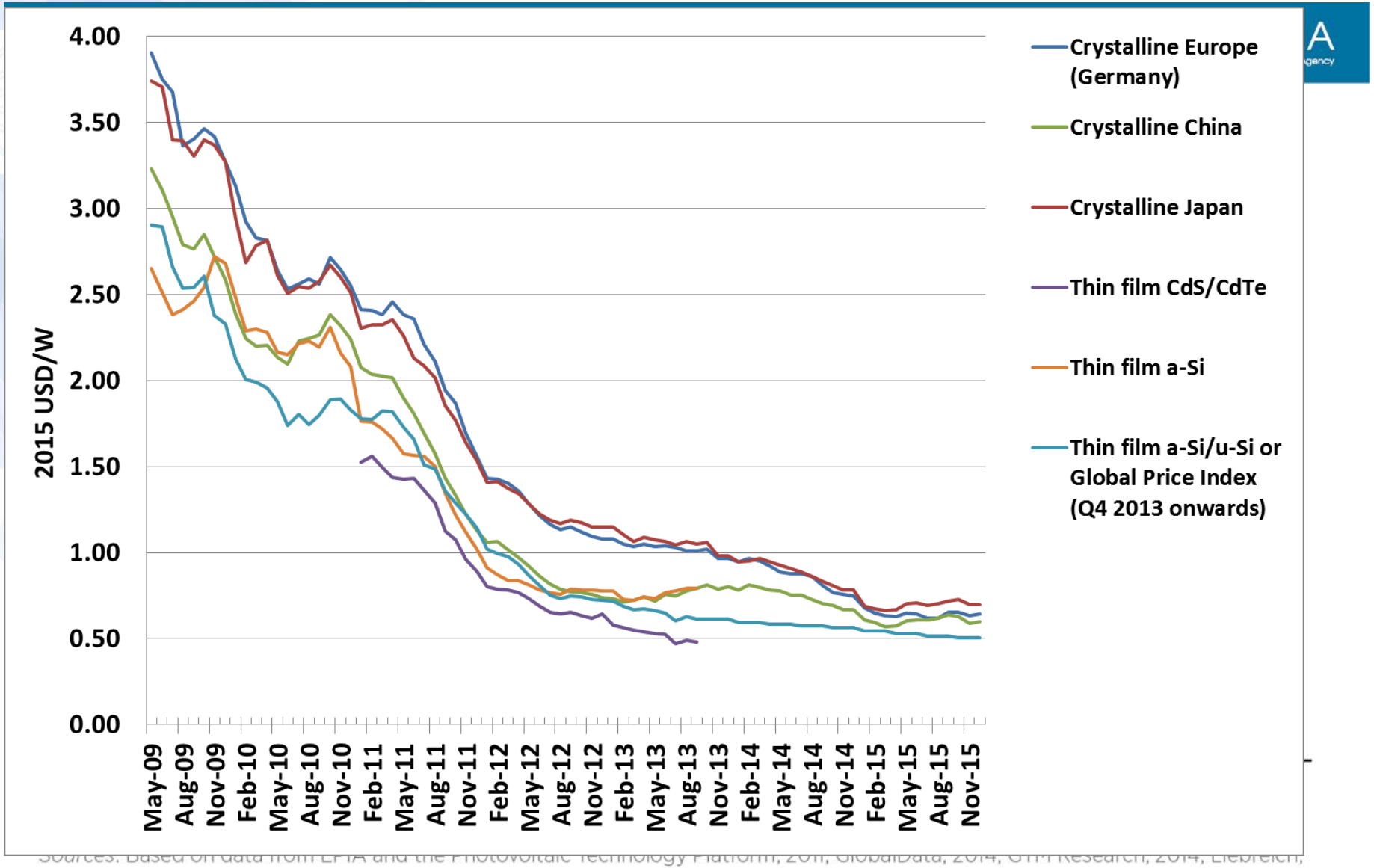


Integrating high levels of variable renewables is competitive



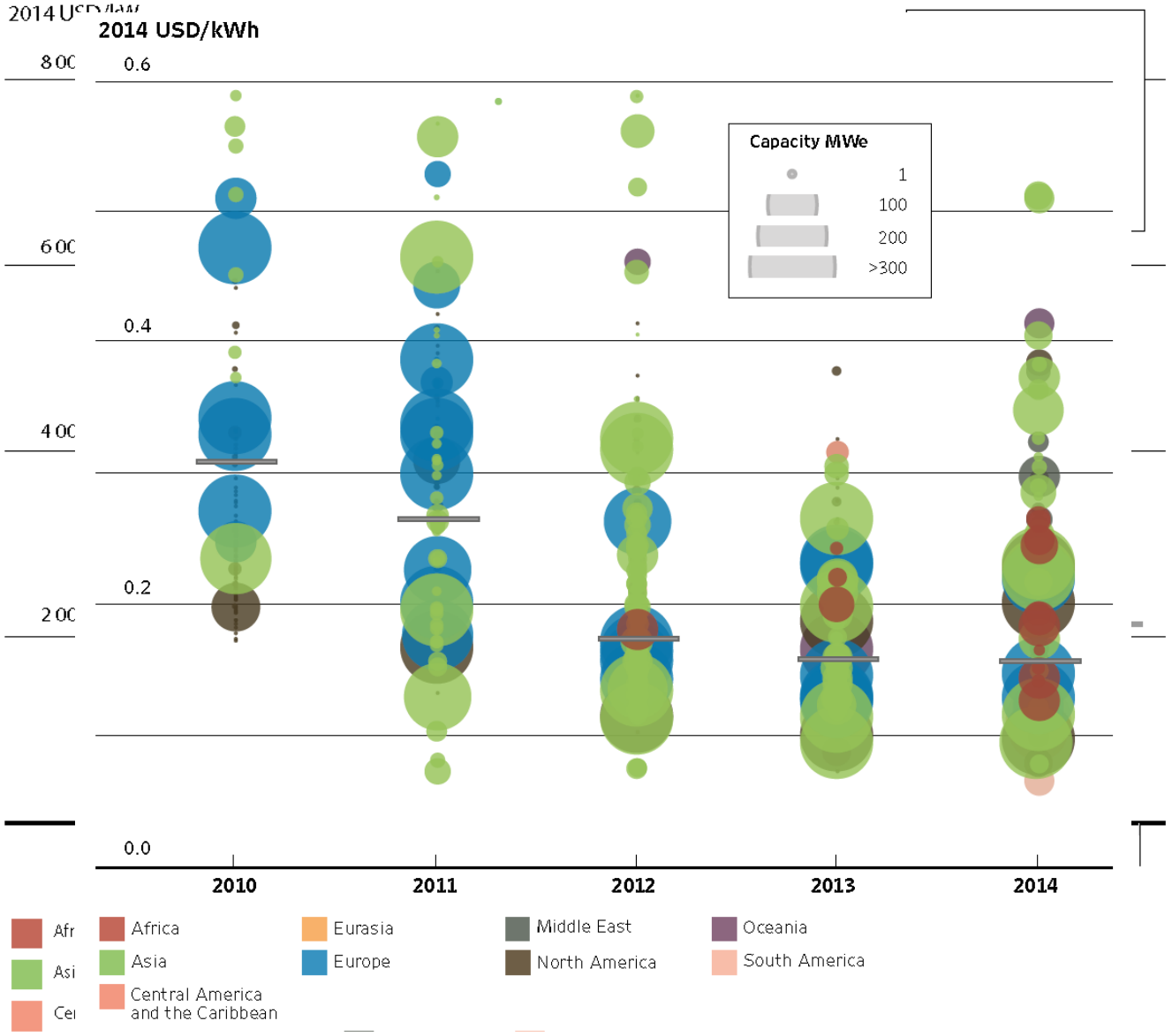
SOLAR PV COSTS

Solar PV module prices



Sources: Based on data from EPIA and the Photovoltaic Technology Platform, 2011; GlobalData, 2014; GTM Research, 2014; Fraunhofer ISE, 2011; pvXchange, 2014 and IRENA analysis.

