# UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL, HUMAN AND MATHEMETICAL SCIENCES

Social Sciences

**"Nudging the jetset to offset":**

**Voluntary carbon offsetting for air travel**

by

**ROGER TYERS**

Thesis for the degree of Doctor of Philosophy in Sociology and Social Policy

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# ABSTRACT

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## "NUDGING THE JETSET TO OFFSET": VOLUNTARY CARBON OFFSETTING FOR AIR TRAVEL

Roger Michael Henry Tyers

In recent years in both academia and in many western governments, 'Nudge'-style interventions have been tested and applied to various policy areas including public health, road safety, and saving domestic energy. Often these have been successful in terms of changing behaviour, partly because the interests of the citizen-consumer (pro-self ends) and those of the environment/society (pro-social ends) are in convergence. Less research has been conducted into using nudges for solely pro-social behaviours. In this thesis I discuss the application of nudges to promote one pro-social behaviour: voluntary carbon offsetting for air travel.

Testing nudges through randomised controlled trials and evaluating them through qualitative focus groups, nudges were found to have limited utility in promoting this target behaviour. Two explanations are proposed, one in terms of the design of the nudges, and one in terms of the substantive problems associated with this target behaviour. In terms of the design of the interventions trialled in this study, 'too much information' being provided, a 'distant' social norm message, and a lack of attention to 'intrinsic values' at the expense of more technical language may be barriers which pro-social nudges ought to avoid.

Secondly and more substantively, it is argued that when pro-social behaviours are not perceived as '*common',* are not *'visible'* (i.e. others cannot 'see' them being done, and so they are resistant to the power of social norms), and they are associated with negatively-constructed 'cousins' (as carbon offsetting is associated with invasive 'extra' services), then nudges are unlikely to be effective. This is a key empirical contribution to the literature regarding the practical boundaries at which nudging may start to fail.

These findings act as an empirical demonstration of the theoretical contribution of the thesis, which is a novel portrayal of the nudge paradigm as macro-libertarianism and micro-paternalism: a form of neo-liberal behavioural governance which is politically attractive, but is often ineffectual. The thesis concludes by arguing that when the interests of the citizen-consumer and those of the environment/society are not in convergence, nudging may be inadequate and tougher regulatory approaches, such as 'budging', may be necessary. Implications for both behavioural public policy and sustainable aviation are discussed.

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# DECLARATION OF AUTHORSHIP

I, Roger Tyers .....

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

"Nudging the jetset to offset:
Carbon offsetting for air travel"

.....

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.

Signed: .....

Date: .....

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# Definitions and Abbreviations

**ATAG** – Air Transport Action Group

**ABTA** – Association of British Travel Agents

**BIT –** Behavioural Insights Team

**CAA** – Civil Aviation Authority

**CCC** – Committee on Climate Change

**EEA** – European Economic Area

**EU-ETS** – European Union Emissions Trading Scheme

**GHG** – Greenhouse Gas

**IEA** – International Energy Agency

**ITF** – International Transport Forum

**IATA** – International Association of Travel Agents

**ICAO** – International Civil Aviation Organisation

**LLC** – Low cost Carrier

**MBM** – Market-based mechanism

**OECD** – Organisation for Economic Co-operation and Development

**RCT** – Randomised Controlled Trial

**RF** – Radiative forcing

**RPK** – Revenue Passenger Kilometres

**SBST** – Social and Behavioral Sciences Team

**VCOs** – Voluntary Carbon Offsets

**VCS** – Verified Carbon Standard

**VFR** – Visiting Friends and Relatives

**WTP** – Willingness to Pay

# Chapter 1: Introduction

## 1.1 The behavioural turn in public policy

In the last ten or fifteen years, there has been something of a behavioural turn in public policy in many western states. This is largely due to the challenge of 'wicked' problems – such as increasing levels of obesity, congestion, pollution and non-communicable diseases – which all imply a need behavioural change on the part of citizens (Spotswood 2016, 1). It is also a reflection of the fact that *forcing* behavioural change becomes anathema in an age where personal liberties are cherished and state intervention, regulation and taxation are often viewed with scepticism. So rather than forcing behavioural change, policy-makers have become interested in how to foster or 'encourage' change instead. To this end we can observe how in academia and public-policy circles, insights from behavioural sciences are increasingly being employed to help policy-makers deal with problematic behaviours in a neo-liberal age.

Governments have always had an interest in influencing the behaviour of their citizens. Traditionally this has been achieved primarily through the use of bans, taxes, fines, and more recently, information campaigns to encourage behavioural outcomes which would be better for both the citizen and the state. Some examples might include the taxation of alcohol, congestion charging for car use in cities, the introduction of fines for smoking in public places, or information campaigns to encourage safe sex (Kelly 2016). Bans, taxes and fines would be based on assumptions from orthodox economics, which posit individuals as rational actors who will maximise their self-interest by conforming to the state's will. Information campaigns may not directly affect citizens financially, but still appeal to citizens' rational self-interest. While these kind of 'traditional' approaches are likely to continue for the foreseeable future, governments are also increasingly engaging with behavioural sciences in the development of policies which are based on a more realistic understanding of human rationality and decision-making than the traditional 'rational-actor' perspective granted by orthodox economics (Lunn 2013; Jones et al. 2013; Shafir 2013). This has led to the growth of behavioural policies which are often perhaps more subtle and nuanced than more traditional policy tools, such as the use of defaults to encourage saving in pension schemes, the framing of public health messages to discourage excessive drinking, or the use of social norms to promote recycling. Unlike traditional regulatory instruments, such policies have the advantage of being quick and cheap for governments to deliver, whilst also being less overtly politically contentious than banning or taxing things.

Perhaps the most well-known manifestation of behavioural policy is that of *Nudge*, the name of the bestselling book by behavioural economist Richard Thaler and Law scholar Cass Sunstein

(2008), and a term which has become a short-hand for a specific kind of behavioural policy. Before *Nudge*'s publication, behavioural science had already started to influence some policy circles, particularly in the UK (Jones et al. 2013), but after its release it became increasingly visible in academic debate, in rhetoric by high-profile politicians, and in mainstream media comment. 'Nudging' and its ideological companion Libertarian Paternalism, will be explained in greater depth in the literature review, but at its core is the realignment of 'choice architecture' informed by an understanding of humans' 'bounded' rationality, in order to make certain decision outcomes more likely than others without forbidding any outcomes or significantly changing economic incentives (Sunstein & Thaler 2008). Whitehead et al. (Whitehead et al. 2014) observe that nudge-type policies, led at a central-state level, can be observed in 51 states around the world, although the most enthusiastic state champions for nudge are to be found in the Netherlands, Canada, Australia, Singapore, Denmark, and particularly the UK and United States, where behavioural policy has become institutionalised in the British Behavioural Insights Team (BIT) and the American Social and Behavioral Sciences Team (SBST).

Hagman et al. (2015) note an important distinction between different types of nudges: those which are *pro-self* and those which are *pro-social*. While this distinction is not an absolute one, for reasons which will be explained in section 2.1.6, it is a useful heuristic which will be employed for the purposes of this thesis. Nudges which are pro-self are those which steer individuals away from 'irrational' behaviour which would damage their own self-interest or wellbeing. Nudges which are aimed at encouraging safer driving, healthier eating, saving money, or reducing alcohol consumption or smoking would fit into this category (Youde & Pang 2010; van Kleef et al. 2012; Behavioural Insights Team 2013b; Johannessen & Glider 2003). In contrast, pro-social nudges would attempt to steer individuals towards behaviours which would be in the 'public interest' i.e. to the benefit of society and/or the state or environment. Examples might include nudges aimed at encouraging recycling or charitable donations (Cotterill et al. 2008; Behavioural Insights Team 2013a). This type of nudge tends to be quite different because the aim is to nudge individuals away from 'rational' behaviour which maximises their own wellbeing (in the neoclassical understanding of the term). Rather, individuals are being nudged to perform a behaviour which entails no material benefit beyond the psychological warm glow gained from social signalling or 'doing the right thing'.

