IRENA’s Power Generation Cost Analysis and Support for Renewables

Michael Taylor
mtaylor@irena.org
IRENA Innovation and Technology Centre

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About IRENA

- Members of the Agency
- Signatories/States in Accession

As of October, 2013
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 is a barrier
- Decision making based on: outdated numbers, opinion
- IRENA to strive to become THE source for cost data
- Goals:
  - Assist government decision-making, allow more ambitious policies
  - Fill a significant information gap
- Coverage:
  - Power generation (June 2012 and January 2013)
  - Road Transport (July 2013)
  - Stationary applications (2014)
Key findings

- 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 price 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
- Data collection poses challenges
- Why isn’t data systematically collected from support policies?
LCOE ranges and averages

![ DIESEL-FIRED ELECTRICITY COST RANGE ]

![ FOSSIL FUEL-FIRED ELECTRICITY COST RANGE IN OECD ]

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<th>Technology</th>
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Levelised cost of electricity by country/region

Note: assumes a 10% cost of capital
Hydropower

- 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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TOO MUCH OF A GOOD THING......
The LCOE of wind

Higher capacity factors from improved technology + Wind turbine cost reductions = LCOEs are falling
PV modules prices

Graph showing the trend of PV module prices from May 2009 to May 2013, categorized by country and type:
- Crystalline Europe (Germany)
- Crystalline Japan
- Crystalline China
- Thin film CdS/CdTe
- Thin film a-Si/μ-Si
- Thin film a-Si

The prices decrease over time, indicating a decline in the cost of PV modules.
Learning rates for PV modules

Source: Bloomberg New Energy Finance, February, 2011 and IRENA
An emerging/persistent issue: Balance of system costs?

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

Source: Seel, Barbose and Wiser, 2012
Diagnosis for support policies

• The patient is very healthy

*Technology improvements, capital costs reducing* -> *LCOEs falling*

• But growing pains may be experienced

*Rapid growth can lead to significant supply/demand imbalances*

• Suggested treatment is very patient specific

*Trade-offs involved, depends on market, technology and scale*

• Preventative measures can be highly effective

*Future proofing policies is challenging, but necessary*

• Further basic research required

*A lot of data exists, but it is typically not collected, IRENA to change this*
PLANS FOR THE IRENA RENEWABLE COSTING ALLIANCE
Rationale and Plans

- Analysis to date has been based on low hanging fruit
- Engage with business: The Alliance will work at a technical level on data and its availability
- Alliance members share, confidentially, their data on real world project costs
- Entirely voluntary, we work together for mutual benefit
- Establishment period now, official launch at Assembly
- Goals:
  - more data, better data, a greater focus on analysis of data
**Structure**

**Member countries:**
- Steering group for costing analysis focus
- One workshop a year
- Must nominate institution to deliver data
- Quarterly newsletter

**Alliance Members:**
- Provide data, confidentially
- One workshop a year
- Ability to query the database in detail
- Quarterly newsletter

**Observers:**
- Quarterly newsletter
- Mailing list for new publications/analysis
IRENA is part of the solution

mtaylor@irena.org

www.irena.org/costs