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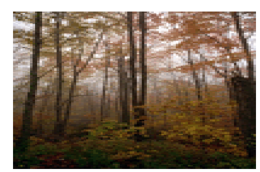
Renewable Power Generation Costs 2012: An Overview

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COSTING….

WHY?
HOW?
WITH WHOM?

Rationale and goals

- Renewable energy can meet policy goals for *secure*, *reliable* and *affordable* energy and *access*.
- Lack of objective and up-to-date data
- Yet, economics are the key decision factor
- Cost declines, rapid for some renewables
- But, decision making is often based on:
  - outdated numbers
  - opinion, not fact based
- IRENA to strive to become THE source for cost data
- Goals:
  - Assist government decision-making, allow more ambitious policies
  - Fill a significant information gap

Framework

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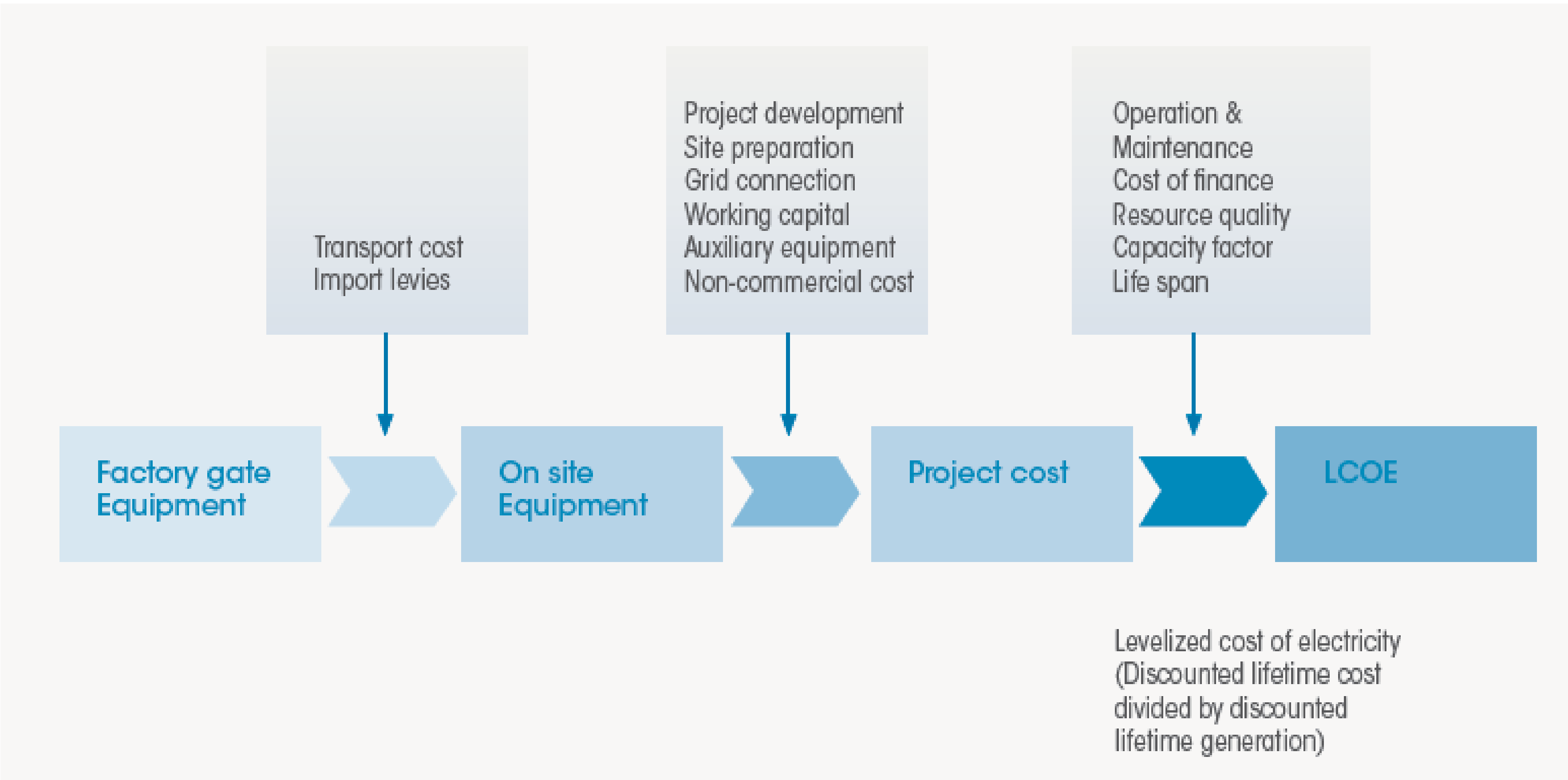
Where to set the boundaries?



Are costs even available? Prices, or price indicators?

