



CUT IT DOWN OR CUT IT OUT

ENERGY EFFICIENCY AND CONSERVATION

There is no doubt that, at dinner parties, climate change is a conversation killer whereas discussions about energy are much more successful (so long as they don't get too technical) - energy is the Mom and apple pie end of the debate. However, when practical changes are required on the ground things can get a bit tricky. Deep down most of us know that we use, and waste, far too much energy, but cutting back or cutting out is quite a challenge – after all, we all hate losses!

Peter Tertzakian¹ says that “energy obesity” - our overuse of energy - has to be tackled, and by doing so, we will go a long way to mitigating other serious issues, such as climate change, energy security, limits to prosperity and challenges to the environment (toxic emissions, deforestation, land and water use). He is concerned that energy policy is becoming subservient to climate change policy and claims that if our energy obesity can be solved from the top down, we will go a long way to alleviating all the issues. Seeking to solve the problem by going bottom-up from emissions, by instituting a myriad of complex mechanisms like caps, trades, offsets and taxes doesn't mitigate the urgency of our prosperity and security issues. The formula, he says, is straightforward: reduce our energy appetite and we reduce our carbon footprint and a whole host of other problems too.

Anthony Giddens² agrees and points out that most initiatives that have successfully reduced emissions so far have been driven by the motivation to increase energy efficiency, rather than the desire to limit climate change. This observation applies to whole countries as well as to regions, cities and the actions of individuals. It should still be the lead principle today, since greater energy efficiency *ipso facto* reduces emissions. People are able to grasp and respond to this perspective more easily than they do to climate change, with all its surrounding debates, arguments and complexities; it is not difficult to present energy efficiency in a positive light.

Tertzakian says that ending our energy obesity cannot entail curbing our pursuit of a higher standard of living. If we were to sufficiently ration, conserve, or cut our consumption levels, the impact on our economy would immediately affect living standards. Instead, we must reduce our overall energy consumption while still improving our quality of life, not only in the comfort of the richest nations on earth, but around the world, where standards of living are just beginning to rise.

Bryan Walsh³ quotes research from the McKinsey Global Institute (MGI) which shows that we could slash the projected growth in the world's energy demand by at least half, by 2020, just by taking advantage of existing opportunities to cut waste - simple, costless changes like turning off the lights in offices at night.

¹ P. Tertzakian (2009) *The End of Energy Obesity*; p. 132

² A. Giddens (2009) *The Politics of Climate Change*; p. 106/7

³ Brian Walsh *How to Win the War on Global Warming*; *Time* magazine; 17 April 2008

“There’s so much water pouring out of the bottom of the bucket that it’s insane to put more water into it,” says Adam Grosser, a partner with Foundation Capital, which invests heavily in energy-efficiency companies.

And so it is, but....if only life were so simple.

While the terms energy efficiency and energy conservation are liberally thrown around, when people talk about cutting energy demand, it’s important to note the difference between them:

Energy efficiency means that a product or activity is designed to use less energy. Your washing machine or freezer is more energy-efficient than those used twenty years ago - just picture the huge bulbous, unintentionally space heating, fridges of the 1950s (which sadly have become fashionable again). The Toyota Prius is more fuel efficient than an SUV, a compact fluorescent light bulb uses less electricity per hour than its incandescent ancestor.

Energy conservation means not using or wasting the energy in the first place. There is quite a difference between screwing in a more energy efficient light bulb and turning the light off when you leave the room. Both approaches are important but they each have their downsides.

ENERGY CONSERVATION

Energy conservation suffers from a perception that it is all about cutting back and doing without. After all, no-one likes losses.

Simon Retallack and Tim Lawrence⁴ say that nearly 45% of an average UK citizen’s contribution to CO2 comes from heating space and water alone. The remaining 13% of home energy use comes from refrigeration, lighting, cooking, clothes washing, dishwashing, and using consumer electronics.