Solar PV modules and utility-scale projects



Technology improvements
and
cost reductions

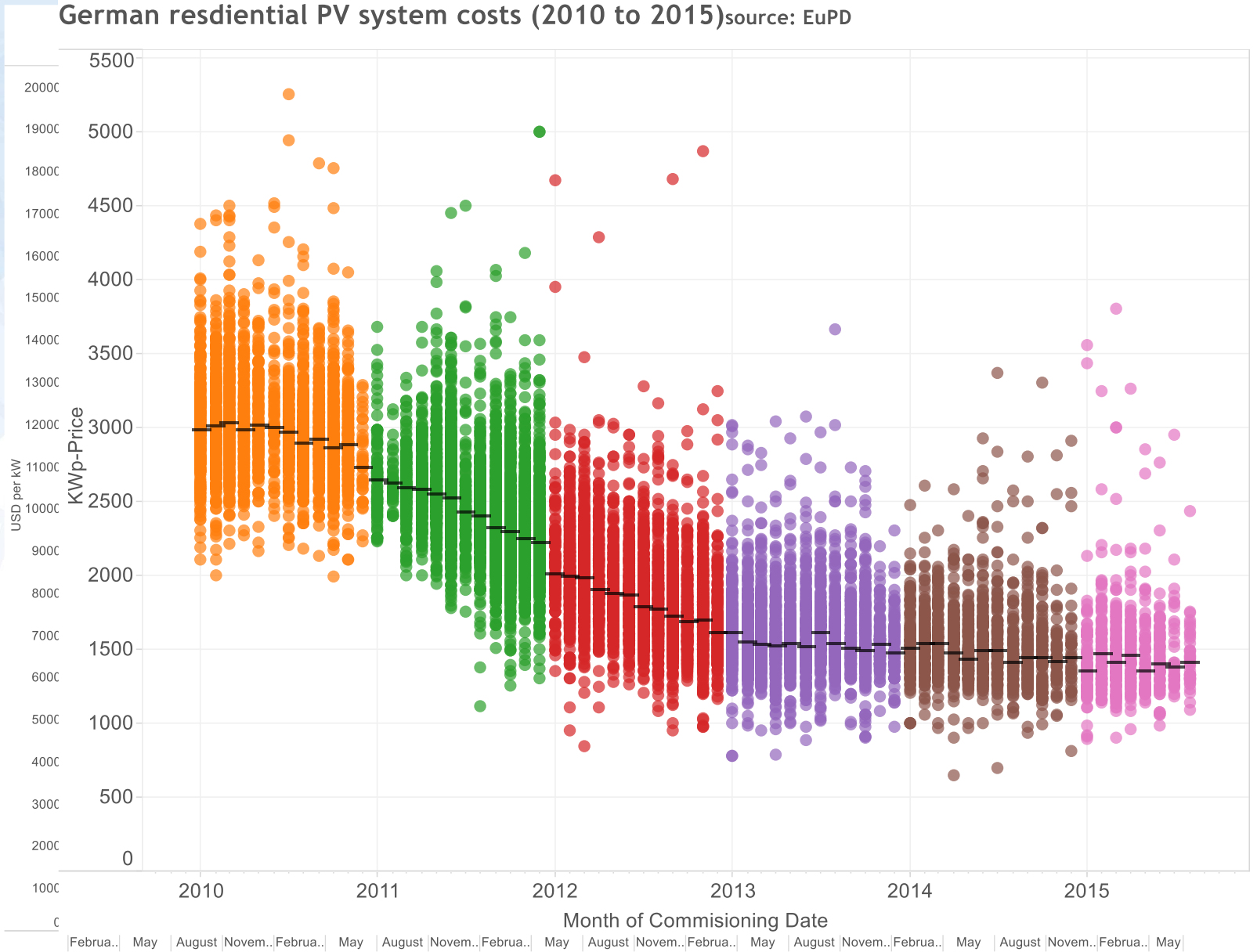
=

Falling LCOEs

Residential installed costs continue to edge lower

California

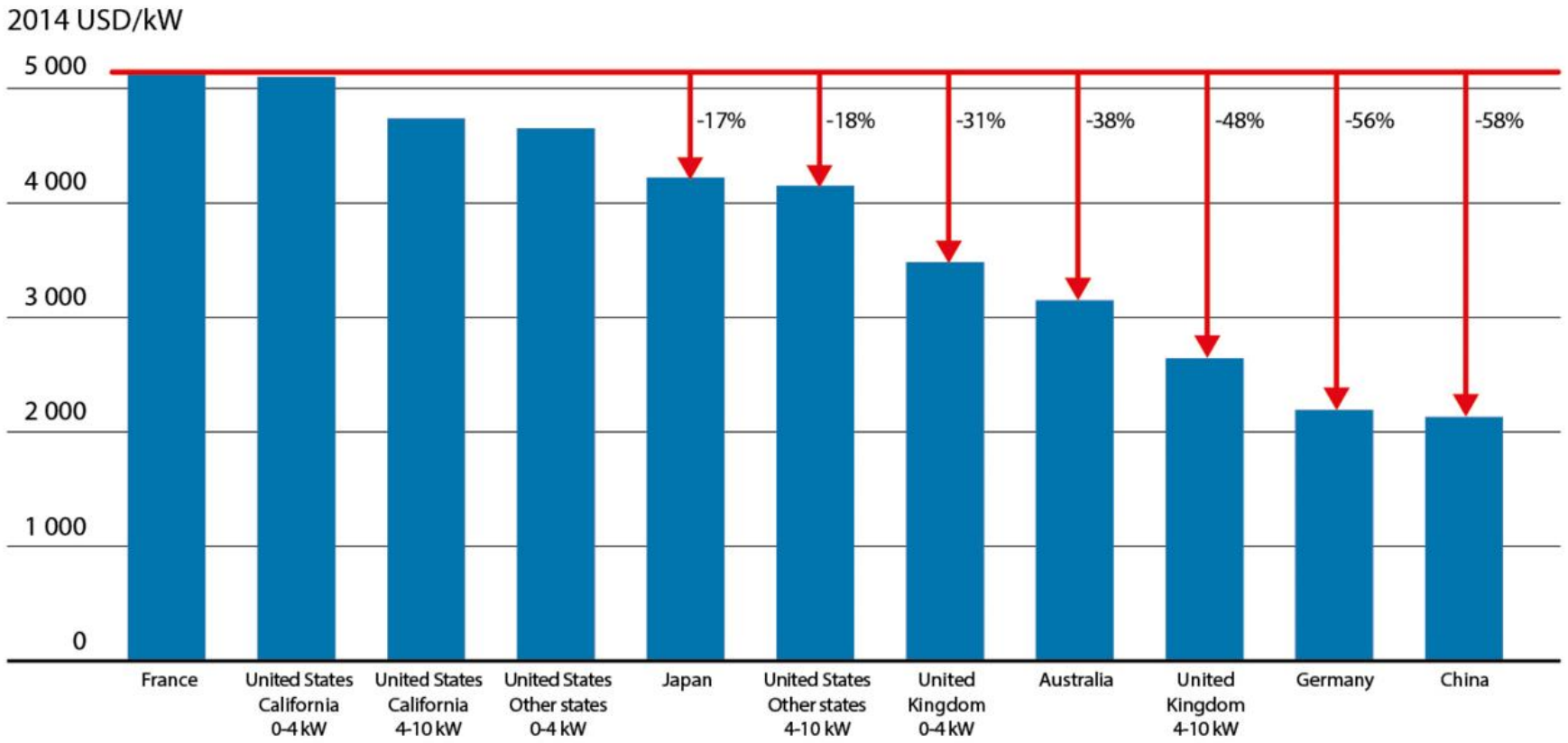
Germany



Residential solar PV: Average cost differentials

RENEWABLE POWER GENERATION COSTS IN 2014