Levelised cost of electricity (LCOE)

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2 TODAY'S COSTS

Key findings

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- Renewables now THE economic solution off-grid and for mini-grids, increasingly competitive for grid supply
- A shift in policy focus will need to come
- Dramatic cost reductions for Solar PV. Onshore wind competitive at best sites, CSP has great potential. Hydropower, geothermal and biomass more mature
- Equipment cost declines and technology improvements
  ⇨ LCOEs are falling
- A convergence in LCOEs
- Data collection poses challenges

LCOE ranges and averages

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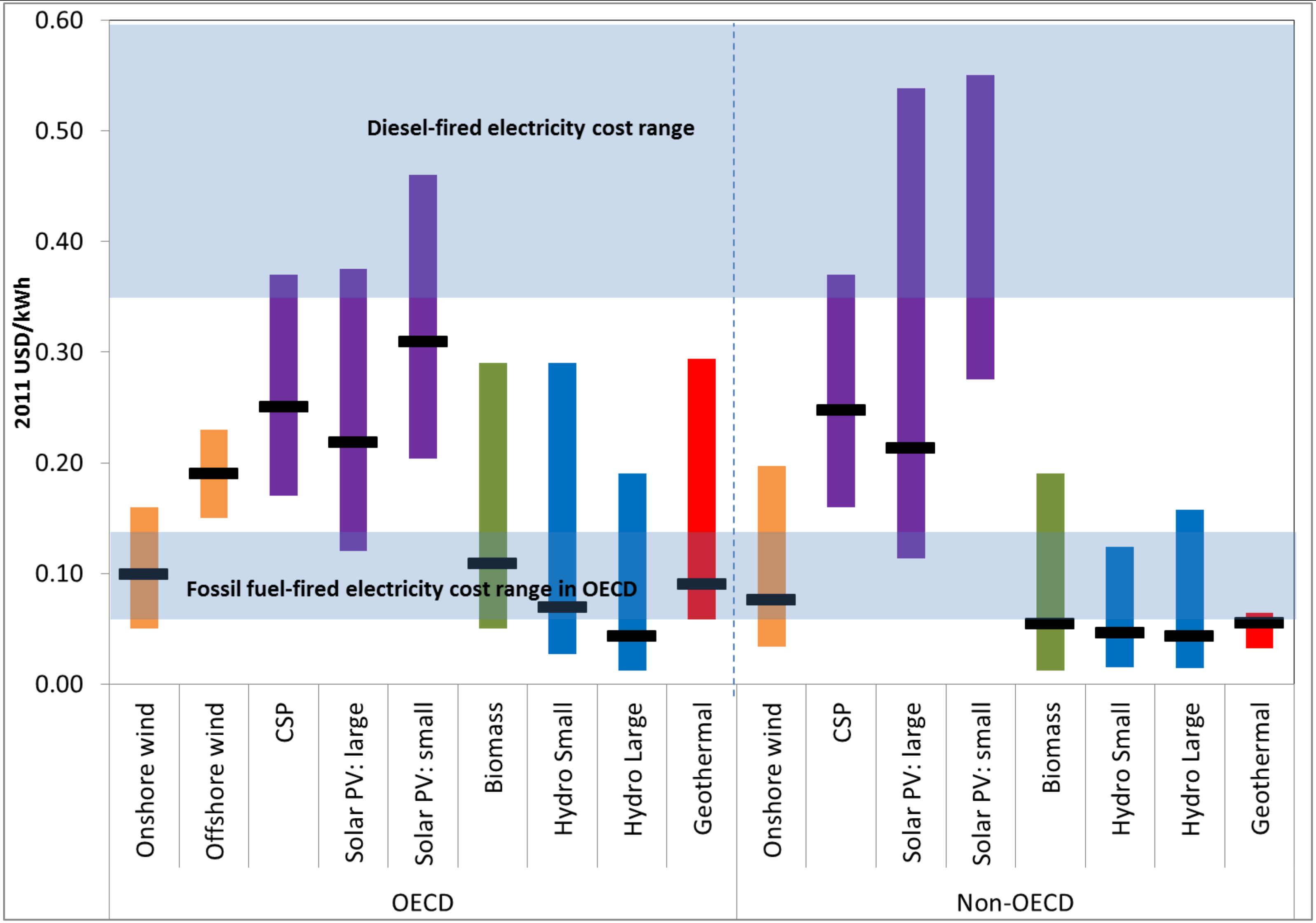

