Nudge-nudge, Wink-wink, Say No More!

How behavioural nudges can combat climate change

Cameron Haworth *

January 9, 2021

This essay has two purposes. Firstly, to provide a framework to show how nudges can be used and evaluated to combat climate change in Aotearoa, New Zealand. Secondly, to explore the merits of two nudge packages, and how one or both could be used to address climate change. The proposed nudge packages are:

Easy Mode: simple, low-cost nudges that are likely to be successful and provide a net benefit for society, without requiring major realignment of wider policy

- For aviation: mandate that the default option for domestic flights to be for passengers to offset the carbon costs, with passengers explaining why they are not offsetting the carbon.
- For car parks at public transport hubs: make the most advantageous parking spots EV Only, increasing the status of EVs and nudging people towards an EV purchase.

The Big Kāhuna: aggressive, higher-cost, and harder to implement nudges that can generate a significant impact if successful and coordinated with wider policy adjustments.

- A Green Price to be listed alongside retail price on supermarkets products, reflecting the true, carbon-neutral cost of the product — showing consumers the true cost of products and nudging them towards items with lower carbon costs.
- An opt-out corporate carbon tax, where carbon-positive companies pay for carbon-offsetting — or choose not to pay the tax, and publicly explain how they plan to better spend the same funds — nudging companies towards carbon-neutral stances.

  In addition to, or instead of green pricing in supermarkets:

- Plain packaging for carbon-positive goods. This allows carbon-neutral and carbon-negative brands to stand out on shelves and highlights their climate-friendliness. This would also incentivise other brands to recalibrate their emissions for carbon-neutral status.

*Cameron is a PhD candidate at the University of Auckland (under Prasanna Gai) and works part-time at the Reserve Bank of New Zealand, where he is two years into his career. Email: cmchaworth@gmail.com.

We begin this essay with an overview of three socio-economic causes that must be addressed to slow climate change. We then examine the transmission mechanisms through which nudges can be used to address the socio-economic issues. Next, we set out criteria for assessing potential nudges and provide a set of potential nudge solutions. We describe two policy packages and conclude. Let's get to it.

1 Socio-Economic Factors Driving Climate Change and an Introduction to Nudging

> *"Many individuals are doing what they can. But real success can only come if there is a change in our societies and in our economics and in our politics."*
>
> *— David Attenborough, 2019*

Human-engineered climate change is a global phenomenon on track to heat the Earth's temperature by more than 2 degrees by 2050 and cause economic harm near $8 trillion by 2050 [1] [2]. The reduction of global warming to only 1.5 degrees is estimated to save roughly a million lives per year by 2050 [3].

While climate change is caused by carbon-emitting human activity, the activities themselves are driven by fundamental societal preferences and economic factors. By changing preferences and available choices, a wholesale change in carbon-emitting is possible. This can be led from the public sector — but need not start with a revolution. As we will see, small nudges can make big differences.

Let us start with the three big socio-economic drivers of climate change.

The first: there are negative externalities from the production of carbon-emitting goods and services. In other words: we produce side-effects when emitting carbon to make stuff, and those costs are borne by everyone — and the planet — instead of included in the cost of the stuff itself. The use of (Pigouvian) carbon taxes to internalise these externalities are often floated as a solution here; make the emitters pay for the costs of their emissions [4]. Given the economic interests involved, there is often political backlash to this. Why create yet another tax? Especially for something that *might not be real...*

Which takes us to the second economic cause: imperfect information. Despite near consensus among scientists, there is still far from a global majority who believe in climate change [5]. As long as people have imperfect information on the scientific causes and costs of climate change, free markets will fail to incorporate the costs of carbon. An obvious answer is education. But how does one educate someone who doesn't want education on a topic — especially beyond school age?

This is one avenue where nudges can be used. Rather than addressing the conscious, logi-

cal, slow system of someone's mind, nudges work through with the subconscious, erratic, fast system — ruled by heuristics that make us gamble to avoid certain losses, or under-save for retirement [6] [7]. Rather than relying on logical education, nudges can be used to redirect particularly useful heuristics, and nudge people towards making socially optimal decisions — by their own free will. Technically.[1] A popular example of nudging is having retirement saving schemes where the default option is to save; people must make the effort to opt out.