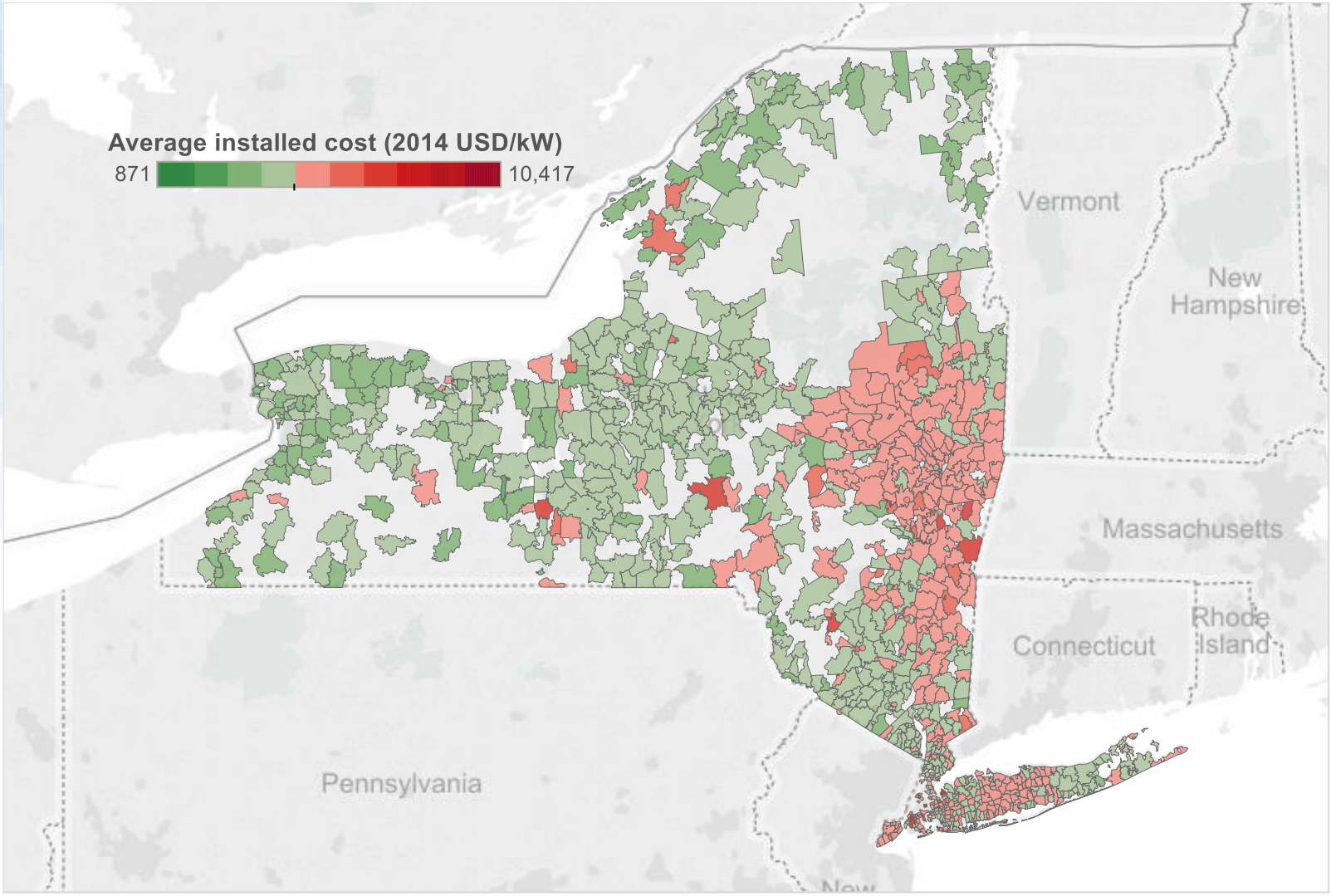
FIGURE 5.11: ESTIMATED AVERAGE TOTAL INSTALLED PV SYSTEM COSTS IN THE RESIDENTIAL SECTOR BY COUNTRY, 2014



Source: IRENA Renewable Cost Database; DECC, 2014; GSE, 2014; IEA PVPS, 2014; and Photon Consulting, 2014.

Where do costs differ? Why?

Average residential PV system cost (relative to 2014 median)