They list some barriers people have to conserving energy:

- The use of energy is not tangible or visible; people are used to having warm, bright, convenient, welcoming and entertaining homes; our day-to-day habits are ingrained; conservation measures largely fail to bring any personal benefit in terms of social status and emotional fulfilment, and only relatively marginal cost savings for most households.
- In relation to car use people have a very strong attachment to the car, based partly on its association with social status, and its ability to shape identity; car travel is perceived to be better than alternatives in terms of independence, convenience, comfort, safety and cost; lower carbon cars suffer from image problems, higher upfront costs, misconceptions about performance, and for certain technologies, a lack of infrastructure.
- When it comes to flying, people have an aspiration and a sense of entitlement to holidaying abroad; flying has a higher social status than other forms of travel; we want to travel further than before for increasingly exotic holidays, and to take shorter but more frequent trips; flying is the most convenient in terms of speed and has become more affordable; also driving and flying are cheaper than alternative modes of transport. Poor planning has resulted in people being reliant on their cars.

⁴ *Simon Retallack, Tim Lawrence & M. Lockwood (2007) Positive Energy*

- People are openly honest about their personal laziness, greed and disinclination to change.
- Some energy saving behaviours have a poor image for some people - a bit hippy-dippy, new-age or alternative.
- The more pragmatic “small actions” message, involves asking a large number of people to do small things - the language is one of ease, convenience and domesticity and can easily lapse into “wallpaper” and be easily ignored. Juxtaposing the apocalyptic and the mundane can beg the question, how can small actions really make a difference to things happening on this epic scale

But maybe people just have to adapt?

ADAPTATION

Adaptation is a term referring to our ability to adjust to new information and experiences. Through adaptation, we are able to adopt new behaviours that allow us to cope with change. This is a good trait to have when facing future climate related difficulties or crises. However, it is not such a good attribute when it comes to cutting back on energy use.

Swiss biologist and psychologist, Jean Piaget, renowned for his groundbreaking work with children, believed that humans desire a state of cognitive balance or equilibration. When the child experiences cognitive conflict - a discrepancy between what she believes the state of the world to be and what she is experiencing - adaptation is achieved through one of two ways:

1 Assimilation - which involves incorporating new information into previously existing thought structures. For instance, a child encounters a Dalmatian for the first time and then realises that her understanding of “dogs” now includes Dalmatians.

2 Accommodation - which involves the formation of new mental structures when new information does not fit into what you already know. For instance, a child sees a fox for the first time and learns that it is different from “dogs” and “cats.” So , she must create a new category for “fox”.

Assimilation and accommodation work like pendulum swings at advancing our understanding of the world and our competency in it. According to Piaget, they are directed at a balance between the structure of the mind and our surroundings. This ideal state he calls equilibrium.

But, just as addicts adapt to their drug, when we adapt to pleasurable experiences or things, we often want more. We get used to them and then take them for granted. In the early 1990’s, people were delighted to have access to a mobile phone the size of a car battery (and nearly as heavy). Now kids are disgusted if they don’t hide snugly in the palms of their hands. What most of us do with computers hasn’t changed much over the years, but what we expect them to do for us has. As the novelty wears off, the pleasure is replaced by comfort, which for many of us becomes disappointing and is no longer enough. So we want more, observe the obsession with wider and wider TV screens.

In 1973, 13% of Americans thought of air-conditioning in their cars as a necessity. By 2003, 41% did. The climate hadn’t changed that much in the intervening years. What has changed is the standard of comfort we have become used to.⁵

Asking kids nowadays to turn off the lights is a major imposition, as they are used to having the lights on. Whereas I was brought up by parents, who themselves were brought up in the 1930’s and 40’s era and never let us forget how lucky we were to have any lights at all.

⁵ Barry Schwartz(2004); *The Paradox of Choice*; p. 169

ENERGY EFFICIENCY

Energy efficiency is a buzz term of the noughties, it rolls off the tongue nicely and has a touchy feely ring to it. If we can't stop people using all this technology, then at least let's make sure the stuff itself uses less energy. Design cars that run on less, and houses that keep the heat. Give people grants so that they can insulate their windows, walls and ceilings. It sounds so simple.

