

## CHAPTER EIGHTEEN

# Behavioural insights for conservation and sustainability

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### 18.1 Introduction

Many of society's ailments and ambitions, from obesity and corruption to economic growth and conflict, are ultimately about human behaviour. Sustainability and conservation challenges are no different, and although legal, economic and engineering solutions will be key, so will a shift in individual actions around resource use and waste, diet, fishing and agricultural practices, wildlife consumption, tourism and beyond (Rowson & Corner, 2015). Policy-makers, educators and conservation NGOs are therefore unavoidably in the business of behaviour change, but the conventional toolkit of regulation, incentives and information provision is increasingly being recognised as incomplete, and too rooted in a rudimentary model of human behaviour (Shafir, 2013).

On the rise is a more realistic understanding of behaviour, drawing on the latest insights from behavioural economics, social marketing and cognitive and social psychology. By harnessing these new tools we can radically improve policy and campaign outcomes and achieve greater social impact (Halpern, 2015). The field is rapidly growing in some parts of the sustainability community, as well as in public health, international development and consumer finance, but conservationists have so far been slow to embrace the behavioural perspective (Reddy et al., 2017). This is now beginning to change, particularly among NGOs faced with explicitly human challenges such as poaching, corruption, the illegal consumption of wildlife and common pool resource depletion, including water and coastal fisheries.

In this chapter I provide an overview of behavioural insights for sustainability and conservation, aimed at readers with little prior expertise in the subject. I do this by first reviewing a conventional understanding of behaviour change, discussing its shortcomings and then presenting some additional strategies.

## 18.2 A flawed starting point – rational choice

In both economics and psychology the dominant models of behaviour have historically been rooted in the concept of *subjective expected utility*, describing individuals as making rational choices that maximise the benefits to themselves (Scott, 2000) (see also Darnton, 2008, for a review of behaviour-change models). The axioms underlying these models are first that behaviour is cognisant and deliberate; second, that we are self-interested in the sense that we maximise our own utility as defined by our preferences, typically construed as wealth, enjoyment or subjective well-being; and finally that the locus of decision-making is the individual, implying a degree of indifference to context (Becker, 1976).

In economics, this account of behaviour is formalised in standard micro and macro models, and has long provided the dominant intellectual framework for policy, regulation and law, business and finance, international development, public health and natural resource management. Indeed, the economic concept of cost-benefit analysis is highly analogous to this understanding of behaviour, implying we make choices by carefully trading off pros and cons. Among environmental campaigners and educators the language draws more from the field of psychology, speaking of *values* and *attitudes* rather than *preferences* and *utility*, but the assumptions of intentional, reasoned and individual choice are usually still implicit.

With this conventional model of behaviour in mind, a suite of tools for behaviour-change emerge, and capture the bulk of government and NGO activity.

1. **Regulation.** Influencing our behaviour through the threat of sanction via bans, quotas or standards.
2. **Economic levers.** Self-interest is harnessed by making pro-environmental behaviours the more appealing option, typically through the provision of economic incentives including taxes, subsidies, fines, grants, or payments for eco-services.
3. **Social marketing and attitudinal campaigns.** An attempt to alter our preferences, values or attitudes by promoting greater environmental concern.
4. **Information provision.** Assuming pro-environmental values to be present, people cannot act on them if they have flawed beliefs or lack awareness of the environmental impact of their choices. This information deficit may be overcome through education, awareness-raising, guidance, or product labels and kite marks. In practice, the line between ‘merely’ providing information and attempting to influence our attitudes is often blurred.

### 18.3 Going beyond conventional wisdom

A great deal has been achieved through the above approaches. In particular, regulation and economic incentives can be highly effective, reflecting the fact that self-interest is a powerful driver of behaviour. Information provision can also be effective *if* information deficit is a major barrier – product labels can have powerful effects in otherwise shrouded markets, for example. Raised awareness is also often a critical step towards building public consent for big-ticket policy initiatives, such as a carbon tax or the banning of wildlife products (Marteau, 2017; Portney et al., 2018). In and of itself, however, awareness is often not enough to shift individual behaviour due to the dominance of other factors, such as competing motivations or practical and psychological barriers to action (Barr, 2004; Olander & Thøgersen, 2014).