The third socio-economic factor behind climate change is the long-standing stigmatism of 'green' preferences and politics. Many of the decisions available to consumers and voters that would naturally act against climate change have been tied in with parallel categorisations of 'hippy movements,' associated with protesting and other 'antisocial' ideas. This has prevented mainstream adoption. Until these generalisations are dismantled, many climate-friendly lifestyle choices will be constrained to small groups.

Nudges provide one path for starting this process of social change. Small, non-invasive normalisations can be made to nudge climate-preferences from the 'extreme' towards the median.

Nudge solutions, powered by the public sector, affecting a large proportion of society, can make a significant impact in New Zealand's fight against climate change. We can also create a template that can then be used to inspire change globally. However, we must also be reasonable about the scale of the impact that can be achieved by nudges alone. The power of nudges comes from their ability to make a disproportionate impact from their simplicity and low cost. Even with disproportionate impacts, nudges alone cannot provide all the policy responses required to prevent climate change. There is a need for nudge policies to support wider policy solutions.

2 Applying nudges to climate change

There are two useful tools for thinking about how nudges address the three socio-economic issues of climate change:

- An analysis of Nudge-able heuristics that can be redirected for climate-friendly behaviour
- The Consumer On-Ramp model for developing advocacy in low-awareness environments

A heuristic is a fancy term for the imperfect methods our brains use to make decisions. Many heuristics are nudge-able in some way — we focus on five, for brevity.

[1] Critics argue that nudges take advantage of people and are a pathway to a 'nanny state.' I find this a strange argument since alternative interventions involve far more nanny-ing.

First, there is the Status Quo Bias and Inertia. This regards our natural laziness. We tend to pick the path of least resistance. This bias leads towards a significant preference for default options. When a default option is provided, people are far more likely to choose that than deviate. This provides a popular and effective avenue for nudging.

Second, is Mindlessness. This is the tendency for people to make decisions without concentrating, leading to the impulse purchase of discounted goods, etc. Like inertia, mindlessness can be used to promote beneficial decisions by making the mindless ones more beneficial — or making the beneficial ones more mindless.

Third, is Anchoring. The first encounter people have with something or someone tends to weigh heavily on their future thinking on the matter, forming a benchmark against which they adjust when making other decisions. Having an environmental benchmark for the consumption of goods and services can anchor people towards climate-friendly options — and fight against the existing price-conscious and branding anchors.

Fourth, Representativeness. This regards the degree of similarity between something and its perceived stereotype or assumption. Changing social perception of climate-friendly behaviour requires a significant adjustment of existing stereotypes. This can be addressed by providing a representation of climate-friendly behaviour that is widely acceptable in the mainstream.

Finally, Framing and Attraction. The way in which information is provided affects the way it is interpreted. Positive framing can sway decisions. Framing the benefits of climate-friendly choices around their attractive benefits can increase the likelihood of their adoption.

There are three insights we can draw from these heuristics when designing nudges:

- Nudges can provide a climate-friendly default option (inertia and anchoring).
- A benchmark reflecting climate-friendly decisions can improve consumption choices. It may also affect social expectations and stereotypes (anchoring, mindlessness, and representativeness).
- Climate-friendly products and choices can be made more attractive by public information or positive framing (framing and attraction). Displaying products with reference to their climate-friendliness can frame them in more favourable light.

We now move to our second piece of nudge analysis: The Consumer On-Ramp.