We can see that pro-self and pro-social nudges are qualitatively different – the former attends to individuals' self-interest, the latter aim to counterbalance that self-interest in order to avoid the overuse or under-provision of public goods (Hagman et al. 2015, 442). Both pro-self and pro-social nudges have been implemented in government policy, and indeed many nudges - arguably the more successful ones - have attended to individual's self-interest *as well as* the 'public interest',

broadly defined. It is clear why this might be so. When the individual and public interest are congruent, as in the case of people saving money through a pension-scheme, having 'better' health, saving more money, improving their employment chances etc., individuals may benefit personally, while the government and the taxpayer may also benefit from reduced expenditure on health care, less reliance on state benefits, better tax receipts etc. At other times however, internal-individual and external-societal benefits may diverge. The benefits of recycling, for example, might seem self-evident from a pro-social view, but there is little or no tangible benefit from an individual pro-self view, yet recycling remains a justifiable site for soft behaviour change interventions by the state.

This research project seeks to assess the extent to which nudge-style behavioural interventions can be useful in encouraging one particular kind of pro-social (and specifically pro-environmental) behaviour – buying carbon offsets for air travel. This may be a challenging behaviour to encourage, as it demands that the individual make a financial sacrifice for little tangible return. Yet previous research into pro-social behaviour change suggests it may be possible to encourage behaviours which do not serve the material interests of the individuals' targeted, but rather appear to be motivated by altruism, generosity or perhaps other 'intrinsic', other-regarding values (Crompton 2016). For example, organ donations have been boosted by making the choice to be a donor (or not) mandatory at specific points in time (Behavioural Insights Team 2014). As mentioned earlier, charitable giving has also been increased through the use of commitments, 'anchoring', the switching of defaults, and harnessing social norms (Behavioural Insights Team 2013a). In both cases, individuals were successfully motivated to act in an altruistic manner, receiving nothing in return but the 'warm glow' of giving voluntarily (Ferguson & Lawrence 2016).

In the context of environmental policy, nudge-style interventions have perhaps been easier to implement successfully when both the individual and society 'win' from a particular behavioural outcome. Interventions to reduce domestic energy use by the use of feedback or social norms have largely been successful (Sunstein & Thaler 2008; Schultz et al. 2007), likely because both the individual benefits financially by saving money, and society at large benefits by reducing energy consumption and greenhouse gas emissions. But other pro-environmental behavioural changes often require individuals to make greater 'sacrifices' in terms of financial cost or convenience, for no obvious or immediate individual gain (Lorenzoni et al. 2007), so achieving positive behavioural outcomes may be far more difficult. In spite of this inherent difficulty, we can see examples of the use of nudge-style interventions for behaviours which do not materially benefit the individual, such as recycling (Nomura et al. 2011; Cotterill et al. 2008) and reducing unnecessary laundry with hotel guests (Goldstein et al. 2008). In these examples it may be that although the individual does not gain financially from the target behaviour, they may still be 'benefitting' in the sense of 'fitting

in' with social norms or ethical expectations, which the nudge has made salient to them. Such examples illustrate the potential for nudging as a method for fostering pro-environmental behaviour change, although the behaviours for which they have been deployed are perhaps rather small-scale in terms of their environmental impact compared to other activities. In this thesis I consider the application of nudges to a behaviour with a far greater environmental impact, air travel. The 'target behaviour' of nudges in this thesis – purchasing carbon offsets for air travel – may be a challenging one to promote, because carbon offsetting is a little-understood concept involving the user paying money and receiving nothing in return. But it is this challenge which is exactly why carbon offsetting makes an interesting case study. If nudges can be shown in this thesis project to have potential in encouraging offsetting, then the policy paradigm of nudge might be practically and conceptually expanded. If they cannot, then this thesis may identify the 'limits' of nudging and identify behaviours where nudges are unlikely to be effective or adequate. Carbon offsetting is also selected because air travel is an increasingly popular and increasingly environmentally problematic behaviour, as the following section demonstrates.

## 1.2 Air travel and the environment

From the perspective of individuals' carbon footprints, aviation is of interest because it is, for most people, the most carbon-intensive activity they will engage in (Gössling & Upham 2008). For example, a round-trip flight from London to New York is estimated to create around 1.5 tonnes of $CO_2$ per passenger (Climatecare 2013), which is roughly the same emissions as are produced by a car being driven for one year (or for 12,000km (atmosfair 2013)). When we consider the average UK citizen's total carbon footprint is around 10 tonnes, it becomes clear that flying can make up a large proportion of an individual's annual carbon footprint (Committee on Climate Change 2013). It is therefore a behaviour that warrants attention from those interested in promoting pro-environmental behaviour change, in addition to behaviours such as recycling or domestic energy saving which, while important, have a far smaller environmental impact and whose significance is often overplayed as a 'green' activity (Whitmarsh 2009).

On a global scale, the aviation industry calculates that it currently contributes around 2.5% of total global $CO_2$ emissions, and predicts emissions to multiply by a factor of between 2 and 4 by 2050 (International Civil Aviation Organisation, 2010). Researchers both in academia and within the industry admit that despite advances in aircraft design, fuel use reduction and improved air traffic management, efficiency gains will not be large enough to mitigate the environmental effects caused by such huge growth (ICAO 2010; Grote et al. 2014; Boeing 2014). Policy-makers have so far been reluctant to impose a carbon tax on air travel (and international flights are already exempt from fuel tax or VAT), and recent multilateral attempts to create a market-based

mechanism or cap-and-trade scheme through the industry's regulatory body, the International Civil Aviation Organisation (ICAO), have thus far been unsuccessful (UN Climate Summit 2014; Transport & Environment 2013; Sandbag 2013; Grote et al. 2014; Seely 2012). At a recent ICAO assembly session in October 2016, plans were announced for a multilateral scheme to mitigate aviation emissions – the first such commitments the ICAO has made on the issue. Although the full implications of the deal are not yet entirely clear, it has already been criticised for postponing emissions reductions until 2027, excluding many countries, and avoiding a legal cap on emissions (Murphy 2016; Vidal 2016). So air travel is a high-carbon behaviour on an individual basis, whilst on a global level it has a large and growing share of the planet's carbon footprint. Technological improvements and/or regulatory structures which might mitigate its contribution to carbon emissions are not currently forthcoming.

One obvious solution to aviation's climate impact might be a radical reduction in the number of flights. Yet, for reasons which will be discussed in the third section of the literature review, a reduction in demand from passengers currently appears highly unlikely for a variety of socio-economic factors. Aviation facilitates passengers' aspirations to display economic and cultural capital through travel; it aids the maintenance of strong and weak ties in an age of globalisation; its growth is partly driven by (and not replaced by) advances in communications technology; and, by making hypermobile lives possible, aviation is increasingly connected to the preservation and presentation of the 'self' and of one's identity. So for passengers who are, for these reasons, unable or unwilling to fly less, carbon offsetting is a potential mechanism for them to "take matters into their own hands" (Kotchen 2009, 31) and reduce the carbon impact of their travel behaviour using a mechanism which is available now, rather than waiting for a technological or legal-political breakthrough.