The wider criticism is that these tools, and the behavioural assumptions underpinning them, overlook important aspects of human nature. I highlight three insights below as particularly in need of greater focus, before outlining some additional tools that emerge from these insights.

#### 18.3.1 The importance of context

By focusing on the *individual* as the locus of behaviour, rational accounts of behaviour fail to recognise the extent to which our actions are shaped by the social, physical, economic, political and cultural context (Shove, 2009). Indeed, evidence suggests that interventions that alter the setting in which choices are made, by making the desired behaviour cheap, convenient, politically cultivated and socially normative, are often more effective than those which focus solely on individual beliefs, attitudes and choices (Thøgersen, 2014). They do, however, require fundamentally different levers than conventional information-provision approaches often relied upon by conservation NGOs, targeting not the individual's unsustainable choice, but the socio-technical structures which encourage unsustainable practices to flourish.

#### 18.3.2 The importance of non-conscious processes

This sensitivity to context is best explained by dual-process models of cognition, which define two parallel systems of mental activity. One is slow, reflective, cognisant and deliberative. This system most resembles rational choice, although more accurately is *boundedly rational*, operating under limited information and cognitive bandwidth, and usually aiming to *satisfice* (find a good enough solution) rather than to optimise (Simon, 1972). The second system, which dominates more of our decision-making than we tend to realise, is fast, largely automatic and driven by intuitive processes such as ingrained habit, emotion and *heuristics* (mental shortcuts) (Kahneman, 2011).

These fast-and-frugal processes are mostly unreflective responses to cues in our social and physical environment, and hence our great susceptibility to external influence. They also leave us susceptible to predictable errors of judgement, or *cognitive biases*, as we trade-off accuracy for cognitive efficiency. For example ‘choose the middle option’, ‘stick with the default and the familiar unless there is a strong reason to risk the unknown’ and ‘do what most people like me appear to be doing’ are all heuristics we instinctively adopt – serving us well enough most of the time without demanding much mental resource, but often leading us to err from optimal decisions (Kahneman, 2011). Designing environments, and campaigns, which reflect these more automatic processes can be an effective strategy for enabling and encouraging more sustainable behaviour (Thaler & Sunstein, 2008).

### 18.3.3 The importance of behaviour over values, attitudes and beliefs

Conservation campaigns typically attempt to raise awareness and elevate pro-environmental values, on the premise that greater concern for the planet, or a species or habitat, will drive financial support or more sustainable behaviour. However, it can be difficult to engage citizens in these issues. Research shows that pro-environmental information often has the intended impact only on those already sympathetic to the message, as we update our views asymmetrically, skewed towards the direction of our prior convictions (Sunstein et al., 2016). This observation is rooted in *confirmation bias* – our tendency to gravitate towards information which corroborates our existing views, while we discount, ignore or distort information which challenges us (Nickerson, 1998).

That said, encouragingly, the battle for hearts and minds is slowly being won: pro-environmental attitudes are now common across much of Europe, for instance (Steentjes et al., 2017). This is helping to raise the policy agenda (Carrington, 2019). However, few citizens are independently giving up their cars, overseas holidays or beef burgers. It would also be naïve to expect fishers, farmers, poachers and loggers to compromise their livelihoods so willingly. Clearly, there is more to behaviour change than awareness and attitudes, highlighting the problem of a widely observed *value-action gap* (Kollmuss & Agyeman, 2002). The reasons for this gap are myriad and complex, although two broad categories are worth highlighting: insincerity of our values and barriers to acting on them.