Note: assumes a 10% cost of capital

Source: IRENA

Levelised cost of electricity

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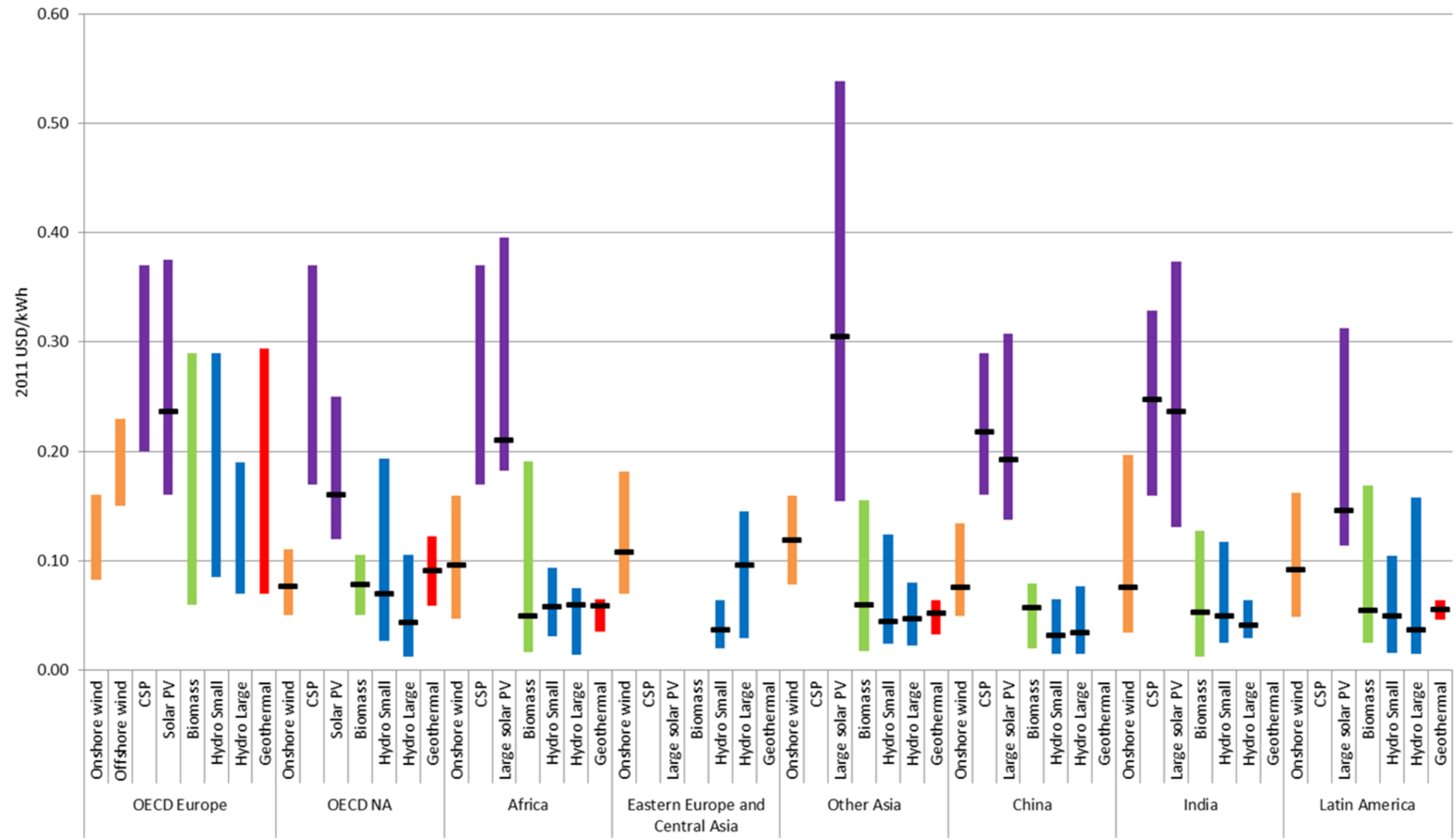
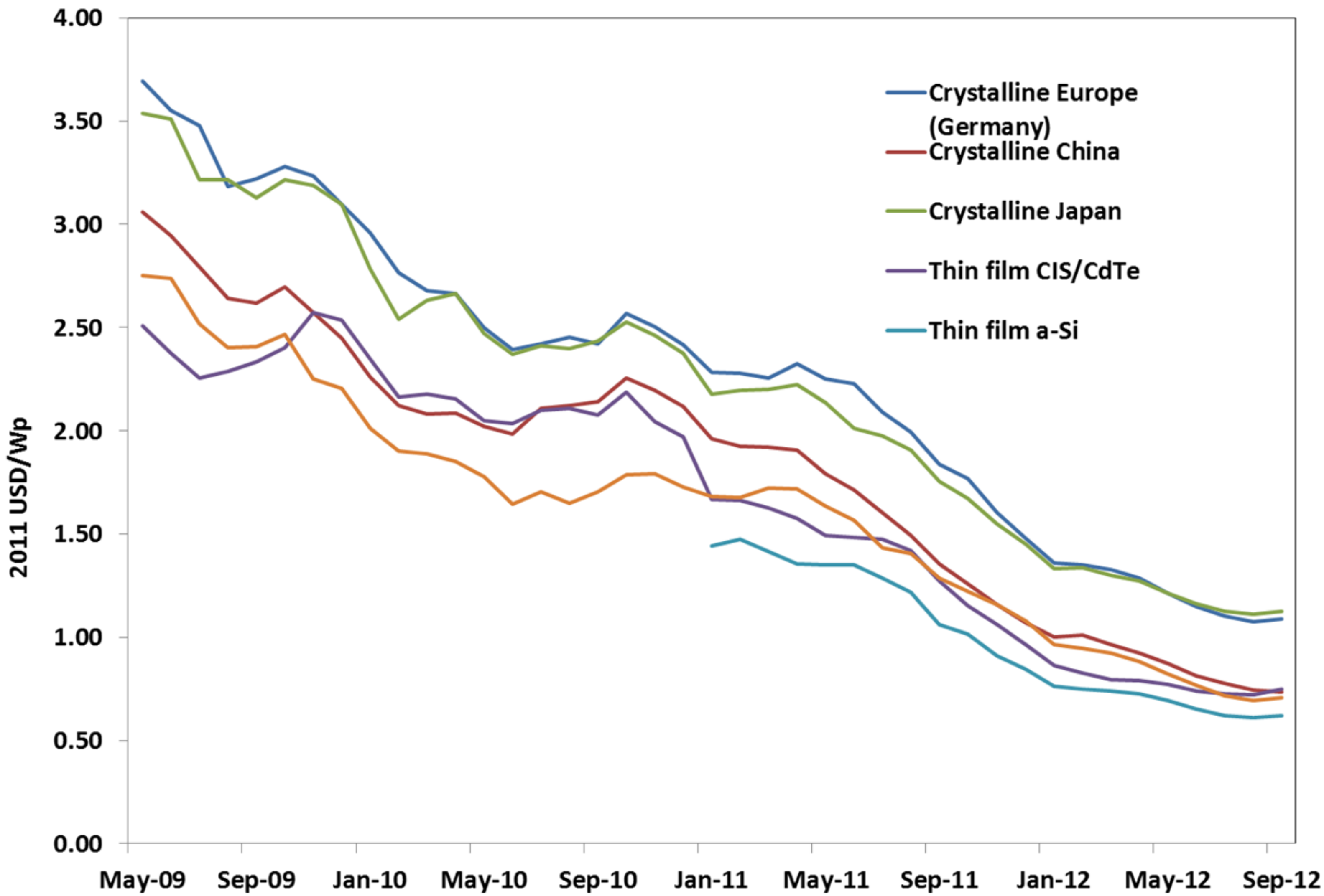