A popular criticism of nudge policies is that they are short-term distractions that fail to make lasting change [8]. We can address this concern by designing nudges using insights from the Consumer On-Ramp for developing customer *lifetime value*, from the wider management literature (Figure 1). This is useful for exploring how the issue of imperfect

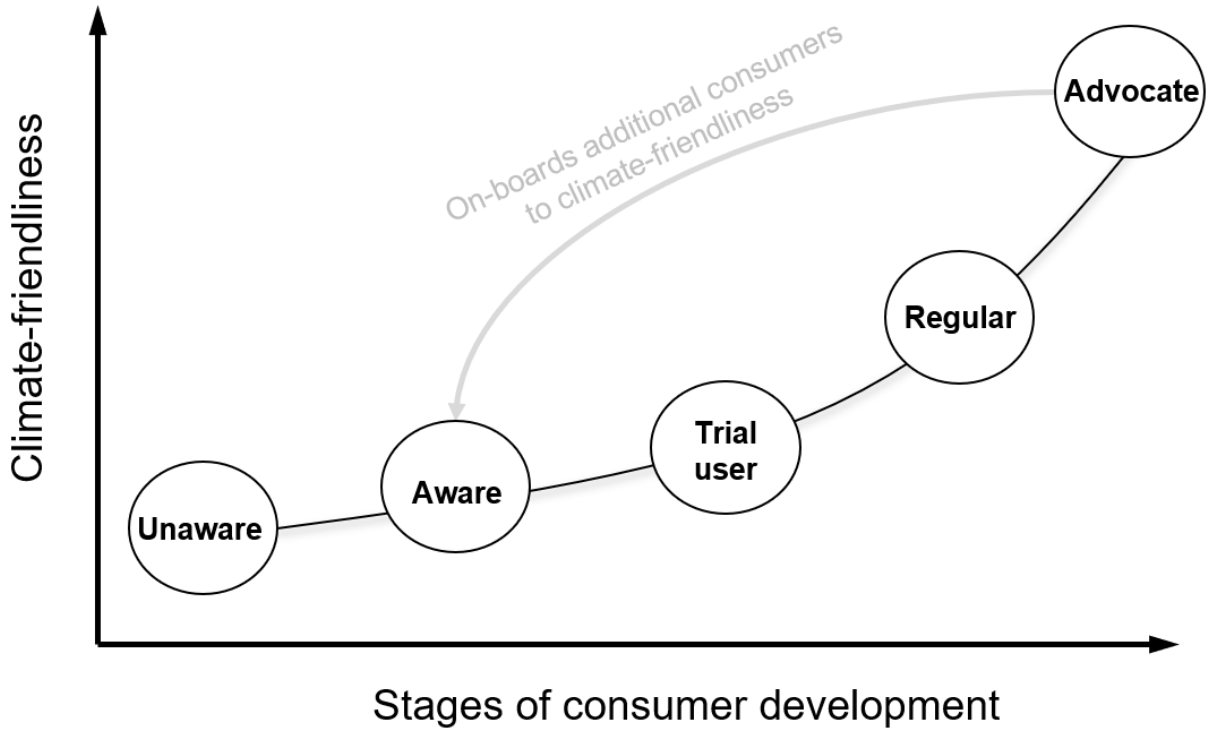

Figure 1: The Consumer On-Ramp (source: Author)

information can be navigated, while also addressing the issue of social stigmatism.

The model has five stages of development, mapping out how a potential consumer moves from being unaware of climate-friendly behaviour, to being aware. They can then become a trial-user — trialling climate-friendly behaviour of some kind, before potentially transitioning to a regular — who displays frequent climate-friendly behaviour. The final development step is advocacy — where the consumer reaches out to the rest of their network, recommending similar climate-friendly behaviour.

Developing consumers up and along the on-ramp requires small jumps in information as well as additional incentives. These can come in the form of nudges. There are three insights to draw from the model in relation to climate change nudges:

- Nudges should target small jumps in the on-ramp. Rather than attempting to convert unaware users directly into regulars or advocates, nudges should target individual leaps in development. This is more likely to create lasting behavioural change.

- A lack of trial experience may be a stumbling block for many consumers, preventing them from making further climate-friendly consumption decisions.

- Advocacy-enabling nudges can drive lasting change. Mainstream advocacy and word-of-mouth communication may be more effective than the government in influencing opinion.

3 Criteria for Assessing Climate-Friendly Nudges

Now that we better understand how nudges can help us achieve our goal, we should establish criteria for assessing their potential for success.

First, come two measures of policy impact:

- Probability of success (due to effectiveness, or political difficulty in pursuing), and
- Magnitude of change if successful.