First, pro-environmental values are frequently in tension with self-interest, creating cognitive dissonance and guilt for habits we are unwilling to forego. Guilt can be a powerful motivator for action, but we also have a tendency to resolve this dissonance not by curbing our unsustainable behaviour, but by ignoring the issue (wilful ignorance), or employing various acts of psychological fudging, including motivated reasoning (rationalising towards a convenient and

ego-serving, rather than logical, conclusion), moral licensing (excusing ourselves the flight because we recycled) and biased social comparisons (inflated convictions that ‘I do more than most’ and deferring responsibility to government/industry/other countries) (Barkan et al., 2015). In other words, our behaviour reveals that our concern for cost, profit, convenience and enjoyment frequently outranks our concern for the planet, despite our ability to maintain sincere environmental values and a sense of integrity – the psychological equivalent of having our cake and eating it (Shalvi et al., 2015; Gino et al., 2016).

Second, even where intentions are sincere, we may fail to act due to various psychological and practical barriers. These include hassle, a lack of options, lack of know-how, upfront cost barriers, lack of willpower, lack of self-efficacy (belief that we can make a worthwhile difference), procrastination, forgetfulness, ineffective planning, ingrained habit and various cognitive biases that favour a ‘do-nothing’ strategy, including loss aversion, present bias, uncertainty-aversion, inertia and risk-aversion. These factors constitute the second major element of the value–action gap (Webb & Sheeran, 2006), and although they often seem trivial, they can be disproportionately impactful. They therefore deserve disproportionate attention when designing interventions and campaigns to help bridge the divide between good intentions and action. For example, helping people plan better to reduce food waste, removing the hassle of switching to a green energy tariff, providing easy substitutes to medicinal wildlife products, or providing timely reminders and tips for reducing water consumption are all strategies which can help turn green aspirations into green actions.

#### **18.4 Effective strategies for promoting conservation behaviours**

With the above points in mind, the most effective route to change, whether tackling wildlife crime, energy conservation, or the protection of common pool resources, is often a ‘twin-track’ approach (Burgess, 2016). The aim is to target both the individual (motivations, decision processes, habits, emotional engagement, attitudes and awareness) *and* the enabling environment (ensuring that policy, the built environment, social norms and incentives promote and facilitate the sustainable behaviour). These are often two sides of the same coin: the choices we make as individuals are often inseparable from the enabling environments in which we make them.

Below, I briefly outline four levers for change that span individual forces on behaviour and three key environmental dimensions: social, material and economic. Many of the examples given are drawn from other contexts where the behavioural mechanisms are relevant, acknowledging that the use of behavioural interventions is nascent within the field of wildlife conservation (Reddy et al., 2017).

### 18.4.1 Inner motives: ego, emotion and meaning

Two fundamental motivations influence our adoption of beliefs and attitudes: to construe our lives in a positive (ego-enhancing) fashion, and to construe them in a way which makes sense and is consistent (Chater & Loewenstein, 2016). Thus, we are rarely convinced by mere truth, but by *narrative fidelity* and *self-enhancement*: the extent to which something concords with our prior worldview and with the flattering autobiography we curate in our minds. We also tend to think automatically first (with emotion, intuition, gut instinct) and rationalise second. Thus, our reflective and deliberative faculties often act more as interpreters of our instincts than as executives guiding our judgement (Haidt, 2001).

Therefore, successful campaigns rarely pose cerebral facts or logical arguments, but cater to deeper emotional triggers, operating at the ‘human level’ we have evolved to think at, and are rooted in meaning, plot and personal relevance (Schiff, 2012). This largely explains the *identifiable victim effect* – our greater tendency to donate or make efforts to save an individual animal/ecosystem/community member than a statistical one (Jenni & Loewenstein, 1997). It also explains why campaigns evoking guilt or anxiety can lead to disengagement, because these emotions undermine the ego and present uncomfortable truths, inviting psychological defence rather than engagement (particularly if giving up the unsustainable behaviours is difficult or unappealing). In contrast, research suggests that harnessing emotions with positive valence (intrinsic attractiveness), in particular anticipated pride from acting sustainably, can be more effective (Schneider et al., 2017).

