

Researchers explore bioenergy utilization in China

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With China the largest growing economy in the world, scientists and policymakers alike are keenly interested in the country's increasing use of biomass – instead of polluting and climate-harming fossil fuels – for energy generation. Although bioenergy consumption has more than doubled from 2005 to 2010, few studies have evaluated exactly where, in the vast country, this shift is taking place and through what means.

In a new paper, Shiyan Chang, an assistant professor of [energy](#) system analysis at Beijing's Tsinghua University, and graduate student Lili Zhao examine changes in the geographical distribution of bioenergy utilization in China, like biogas and biomass power generation, and biomass resources, like livestock and poultry excrement, agricultural residues, and municipal waste. The paper appears in a special issue of the American Institute of Physics' *Journal of Renewable and Sustainable Energy (JRSE)* that focuses on emerging energy trends in China.

The researchers used a metric known as the Gini coefficient, commonly used in fields such as sociology and economics to compare inequalities in income or wealth among groups. They found that the Gini coefficient of household biogas continually decreased from 1999 to 2010 – suggesting more widespread dispersion of the energy source – and the coefficient of on-grid biomass power generation decreased sharply from 2007 to September 2010. The study also showed that municipal solid waste was the most widely dispersed form of biomass and that, with the exception of household biogas, which is used mainly in southwestern Chinese provinces, most bioenergy use occurs in the eastern part of the

country.

Over the study period, Chang says, "the spatial pattern of bioenergy in China has been significantly reshaped," with the differences among provinces "getting smaller and smaller." Crucial to this shift, she says, are government policies that promote the widespread technology adoption of biogas, and of biomass- and waste-power generation schemes.

One significant finding was that biomass resources remain more dispersed than bioenergy utilization, suggesting, Chang says, "that there is still great potential for bioenergy development in [China](#) to efficiently use all kinds of biomass resources."

More information: "The pattern of bioenergy utilization in China: a spatial difference analysis", *Journal of Renewable and Sustainable Energy*

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