Second, come two time-related measures. Nudges that can be quickly implemented are more easily tested and improved upon; this can also represent how easy the nudge is to implement. Nudges with more longevity are likely to have a higher lifetime impact.

- How quickly the nudge can be set up and
- The potential longevity of the nudge.

Third, comes the practical cost constraint. While nudges tend to be low-cost, expensive nudges come at the cost of other policies that could make a difference:

- Fiscal cost — the opportunity cost of the nudge.

These factors are interrelated and overlapping. This makes them imperfect from a measurement perspective, but they still allow for a structured approach for considering a nudge's merits.

4 Idea Generation

Finally, we need some ideas. Here are some I prepared earlier (Figure 2).

Nudge	Description	Activity	Fast set-up	Longevity	Probability	Magnitude	Low cost	Total	Innovation
Default carbon-offset on domestic flights	Domestic flight bookings mandated to have an opt-out option for default of off-setting carbon costs	Transport						14 / 20	
EV Premium Car Park Spaces	Convert the most desirable public transport car park spaces to EV-only	Transport						14 / 20	
Green pricing in supermarkets & retailers	Listing a separate Green price that includes carbon costs next to retail prices, allowing for comparison	Direct consumption						13 / 20	
Opt-out corp. carbon tax	Carbon-positive corporations can choose to opt-out of tax on excess carbon — and publicly explain why	Production (Agri, services manufacturing)						13 / 20	
Plain-packaging for carbon-positive brands	No branding allowed for carbon-positive brands in supermarkets; only default plain packaging	Direct consumption						13 / 20	
Compare energy use with neighbours	Send emails to houses informing them of their relative energy consumption and how to improve	Direct consumption						13 / 20	
Washing machine and printer defaults	Mandate default settings for printers to be double-sided, washing machines to be cold	Direct consumption						12 / 20	
MSD provisions of only climate-friendly goods	Goods supplied by the Ministry of Social Development to follow climate-friendly options if possible	Direct consumption						10 / 20	
Fuel-efficient driving included in drivers' tests	Require new drivers to demonstrate fuel efficiency, teaching them along the way	Transport						7 / 20	

Figure 2: Climate-friendly nudges, ranked by success criteria.

5 Policy Packages

The preferred nudges for combatting climate change are highlighted in Figure 2. There are two clusters here, highlighted respectively in blue and green.

Easy Mode: simple, low-cost nudges that are likely to be successful and provide a net benefit for society, without requiring major realignment of wider policy

- For aviation: mandate that the default option for domestic flights to be for passengers to offset the carbon costs, with passengers explaining why they are not offsetting the carbon.
- For car parks at public transport hubs: make the most advantageous parking spots EV Only, increasing the status of EVs and nudging people towards an EV purchase.

The Big Kāhuna: aggressive, higher-cost, and harder to implement nudges that can generate a significant impact if successful and coordinated with wider policy adjustments.

- A Green Price to be listed alongside retail price on supermarkets products, reflecting the true, carbon-neutral cost of the product — showing consumers the true cost of products and nudging them towards items with lower carbon costs.
- An opt-out corporate carbon tax, where carbon-positive companies pay for carbon-offsetting — or choose not to pay the tax, and publicly explain how they plan to better spend the same funds — nudging companies towards carbon-neutral stances.

  In addition to, or instead of green pricing in supermarkets:

- Plain packaging for carbon-positive goods. This allows carbon-neutral and carbon-negative brands to stand out on shelves and highlights their climate-friendliness. This would also incentivise other brands to recalibrate their emissions for carbon-neutral status.

We now go through each nudge in detail, including brief implementation considerations.

6 Nudge Details and Implementation

The first Easy Mode nudge uses a default option offset for carbon costs on domestic air travel, targeting inertia and anchoring heuristics. This is the simplest nudge we propose.

It is possible to provide an explanation for why the default option is there, and that the government encourages users to stick with it. It is also possible to ask users to choose an answer to explain their deviation from the default option. Both additions may increase inertia and the likelihood of carbon-offsetting.