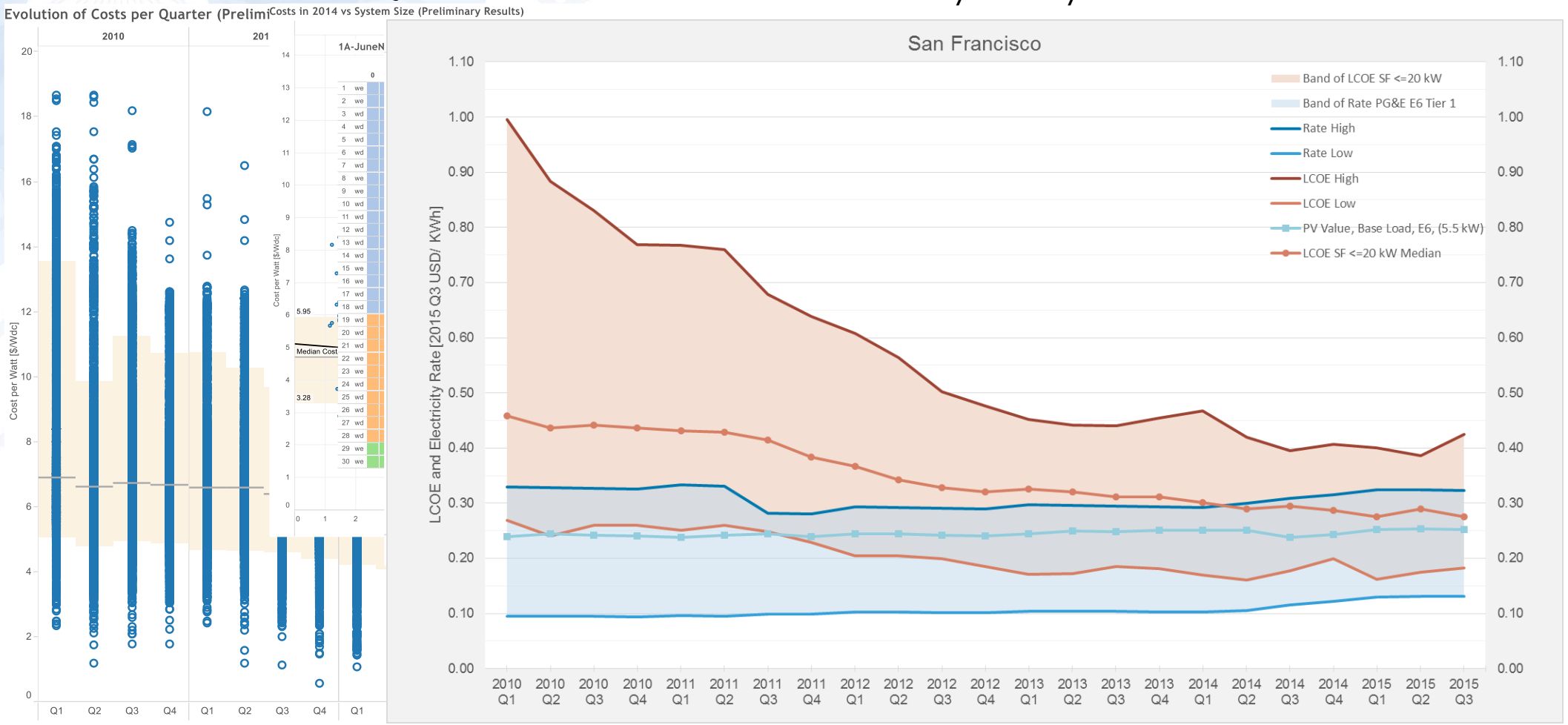


PV Parity Indicators (Preview)

