

## **Both mechanisms make PV trade barriers counterproductive in protecting local employment**

Topic: Industrial Ecology

Author: Yiyi Gao

Co-Authors: Xinzhu Zheng, Xinzhu Zheng

One of the original intentions of imposing trade barriers is to protect local employment, but after innovatively coupling the GSIM trade model and the global multi-region input-output table (MRIO) model, we found that both mechanisms have the opposite effect on this protection. One is that employment in the photovoltaic industry does not only occur in the manufacturing process, but installation and operation are also labor-intensive and only occur locally. Affected by this mechanism, although trade barriers do protect manufacturing employment by increasing production, the resulting price increases suppress local demand for photovoltaics, ultimately leading to a reduction in employment opportunities in installation and operation. Taking the trade barrier policy of the United States from 2012 to 2021 as an example, compared to the free trade scenario, the barriers have increased the number of local photovoltaic manufacturing jobs by 10000, but reduced installation and operation by 65000. Another important discount mechanism is that the reduction of photovoltaic output in other countries is transmitted through the industrial chain to impact the export of related industries upstream and downstream, ultimately restraining the reduction of employment opportunities in these industries. Taking the US trade barrier policy as an example, although the US electrical machinery and equipment manufacturing industry gained 12000 job opportunities between 2012 and 2021 due to the increase in photovoltaic output under this policy, the decrease in photovoltaic output in other countries resulted in a loss of 3000 job opportunities in other local industries, resulting in a 25% reduction in employment protection effectiveness. Based on the above two impact mechanisms, trade barriers have had a negative impact on the US job market.