Note: assumes a 10% cost of capital

Source: IRENA

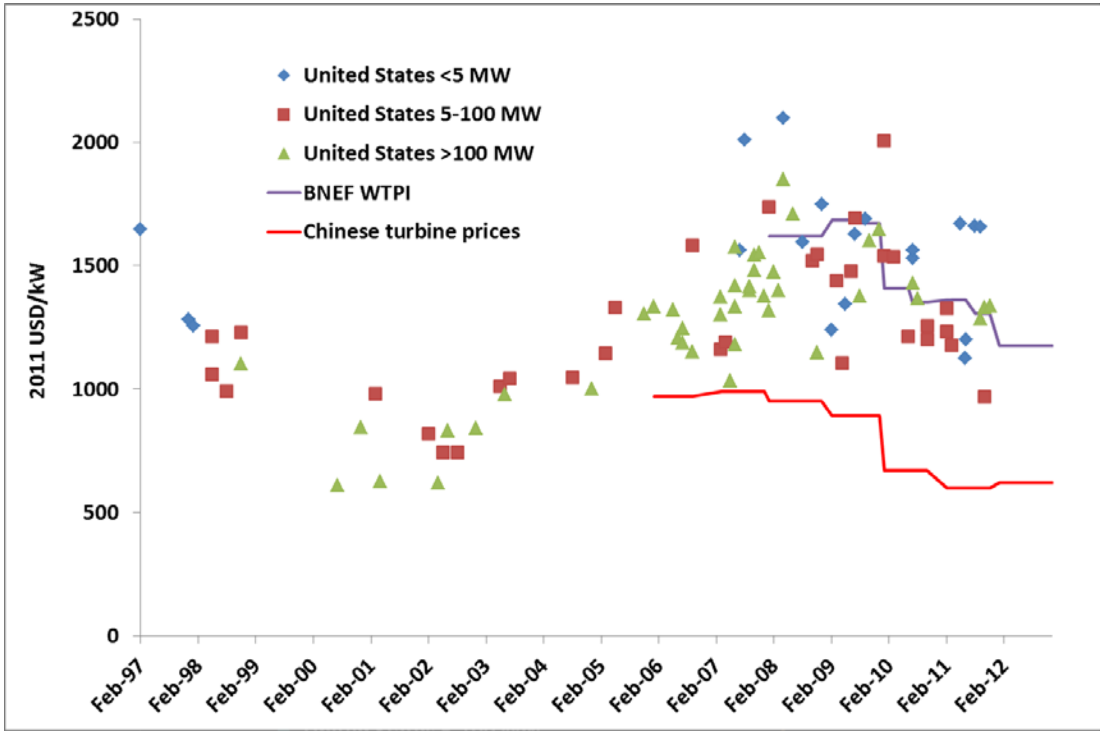
PV modules prices



Source: Sologico

Wind

- Capacity factors are increasing due to technology improvements
- Wind turbine prices are declining
- The LCOE is coming down (e.g. Brazilian auctions)
- Onshore wind is now competitive with fossil fuels in many countries
- Offshore wind is still expensive