Real Project Cost Data

Projected Electricity Rates

PV Parity Analysis



Solar PV Costs in Africa

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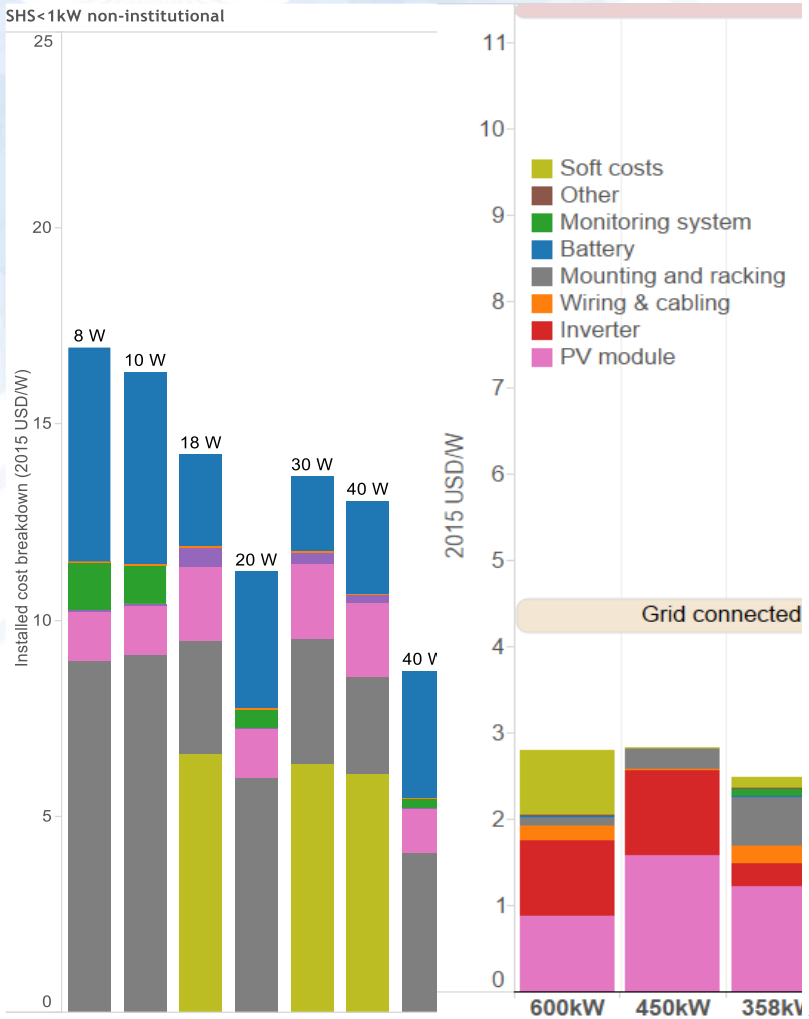
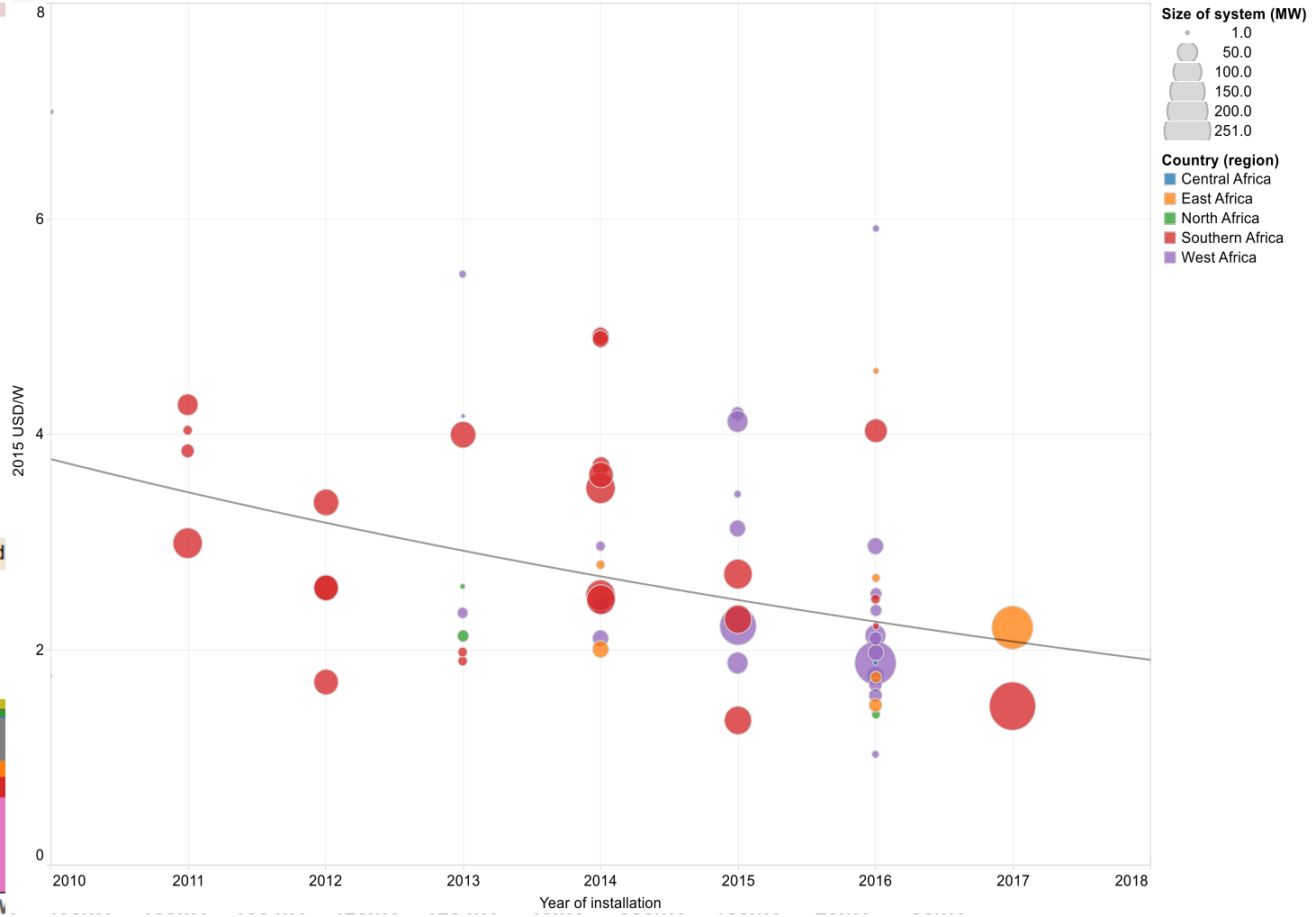
Solar home systems



