

# Shale oil 'dividend' could pay for smaller carbon footprint

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Unanticipated economic benefits from the shale oil and gas boom could help offset the costs of substantially reducing the U.S.'s carbon footprint, Purdue agricultural economists say.

Wally Tyner and Farzad Taheripour estimate that shale technologies annually provide an extra \$302 billion to the U.S. economy relative to 2007, a yearly "dividend" that could continue for at least the next two decades, Tyner said.

Using an economic model, they found that "spending" part of this dividend on slashing the nation's [carbon emissions](#) by about 27 percent - about the same amount set forth in the U.S. Environmental Protection Agency's recently proposed Clean Power Plan - would reduce the shale dividend by about half.

"The benefits of shale technology to the American economy are tremendous - and just seven years ago, shale wasn't even on the radar," said Tyner, the James and Lois Ackerman Professor of Agricultural Economics. "The shale boom provides us with an opportunity: We can continue to accumulate more goods and services, or we can use part of this windfall to pay for a lower carbon economy."

Shale oil and gas make up a significant and growing part of the nation's total oil and gas production. But the production of [shale oil](#) and gas was long hampered by the technical challenges of extracting the oil reserves trapped in shale, a rock formed from consolidated mud or clay. The

recent development of horizontal drilling and hydraulic fracturing, or fracking, unlocked these resources, flooding the U.S. economy with unforeseen gains.

Tyner and Taheripour, a research assistant professor of agricultural economics, used a computable general equilibrium model - which accounts for all economic sectors and factor markets - to test the economic outcomes of pitting the gains from an expanding shale oil and gas industry against the cost of three emission-reducing scenarios: regulating the U.S. electricity and transport sectors, regulating only the electricity sector and putting an economywide tax on carbon.

Each scenario would decrease national carbon emissions by about 27 percent, compared with 2007 levels, by the year 2035.

The model showed that regulating the electricity and transport sectors' emissions would reduce the shale dividend from \$302 billion to \$148 billion. Regulating only the electricity sector would leave \$151 billion of the original dividend. An economywide carbon tax would drop the annual shale gain to \$178 billion.

"We can significantly reduce carbon emissions and still keep half of the gains from shale oil and gas production," Tyner said. "Can we have our cake and eat it, too? The answer is yes."

The carbon tax is the most efficient of the three scenarios because it saves an extra \$30 billion of the shale dividend compared with regulating the electricity and transport sectors while achieving the same reduction in emissions, Tyner said. But, he added, "'tax' tends to be a four-letter word in Washington, D.C."

Regulating the electricity and transport sectors is similar to the regulation proposed in the EPA's Clean Power Plan, which would reduce

national carbon emissions from power plants by 30 percent compared with 2005 levels by 2030.

One objection to the EPA's proposed regulation is that it could hit consumers in the wallet - and it will, Tyner said.

"Anything we do to reduce our carbon emissions is going to come with a price tag," he said. "But it is a glass half-empty or glass half-full situation. We can't yet quantify the benefits of avoiding the adverse effects of climate change, but those effects clearly cannot be ignored."

**More information:** Tyner and Taheripour outlined their findings in a [policy brief](#) published by the National Agricultural and Rural Development Policy Center and in a [paper](#) presented at the U.S. Association for Energy Economics' annual conference.

Provided by Purdue University

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