It is useful to be clear about what carbon offsetting means. A carbon offset is a quantified reduction in emissions of greenhouse gases made in order to compensate for, or to 'offset', an emission made elsewhere. Offsets can be made in compliance markets by states and industrial actors who need to meet legal requirements of the UNFCCC's Clean Development Mechanism (CDM), or in the voluntary market by corporate or individual customers (Broderick 2009; Peters-Stanley et al. 2014). The focus of this thesis is on the latter form – individual voluntary carbon offsets (VCOs). For VCOs, the greenhouse gas emissions caused by a particular activity (in this case, air travel) are calculated, and a monetary price of offsetting those emissions is generated. This money is used for projects which reduce carbon from the atmosphere. A common assumption is that this means planting trees, yet there are other projects which include renewable energy projects, industrial gas destruction and many others. Customers can purchase offsets from a range of offset companies or, in some cases, directly from airlines as part of the

process of buying flight tickets. Despite a lack of recent information in this area, past research suggests that there is a small take-up of voluntary offsets, with an estimated 2% of air passengers choosing to buy VCOs for their flights (House of Commons 2007; Brouwer et al. 2008; Gössling et al. 2009). This might be because carbon offsets are not widely publicised or understood (issues which are explored in the focus group data collected in this project). Some studies have detected that once the concept of carbon offsetting is explained to travellers, they express a relatively high willingness to pay (WTP) which is often higher than the actual market price for VCOs (Brouwer et al. 2008; MacKerron et al. 2009; Lu & Shon 2012).

There is evidently a large discrepancy between these high WTP figures, which may indicate a theoretical appetite for offsets, and the low take-up of carbon offsets as a proportion of actual air passengers. In order to close this gap, it is plausible that the decision to buy VCOs is one which is 'ripe' for a nudge. Sunstein and Thaler argue that decisions which are difficult, infrequent, involve unfamiliar choices, do not involve feedback and have delayed effects are exactly the kinds of decisions where a nudge may be appropriate and necessary (2008, 74-78). It can be argued that the decision to buy (or not buy) offsets for flights fits this definition. It is a decision which is not intuitive; is performed infrequently (for all but the most frequent of flyers); it is (for most people) unfamiliar; to the decision-maker the effects of offsetting are not felt directly, and for the environment the benefits of offsetting are deferred. The initial research question for this project is therefore as follows:

*What is the potential of nudging to encourage carbon offsetting for flying?*

The following section outlines the expectations of the project in the light of previous research findings.

## 1.3 Project expectations and the contribution to knowledge

### 1.3.1 Initial expectations

For the reader, it is useful to bear in mind the difference between the initial expectations of this project at the outset, and the conclusions which were reached following three stages of data collection. During the journey of this project, new research questions arose and the need for a mixed method approach became apparent. Each stage of data collection informed the next, and hypotheses and expectations evolved along the way. The following sections summarise the initial project expectations, the way expectations were adapted during the project, and the findings and contributions to knowledge which the project produced at its conclusion.

While there are reasons to believe that nudges which target pro-social behaviours are more challenging than those for pro-self behaviours (as will be explained in greater depth in section 2.1.6), there is evidence from previous studies which shows that they can work. Such evidence provided the rationale for this thesis project. Previous studies have used randomised controlled trials (RCTs) to show how nudges can encourage pro-social behaviours such as recycling through the use of feedback and social norm messages (Nomura et al. 2011; Cotterill et al. 2008), organ donation by the use of a reciprocity message (Behavioural Insights Team 2014b), charitable donations through reciprocity messages, appropriate 'messengers' and 'anchoring' frames (Behavioural Insights Team 2013a), or reducing unnecessary laundry in hotels and reducing theft of wood from forest parks, both by the use of descriptive social norms (Cialdini 2003; Goldstein et al. 2008). At the outset of this project the initial expectation was that nudges using similar message frames as these previous studies – the exact content of which will be explained in depth in chapter 4 – could also be applied to promote carbon offsetting too, if we consider it to be a behaviour which fits Sunstein and Thaler's definition of one which is 'ripe' for a nudge. The only previous study which has also targeted carbon offsetting with nudges is Araña & León (2013). They successfully tested the use of defaults to encourage attendees of conferences to offset the carbon footprint of the conference they were attending. In their study, they found that using a default of being 'opted-in' to purchase an offset (included in the conference fee, requiring the delegate to actively deduct the cost of the offset if they did not want to offset) significantly increased take-up of the offset, compared to a default of being opted-out (where the delegate had to actively pay extra to buy an offset on top of the conference fee if they did want to offset). These findings suggest that carbon offsetting, as well as other pro-social behaviours, may indeed be 'ripe' for a nudge.

This thesis project differs from that of Araña & León (2013) in the type of intervention used, and the implementation potential of the two studies. Firstly, the previous study tested one default nudge, whereas this study tests three nudges: a social norm nudge, a third party endorsement nudge and affective message nudge. Secondly, in Araña & León's experiment subjects were given pre-defined offset values, rather than allowing them to calculate a personalised offset amount as this project does, which is a more accurate portrayal of offsetting in real-world markets. Thirdly, and perhaps most importantly, is the choice of system 1 or system 2 nudge. Araña & León found that their default nudge, applied at the point of payment, did have a significant effect on offsetting behaviour, which is perhaps unsurprising. Defaults are often considered a strong form of nudge which attends to intuitive 'fast' system 1 among the nudge recipients, and as such are considered the most tested (Sunstein 2016a) and often the most effective (a point which I return to in section 2.1.7). In my project, the choice of nudges, applied 'post-hoc' *after* recipients had

purchased flights and hence requiring them to reflect on a past behaviour, thus addressed the 'slow', more deliberative system 2 thinking. This was an intentional decision: this thesis seeks to enquire into whether system 2 nudges, which are often seen as being 'weaker' nudges can be used for pro-social behaviours (which are often seen as being more difficult to encourage than pro-self behaviours). This is particularly relevant in terms of practical research impact. Due to EU legislation passed since Araña & León's research, companies are no longer permitted to automatically opt-in customers to buy a carbon offset for a flight. This legislation is intended to prevent consumers accidentally buying 'extras' they do not want, by banning pre-ticked boxes on airline websites. (Interestingly, this legislation was itself informed partly by the behavioural insight that consumers are often prone to inertia and 'default bias' (European Commission 2014a; European Commission 2014b)). Therefore the use of defaults, while potentially effective, would not be applicable to real-word solutions for these legal reasons. So unlike Araña & León's work, this project attempted to identify nudges which could, if proven, potentially be applied in real-world situations.

We can see that nudges have been used effectively to encourage pro-social behaviours, and it was hypothesised at the outset of this project that they could also be used to encourage carbon offsetting as well.

### 1.3.2 Adapting expectations in an iterative research approach

Based on the previous findings outlined above, as well as the theoretical background provided by behavioural economics, which will be explored in the literature review, the expectations of this project prior to data collection were that the nudges selected could significantly increase either carbon offset *behaviour* (i.e. the proportion of people who, having received a nudge, actually bought an offset for the last flight they took, compared to a control group who received no nudge), and/or *interest* in carbon offsetting (the proportion of people who having received a nudge, expressed interest in offsetting by using a carbon calculator for the last flight they took, compared to a control group who received no nudge). The choice of sample, university students, was informed by previous literature which suggests that this group of people are more inclined to purchase offsets than other travellers, and so therefore might be more amenable to a nudge towards offsetting. The initial research question at the outset of this project was as follows:

1. *What is the potential of nudging to encourage carbon offsetting for flying?*

The results of the first stage of data collection, which I term 'RCT1', suggested that there was, in fact, limited potential for nudging to encourage carbon offsetting for flying. Both offset behaviour and offset interest were not significantly affected by the nudges when compared with a control group who received no nudge. These findings suggested that either there was a problem with the

design of the nudges (which could be overcome), or there were more substantive problems with nudging when applied to carbon offsetting. Thus, following RCT1, a second research question was posed:

