Study suggests energy independence policies will lead to only a small decline in global greenhouse gas emissions

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(Phys.org)—A team of researchers from across Europe has conducted a study looking into the impact that countries pursuing energy independence polices will have on global greenhouse gas emissions and by extension, global warming. In their paper published in *Nature Energy*, the team reports that though such efforts are likely to lower energy trade,

they saw only a small decline in global greenhouse gas emissions. Vaibhav Chaturvedi, with the Council on Energy, Environment and Water, Thapar House, in India, offers a News & Views article on the work done by the team in the same journal issue, along with some opinions on the shortcomings he sees with studies that are built on models.

As the researchers note, many governments are seeking to address domestic energy issues by looking at ways to reduce reliance on imports. Such moves, many have assumed, might also help reduce greenhouse gas emissions—to reduce reliance on imported oil, for example, some countries might switch over to using all electric vehicles. But, the team also notes, little research has been done to confirm that such an impact will actually occur. To find out if this might be true, the researches started by using five existing global energy models to create a series of different scenarios based on the institution of energy independence policies globally—they also input data meant to simulate compliance with the Copenhagen pledges.

Analysis of the models indicated that though such policies are likely to reduce the amount of energy trade conducted, doing so would likely have little impact on reducing greenhouse gas emissions. Notably, attempting to reduce reliance on oil imports, they found, appeared to yield the least amount of reductions in emissions. The researchers also looked at the economic impact that global pursuit of such policies might have and found that overall doing so appeared to be comparatively cheaper than pursuing mitigation policies.

But as Chaturvedi notes, all of the results found by the team were based on modeled situations, most of which were based on simplistic recreations of our planet as a whole—and while their models represent an advance in such studies, they still must be viewed as only a single tool when hoping to fully understand the global impact of energy policies.

More information: Jessica Jewell et al. Comparison and interactions between the long-term pursuit of energy independence and climate policies, *Nature Energy* (2016). DOI: 10.1038/nenergy.2016.73

Abstract

Ensuring energy security and mitigating climate change are key energy policy priorities. The recent Intergovernmental Panel on Climate Change Working Group III report emphasized that climate policies can deliver energy security as a co-benefit, in large part through reducing energy imports. Using five state-of-the-art global energy-economy models and eight long-term scenarios, we show that although deep cuts in greenhouse gas emissions would reduce energy imports, the reverse is not true: ambitious policies constraining energy imports would have an insignificant impact on climate change. Restricting imports of all fuels would lower twenty-first-century emissions by only 2–15% against the Baseline scenario as compared with a 70% reduction in a 450 stabilization scenario. Restricting only oil imports would have virtually no impact on emissions. The modelled energy independence targets could be achieved at policy costs comparable to those of existing climate pledges but a fraction of the cost of limiting global warming to 2 ◦C.

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