

## **Berkeley-Stanford Cleantech Conference – April 9, 2011**

**Panel Topic:** Clean Technologies: Job Creation or Destruction

**Purpose:** The purpose of this panel was to discuss whether the cleantech industry is creating a net number of new jobs and where these jobs are becoming available.

**Design, Methodology, Approach:** Expert opinions from panelists.

Moderator – Ira Ehrnpreis // General Partner, Technology Partners.

Panelists –

- Yumin Liu // President, GCL Solar Energy.
- Jay Paidipati // Associate Director, Navigant Consulting.
- Christopher Rose // SVP Corporate Development, CODA Automotive.
- Marc Van Gerven // CEO, Q-Cells North America
- Frank Wolak // Professor of Economics, Stanford University

### **Findings:**

The discussion was opened with each expert's opinion on what changes are needed to align policy with the development of the cleantech industry. All the panelists agreed that short-term policy was essential to the successful build-out of the industry, and various ideas were suggested. Wolak immediately pointed to the importance of putting a price on carbon and establishing renewable portfolio standards. He also suggested that renewable energy credits should be standardized across the US market so that improvements could be made in the most cost-effective parts of the country. Rose brought up the importance of incentives in driving otherwise costly technology. He also introduced the uncertain relationship between the United States and China, arguing that in order for the cleantech market to reach its full potential in the US, we need to begin cooperating with our eastern neighbor and be willing to share intellectual property. We need to welcome the Chinese companies into the US so that we can learn from their expertise in certain areas, such as cost-effective photovoltaic (PV) manufacturing. Currently, US policy does not make it very easy for Chinese companies to set up shop in the US.

This point transitioned the topic to a discussion of whether the trend - that many cleantech jobs are moving to China - is indicative of what will happen in the future and how this will affect cleantech jobs in the United States. The question was answered in the context of the solar industry. There was a consensus among the panelists that although China is taking over the manufacturing stage of the cleantech industry, the repercussions of this trend on the US cleantech job market will mainly be positive. The reason for this is that China is playing a very important role in bringing down the module cost, which, in turn, is bringing down the final levelized cost of energy for PV. By decreasing the costs of PV, China is increasing demand and opening up the market of entire industry. This will create many more jobs downstream of the manufacturing that must take place locally, such as installation, maintenance, sales and marketing. Moreover, upstream jobs are also being created to support the China's rapid build-out of module

manufacturing. For example, companies in Germany that produce the equipment on which PV is manufactured are experiencing an increased demand in their products.

The final topic that wrapped up the panel discussion was identifying which sectors of the economy would see the most growth from the expansion of the cleantech industry. The panelists tended to point to the sector that they represented and the responses covered the entire gamut of the industry, from smart grid applications to electric vehicles to unconventional natural gas. However there was a consensus that many of the jobs would be installation and ancillary services, and that they would tend to be higher skilled than their “dirty energy” counterparts.

**Practical Implications:**

Determining that the cleantech industry will have a net increase in jobs both in the US and abroad has very significant practical implications. Most importantly, it supports the idea that investing in cleantech is one way to help bring the United States out of the recession. It also provides solid political backing for legislation that promotes the cleantech industry and green initiatives in general.

**Originality/Value:**

The main takeaway from this panel was that there are many niches in the cleantech industry that need to be filled, but not any one country needs to fill all these niches. Specifically, the United States leadership is not in manufacturing – it is in innovation. Therefore, we should not worry about being a leader in the entire vertical chain of the industry, but instead focus on our strengths. There will be plenty of job opportunities on the deployment side of the industry, so even if some jobs move overseas, there will still be a net increase in jobs at home.

**Keywords:** cleantech, jobs, China, photovoltaics

**Paper type:** Review of conference panel.

*Information about the author of the summary:*

Rashmi Sahai

Institute for Environmental Entrepreneurship

UC Berkeley Energy and Resources Group

Berkeley, CA

rashmisahai@berkeley.edu