> *2. If limitations exist for nudging for carbon offsetting, what could possible reasons be, including the design of nudges, and substantive problems with the application of nudges for carbon offsetting?*

This question was addressed by focus groups, which explored potential barriers to carbon offsetting in general terms, and specifically regarding the nudges I had trialled. Focus group findings thus informed the design of 'improved' nudges in a second RCT, (which I term 'RCT2'). After the focus groups, it was hypothesised that, if the nudges could be adapted and improved on the basis of the focus group data (i.e. attending to the design issues identified), then they could be effective. If the nudges were successful in RCT2, then one might be able to conclude limitations exist for nudging for carbon offsetting and are due to design issues, which in theory can be overcome. If the nudges still remained unsuccessful, then one might be able to conclude that, alternatively, there are deeper substantive problems with the policy paradigms of nudge and/or carbon offsetting. In the end, RCT2 also showed that the nudges failed to have a significant effect in terms of offset behaviour and offset interest when compared to a control group. While the fact that design issues might still be the main obstacle to the effectiveness of the offset nudges cannot be completely discounted, this appears unlikely due to the repeated (and failed) attempts at nudging attempted in the project, and the numerous obstacles to carbon offsetting identified in the focus groups. This thesis thus concludes that nudging for carbon offsets is not only limited by design issues, but also faces deeper, more substantive issues. This, along with other contributions which this project makes to knowledge, is summarised below.

### 1.3.3 Contributions of this project

This project may be of interest to three audiences: academics interested in behaviour change, practitioners and advocates of nudge-style behavioural interventions, and policy-makers and stakeholders interested in tackling the negative environmental consequences of air travel. The project contributes to knowledge in three ways, the first of which is to extend the body of research on nudging into a novel area of behavioural research – carbon offsetting for flying – and show the limitations in using nudges for pro-social behaviours (which in this thesis I assume to include pro-environmental behaviours). It also provides some tentative suggestions on how the design of nudges can be maximised in order to avoid unintended consequences. The second contribution is a more theoretical one, to provide a critique of concepts such as liberal paternalism and nudging, especially of their capacity to inform effective behaviour change interventions, and how in regard to the aviation industry (and possibly other sectors) this may

imply the need for a stronger regulatory role for public authorities. Thirdly, the project provides some novel descriptive findings on demographic and attitudinal factors which might identify types of students most likely to purchase carbon offsets for their air travel.

On the first contribution, by testing nudges through randomised controlled trials and evaluating them through qualitative focus groups, nudges were found to have limited utility in promoting this target behaviour. Two explanations are proposed, one in terms of the design of the nudges, and one in terms of the substantive problems associated with this target behaviour. In terms of the design of the interventions trialled in this study, 'too much information' being provided, a 'distant' social norm message, and a lack of attention to 'intrinsic values' at the expense of more technical language may be barriers which pro-social nudges ought to avoid.

More substantively, it is argued that nudges are likely to be ineffective to be effective when pro-social behaviours – of which carbon offsetting is a good example – are not already perceived as '*common'*, are not *'visible'* (i.e. others cannot 'see' them being done, and so they are resistant to the power of social norms), and they are associated with negatively-constructed 'cousins' (as carbon offsetting is associated with other point-of-sale 'extras' such as travel insurance or car rental). The first contribution of the project is that, by identifying design/substantive problems which can weaken pro-social/system 2 nudges, it highlights flaws in the nudge paradigm from a practitioner perspective.

The second contribution of this project is a more generalised theoretical critique of nudge and liberal paternalism. The project produces findings which illustrate not only participants' *behaviour* – through the RCTs – but also illuminate the *meanings* which participants ascribe to carbon offsetting, nudges, and broader issues of environmental responsibility – through the focus groups. These combined findings indicate how nudging might be ineffective in encouraging carbon offsetting for air travel, and therefore point to the need for stronger regulatory measures to curb the negative environmental consequences of aviation. In the literature review I sketch out a critique of nudge as emblematic of a wider shift in contemporary neoliberal governance which is both excessively liberal in regards to macro-level regulation, and also excessively paternalistic in regards to micro-level behaviours, encouraging an 'individualisation' of responsibility. In the context of aviation, I show the weaknesses of this approach and suggest an alternative based on the work of Adam Oliver. Oliver offers his notion of 'budging', or "behavioural economic-informed regulation designed to budge the private sector away from socially harmful acts" (2014, 698). For Oliver, the findings of behavioural science might not necessarily lead to more nudge-style interventions as a substitute for regulation of particular industries (which appears to be the direction of travel for many nudge advocates). He argues that behavioural insights might also be

used to identify situations where nudges will likely be ineffective, and where regulation is exactly what is required. Through the use of repeated RCTs – the preferred method of nudge advocates – this thesis seems to identify such a situation. On the particular issue of environmental regulation of aviation, there is growing evidence of the inadequacy of relying on voluntary instruments (Grote et al. 2014; Higham et al. 2015; Gössling & Cohen 2014), as well as to the wider debates on the efficacy of voluntary instruments for environmental behaviour change more generally (Shove 2010; Hall 2013; Barr & Prillwitz 2014). This thesis contributes to both these debates.

Thirdly, the fact that the RCTs were embedded within a survey which collected some descriptive features of the participants, such as 'concern about climate change' and 'size of party who travelled on their last flight' means that inferences can be made about what kinds of people, particularly students, are most likely to purchase offsets. The project's findings here contribute to existing survey data on the demographics of likely offset customers (McLennan et al. 2014; MacKerron et al. 2009; Hooper et al. 2008). In RCT1, interest in offsetting was shown to be positively associated with concern about climate change (i.e. the more concerned respondents were, the more interested in offsetting) and the purpose of the last flight being for a holiday, or to visit family and friends (but not for flights for business, study or other reasons). Both of these relationships were significant at the 95% confidence level. Also in RCT1, the number of flights a respondent took was shown to be a significant predictor of offset interest at the 99% confidence level (i.e. the more flights they had taken in the previous year, the more likely they were to be interested in offsetting).

In RCT2, interest in offsetting was again shown to be positively associated with climate change concern about climate change (i.e. the more concerned they were, the more interested in offsetting), and size of party were shown (the smaller the group they had travelled with on their last flight, the more likely they were to be interested in offsetting). Both of these relationships were significant at the 99% confidence level. The findings support survey data obtained by McLennan et al. (2014) and Hooper et al. (2009). However, this project differs from these previous studies in three ways. Firstly, it expressly focusses on a particular segment of society, university students, rather than aggregate airport surveys. Secondly, by using an online rather than face-to-face survey method, and therefore potentially reducing interviewer bias, it may provide more reliable results (Bateman et al. 2002). Thirdly, as the public visibility of carbon offsetting has arguably declined since its 'hey-day' in the late 2000s when these previous surveys were conducted, this project also provides a more recent and up-to-date reflection of the attitudes to offsetting among student travellers.

The thesis is structured as follows. Following this introduction (chapter one), the literature review (chapter two) examines relevant past literature in terms of the assumptions, history and implementation of libertarian paternalism and nudging, their critiques, and the application of nudging to the case study of aviation, carbon offsetting and the environment. Thirdly, there is a chapter on the methodological approach of this thesis. After this there are three chapters – chapter four, five and six – which each address one of the stages of the data collection for this project in the same chronological order as the data was collected. Within each of these chapters, the research question, rationale, detailed method and findings are discussed. Thus, the narrative, chronological structure of the project is maintained whereby the results from each stage inform the research question(s), rationale and mode of enquiry used in the following stage. Chapter seven acknowledge the limitations of the thesis and discusses the cumulative findings from the three data collection chapters, and chapter eight gives concluding remarks addressing both behavioural public policy and sustainable aviation.