But again, human nature is out to foil things. Energy efficiencies can be offset by phenomena like the rebound effect, planned obsolescence, feature creep and Moore's law

THE REBOUND EFFECT/JEVONS PARADOX

In 1865, the British economist, William S. Jevons⁶ put forward the idea that efficiency gains actually increase rather than stem the use of energy. In his day coal was the main source of energy. He posited that any coal that became available because of energy efficiencies facilitated the adoption of even more steam engines, factories, heated homes and a greater appetite for coal.

Jevons saw that this had three effects:

1 Direct re-bound effect - when consumers are offered a device like a more efficient steam engine, they actually buy more steam engines and run them for longer.

2 Indirect rebound effect - when coal is saved by using a more efficient machine, that coal is used elsewhere, such as in the fireplace.

3 Indirect economy effect - when money is saved from energy efficiencies it is spent on goods and services that don't use energy directly, but require substantial energy in their manufacture or supply. Therefore, the wealth freed up by the efficiencies means more energy consumption.

So, this would suggest that energy efficiency is not a solution in itself. Mind-set change will also have to happen to ensure that these technological advances in themselves lead to an overall decrease in energy use. There is a danger that unless we really get the point, cheaper energy bills will mean that people will have more cash to spend on more electrical appliances, up-grading the car, or going on a long-haul holiday.

This is illustrated by the following examples:

- In a statement Geoff Hoon, as UK transport secretary, said that the government needed to do more to encourage electric cars, and he highlighted a target of 5%, saying this 5% switch to electric cars would then offset the extra emissions from a new third runway at Heathrow.⁷
- On the front page of the Southern Star,⁸ an article titled *Kinsale Chamber of Tourism's Positive Steps to Boost Business* focused on a well attended public meeting called by the local Chamber of Tourism to look at ways the town can revitalise its tourist industry. A list of suggestions was put forward by the 87-strong audience, including the following: "Encourage more businesses to leave the lights of their premises on by using low energy bulbs and thereby add to the attractiveness of the streets by night."
- Simon Retallack and Tim Lawrence⁹ note that the increases in appliance efficiency that have already taken place have been unable to offset the growth in the number of appliances, and the energy consumption associated with their use in people's homes. Between 1990 and 2004, the number of appliances used by UK households rose by 50%. Total energy consumption from appliances increased by 18.6% between 1990 and 2000.

⁶ *An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of our Coal Mines* in P. Tertzakian (2009) *The End of Energy Obesity*; p. 118

⁷ *N Watt; Motorists to Receive Grants for Electric Cars; The Guardian; 9 April 2009*

⁸ *The Southern Star; 28 March 2009*

⁹ *S Retallack, T. Lawrence & M. Lockwood (2007) Positive Energy; p.33*

- According to Bjorn Lomborg,¹⁰ the dishwasher, washing machine and air conditioner have each cut about 50% of their energy use over the past decades. The average US car has improved its mileage by 67% since 1973. This should lead us to believe that we would use less and less energy. But while the car's engine gets more efficient, we get a car with air-conditioning. While our washing machine uses less energy, we also buy a dishwasher. We heat each room more efficiently, but have ever more space. Ingenuity still works and people constantly find ways to cut energy use, but our total energy consumption increases and so do our carbon emissions.
- To avoid collisions, planes on long-haul routes have to fly quite a long way apart. And only some planes can fly in air lanes with kind tailwinds, while others have to push through less favourable currents. New communications satellites will enable air traffic controllers to locate aircraft that are far over the oceans, remote deserts or the poles where there is no radar coverage. This will mean greater safety but it also means that controllers will be able to pack planes in closer together along optimal flight paths, which should cut carbon emissions.¹¹ Who's to say, however, that this new technology won't just make it easier for more planes to be up in the sky at the same time?

PLANNED OBSOLESCENCE

Energy efficiencies can be outweighed by planned or built-in obsolescence, which means that products, despite being energy efficient, don't last long or are replaced before their useful life is over, so energy is wasted in manufacture.

This industrial design policy of deliberately planning or designing a product with a limited useful life, so it will become obsolete or non-functional after a certain period, was first developed in the 1920s and 1930s when mass production was in full swing. The rationale behind the strategy is to generate long-term sales volume by reducing the time between repeat purchases.