Hydropower

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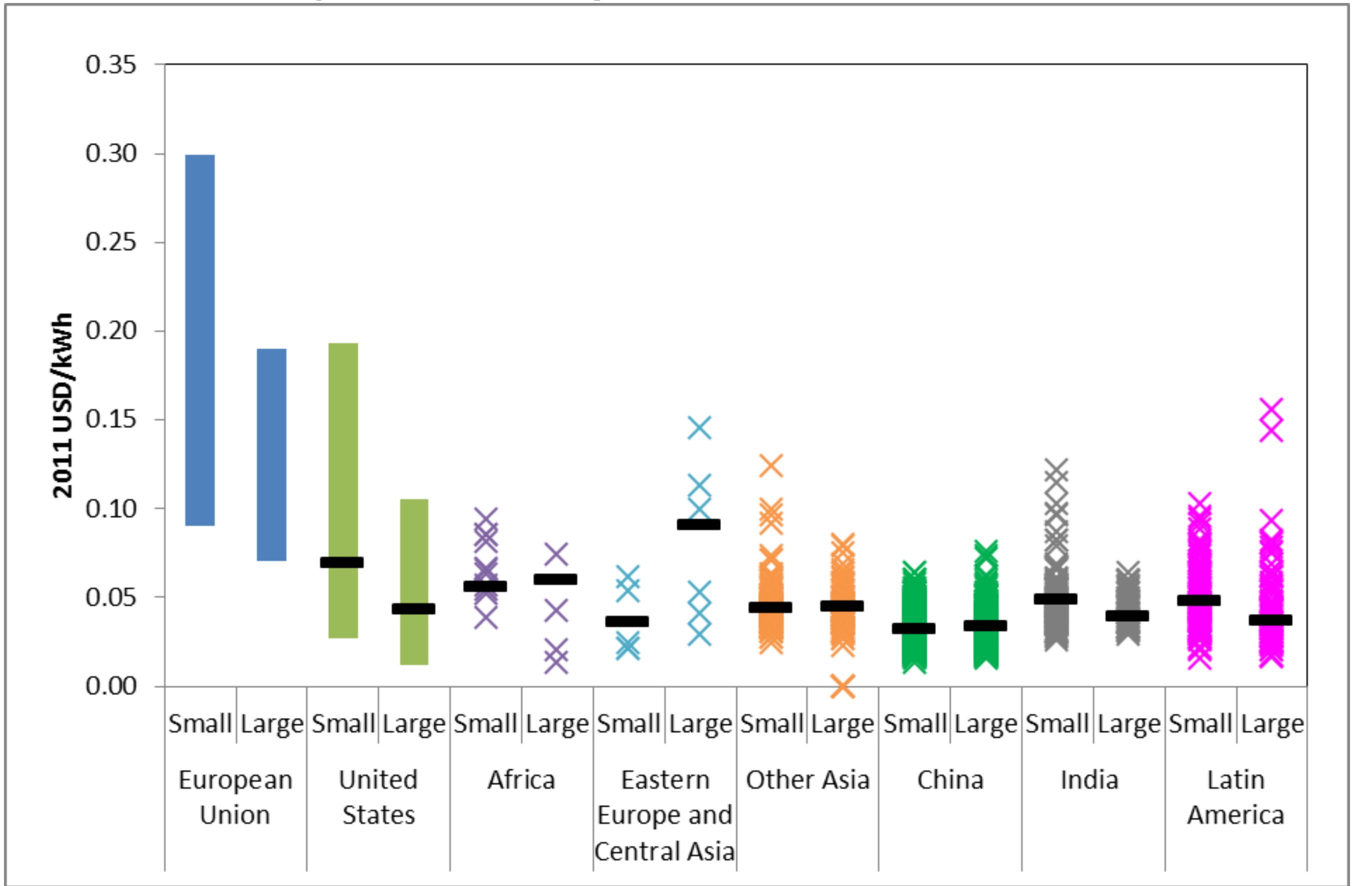
- Mature technology, flexibility in design in many cases
- Lowest cost electricity of any source in many cases
- Importance will grow with penetration of variable RE



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3 COST REDUCTION POTENTIAL TO 2020

A slowing in PV cost reductions?