Recognising our tendency to find the ‘wiggle room’ to rationalise our self-interested actions also sheds light on wildlife crime. Evidence shows interventions that reduce the ease of rationalisation can be effective. For instance, we can highlight the prevalence of good behaviour to correct self-serving misconceptions that ‘everyone does it’ (see discussion on social norms below). We might also create less-malleable boundaries between acceptable and unacceptable behaviours to constrain our ability to re-frame dishonest actions as acceptable (e.g. we are less likely to steal money than do something which indirectly equates to us acquiring money dishonestly, such as by paying a lower price in cash to avoid taxes). Drawing people’s attention to their moral standards, through religious reminders or honesty commitments, can also be effective by reducing the level of dishonesty we are able to reconcile with our self-concept of integrity (Mazar et al., 2008). Such strategies offer attractive alternatives to fines and punishment, particularly in remote situations where monitoring and enforcement are difficult.

Our social identity (the portion of self-concept expressed by membership of social groups or categories such as gender, race, or political beliefs) is also vital in shaping our beliefs, values and actions. We listen to and mimic people we

identify with, like and perceive as credible, but may do the opposite of people in our perceived ‘out-group’ simply as a way of dis-identifying with them (Turner, 1991). This is partly why the politicised nature of the environmental debate is so damaging, but also means certain messengers can be disproportionately effective – in the UK, the so-called ‘David Attenborough effect’, for instance (Haynes-Worthington, 2018). In China, the efforts of Jackie Chan and other celebrities to campaign against shark-fin soup have led to dramatic reductions in consumption (WildAid, 2014).

The broader point through all of this is that we need to understand and cater to the underlying motivations of individuals involved in the depletion or consumption of wildlife and natural resources. We would be naïve to presume a message of sustainability will, for many people, prevail over potent drivers of self-advancement (e.g. in wildlife corruption or over-fishing), convenience (e.g. in air travel or disregard for environmental protections), pleasure and hedonism (e.g. in eating beef or hunting), status (e.g. in ivory ownership), self-expression (e.g. in car ownership) and so on. This demands pragmatism: sustainable outcomes need not be fought only on the basis of sustainability, restraint or moral duty if these more powerful motivations can be harnessed to good effect. Sometimes this is about choosing the right *framing*. For example, public health researchers have found that food explicitly sold as indulgent out-sells identical food sold as healthy, and although a niche market for health food surely exists, on average healthy connotations may harm sales even compared to entirely neutral, non-descriptive labels (Turnwald et al., 2017). Similar findings are now emerging in the promotion of sustainable diets (Vennard et al., 2019). Other approaches include finding compelling ways to displace or supplant these competing motivations, for example by making sustainable travel significantly cheaper and more convenient than air travel; by tapping into identity and offering more sustainable avenues for self-expression; or by attempting to substitute ivory products with an alternative market for high-status jade carvings (e.g. Burgess, 2016).

#### 18.4.2 Social dimension: peer-influence

The social dimension of our behaviour is particularly relevant to conservation issues because the protection of public resources, including fish stocks, rainforests, freshwater or clean air, frequently depends on collective action and the restraint of personal self-interests for communal benefit. Rational choice theory, painting us broadly as self-serving individuals, highlights the risk of a tragedy of the commons in such circumstances, and suggests taxes on externalities (Pigouvian taxes) or privatisation of resources are necessary to realign individual and collective interests (Ostrom, 2000).

However, in reality we are deeply social creatures: we have the capacity to cooperate, a tendency to reciprocate and conform to social norms and to shun



freeloaders and deviants (Trivers, 1971; Ostrom, 2000). These are processes of evolutionarily ingrained peer pressure: feelings of social obligation, guilt and desire for public acceptance are the proximate drivers for deeper benefits of group cohesion and collaboration. For example, evidence suggests adherence to social norms, and the taboo of breaking them, has traditionally been enough to ensure sustainable harvesting practices in Madagascar (Jones et al., 2008). Our objective is to harness and further strengthen these traits.

