

# The pitfalls of eco-efficiency

16 January 2020, by Régis Chenavaz



Changing incandescent light bulbs (right) to LEDs (left) is an example of eco-efficiency, but it can also have unintended consequences. Credit: [Shutterstock](#)

The saying "the road to hell is paved with good intentions" can be applied to many situations, and among them are companies' efforts to preserve natural resources. For example, changes intended to reduce resource use can in the end have the opposite effect.

For a company, "eco-efficiency" means using fewer natural resources in the [production process](#) to obtain the same quality and quantity of a particular product. Coca-Cola and Nestlé, for example, strive to reduce their water use and Siemens is trying to use less electricity. This environmental effort is important, knowing that Coca-Cola needs 70 liters of water to produce 1 liter of soda and that they are responsible for considerable plastic pollution.

While "greener" products are very much in vogue, energy savings have the advantage of lowering production costs. Offering consumers products that are less resource intensive also sends out a positive signal. Let's take a closer look at the mechanics of such an approach and how it can sometimes backfire.

## Rebound effects

Many believe that an eco-efficiency approach aligns business' economic objectives with the environmental objectives of reducing the use of natural resources. However, it is not that simple. We need to distinguish between the natural resources used per unit produced—often highlighted by companies engaged in an eco-efficiency approach—and the natural resources consumed overall, which are linked to [global demand](#) for these resources. It is this last point that determines the environmental impact.

For example, let's examine the case of a car that is more fuel efficient, traveling more miles per gallon of gasoline. Less fuel is required to make the same trip, which also means that the same trip has now become cheaper. This money savings can encourage us to drive more, and therefore to consume more petrol—this is known as the "rebound effect."

We observe the same effect for LED bulbs, which cost less to use than incandescent bulbs. We can make fewer efforts to turn off these low-consumption lights than those with incandescent bulbs, which can paradoxically can increase energy use.

By reducing production [costs](#), eco-efficiency can thus have a "cost effect": As [production costs](#) decrease, the selling price also decreases and, consequently, demand and production can rise. We consume more, which runs counter to our environmental objectives. This argument seems valid in mass markets. When total resource use increases as a result of an eco-efficiency policy, it is said that there is a "rebound," with an ultimately negative impact on the environment.

## The case of luxury goods

But there is also what we call a "negative rebound," when resource use decreases more than expected. This is the case for luxury goods or niche markets,

when companies use the green credentials of their products as a sign of differentiation. The consumer is then ready to pay more for greener products—for example for electric or hybrid cars or recyclable batteries. Today, hybrid cars are more expensive to produce than conventional ones, the process being relatively new and cost of development needing to be amortized. But at the same time, price is also higher because consumers are attracted to hybrid cars.

If companies take advantage of this and increase their prices, this results in a decrease in the quantities demanded and therefore in the total resources consumed. In the end, the environmental benefit is greater than expected. Paradoxically, it is when companies raise their prices for more eco-efficient products that the environmental impact will be most favorable.

To be genuinely beneficial to the environment, eco-efficiency policies must therefore not encourage demand too much and manage both the efficiency of [resource use](#) and the total amount of resources consumed. Such an holistic eco-efficiency management carefully balances the impact on price and demand, ensuring that [good intentions](#) become good environmental deeds.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

APA citation: The pitfalls of eco-efficiency (2020, January 16) retrieved 3 October 2022 from <https://techxplore.com/news/2020-01-pitfalls-eco-efficiency.html>

*This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.*