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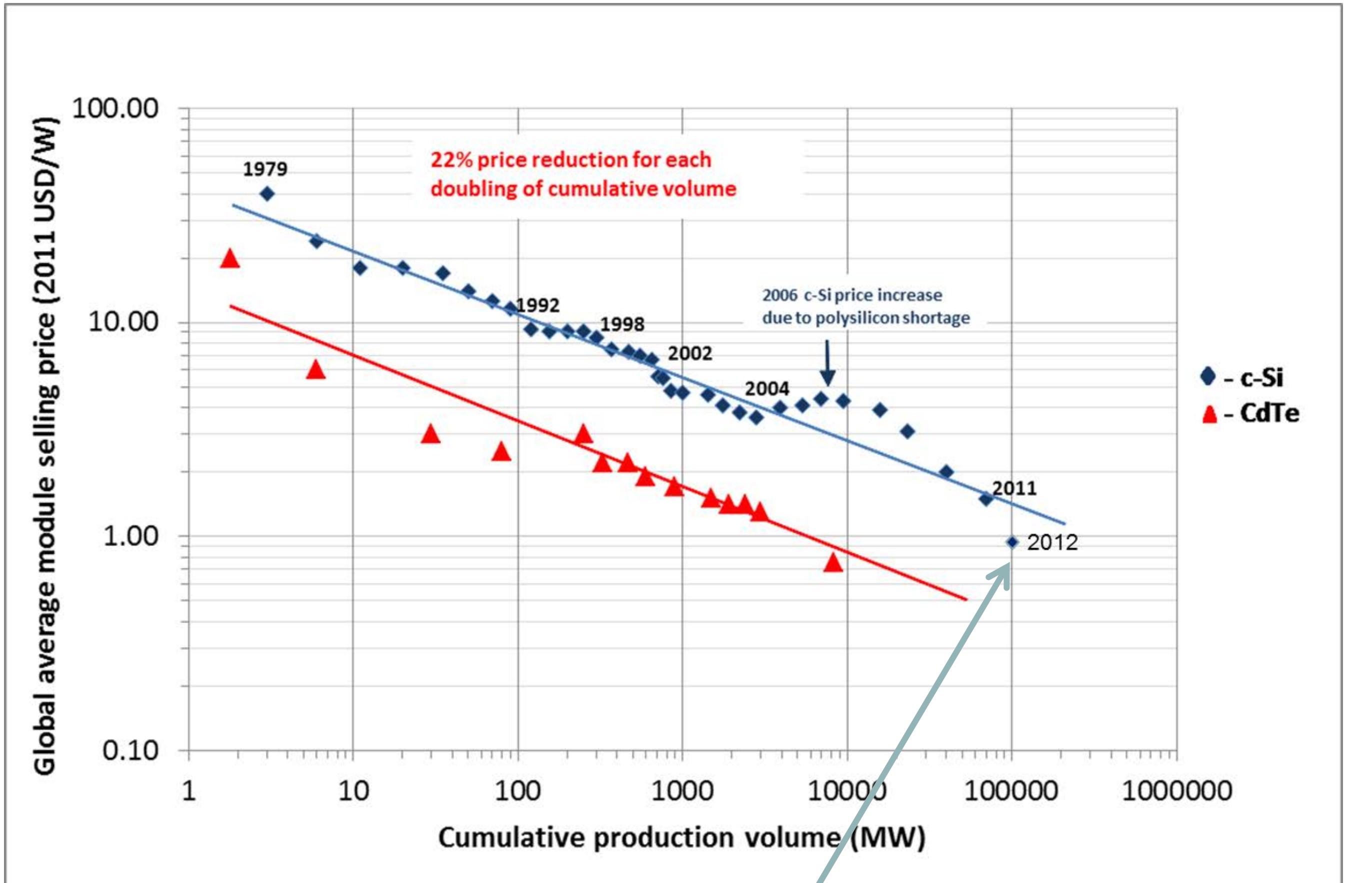
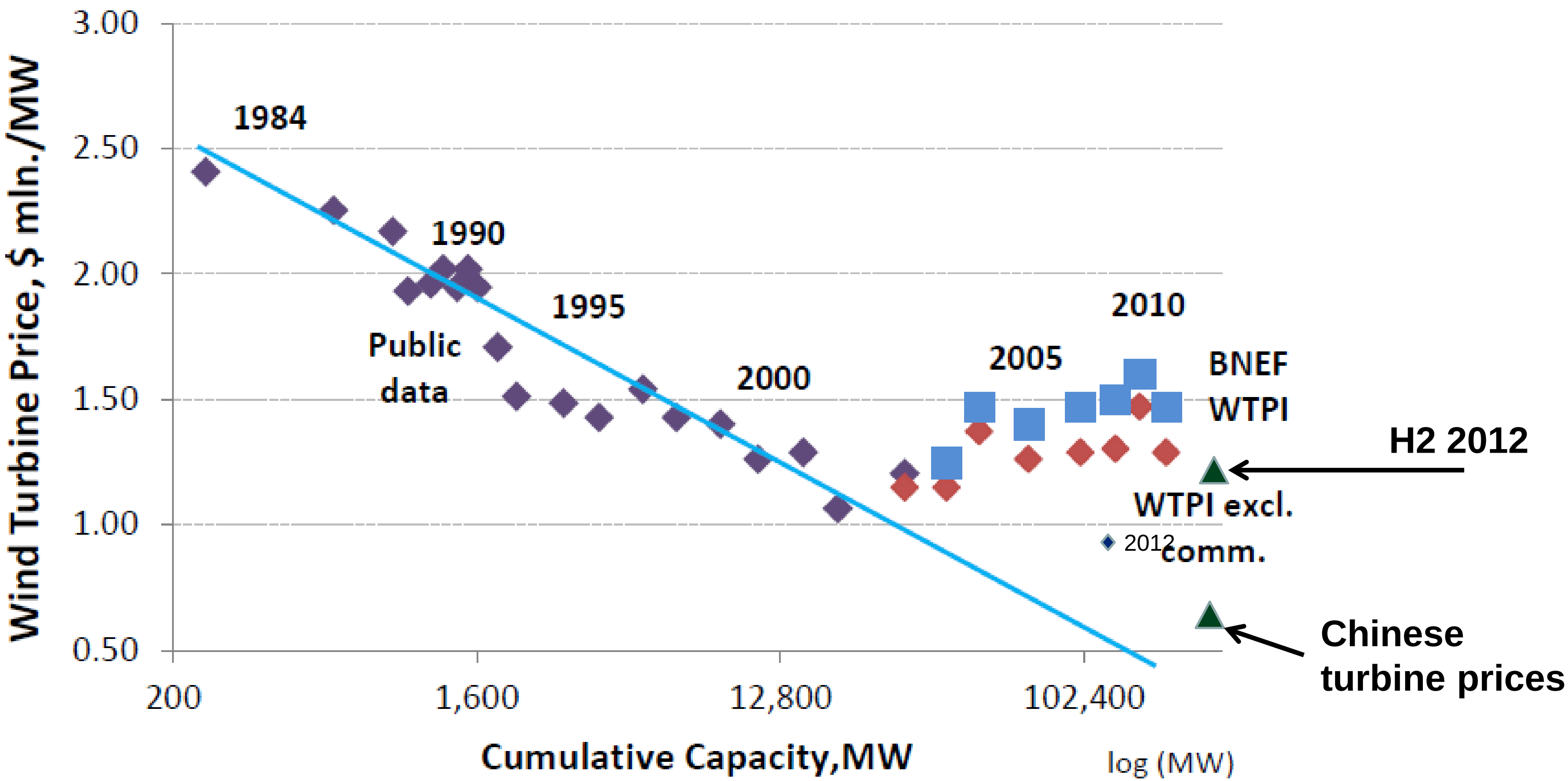


c-Si module prices have overshot learning curve. A slowing in cost reductions to 2015?