# Chapter 2: Literature Review

This chapter will review some of the key fields of literature which are relevant to this project, in three sections. Firstly, there will be a discussion of the policy paradigm of nudge, its philosophical companion libertarian paternalism and the field of behavioural economics, which provides nudge's intellectual foundation. This section acts as the 'orthodox' view on why nudging has captured something of the political zeitgeist in particular countries, and how it has been shown to be a successful policy instrument in a variety of contexts. The section also provides the rationale for the choice of nudging as a policy instrument for changing behaviour in general terms, and more specifically in terms of pro-social contexts, where this project seeks to apply them. The second section will offer a more critical perspective on nudging in public policy, placing nudge among theoretical and practical debates around behaviour change more widely, and what its popularity might tell us about the direction of travel of contemporary neoliberal governance. In these debates, there is much controversy over whether governments should seek to influence behaviour through 'soft measures' including nudging, or through harder measures such as changes in infrastructure, or 'shoves' such as bans or taxes on certain problematic behaviours. This section will illustrate, on the one hand, the possibilities for nudging to bridge the so-called 'attitude-behaviour gap' by directly addressing behaviours, whilst showing that for particular 'sticky' behaviours with damaging social or environmental consequences, nudges may be inadequate and policy shoves might be necessary. The third section describes the specific policy problem to which nudging is applied in this project – pollution from air travel. This section will explain how and why the air travel industry is damaging for the environment, how flying has become an entrenched and sticky behaviour in most developed countries, and how the aviation industry does not currently appear capable of dealing with its environmental impact through self-regulation. Having established this context, carbon offsetting will be suggested as a potential solution for mitigating aviation's environmental impact, and nudges will be suggested as a way to encourage the take-up of carbon offsetting, as a case study for the viability of nudging for pro-environmental ends.

## 2.1 Behavioural economics and Nudging

This section will give some background on the historical origins of nudging, as well as an explanation of nudge's ideological companion libertarian paternalism and some of the contributions made to the nudge paradigm from the field of behavioural economics. It will also highlight some of the practical examples of where nudges have been shown to work, and show how different nudges target different types of behaviour (pro-self and/or pro-social) and use

different systems of thinking (system 1 and system 2). Finally, the reasons for nudging being chosen as an intervention in this project will be presented.

### 2.1.1 The tenets of behavioural economics

The field of behavioural economics long predates nudge, and provides the 'scientific' basis upon which the policy paradigm of nudge has been founded. It is therefore logical to briefly deal with behavioural economics first. Behavioural economics deviates from standard classical economic explanations of human behaviour which have traditionally viewed human actors as rational utility-maximisers. In the classical economic approach, individuals base their consumption choices on perfect information flows and competition between suppliers of goods and services, in a way which maximises their personal utility. Perhaps most problematic is the fact that this approach does not define 'utility' in any deep sense, but often reduces it to economic variables such as time, money or convenience, without examining personal motivations in greater depth (Darnton 2008). In spite of these reservations, the rational actor model has remained at the core of economic accounts for human behaviour, and still remains influential and intuitively appealing (Harford 2008). In contrast, Herbert Simon, a forerunner of behavioural economics, saw humans being limited in their decision making by the "bounded" nature of their rationality. Rather than making optimal decisions with access to all necessary information, in reality humans make 'satisficing' decisions which are a 'best-fit' based on limited available information, and potentially 'imperfect' interpretation of that information (Simon 1947). This idea was further developed by Amos Tversky and Daniel Kahneman, who originally trained as psychologists, to later become considered pioneers of the new discipline of behavioural economics. Tversky and Kahneman observed different heuristic devices (i.e. mental short-cuts, or 'rules of thumb') which inform the way we make decision-making in real situations. One of these heuristics is loss-aversion, whereby people's negative reaction to a loss is far greater than their positive reaction to a gain of the same value. Or, put another way, by the term 'endowment theory', we endow things we already own with extra value (Kahneman, Tversky, 1979). Another heuristic is 'present-bias' or 'hyperbolic discounting', where people give much greater value to gains made now than those to be made in the future. As Oliver (2013) notes, neither of these insights are entirely new and were discussed by the likes of Adam Smith (1759) and even Machiavelli (1532) much earlier, yet the contribution of the likes of Tversky and Kahneman's has been to *quantify* such heuristics and so develop these familiar and anecdotal insights into a more scientific canon of understanding about decision-making, systematic errors and heuristics which we now call behavioural economics. Oliver describes behavioural economics as:

> "a set of observations that show that the cognitive processes that people employ when making decisions often systematically, and therefore seemingly deliberately, violate the set of assumptions and axioms that underlie the dominant neoclassical model"
>
> (2013, 689)

As well as loss-aversion and present bias, to our list of key heuristics we might also add *status quo bias* - a tendency to avoid change and stick with the default option, particularly when faced with difficult or uncommon decisions, and *anchoring* - a tendency to rely too heavily on the first piece of information offered (the "anchor") when making difficult decisions (Kahneman 2011).

Other heuristics relate to affect and the influence of others. For example, people are likely to resort to affective heuristics when presented with a challenging or unusual decision (Finucane et al., 2000) i.e. we substitute the difficult question "What do I think about it?" with the easier question "How do I feel about it?" (Kahneman, 2011, 139). Another powerful heuristic is that we are also strongly influenced by what we perceive other people to do, especially those we respect or our peers – we desire "social proof" or endorsement of our decisions by others (Cialdini 2001).All of these heuristics might be seen as deviating from classical economic accounts of decision-making because they highlight how many decisions and behaviours are not always entirely 'rational', and that they can potentially create sub-optimal outcomes for people, particularly in the long run.

A recurrent theme in behavioural economics, although sometimes described using different words, is the construction of a hypothetical dualism in psychological decision-making processes which may further explain, and potentially predict, certain decision-making processes in certain contexts. One part of this dualism is the 'rational' or 'cognitive' process, where individuals make informed and self-conscious decisions, weigh up the costs and benefits of different outcomes based on information from relevant parties (governments, markets etc.), and eventually arrive at choices which are in their best interests. This model of decision-making is often called the utilitarian model (Hall 2013), 'slow' thinking (Kahneman 2011), or the system 2 'reflective' system (Sunstein & Thaler, 2008). We are most likely to employ 'slow' thinking when we are attempting a complex task (such as driving a car) for the first time, speaking in a foreign language, or making big life-affecting decisions such as buying a house.

The alternative model focusses on what is sometimes called 'fast' thinking (Kahneman, 2001), 'click, whirr' processes (Cialdini 2007), or the system 1 'automatic' system (Sunstein & Thaler, 2008). These 'automatic' processes are far more susceptible to environmental influences (especially what other people are doing), and the outcomes may not be in the best interests of

the individual, or society. 'Fast' thinking is used much more often in our daily lives, for example, when we drive a car on a calm road (on mental 'autopilot'), when we use our native language for simple speech, or when we buy our lunch. Whilst fast thinking is the mental process which enables us to think, act and decide quickly (and as such, is vital to our day-to-day existence), it is also prone to periodic errors. Some of these errors are trivial, but some of them may have serious implications for individuals, and society. For example, we might drive dangerously fast, or we might buy a chocolate bar at the staff canteen even though we are supposed to be dieting. It is fast thinking which is at work in these contexts, and it is fast thinking which is therefore of primary interest in the field of behavioural economics and which could potentially be changed by nudges, although as we shall see, slow thinking is, to a lesser extent perhaps, being targeted by nudges too.