One effective approach is to highlight the prevalence of a desirable behaviour, harnessing our tendency for conformity, but also for reciprocity: the knowledge that others are contributing to a public good encourages us to do the same. For example, comparing householders' energy use to their more efficient neighbours reliably reduces consumption by a few percent (Allcott, 2011), and telling hotel guests that most others re-used their towel led to 44% doing so, significantly more than with a conventional environmental message (Goldstein et al., 2008). Another strategy is to imply reciprocity more directly. For instance, the conservation charity Rare brokered agreements between downstream and upstream water users. Downstream users financed payments and materials for upstream users in the hope they would reciprocate and be stewards of upstream ecosystems, protecting 16,000 hectares of land in the watershed (Rodríguez-Dowdell et al., 2014).

The corollary is that advertising undesirable norms, often done inadvertently in an attempt to highlight the severity of a problem, can unintentionally license the undesirable behaviour. For example, a US national park suffering the theft of fossilised wood found that thefts increased in response to a sign which read 'thousands of visitors are taking fossilised wood and deteriorating the natural environment' (Cialdini, 2003). Note the connection to an earlier point: we often rationalise selfish behaviours through convenient social comparisons, a form of *social licensing* through which freeloading can become normalised and resource extraction risks competitively escalating (Dimant, 2017).

Our tendency to adhere to norms is often strengthened by peer observation, because being watched adds real social cost to deviance (Argyle, 1957). Hence, we can promote cooperation in conservation contexts by making behaviours less anonymous and improving the mechanisms for communication, peer monitoring and self-governance within fishing and farming communities (Ostrom et al., 1994). Public league tables are one way of achieving this: taking an example from a different setting, UK government departments' energy consumption dropped by up to 22% after publication in a ranked league table. Operating through similar principles of observability, a national park in Costa Rica found that donations were more likely to be made when they were public (Alpizar et al., 2008). Making behaviour more observable doesn't only leverage peer pressure to act pro-socially, but also helps build the



perception of a social norm. For instance, solar panels installations have been shown to be ‘contagious’ – neighbours are more likely to install them if other houses nearby have them visibly installed (Plumer, 2015).

#### 18.4.3 Material dimension: choice architecture, nudging and effort

The term ‘choice architecture’ refers to the presentation, setting, or framing of choices. This might include the manner in which ethical investments are presented to pension customers, the design of a plastic bottle return scheme, or the layout of a supermarket, restaurant menu or canteen. We can be greatly influenced by the minutiae of these choice environments, which can therefore be designed to gently promote more sustainable outcomes without precluding freedom of choice or relying on conventional incentives – this is the basis of *nudging* (Thaler & Sunstein, 2008). Nudges can take many forms, from the provision of timely prompts to the design of information and choice environments. Often they aim to address or directly harness a particular cognitive bias or trait, for example putting sustainable options first on menus in canteens. Such examples barely scratch the surface of the opportunities to use choice architecture, which are well-reviewed elsewhere (Johnson et al., 2012).

Two particular aspects of our choice environment are in particular worth highlighting: effort and timing. First, we are consummate effort minimisers, and in the words of Nobel prize-winning behavioural economist Richard Thaler, if you want to encourage a particular behaviour, ‘make it easy’ (Halpern, 2015). This has major implications for sustainable behaviours and conservation efforts which, even with good intentions, are often thwarted by minor hassle. Importantly, this goes beyond what might be considered rational, with small *friction costs* (seemingly trivial points of hassle) having a disproportionate impact on our behaviour and often leading us to act against our best interests or intentions (Behavioural Insights Team, 2014).