Mini-grids

Utility-scale



COST REDUCTION POTENTIALS

Cost reduction drivers are changing

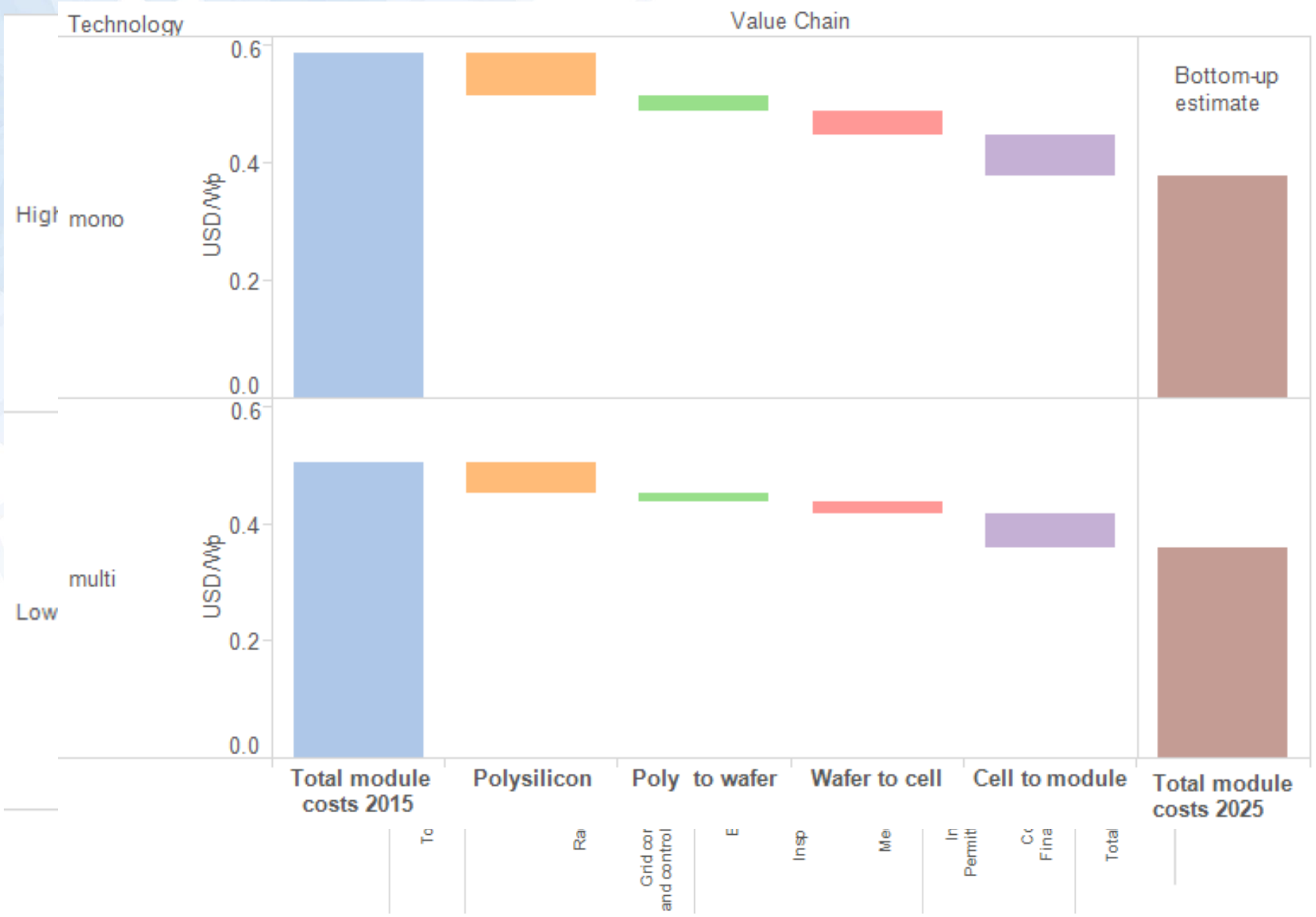
Low equipment costs change the dynamics

Balance of project costs, O&M, financing will grow in importance

In some cases more challenging to unlock

But cost differentials are large and the policy levers exist

Solar PV cost reduction potentials



Large average cost reduction potential

BoS to dominate

Upcoming cost analysis: Firm

PV parity indicators

Global wind learning curve

Stationary applications

Energy security

RE power cost reduction potentials

RE financing costs

Solar PV costs in Africa

IRENA's Cost Analysis

Bringing Our Future Forward

Thank you!