### 2.1.2 From behavioural economics to nudging in public policy

The field of behavioural economics was popularised by academics in the 1990s and early 2000s. As well as Daniel Kahneman's nobel prize for economics in 2002, notable publications in this period include fellow Nobel prize-winner Robert Shiller's '*Irrational Exuberance'* (2000), Robert Cialdini's '*Influence: Science and Practice'* (2001), Colin Camerer's '*Behavioural Game Theory*' (2003), and Dan Ariely's '*Predictably Irrational'* (2008), which, in different ways illustrated how psychological insights could have impact on the worlds of business, finance and economics, sharing a common theme of scepticism towards the rational-actor model of human behaviour and a confidence in be able to explain, and potentially change 'predictably irrational' behaviours. The best-selling '*Nudge*' by Thaler and Sunstein (2008) pushed behavioural economics into the realm of public policy, and exposed the discipline to the gaze of the mainstream media and much academic debate. Since the book's publication, behavioural economics has become more than an academic niche, but the basis of a nascent paradigm in public policy.

In their book, Thaler and Sunstein construct their notion of libertarian paternalism, the basic premise of which is that, using insights provided by behavioural economics, nudges can help individuals to make choices which are better for themselves and for society, without *forcing* people to act in certain ways and without *denying* them options. In the areas of public health, environmental responsibility or retirement saving, individuals may be nudged through the innovative adaptation of 'choice architecture' to make choices which are healthier, greener and financially prudent. Choice architecture refers to the manner in which options are presented to people – e.g. in a shop display, on a website, on a form, or on machines and household appliances). Yet, importantly, if people still choose to drink too much, use electricity excessively, or fail to start a pension, then they are not restricted from doing so. In this sense, the argument

goes, nudges can be libertarian in that autonomy remains with the individual, yet paternalistic in the acceptance that it is legitimate for private and public institutions to attempt to influence people's behaviour (Sunstein et al., 2003, 1162). The concept of libertarian paternalism has sparked plenty of debate, firstly over whether the two terms are really compatible, and secondly over whether it is perhaps *overly* libertarian or overly paternalistic (or even both). These debates will be addressed in section 2.2.1

Nudging is evidently popular, with an ever-growing network of researchers, practitioners and policy-makers keen to see how behavioural insights might be applied in a variety of contexts. The most enthusiastic state champions for nudge are to be found in Europe and North America, and particularly in the UK and United States, where behavioural policy has become institutionalised in the British Behavioural Insights Team (BIT) and the American Social and Behavioral Sciences Team (SBST). At a supranational level, both the World Bank and OECD have issued reports on the application of 'behavioural insights' to development policy specifically (World Bank 2015), and to public policy more generally (OECD 2015). The European Union Commission has conducted several trials on the use of behavioural insights since the creation of the Foresight and Behavioural Insights Unit within its Joint Research Centre (JRC) in 2014, and has published a comprehensive review of recent nudge-style interventions which have been deployed at an EU and a nation-state level across Europe (Lourenço et al. 2016). We can also observe a diverse community of interested parties including development organisations such as USAID, AusAID and UNICEF, corporations such as Unilever, marketing consultancies (like 'Ogilvy Change' who organise an annual 'Nudgestock' event), and research institutes (such as Denmark's iNudgeYou and Norway's GreeNudge) collaborating and sharing ideas for best practice (Whitehead et al. 2014).

But it is in the UK that the ideas have probably found most favour with policy-makers. Jones et al. (2013) describe how, in the years between 2004 and 2010, a community of civil servants, academics and politicians began to promulgate the potential for behavioural economics and nudge interventions in public policy. Senior civil servants such as former Cabinet Secretary Sir Gus O'Donnell (then the UK's most senior civil servant), David Halpern (who now leads the Cabinet Office's Behavioural Insights Team) and Sir Liam Donaldson (former Chief Medical Officer) became advocates for using behaviour change approaches. US academics such as Kahneman, Cialdini and Thaler visited London to brief British cabinet office staff and politicians, and in February 2010, just months before being elected Prime Minister, David Cameron delivered a 'TED Talk' on the possibilities provided by behavioural economics in a speech titled "the next age of government". One can plausibly argue that behavioural economics and 'nudge theory' had, by the 2010 general election, reached the very pinnacle of the UK policy-making elite.

In 2010, David Cameron launched the Behavioural Insights Team (BIT) as "the world's first government institution dedicated to the application of behavioural sciences" (Behavioural Insights Team 2014a). The team, commonly known as the 'Nudge Unit' has become a global leader in this field, devising ways that nudge-style interventions can be rolled out to government departments in the UK, and later, to other countries too. As an indicator of its fast-growing reputation, the BIT was part-privatised in 2014 to allow it greater commercial freedom in offering its services to its many public and private sector clients, and to avoid the mandatory staff headcount limits which were affecting government departments amid wider austerity measures (Hallsworth & Sanders 2016). In something of a milestone for the BIT and the larger policy community interested in behavioural economics, 2014 also saw David Halpern, the BIT Chief Executive, deliver a keynote speech at the first ever International Behavioural Insights Conference in Sydney, Australia, an event which has now become an annual international fixture. Section 2.2.1 will look at some of the reasons why nudging seems to have had a particularly receptive audience in the UK.

### 2.1.3 The institutionalisation of nudge in UK Government

In 2010, the Cabinet Office and the Institute for Government published the MINDSPACE document which has become something of a blueprint or toolkit for the nudge interventions which have been carried out by the BIT as well as other government departments and local authorities. It has been downloaded over 13,000 times and is the most-downloaded resource ever produced by the Institute for Government (Rutter 2014). The basis of the document is the following checklist – see Table 1 - detailing the key influences on people's decision-making, (a checklist owes a large debt to the work of the behavioural economists mentioned earlier):

*Table 1: The 'MINDSPACE' Toolkit for behavioural interventions*

| | |
|---|---|
| **Messenger** | - we are heavily influenced by who communicates information |
| **Incentives** | - our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses |
| **Norms** | - we are strongly influenced by what others do |
| **Defaults** | - we "go with the flow" of pre-set options |
| **Salience** | - our attention is drawn to what is novel and seems relevant to us |
| **Priming** | - our acts are often influenced by sub-conscious cues |
| **Affect** | - our emotional associations can powerfully shape our actions |
| **Commitments** | - we seek to be consistent with our public promises, and reciprocate acts |
| **Ego** | - we act in ways that make us feel better about ourselves |

(Cabinet Office 2010b)

One can see how elements of this MINDSPACE toolkit re-appear in various trials which the BIT have run, along with the repeated appearance of Randomised Controlled Trials (RCTs) as the BIT's preferred methodology (Haynes et al. 2012). Elements of the toolkit helped inform the nudges used in this project too.

Since 2010, there has been an impressive breadth and ambition of nudge interventions, which are too numerous to examine in depth here. Some high-profile nudges have encouraged UK citizens to enrol in pensions by switching to a default of auto-enrolment (Behavioural Insights Team 2013b); have boosted organ donations through introducing mandated choice (Behavioural Insights Team 2014b); and have shown ways to increase charitable giving through the use of commitments and social norms (Behavioural Insights Team 2013a). The BIT has also conducted trials and produced papers on the subjects of consumer empowerment, alcohol consumption, road safety, reducing home energy use, fraud reduction, improved collection of taxes and fines, and measures to reduce unemployment, among others (Benedictus 2013; Behavioural Insights Team 2013a; Cabinet Office 2010a; Dunt 2014; Youde & Pang 2010; Cabinet Office 2010b). Informed by this growing body of work, in 2014 the BIT developed a simpler, more accessible 'toolkit' to MINDSPACE called 'EAST', which encourages civil servants and others in the 'nudge community' to try and create behavioural interventions which are 'Easy, Attractive, Social, and

Timely' (Service et al. 2014). According to its 2013-15 update report, the BIT currently has a staff of over 60, has recently conducted over 150 trials, delivered several hundred seminars and training sessions to local authorities and national departments, and has set up overseas offices in New York and Sydney (Behavioural Insights Team 2015). In 2016 it strengthened its connections with academia – beyond its already existing advisory panel – by creating a PhD programme in conjunction with University College London. Having far exceeded the initial requirement that the BIT recoup its budget through equivalent public expenditure savings, the BIT future seems assured, with continued political support at a ministerial-level (Hallsworth & Sanders 2016).

