

The Psychological Underpinnings of the Consumer Role in Energy Demand and Carbon Abatement

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The energy efficiency gap is the gap between energy currently used to generate an output and the level of energy required to achieve the same output if more efficient technologies were fully adopted. At the consumer level, the existence of the efficiency gap indicates that people are paying more than the lowest market price for their activities. In price terms this is irrational, and it is not only money wasted but excess carbon is also being emitted.

Over the past few decades consumer energy demand has been rising steadily with average incomes. Future demand for energy is unknown, however to date the trend shows no signs of ebbing, and bears with it the risk of growing emissions. Substitution (swapping technologies for more efficient ones) and conservation (choosing to use less energy) are separate issues, however in this context they are both related to consumer preferences to save money or reduce emissions. Both substitution and conservation efforts would be required if we are to meet targeted reductions.

Consideration of other factors in consumer decision-making processes gives the impression that the failure to maximize on efficiency is not necessarily irrational. While they may value efficiency, price is not a unique driver of choice. With a rapid turnover of new technologies there is an inherent uncertainty with investment decisions. Learning which technology is most appropriate, deciding on the right time to invest, addressing the risk associated with locking oneself into a large investment, and paying the transaction costs of gathering and applying new information, are all factors which could delay the transition to greater efficiency. A large degree of uncertainty could lead people to rely on behavioural mechanisms to inform their decisions. 'Norms' inform people of what those around them are doing and thus what the socially optimal course of action might be. When we lack perfect information heuristics often guide choices, e.g. rules of thumb, or emotions, or time preferences. Sub-optimal investment decisions may also come about due to a lack of awareness of a better

option. When there is sufficient knowledge and an intention to make the change, procrastination may delay change further.

The growth pattern in emissions has drawn the concern of leaders worldwide. Legislation targeting carbon mitigation has largely been focused on standards and a carbon cap and trade (in Europe) at the industrial level. These policies provide a definite reduction in carbon while overlooking consumer choice. Consumers report an interest in environmental matters and in reducing the threat of climate change, however their actions on a whole have not told the same story. Efforts to include the consumer have been confined to labelling and information campaigns. With an absence of coherence and integration of the information they provide, these have proven weaker than hoped. Some have been very successful in their market, such as the energy star label and the white goods labels in Europe and Australia and some other countries. However these two labels alone give a very different message. In this paper we argue that communication strategies have lacked the sophistication to engage consumers in abatement efforts, and that current policy structure sidelining their choice is failing to take advantage of a large potential to reduce consumer driven emissions.

The causes for consumers failing to align their actions with their values in the context of climate change could be multiple. Energy is an abstract commodity, which we consume indirectly. We rarely engage with the consequences of energy generation when we turn on a light switch, boil a kettle, or take a shower. We are separated in time and space from the negative impacts of our energy consumption. While we consume vast amounts of carbon intensive materials in the west today, somewhere else tomorrow the impacts are felt. This asymmetry leaves a gap where information is required to re-engage the consumer with the knock off effects of their choices.

In this paper we describe the consumer role in emissions in three categories: the efficiency of the goods and services they choose, the actual use of those goods and services, and the carbon embedded in their consumption basket. An example of the efficiency of the stock the consumer chooses to invest in would be the mpg of their car. How they use this stock will further affect its efficiency, e.g. if tyres are not pumped the car requires more fuel per mile. Embedded carbon is the carbon associated with the production line of a good or service, that is taking account of the emissions during the manufacturing of a car and its disposal. In some cases where we save on emissions from running a service the carbon embedded may be far higher, thus cancelling out some of the saving. Successful communication of these factors to the consumer would have to take an integrated approach in order to simplify it enough so that they can engage with it at the critical time of decision, and allow for easy comparison across products or services.

We conclude that the carbon footprint label is the most comprehensive and potentially simplest means of communicating the



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environmental and efficiency criteria with consumers at the time of purchase. This label displays the lifelong emissions associated with a good or service. This is not a simple calculation process, nor is it straightforward to trace data to the origin of a supply chain. However, looking at this from a consumer perspective, it would allow for simple fast comparisons and, after some exposure time, consumers would engage quite simply with the figures.

In order for such a label to prevail as a driving force in altering consumption patterns, the greater psychological or behavioural barriers would have to be addressed. These include a host of nudge strategies to incentivise a greater value among consumers for a low-footprint lifestyle, an understanding of the concept, and the generation of a new norm facilitating low-carbon living. To manage such an ambitious goal policy would need to incentivise local initiatives, tailored to the needs and wants of diverse communities, and thus engage with people on a more personal level.

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