THE COST AND SHORT-TERM BENEFITS OF LOCAL CONTENT REQUIREMENTS

Evidence from the Indian solar auctions

Benedict Probst, Vasilios Anatolitis, Laura Diaz Anadon, Andreas Kontoleon
Background

**What** are we analyzing?
- What is the effect of local content requirements (LCR) on the bid prices in the solar PV auctions in India?
- How successful were the LCR in terms of industrial policy goals?
  - (Competitive) PV manufacturing industry
  - Effective achievements of targets
  - Job creation

**Why** are we analyzing solar PV auctions in India?
- Important RE market (target capacity: **175 GW** of RE by 2022)
- Indian auction design allows provides a quasi-experimental setting (counterfactual), since separate LCR and “open category” (OC) auctions took place, often in the same State (and even Solar Park), at the same time
- LCR increasingly popular instrument, especially in developing countries (e.g. Saudi Arabia, Uganda, Argentina, South Africa)
Background

- **How** are the LCR in India designed?
  - LCR: a certain share of total investment costs or certain parts of the value chain have to be sourced locally, and these requirements can either be strict (e.g. Saudi-Arabia) or impact the score in a multi-criteria auction
  - In India, **cells** and **modules** had to be locally manufactured
  - Raw materials, ingots and wavers could be imported

- **Which time period** are we analyzing?
  - 2014-2017: the second phase (Phase II) of the National Solar Mission (goal: 100 GW of PV by 2022), during which LCR were still eligible
  - In December 2017, (direct) **LCR abolished** due to a WTO ruling and deal with the US
  - Phase I had no counterfactual auctions (when polysilicon PV modules were used, LCR had to be followed; not applicable for thin-film technology)
Effects on bid prices and realisation rates

Bid prices
- LCR significantly increase the price of solar power in India
- Average increase between 5.7% - 7.1% compared to Open Category
- Gap between categories did not decrease over time
- Experience of bidders leads to the decrease of bid prices

Realisation rates
- LCR can lead to significant delays, such in the case of Brazil, or have a negative impact on the realisation rate of the projects
- In India, we find no difference between realisation rates
Effects on manufacturing capacities

- Manufacturing capacity shows significant increase from 300 MW/a in 2010 (192 MW/a cell manufacturing) to 8400 MW/a in 2017 (3200 MW/a cells)
- Many producers have a capacity of less than 200 MW/a (the minimum capacity for economies of scale)
- 53% of cell and 65% of module manufacturing capacity currently operational
Conclusions

- Increase of bid prices due to LCR regulation by 5.7%-7.1%
- LCR show no difference in realization rates
- But: unsuccessful in implementing a globally competitive PV manufacturing industry
- LCR policy was not part of a more holistic and long-lasting industrial policy effort
- No integrated manufacturing capacities of companies (only cell and module)
- India should provide more direct financial incentives to manufacturers
- India’s new approach:
  - Five 2 GW (total 10 GW) 25-year PPAs for solar PV projects are auctioned, but with the obligation to build 600 MW of integrated manufacturing facilities (total 3 GW)
Contact details

Vasilios Anatolitis
Competence Center Energy Policy and Energy Markets
Fraunhofer Institute for Systems and Innovation Research ISI
Breslauer Straße 48 | 76139 Karlsruhe | Germany
Phone +49 721 6809-281 | Fax +49 721 6809-272
vasilios.anatolitis@isi.fraunhofer.de
http://www.isi.fraunhofer.de