### 2.1.4 Nudging and behaviour change

The rise of nudging and the use of behavioural insights in policy reflects wider changes in perspectives on behaviour change. Behavioural economics and behavioural psychology both critique the utilitarian view of humans acting as rational decision-makers enjoying full access to relevant information, and the capacity to perfectly process it (a caricature which Thaler and Sunstein call 'Homo Economus') as unrealistic. As opposed to the classical economics 'utilitarian' approach to behaviour change, what Hall (2013) terms the 'social-psychological' approach recognises that decisions are made based on limited information, and with limited capacity to process information in a world of competing demands for attention and (often contradictory) sources of information. This approach also notes the fact that real individuals (what Thaler and Sunstein alternatively call 'Homo Sapiens') do not make decisions 'in a vacuum' but are powerfully influenced by situational context and social norms.

In terms of influencing behaviour, Hall argues that this more realistic, social-psychological approach implies two possible instruments. One is social marketing, whereby consumers are encouraged to 'improve' their consumption behaviours – in ethical, health-enhancing and environmentally friendly ways – through advertising and publicity campaigns, similar to those found in the private commercial sector (see Burchell et al. 2012; McKenzie-Mohr et al. 2012). The other is nudging. For a variety of reasons, social marketing appears to have fallen out of favour, at least among UK policy-makers. This might be because launching social marketing campaigns involving publicity and advertising is seen as an expensive way to try and influence behaviour when the nudging alternatives often seem cheaper and quicker (Tapp & Rundle-Thiele 2016). Also, social marketing is often perceived as being primarily about providing information, and there is increasing doubt about the diminishing effectiveness of such information disclosure strategies, particularly when they are targeting system 2 thinking – often using scientific and 'long-form' communication techniques – in a contemporary social environment where the average individual is already overwhelmed by complex information (Ben-Shahar & Schneider 2011; Loewenstein et

al. 2014). Bubb (2015) argues that information provision can still be useful, but only if we move away from traditional system 2 forms of disclosure and towards more innovative, nudge-style system 1 disclosures which can harness behavioural insights for greater impact.

Broader scepticism over the ability to engender behavioural change by simply appealing to attitudes may also help explain the appeal of nudge. Scholars and policy-makers seem to be wary that providing information in the hope that attitudinal, and then behavioural change will follow, is a strategy that is not always effective. This so-called "attitude-behaviour gap" has proved a stubborn barrier to behaviour change. For pro-environmental behaviour change, it has repeatedly been shown that pro-environmental attitudes are often a poor indicator of pro-environmental behaviour (Shove 2010; Spurling et al. 2013; Whitmarsh 2009; Mair 2011). Several studies have found that in some cases, individuals with greater pro-environmental attitudes are actually *less* willing to make substantial pro-environmental changes to their behaviour (Hall 2013; Whitmarsh 2009; Randles & Mander 2009; Mair & Wong 2010). Stoknes (2014) argues that when people's attitudes and behaviours are not consistent (e.g. believing oneself to be 'green' but not always behaving in a 'green' way), then a cognitive dissonance can occur, meaning that the green beliefs are more likely to change, rather than the 'not-green' behaviour. This means that there is not only a gap between attitudes and behaviours, but that not-green behaviours can actually 'infect' attitudes as well. He argues that this is because of cognitive dissonance: the significant psychological discomfort when there is too much difference between what we think and what we do, which is usually rectified by changing our thoughts, not our actions (Festinger 1957). One advantage of changing choice architecture (particularly in System 1 nudges such as eco-labelling or energy-efficient defaults) is that by focussing on *nudging behaviours* rather than *informing attitudes*, small changes in behaviour can lead to longer term attitudinal change, by increasing people's sense of empowerment and reducing cognitive dissonance. This strategy of focussing on changing behaviours, which may then affect attitudes, is in direct opposition to orthodox thinking on behaviour change. Stoknes argues that while green nudges might not be a complete solution to environmental problems, they can be a useful way to increase a sense of hope, control and self-efficacy, all things which are essential in nurturing more substantial and enduring behaviour change (Bandura 1977; Stoknes 2014).

### 2.1.5 Defining nudges

Amidst all this institutional activity, capacity-building, and new thinking on behaviour change, some definitional issues need to be dealt with. It is important to note that nudging, behavioural economics and behavioural insights are not synonymous terms, despite being connected. The EU's Behavioural Insights Applied to Policy (BIAP) Report of 2016 notes that while these three

terms are often used interchangeably, there are important differences. Behavioural economics has certainly laid the intellectual foundations upon which nudging rests, but many nudge-style interventions are actually informed more by psychology and, in some instances, the application of common sense and simplicity to the way the state communicates with its citizens (Service et al. 2014). Kahneman himself has said that "the [UK] Behavioural Insights Team is widely perceived as doing behavioural economics… they are actually doing social psychology" (Harford 2014). Definitional problems also occur because some initiatives are explicitly framed as 'nudges' from their inception to their delivery, whilst others are labelled as nudges in retrospect. The BIAP report quite usefully distinguishes between *behaviourally-tested* initiatives, *behaviourally-informed* initiatives, and *behaviourally-aligned* initiatives. Behaviourally-*tested* initiatives are those which are empirically tested, before being rolled out as larger scale policies. Examples here might include the UK BIT's trial (conducted with HMRC) on the effectiveness of the framing of information in tax payment reminder letters, in order to improve tax collections. Following a series of relatively small-scale RCTs to identify the form of words and framing which was most effective in increasing collections, the most effective frames – based on more personalised messages – were rolled out as standard HMRC policy (Service et al. 2014).

Behaviourally-*informed* initiatives are those which are informed by existing literature and theory from behavioural science, but are not tested in any specific experiment prior to implementation. This was the case with the EU's ban on pre-ticked boxes for websites in the 2014 Consumer Rights Directive, which was based on the well-worn assumption from behavioural economics research that people are highly influenced by inertia, status quo bias and the power of defaults, and therefore may unwittingly buy internet add-on 'extras' (such as extra baggage for flights, or hotel bundles with hire cars) which they don't actually want and might not purchase if they had to make an active choice to tick a box. The policy was introduced without the production of experimental evidence in advance (Lourenço et al. 2016).

Behaviourally-*aligned* initiatives are those where behavioural insights can be identified, but where the initiatives are not explicitly derived from behavioural theory or from experimental evidence. However, they do use behavioural 'levers' in order to tackle particular behavioural 'biases', often to complement existing instruments such as fines. One such example is the use of 'decremental' penalty points for driving offences, as used in countries such as Luxembourg, Bulgaria, Croatia, France, Italy, and Spain. In contrast to the UK system of accumulating penalty points when driving offences occur up to a given limit (when the licence may be revoked), in a decremental points system the driver *loses* points from a given allowance until they have no points left (and the licence is revoked). This system clearly draws on the behavioural economics notion of loss

aversion, where people ascribe higher value to losses compared to gains of an equal amount (Kahneman Tversky, A. 1979).

