How to Innovate for a Greener World (and Make Money)

By Serguei Netessine

In the minds of both consumers and managers going green is typically thought as being associated with an additional expense. We see this in food stores, for instance, where organic products cost more. Despite this general perception, there exists a simple approach for just about any organization or household to become more sustainable and make more money in the process.

The miracle solution lies in *Energy Efficiency* projects. For instance, replacing old incandescent and halogen light bulbs with new energy efficient compact flourscent bulbs, installing additional insulation, motion-activated light switches, replacing old-leaky windows, buying energy-efficient heaters, are all known to lower carbon footprint while dramatically lowering energy bills! In fact, **Energy efficiency projects are the easiest and the fastest way to reduce greenhouse emissions**, their return on invested capital is large, and these projects do not rely on any new or unproven technology.

Nevertheless, only a miniscule proportion of houses and organizations implement them. This certainly looks like a paradox and, in a way, it is: here is a simple solution to one of the world's most vexing problems, but it is not adopted at any significant rate. The problem lies in the alignment of incentives induced by the business model and the situation calls for a **Business Model Innovation**.

Let us analyse the situation first. Take an energy efficient bulb, for instance. As consumers, we see that a standard CFL (compact fluorescent lamp) costs perhaps 3–10 times more than an equivalent incandescent lamp, which stops most of us from making the high upfront investment. Of course, we understand that the CFL probably lasts longer (or at least so the label

claims), and that its power consumption is probably dramatically lower, but does this really pay off? Precise calculations will tell you that a CFL lasts 8–15 times longer and uses 3–4 times less energy. A recent article in U.S. News even stated directly "A household that invested $90 in changing 30 fixtures to CFLs would save $440 to $1,500 over the five-year life of the bulbs, depending on your cost of electricity. Look at your utility bill and imagine a 12% discount to estimate the savings." But these calculations are neither simple nor are they certain: we rarely known how much energy we consume (perhaps one recalls an average utility bill but how much of it is one lamp?), and prices of electricity fluctuate wildly making it hard to pinpoint the true electricity cost. Plus, nobody can ascertain exactly how long the CFL bulb will last and, with the prices going down steadily, it always seems that waiting another year or two helps one save even more. Finally, there is always a box of spare incandescent lights somewhere in the house (purchased in a bulk at a discount), which never seems to run out. The result: status quo.

The root of the problem is that neither consumers nor organizations have certainty about benefits of the energy efficiency improvements, while the costs are all too obvious: higher price of energy-efficient equipment. This is a clear example of an*inefficiency* caused by significant uncertainty about electricity consumption and prices, longevity of the equipment and, ultimately, by the return on investment. In other words, buying a CFL bulb is associated with a moral hazard problem: the consumer (or the organization) wishing to replace old equipment with new technology takes all the risk, while equipment manufacturers (General Electric, Phillips etc.) take none: they just sell the product and pocket the margin. This is never good for a value chain.

While solving the consumer problem is still a little tricky, but **Energy Efficiency Services Companies (EESCOs)**, have offered a viable solution to this dilemma in the commercial sector. Although many different arrangements exist in this industry, the basic idea is the same: An EESCO comes to the client with a simple business proposition—first, we jointly ascertain the current utility bill, then the EESCO implements whatever energy efficiency projects it deems fits, and in subsequent years, all savings relative to the initial bill are shared between EESCO and the client. The benefit to the client arises from risk reduction – there is no more upfront

payment for technology that might or might not deliver benefits.

Of course, this risk-reduction comes at a price: the benefits of increased energy efficiency must now be shared with the EESCO, and typically these contracts are long-term, to assure that EESCO has enough time to recoup costs of investing into energy-efficient equipment. What is interesting here is that EESCOs innovate by taking upon themselves risky projects and making money on the way, a general approach we described in our recent **Harvard Business Review article**. As one would expect, companies that manufacture energy-efficient equipment are the best informed experts out there on energy efficiency and many of them have been expanding into implementing energy efficiency projects (e.g., Honeywell, Trane, Siemens etc.). Another segment of such companies is affiliated with utilities. Whatever be the origin of the EESCO, it typically has a substantial informational advantage over the client, i.e., it is better able to understand, quantify, price and manage these risks. Sometimes this arises directly out of the EESCOs experience, expertise and in other instances, the companies installing superior monitoring equipment that alerts it to any swings in demand or supply, and appropriate corrective responses can be initiated.

Not surprisingly, the **EESCO industry has grown at a rate of more than 7-8% per year, even during the economic crisis**. No technology innovations can possibly help in this case: no matter how much time and effort we spend creating better, more efficient light bulbs, the problem of the adopters limited information, the consequent uncertainty about payback time, and the misaligned incentives between the provider and the firm remain, as long as the business model doesn't evolve, which is something that is frequently the case in numerous examples we describe in **our Business Model Innovation blog**.

http://renaissanceinnovator.com

Find article at
https://knowledge.insead.edu/entrepreneurship/how-innovate-greener-world-and-make-money

---

About the author(s)

Serguei Netessine is a Professor of Operations, Information and Decisions at the Wharton School, University of Pennsylvania.