While this is a simple policy, the potential impact is meaningful, with domestic air travel

contributing 200 kg of carbon per person per year (2-3 percent of annual emissions). This policy could then be rolled out to all flights into and out of New Zealand. This would make a significant impact — as international flights produce 80 percent of aviation emissions from just 35 percent of total flights (pre-COVID) [9]. Even without formal expansion, setting a domestic default will shape expectations. This will result in kiwis growing used to offsetting emissions, and the number of flyers opting into carbon-offsetting on international flights will likely rise too.

Implementation of this nudge is straightforward, as most domestic flights come from two airlines: Air New Zealand and Jetstar — with the former already offering opt-in carbon offsetting. Formalising the opt-out default should be inexpensive — except for flyers, who are internalising their carbon costs.

The second Easy Mode nudge — reserving spaces for EV only vehicles in the front of car parks — leverages the customer on-ramp to build awareness of EVs. It then uses the framing heuristic to make EVs more attractive — elevating them to special status with perks. This status is reinforced daily as commuters walk past (possibly empty) EV spots from their car park.[2] Not only do the spaces encourage EV take-up, but they can also be fitted with charging stations providing needed infrastructure, addressing 'range anxiety' that EVs may run out of electricity between destinations.

Implementation can begin in Park and Ride bus and train stations. Further expansion is possible to private supermarkets and stadiums, where parking spaces can be similarly advantageous. This would require either regulatory changes or government encouragement and funding.

Now we move to the Big Kāhuna nudges.

A green price can be calculated by adding a product's net carbon footprint to its retail price. This is then displayed on shelves alongside the retail price. This can be accompanied by a green tick if the retail price is of negligible difference from the green price.

This system provides an elegant solution to the first two socio-economic causes of climate change: the mispricing of carbon, and imperfect consumer information. Consumers can now see the full, green price of the products, and have the choice to adjust their purchases to favour the products with relatively low green prices. This is accomplished without any tax — meaning that less-wealthy families can to continue to buy low-cost products as needed.

This nudge makes use of several heuristics. Shoppers will see two benchmarks now: retail and green prices. This provides a green price anchor alongside the retail price anchor. Shoppers will be pulled towards similar products where the green price is lower, or where

[2]There is potential for this to reduce car park efficiency, but the impact should be small.

there is a green tick of approval for low differences. This is likely to occur even if the shoppers have no interest in climate change — due to the mindlessness heuristic taking over. As well as the pure price signals, there is also positive framing from the green prices and ticks for climate-friendly products.

The green price addresses the awareness stage of the consumer on-ramp. However, due to the interactions of the heuristics listed above, it is also more likely to result in some shoppers trialling new climate-friendly products they otherwise would have avoided. It is also easier for climate advocates to inform their friends on how to shop: It's easy — look for the green ticks.

If the pricing is rolled out on a large enough scale, producers may react by reducing the net carbon footprint towards the green tick levels. This can spill over to the export of lower emission goods, further lowering New Zealand's own emissions.

There are plentiful methodologies for measuring carbon footprints, and many companies already calculate this — though it can be more difficult for small producers. Inevitably, this will increase the costs across the system, raising the already high costs of New Zealand's essential goods and services. However, most of these costs will be one-off, followed by straightforward ongoing monitoring. The long-term benefits are likely to outweigh these costs (a detailed cost-benefit analysis is required).

The biggest barrier to this policy is political: convincing (or paying for) supermarkets to use the pricing system; and auditing firms for accurate reporting of carbon costs. However, New Zealand is an excellent place to trial this. There is a supermarket duopoly here (Progressive, and Foodstuffs), making the first barrier much easier to clear, providing national coverage for the programme.

The second nudge in the Big Kāhuna package is an opt-out corporate carbon tax. Companies are asked to pay a tax on net emissions; but they can choose to opt-out. A public record can be kept of corporations who have and haven't paid. Those who opt-out can fill in an explanation as to why they haven't paid. Explanations can be scrutinised by stakeholders and media — likely pressuring more companies to either: (a) opt into the tax, or (b) offset their emissions in advance, avoiding the need to pay or explain. I would argue that (b) is a better outcome — and more likely to dominate in the longer term, as it is proactive, and companies can use their offsetting activities in their marketing.

