
CPI-ISB Energy and Environment Program
The CPI-ISB Energy and Environment Program

• Collaborative research program between Climate Policy Initiative and Indian School of Business

• **Goal**: De-carbonize Indian energy system, via market transformation

• **Approach**: Policy research, with focus on markets, industry structure and finance

• **Output**: Reports, based on in-depth analysis, with implementable policy implications
Fact: The cost of financing makes renewable energy (RE) expensive in India

• India aims to double existing RE capacity by 2017.

• RE is over 50% more expensive than conventional power, and requires policy support.

• Inferior debt terms – high (and variable) interest rate and short tenor – add nearly 30% to the cost of RE.

• *Policy implication:* the need for provision of low-cost, long-term debt

Source: *Meeting India’s Renewable Targets – The Financing Challenge* (2012), CPI
Recommendation 1: *Provide* concessional finance *instead* of existing federal policies

Debt-related policies are more cost-effective and interest subsidy is an attractive short-term alternative

Impact of federal policies at a state level Feed in Tariff for Wind at INR 5/kWh

<table>
<thead>
<tr>
<th>POLICY TYPE</th>
<th>POLICY</th>
<th>COST-EFFECTIVENESS POTENTIAL (%REDUCTION IN SUBSIDY COST)</th>
<th>SUBSIDY-RECOVERY POTENTIAL</th>
<th>ONE-YEAR BUDGET EFFICIENCY (MW PER INR 100 MILLION)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBT</td>
<td>Extended Tenor Debt</td>
<td>30%</td>
<td>110%</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Reduced Cost Debt</td>
<td>20%</td>
<td>98%</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Interest Subsidy</td>
<td>12%</td>
<td>0%</td>
<td>36.9</td>
</tr>
<tr>
<td>EXISTING</td>
<td>Accelerated Depreciation</td>
<td>18%</td>
<td>42%</td>
<td>35.7</td>
</tr>
<tr>
<td></td>
<td>Viability Gap Funding</td>
<td>9%</td>
<td>0%</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>Generation Based Incentive</td>
<td>3%</td>
<td>0%</td>
<td>19.7</td>
</tr>
<tr>
<td>BASELINE</td>
<td>Zero Federal Support</td>
<td>0%</td>
<td>0%</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Results for solar energy are similar

Source: *Solving India's Renewable Financing Challenge: Which Federal Policies can be Most Effective* (2014), CPI
Recommendation 2: Facilitate capital markets in provision of low-cost, long-term debt

- Innovative financing mechanisms can reduce the cost of debt by up to 4.5 percentage points, increase tenor by up to 10 years, and reduce the cost of RE by up to 25%.

- Two attractive mechanisms:
  1. Credit enhancement of domestic bonds to AA
     - Ensure liquidity injection in bond markets
     - In particular, attract local institutional investors
  2. Reduction of hedging costs of FX borrowings
     - Use a portion of foreign reserves/exports to hedge
     - Explore more complex schemes: FX liquidity facility

Source: Solving India’s Renewable Financing Challenge: Instruments to Provide Low-cost Long-term Debt (2014), CPI; Finance Mechanisms for Lowering the Cost of Clean Energy in Rapidly Developing Countries (2014), CPI
Recommendation 3: Create an RE fund

• A dedicated fund to support Recommendations #1 and #2
  • **Provide** low-cost, long-term debt
  • **Facilitate** low-cost, long-term debt

• Sourcing: **Could use multiple sources/tranches**
  • **Budgetary support**, including NCEF funds
  • **Multilaterals/bilaterals**, including WB, ADB, KfW, JICA
  • **Capital markets**, including from institutional investors

• Implementation: **Do we need a separate fund?**
  • **IREDA**: The RE development bank, but needs to become more innovative
  • **IIFCL**: Is innovative, but does not receive majority of RE funds