Metropolitan Policy Program at BROOKINGS

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Decline of clean energy technology patents raises warning lights for several indicators of U.S. economic competitiveness

New research from Brookings Metro assesses the status of the U.S. clean tech innovation enterprise nationally and regionally; findings raise questions about the competitiveness of the U.S. innovation scene

Washington, DC — The Brookings Metropolitan Policy Program has released a new analysis that looks at the trends and issues involving technology patenting for clean technology innovation across 14 clean technology areas amongst the nation's diverse metropolitan areas.

The report, "Patenting invention: Clean energy innovation trends and priorities for the Trump administration and Congress," by Devashree Saha, a senior policy associate and associate fellow at Brookings, and Mark Muro, a senior fellow there, examines the dynamics, emphases, and patterns in clean-technology patenting since 2001, both nationally and by metropolitan area. The report provides a baseline look at the pace and geography of cleantech innovation with an eye to inform decision-making, both federally and locally.

The report highlights five key findings:

- **U.S. cleantech innovation has grown significantly since 2001, but patenting may now be slowing**
- **Cleantech patenting tends to be concentrated in relatively few technology domains such as advanced green materials, energy efficiency, and transportation**
- **Large metropolitan areas host a disproportionate share of cleantech patenting but do not monopolize it; overall, cleantech patenting is widely distributed across the nation**
- **The nation's metro areas, both big and small, display distinctive profiles in cleantech patenting**
- **The share of U.S. cleantech patents owned by foreign companies has grown over the years, raising concerns about the global competitiveness of U.S. companies**

"Clean energy innovation holds immense potential to spark job creation in U.S. regions, support the manufacturing sector, and make the U.S. more competitive internationally," notes Devashree Saha, lead author of the report. She continues, "Cleantech patents are a crucial indicator of innovation in the United States."

She notes that the patent data shows clean energy innovation activity is occurring all across the nation, both in red and blue states, and in large metropolises and smaller communities.

However, several indicators of U.S. cleantech innovation competitiveness are raising warning lights. Eleven countries around the world now spend more on energy research and development as a percentage of their economies than the United States does; China spends three times as much. Patenting—a measure of new technology invention—matters, as it is an intermediate step toward innovation, and patent data provide indirect and partial indicators of innovation. Patenting activity has shown a positive correlation with regional economic health, as high rates of patent creation are geographically associated with higher-than-average wages, lower regional unemployment, and more startup company activities.

Mark Muro, co-author of the report, adds, "As Congress considers the Trump budget proposals and develops its own plan, it is critical to understand that some of the proposed federal cuts raise enormous concerns about the future of the nation's long-term commitment to low-carbon economic development, and more importantly, about the competitiveness of the U.S. innovation ecosystem."

To that end, this report look closely at trends as they are playing out across 14 clean technology areas among the nation's diverse metropolitan areas. With the economic potential for workers and regions of cleantech innovation widely acknowledged, the question has now become: will the U.S. compete?

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