Removing or introducing small frictions is therefore a powerful and widely applicable intervention. For example, shaped bin lids that remove the friction of recycling, making it easy to see where to put bottles, cans and paper, have been shown to significantly increase recycling and reduce contamination (Duffy & Verges, 2009). Similarly, multiple studies have shown that removing the tray from canteens (but allowing plate refills) makes it slightly harder to take too much food, significantly reducing food waste by up to 40% (e.g. Thiagarajah & Getty, 2013).

One of the most powerful ways to make something easy is to make it the default, in part because we often fail to make an active choice, and in part because defaults are often taken as implicit recommendations or safe/standard options. For instance, one study found a 10-fold increase in the uptake of a renewable energy tariff by making it the default (Ebeling & Lotz, 2015).

Similarly, in 2012, UK auto-enrolment legislation changed private pensions from 'opt in' to 'opt out', leading to a dramatic 42% increase in the number of people saving for retirement, more effective than billions of pounds in subsidies (Department for Work and Pensions (DWP), 2017). Perhaps a natural progression from this success is for pension providers to make the default portfolio an ethical investment – a policy idea surely capable of pushing trillions into the green economy, considering the great majority of us never change our investment portfolio.

Second, timing really matters. We find some behaviours much easier at certain moments, and policies and campaigns should be targeted to harness this fact; for instance, promoting uptake of loft insulation among new home movers while the loft is empty. Similarly, evidence shows that we are more likely to adopt new transport behaviours after disruptions such as a house move or train strike, having been forced to break our usual habits and explore new options (Larcom et al., 2017). This so-called 'fresh-start effect' was evidenced by the Behavioural Insights Team in the City of Portland, finding that promotions to use a bike-sharing scheme were nearly four times as effective among people who had just moved home (unpublished data, 2017).

Although some of these examples may seem removed from the field of conservation, the broader point is that it pays to understand the relevant micro-behaviours and processes, as there are invariably points at which default outcomes can be set, timely moments identified and frictions introduced or removed, often with surprisingly large impacts. This might include, for example, making it easier to accurately record fish-take, to apply for licences or land stewardship schemes, or to whistle-blow on poachers and ivory sellers. This approach embraces the concept of *radical incrementalism*, noting that multiple incremental changes, each targeting a small part of the problem, can sum to dramatic improvements in outcomes.

#### 18.4.4 Economic dimension – incentive design

Incentives are often effective, and there is a large literature in economics devoted to this which I do not cover here. However, they can also have more subtle psychological consequences, and these factors should be considered to maximise their effect and minimise their risk of backfiring.

A key insight is that payments and fines embody meaning beyond their economic value, signalling the desirability of the behaviour and altering its social acceptability and thus interacting with our intrinsic motivation to do something. For example, Swiss residents were found to be less likely to support the construction of a nearby nuclear facility when offered compensation, as the payment implied risk (Frey & Oberholzer-Gee, 1997). Under such circumstances, common advice is to 'pay enough, or don't pay at all' (Gneezy &

Rustichini, 2000). Similarly, pro-social activities such as volunteering are valuable to those who do them partly because they satisfy a feeling of virtue or duty, which payment can undermine (Ariely et al., 2009). In such cases, non-financial rewards such as public recognition, which can amplify the value of virtue rather than crowd it out, can be more effective (Ashraf et al., 2014; Gallus, 2016).

Several studies have similarly highlighted the risk that individual or community payments for conservation outcomes can backfire, crowding out intrinsic motivations. By creating the option of foregoing the payment, these incentives can unintentionally create a guilt-free route to ignoring the conservation agenda, as this is now an option you can 'pay for' (e.g. Vollan, 2008). In other words, the punishment becomes more tolerable and morally acceptable, compared to the guilt of breaking local norms, community trust and social obligation – these intrinsic motivators can be a potent form of enforcement.