An aceleration for wind?



Cost reduction potential is good if wind market emulates the dynamics of solar PV market

Source: Bloomberg New Energy Finance, February, 2011 and 2012; and CWEA, 2012.

An emerging issue:
O&M costs to be a problem?

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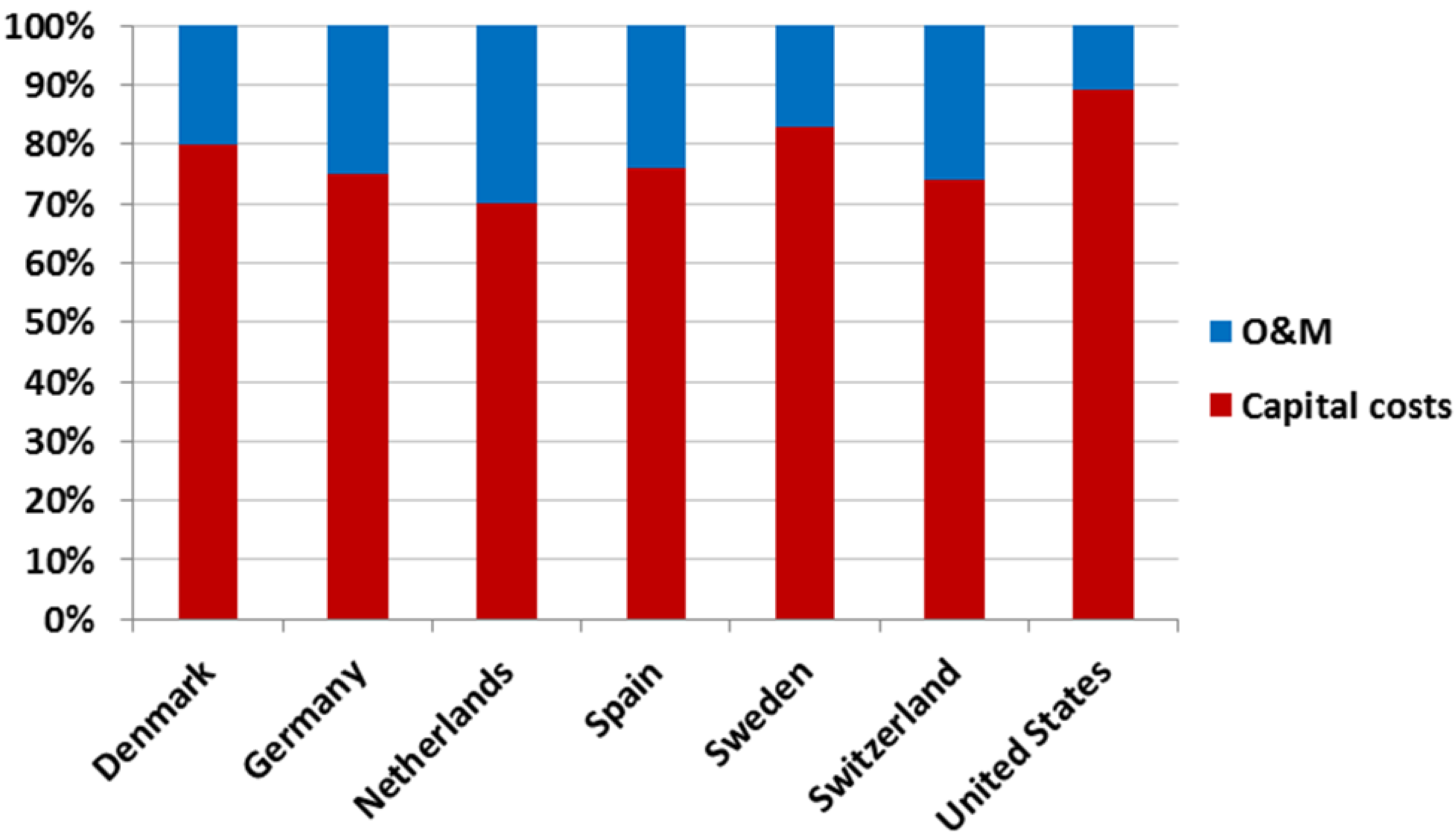

As equipment costs fall, O&M's share of LCOE will rise and may slow LCOE reductions