The phrase itself was first popularized in 1954 by Brooks Stevens, an American industrial designer. By his definition, planned obsolescence was *"instilling in the buyer the desire to own something a little newer, a little better, a little sooner than is necessary."*

Critics such as Vance Packard,¹² who, in 1960, wrote *The Wastemakers*, claim the process wastes resources and exploits customers. Resources are used up making changes, often cosmetic, that are not of great value to the customer. Packard talked about obsolescence of function and obsolescence of desirability, the latter he also called psychological obsolescence, referring to marketing attempts to wear out a product in the owner's mind.

As Packard observed, it is impossible to make genuine technical innovations in established products every year, so their planned obsolescence must be focused on design, not functionality. Businesses quickly learned that consumers bought things more often if they were convinced that product novelty trumped product utility and reliability.

Supporters of planned obsolescence say it drives technological advances and contributes to material well-being. In a fast-paced competitive economy relying on continual growth, market success requires that products are made obsolete by actively developing replacements.

According to Colin Campbell, a sociology professor at the University of York, we suffer from "neophilia" - a strong affinity for novelty.¹³ Pre-modern societies used to be wary of the novel, whereas we are almost addicted to it.

¹⁰ B. Lomborg (2007) *Cool It*; p. 30/31

¹¹ *New Scientist*; 15th Dec. 2012; p. 28

¹² Vance Packard, *Vance (1960/3) The Waste Makers*

¹³ Rachel Botsman & Roo Rogers (2010/11) *What's Mine Is Yours-how collaborative consumption is changing the way we live*; p.33

FEATURE CREEP

Feature creep refers to the ongoing expansion or addition of new features in a product, such as in mobile phones or computers - so you feel you have to have the latest model to keep up with the changes. But extra features can go beyond the basic function of the product and so can result in over-complication rather than simple design. Apparently, the added extras are often not put there for the benefit of the end user. Some say that engineers and designers simply get carried away - *wouldn't it be great if our product did this?* - and they find themselves competing with each other, to produce the most geeky product.

According to an article in *The New Yorker*,¹⁴ product returns in the U.S. cost a hundred billion dollars a year. A study by Elke den Ouden, of Philips Electronics, found that at least half of returned products have nothing wrong with them. Consumers just couldn't figure out how to use them. You might think, then, that companies could avoid feature creep by just paying attention to what customers really want. But that's where the trouble begins, because although consumers find overloaded gadgets unmanageable, they also find them attractive. It turns out that when we look at a new product in a store we tend to think that the more features there are, the better. It's only once we get the product home and try to use it that we realize the virtues of simplicity.

Marketing executives, Debora Viana Thompson, Rebecca W. Hamilton, and Roland T. Rust, found that when consumers were given a choice of three models, of varying complexity, of a digital device, more than 60% chose the one with the most features. Then, when the subjects were given the chance to customize their product, choosing from twenty-five features, they behaved like kids in a candy store. (Twenty features was the average.) But, when they were asked to use the digital device, so-called "feature fatigue" set in. They became frustrated with the plethora of options they had created, and ended up happier with a simpler product.

Consumer electronic products are often sold by emphasising technical descriptions that are meaningless to anyone other than enthusiasts, who are more likely to be male. According to US marketing executive, Bridget Brennan,¹⁵ women want a product to work the moment it comes out of the box. They want it to be intuitive and to be helpful. Women don't have time to configure or troubleshoot technology. Women want to get to the action. If they've got a new mobile phone they want to call a friend right away, while men may spend hours programming the thing, downloading applications and enjoying every minute of it.

I can say aye to that...

MOORE'S LAW

The term was coined by Intel cofounder Gordon Moore. In its original formulation, the law said that the number of transistors on a computer chip doubles every couple of years; later this morphed into the observation that data density doubles every eighteen months. Today's gluttonous tech consumers understand it to mean that the products will be twice as nifty next year and cost half as much.

¹⁴ http://www.newyorker.com/talk/financial/2007/05/28/070528ta_talk_surowiecki

¹⁵ *Why She Buys* – Bridget Brennan; p.160/1