This nudge doesn't use the inertia heuristic; companies are unlikely to fall to such biases. However, it does make use of anchoring and adjustment; comparing companies that do and don't offset emissions. It also draws a benchmark: you should be carbon neutral. If not, it's up to you to work out a plan — for your own benefit. This can help address the third socio-economic cause of climate change by normalising climate-friendly behaviour, as well as addressing the first: by internalising the externalities from carbon emission.

There are set-up costs for establishing taxation infrastructure to support this policy, and ongoing costs in terms of public reporting and tax administration.

The final Big Kāhuna nudge can be used in addition to, or instead of the green pricing nudge. This is: plain packaging for products with a large difference between green prices and retail prices.

Packaging plays a significant role in modern marketing and supermarket behaviour where similar products rely on branding to achieve price-differentiation. Can someone really tell the difference between Coca-Cola and New World's Homebrand Cola? With plain packaging, more shoppers might be tempted to stop paying extra for 'premium' products that have lost their wrappings for degrading the environment.

The worst-case scenario from this policy would be for all plain-packaged premium brands to leave New Zealand. This would reduce consumer choice. But, this would be phenomenal from an emission-perspective — and encourage more climate-friendly brands to establish themselves here. This environment would be favourable for the founding of new sustainable New Zealand brands that can thrive in the domestic market and expand their model overseas, reducing emissions there, too.

Implementing plain packaging alongside green prices is possible, but unnecessary. The threshold for plain packaging should be set for a relatively large difference between green and retail pricing. This would make the green ticks and prices redundant or confusing. In a choice between the two policies, I consider the green pricing solution more elegant. However, if the costs of managing a green price system are too damaging for producers and consumers, then the plain-packaging approach may be a lower-admin alternative. Most of the costs from the policy are borne by the worst climate-degrading products (small producers who are over the limit are forced to save on marketing budgets — a small bonus?). Premium brands may cut prices to compete with homebrand products — benefitting consumers. A detailed cost-benefit analysis may show this to be the superior approach.

7 Conclusion

Climate change is a choice. But it is a largely unconscious one, driven by human inertia and other cognitive biases. We are on the backfoot and will be fighting uphill until behavioural nudges are used to level the playing field. This essay has shown why and how these nudges work, ultimately addressing the three socio-economic causes of climate change: externaltities from carbon-emitting activities; imperfect access to carbon emission information, and; social stigma relating to climate-friendly behaviour. We have shown how nudges can provide solutions while preserving choice and minimising government intervention through the use of default options, opt-out taxes, and green-pricing and/or packaging restrictions. Some of these options are easy. Some are hard — but with huge payoffs. New Zealand is small, but our emissions-per-capita are high. The rest of the world is also grow-

ing more used to our voice. What we say and do matters. If we can provide a benchmark for domestic climate policy, this can have a significant impact on global climate change. We have to start somewhere — why not a little nudge?

References

[1] Jay Shambaugh Lawrence H. Goulder Charles D. Kolstad Ryan Nunn, Jimmy O'Donnell and Xianling Long. Ten facts about the economics of climate change and climate policy. Oct 2019.

[2] The Economist. Global economy will be 3 percent smaller by 2050 due to lack of climate resilience. Nov 2019.

[3] The UN. Climate action key findings. Jan 2021.

[4] David Nellor and Ronald McMorran. Tax policy and the environment : Theory and practice. Sep 1994.

[5] American Association for the Advancement of Science. Scientific consensus: Earth's climate is warming. 2015.

[6] Daniel Kahneman and Amos Tversky. Big elephants in small ponds: Do large traders make financial markets more aggressive? *Econometrica*, 47(2):263 – 292, 1979.

[7] Shlomo Benartzi and Richard H. Thaler. Heuristics and biases in retirement savings behavior. *Journal of Economic Perspectives*, 21(3):81 – 104, 2007.

[8] Jolanda Jetten Frank Mols, S.Alexander Haslam and Niklas K. Steffens. Why a nudge is not enough: A social identity critique of governance by stealth. *European Journal of Political Research*, 54(1):81 – 98, 2014.

[9] Air New Zealand. Sustainability report. 2019.