The importance of self-governance and local norms must therefore be reflected in any outside regulation or incentive scheme, which should aim to support and augment (*crowd-in*) these intrinsic motivations, not supplant or undermine them (Vollan, 2008). This is not always easy to achieve by design or to predict. One good example from a disparate context is the UK's £0.05 plastic bag charge, which has led to an 83% reduction in use (HMG, 2017). Such a large impact is implausible through price elasticity alone, but occurs because it reinforces intrinsic motivations by altering the choice architecture: the payment acts as a reminder; the default is now to forego a bag and social expectation of not using one is strengthened – no longer can we unthinkingly use a bag in wilful ignorance, but must proactively and publicly request to harm the planet.

A second cluster of research focuses on designing incentives to harness the heuristics and biases through which we think about costs and rewards. For instance, our tendency to steeply discount the future and bias our attention towards the present (Laibson, 1997) implies effective incentives should be front-loaded and costs delayed. Finance solutions may achieve this, for example to encourage home energy improvements where the reverse (high upfront costs and long-term benefits) is ordinarily a barrier. Similarly, simply redesigning product labels to highlight lifetime cost rather than only the price tag can nudge us towards more energy-efficient purchases (DECC, 2014).

Prospect Theory, an empirical account of our perception of gains, losses and risks (probabilistic outcomes), shows us to be loss-averse, i.e. more motivated to avoid a loss than receive an equivalent gain (Kahneman & Tversky, 2013). Implementing this in a literal fashion may be contentious in some contexts but effective: giving teachers a bonus at the beginning of a year and then taking it back if they fail to meet certain performance standards has been found to be more effective than conventional payment on performance (Fryer

et al., 2012). Topical at the time of writing, this bias may prove useful in the UK if we transition from EU agricultural subsidies to a system of payments for conservation outcomes – farmers' historic receipt of these payments will likely drive a stronger motivation not to lose them compared to new incentives being introduced.

Lotteries can also be a powerful tool. Despite being equivalent in expected utility, we tend to value a 1-in-a-million chance of £1m more than a guaranteed £1, while a guaranteed loss of £1 is preferable to a 1-in-a-million chance of losing £1m. Through the lens of rational choice, this equates to a biased over-weighting of small probabilities. A more intuitive psychological explanation is that we are willing to pay for the hope of winning, or the peace of mind of having no risk rather than some risk. Regardless, lotteries offer creative policy options and are widely usable in many contexts, although they have not yet been tested in a conservation context. In another context, one compelling example comes from China, where authorities introduced state lottery tickets on the back of retail receipts to reduce tax avoidance. The expected value was tiny due to very long odds, meaning an equivalent fixed incentive would be ineffective. However, the disproportionate value customers put on the lottery meant they asked for their receipt, putting the sale on record and making it harder for retailers to evade tax (Wan, 2010).

To translate these insights to a sustainability context, imagine a plastic bottle deposit scheme which, rather than returning £0.10 per bottle, entered you into a lottery where every millionth returned bottle won £100,000 (this would yield 35 news-worthy winners per day based on current UK bottle use; House of Commons, 2017). Or – quite hypothetically to illustrate the point – would anyone dare use a plastic bag if rather than being charged £0.05, a spot fine of £1000 was levied on every 20,000th bag-user? Clearly, not all incentive designs are equal through the lens of behavioural science.

In this chapter I have only scratched the surface of what behavioural science can offer the field of conservation, but the key lessons are this: there are myriad influences on our behaviour, many of them contextual and operating through subtle, non-conscious processes. Effective interventions must consider these forces alongside a conventional understanding of regulation, incentives, information and awareness. In doing this, entirely novel approaches are often revealed. Other times, conventional tools can be made more effective. Ultimately, however, the most effective intervention will not be the one which draws upon the most novel finding from behavioural science, but the one which addresses the relevant barriers and motivations. As such, none of these strategies are 'one-size-fits-all', but should be brought to bear through a grounded and empirical understanding of the nature of the problem among the population of interest. Sometimes, this may be as simple as making things a bit easier or a bit cheaper.

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