An emerging issue:
Balance of system costs for PV

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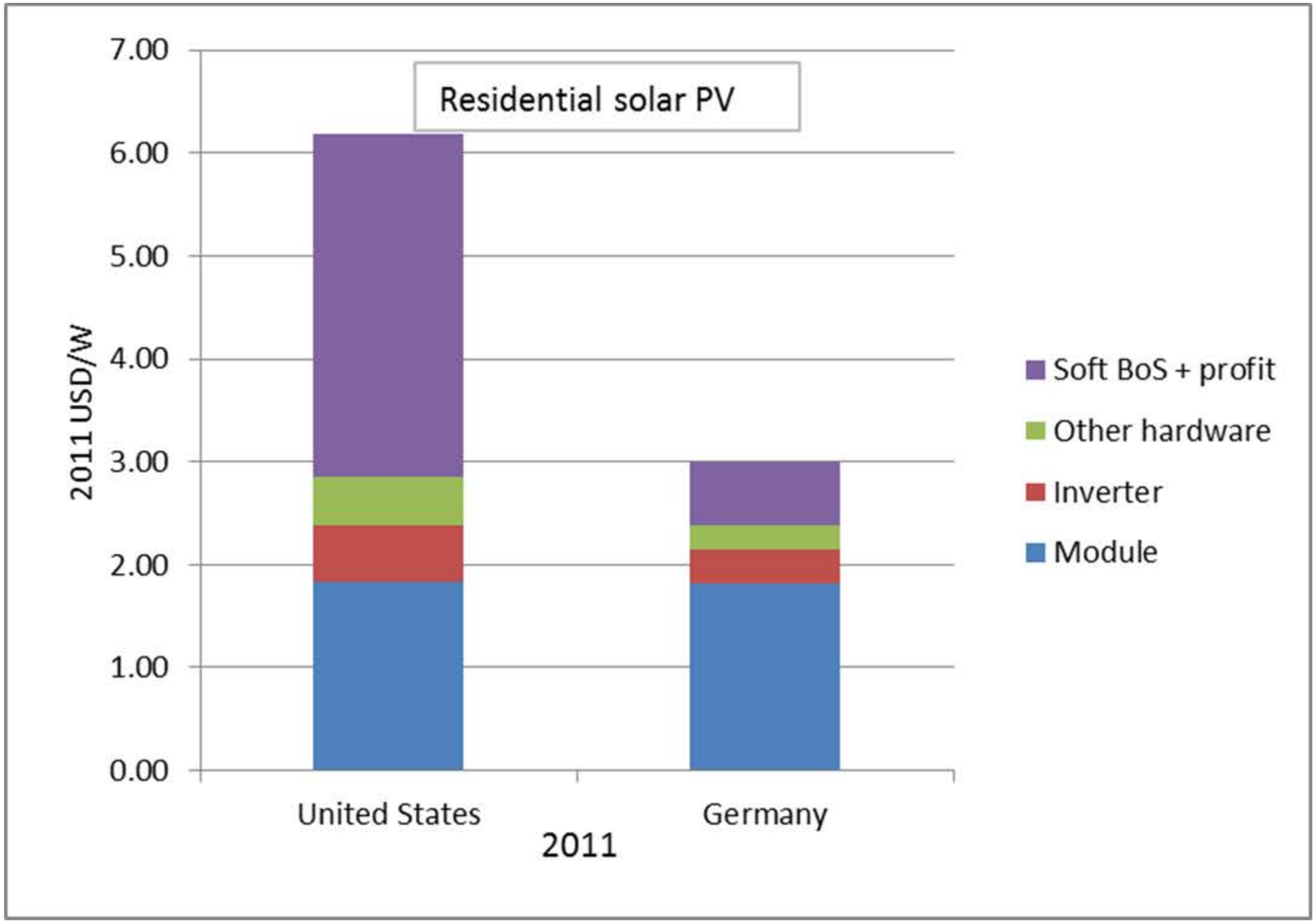

Cost reduction pass-through will be strongly tied to success in reducing BoS costs

Source: Seel, Barbose and Wiser, 2012

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IRENA'S RENEWABLE COSTING ALLIANCE

Rationale and goals

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- Lack of cost data in public domain is a barrier, but one not widely appreciated
- The alliance will raise the profile and provide a forum for feedback/debate
- Alliance members will contribute (confidentially) project data to *IRENA's Renewable Cost Database*
- Assist IRENA with efforts to disseminate the data and analysis
- Work has begun on the details of the alliance, launch is scheduled for Q3 2013. Will build on IRENA's existing networks

5 CONCLUSIONS

Implications of cost declines

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- Rapid, unexpected, cost reductions pose challenges
- Efficient support policies still needed
- An integrated strategy is required
- Policy focus will need to shift, depending on country, in the near future. Few countries “get” this!

Future work

- 2013 will see the release of IRENA’s analysis of the costs of renewables for transport and stationary applications

To Conclude

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- A virtuous circle of faster deployment & cost reductions, particularly for PV, is driving a convergence in RE costs at low levels
- Renewables are THE economic solution for off-grid and mini-grid electricity projects (PV and small-scale wind, biomass and hydro)
- Renewables are increasingly competitive for grid supply, but efficient support policies still required
- Renewables will increasingly have to work together as their penetration increases:

  → A shift in policy and analysis required
- The quest for better cost data and understanding of differences continues. Regular updates for PV, CSP and wind will be needed
- IRENA's Renewable Costing Alliance will help

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Renewables are increasingly competitive, but more needs to be done to fulfill their potential…

IRENA is part of the solution

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