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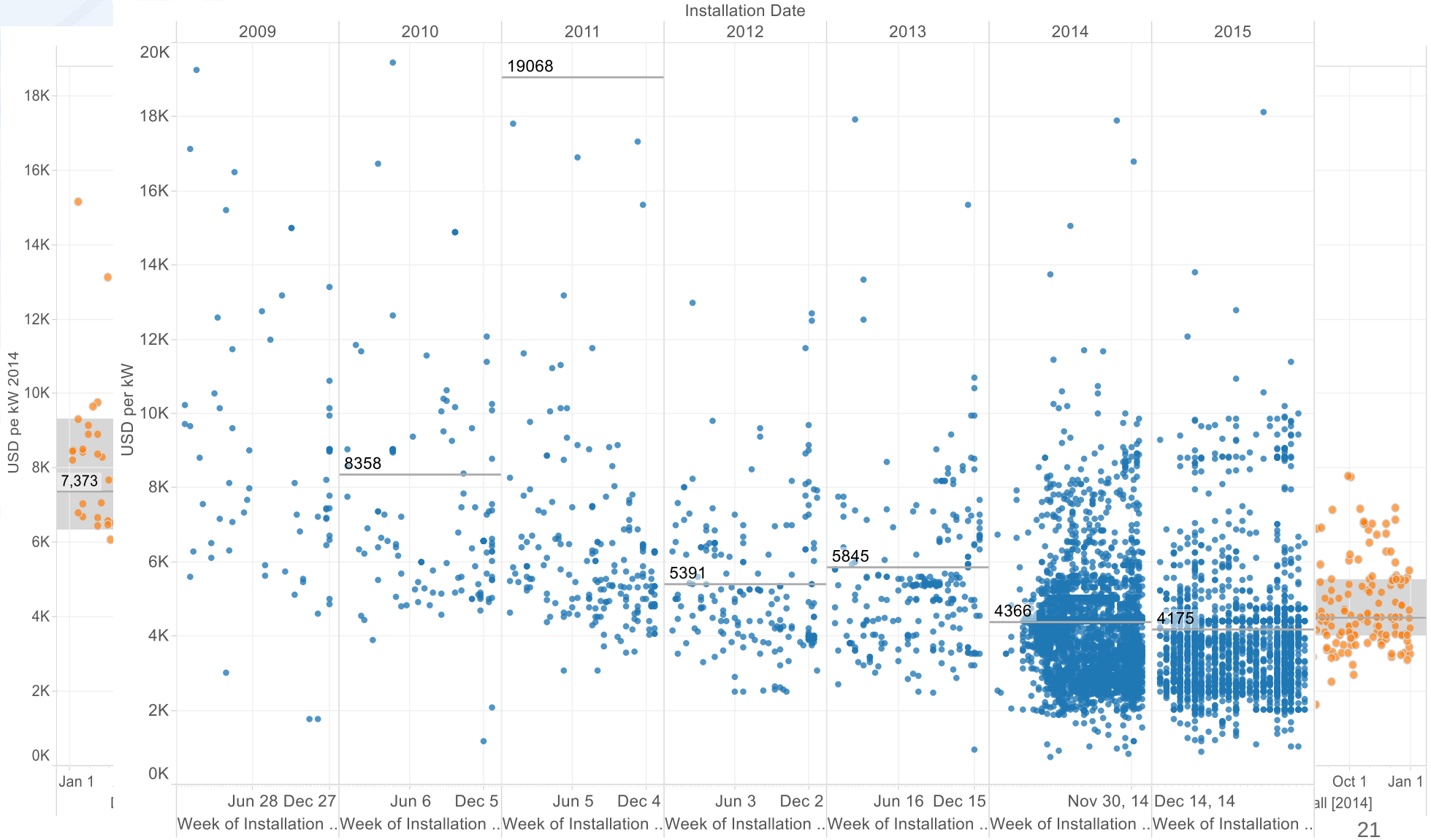
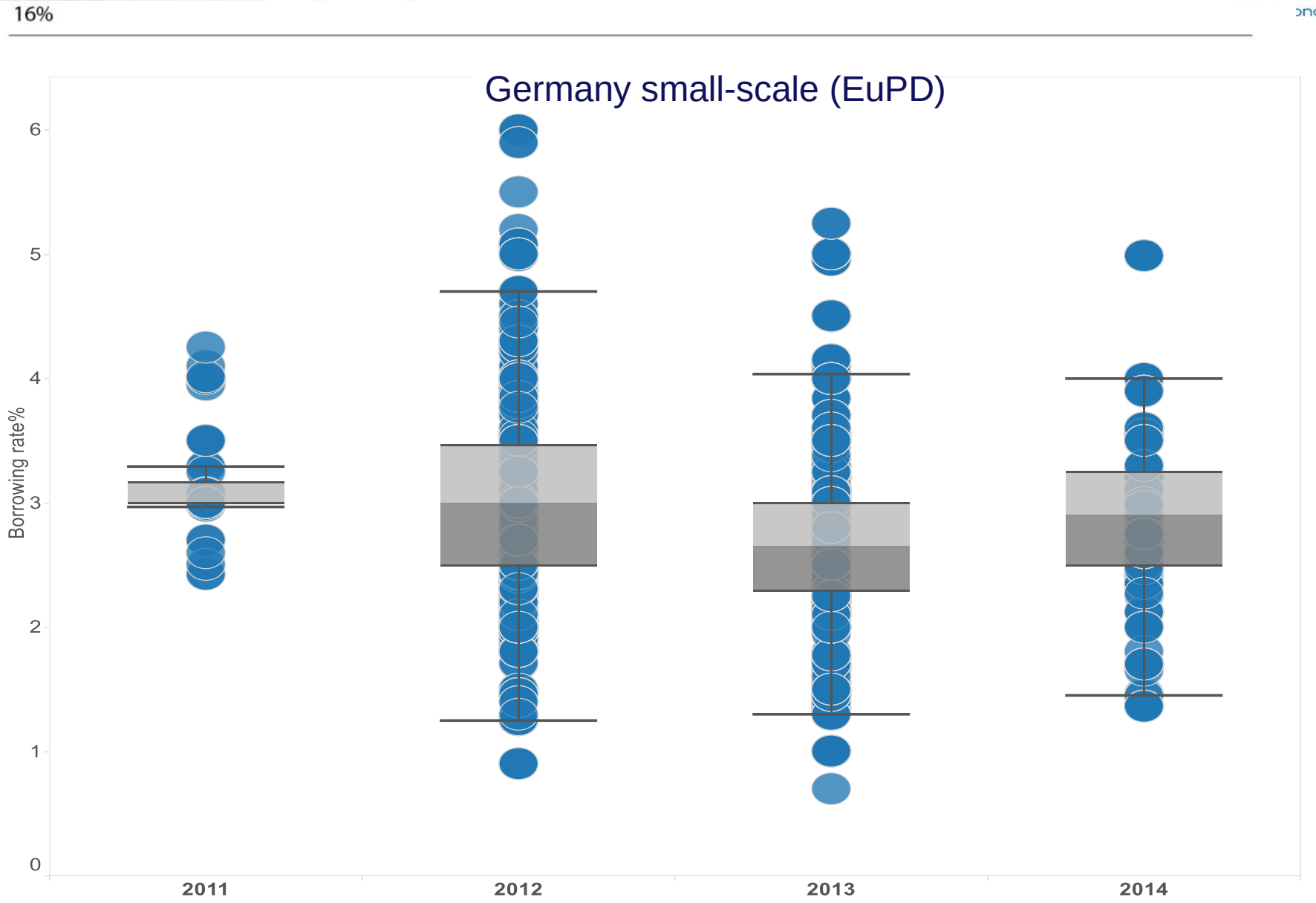
COMMERCIAL SOLAR PV COSTS

Arizona

New York State



The cost of finance



Source: Renewable Energy Finance Tracking Initiative

Solar PV Costs in Africa

Data collection challenging, but encouraging results

- Some markets relatively competitive
- Significant cost reductions appear possible for hardware and soft costs
- Very small SHS cost structures are challenging
- Government bodies should be aware of the "reasonable" cost range for their procurement process
- Regional deep-dives necessary for greater clarity