

# Green technology saves energy and boosts profits, productivity in factories

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Garment factory in Bangalore, India with fluorescent lighting. Credit: Achyuta Adhvarya

Switching to LED lights in factories not only saves energy, it boosts productivity and increases profits, a new study shows.

LEDs—or light-emitting diodes—create less heat than traditional lights,

so they help keep factory floors cooler. When workers are more comfortable, they produce more and are less likely to be absent—a major problem for employers, according to the study of 25 garment factories in Bangalore, India, from 2010 to 2013.

"Heat stress stops the body's capacity to exert, so workers are less able to complete production targets," said Achyuta Adhvaryu, an assistant professor at the University of Michigan Ross School of Business and one of the study's authors.

The garment factories in the study were not air conditioned and had hundreds of people laboring on machines that ran constantly in buildings with multiple stories. Similar work conditions are found in Bangladesh, China, Indonesia, Vietnam and other major exporters in the \$200 billion apparel industry.

Due to climate change, finding ways to keep factories cooler will become increasingly challenging for businesses in developing countries, which on average are hotter than developed nations.

The researchers studied the staggered rollout of the LED lights in the [factories](#) over four years. They found the LEDs cost about \$6,300 to install, and the [energy savings](#) was about \$3,000 per year.

But increased profits from efficiency gains were more stark; an increase of \$41 per operating day for each factory, or nearly \$13,000 per factory per year.



Converting to LEDs saved energy and increased productivity. Credit: Achyuta Adhvarya

"LEDs create a productivity gain that dwarfs the energy savings," Adhvaryu said.

The paper's co-authors were Namrata Kala of Yale University and Anant Nyshadam of the University of Southern California.

**More information:** The study (PDF):  
[www.dropbox.com/s/6fld9qdv2cc9 ... feb2014\\_combined.pdf](http://www.dropbox.com/s/6fld9qdv2cc9...feb2014_combined.pdf)

Provided by University of Michigan

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