In their review of behavioural policy initiatives across the EU, Lourenço et al. (2016) note that very few of the initiatives they review fall into the first behaviourally-tested category, with the interesting exception of the UK. The second two categories are far more commonly observed, which raises the question of 'what counts as a nudge?'. It is arguable that when Thaler and Sunstein devised the term, they did so in order to create a 'catchy' shorthand for something rather more complex. Yet the use of the term since Thaler and Sunstein first coined it has become so common that it is important, not least for the purposes of clarity in this thesis, to define what I consider a nudge to be. In terms of the way a nudge is 'created', is being informed or aligned with behavioural science enough to count as a nudge, or is experimental testing required? Furthermore, do the objectives of an intervention matter to count as a nudge, or not? To the first question, I explain below why, for purposes of clarity in this thesis, I refer only to behaviourally-tested initiatives as nudges. To the second question, I do not believe that the objectives of an intervention matter in terms of whether or not that intervention counts as a nudge or not. However, the objectives may matter very much in terms of the likely effectiveness of a given nudge. Indeed, trying to identify which objectives are amenable to nudging and which are not is the very substance of this thesis.

In terms of the first issue, of the process required for an intervention to count as a nudge, there is a developing consensus around the primacy of RCTs as the "gold standard" of empirical research (John et al. 2011). As well as their general advantages of producing easily understood results (which will be discussed in the methodology chapter), they are particularly well-suited to nudge interventions in that they can help pinpoint the exact changes in choice architecture which influence behavioural change in a given context, while controlling for other factors. RCTs are clearly the preferred method adopted by the BIT, who note and lament the fact that in much public policy-making, RCTs are not (yet) the norm (Haynes et al. 2012). Yet in practice, the expense and expertise involved in conducting RCTs can make them unattractive means of 'proving' if an initiative is going to work or not. When time and money are scarce, public authorities may be expected to implement initiatives which are informed or aligned with behavioural science, but not 'tested' in the rigorous way advocated by 'professionals' such as those in formal behavioural insights teams. Indeed, as Sunstein and Thaler argue, there is always a default option or some kind of choice architecture present in any given decision-making process, so when, for example new roadsigns, websites or bureaucratic processes are required by a certain public authority, they can integrate 'behavioural insights' into the production of the new sign, website or process – by reviewing the existing literature – without always having to reach for the

gold standard advocated by 'professional' nudgers of a fully-fledged RCT. There may be an argument that for such professionals who are trying to define, justify and unite their relatively 'new' roles as official behavioural policy experts, they are currently going through what Noordegraaf et al. (2014) describe as a 'professionalisation project'. Part of that process may mean advocating the use of RCTs is a device for protecting their status as experts, excluding those whithout experimental expertise, and ascribing scientific credibility to what may otherwise be perceived as a vague and ill-defined profession (Feitsma & Schillemans 2016).

The standard definition of a nudge, as given by Sunstein and Thaler, pays no mention to the necessity for RCTs. They define a nudge as "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid" (Sunstein & Thaler 2008, 6). It may be argued that the word 'predictable' in this quote implies rigorous (pre-)testing – which might well involve RCTs – or at least referring to and replicating previous relevant research findings. This definition does allow us to see what would *not* count as a nudge, by mention of the fact that a nudge must be 'cheap and easy to avoid'. Therefore labelling unhealthy food with warnings about its high sugar or fat would be a nudge, but banning or significantly taxing unhealthy food would not. We might refer to bans or taxes as 'shoves' instead of nudges.

The debate about what counts as a nudge is evidently contested. For the purposes of clarity in this thesis I refer to nudge interverntions which have been behaviourally-tested using RCTs. Perhaps of greater interest to this project is not the definitional debates over the 'means' of developing nudges, but the policy 'ends' which they can, or cannot (or should/should not) be applied to. Are certain behaviours more amenable than others to be nudged? If so, why might that be? And if some behaviours are simply 'un-nudgeable', what policy alternatives should be employed? The following section looks at two ways of categorising nudges in terms of pro-self and pro-social outcomes, and the 'systems of thinking' distinction between 'fast' system 1 and 'slow' system 2. Providing a typology of these distinctions might help to enlighten us as to which nudges are more or less likely to work, and hence to try and identify some of the 'limits' to nudging.

### 2.1.6 Pro-self and pro-social nudges

As mentioned earlier in the introduction, Hagman et al. (2015) make an important distinction between pro-self nudges and pro-social ones. Nudges which are pro-self are those which (primarily) steer individuals away from 'irrational' behaviour (or 'bounded rationality') to increase their long-term wellbeing. Pro-social nudges would (primarily) attempt to steer individuals

towards behaviours which would be in the 'public interest' i.e. to the benefit of society and/or the state or environment. Hagman argues that pro-self nudges are perhaps the most easily to accommodate firstly on normative grounds, and secondly on grounds of likely effectiveness. Normatively, pro-self nudges sit more comfortably within the libertarian paternalistic model provided by Sunstein and Thaler, who argue that nudges should work to benefit the individual *as judged by themselves.* This is easier to see when people are nudged to save money or to eat healthier food – it is likely that the 'nudgee' can recognise the benefits of the nudge were it explained to them (even though in practice, nudges often happen at a subconscious level or are 'unannounced' to the nudgee – an ethical issue which will be addressed in 2.2.1). In terms of likely effectiveness, nudges which encourage a person to eat healthy food rather than unhealthy food are, in terms of rationally maximising self-interest, working to the benefit of the individual's (long term) health and self-interest. The same can be said of pension saving, which is, in classical economic terms, "profit maximizing" in the long run. In both cases, "with regards to pro-self nudges irrational behaviour will cause a situation where current-self incurs high costs on future-self due to insufficient willpower. Consequently pro-self nudges seek to counterbalance irrational behaviour in order to maximize the overall good for an individual" (Hagman et al. 2015, 441). Many people will be intuitively aware that saving money and eating healthily are good for them, so they may well be more likely to be receptive to a nudge which pushes them in this direction.

In public policy, governments are perhaps most motivated by the aggregate consequences of individual action. If one person fails to start a pension or becomes obese, the state is unlikely to intervene, but if this happens on a large enough scale, then the state may have a responsibility to intervene due to the high social costs of providing welfare to future pensioners, or to providing healthcare for an obese population. When the state uses pro-self nudges, there is a potential win-win situation if the individual changes their behaviour to be in line with their own rational, long-term self-interest as well as that of the state and society.

However, the situation becomes more difficult when the state attempts to influence pro-social behaviour, which may be in the (long-term) interests of the state or wider society, but where the benefits to the individual are far harder to discern. For example, if an individual can choose to recycle or not, then it may be rational for them to choose not to do so if it takes additional time or effort. Aggregated across society, this 'rational' decision may lead to a situation in which no-one contributes to the overall good, and a "tragedy of the commons" ensues (Hardin 1968). Pro-social nudges therefore attempt to "counterbalance this rational profit-maximizing behaviour in order to avoid overuse or under-provision to public goods." (Hagman et al. 2015, 442)

It is worth noting that while Hagman et al.'s pro-self/social distinction is useful, the division between pro-self and pro-social acts is not entirely clear-cut. Pro-social acts might often carry benefits to the individual as well, either materially or psychologically. Materially, one might donate to a cancer research charity (ostensibly a pro-social act) in the hope that he/she or their family could benefit from breakthroughs in cancer treatment in the future. One might purchase carbon offsets in the belief that doing so might help prevent pollution or climate change which could threaten their own health or livelihood. Psychologically, what may appear to be altruistic acts such as giving blood or signing an organ donor register might bestow advantages for the donor in terms of enhancing reputation and prestige, signalling wealth (Glazer & Konrad 1996), and/or giving the donor a "warm-glow" from giving (Andreoni 1990). Likewise, pro-self behaviours, such as pension saving or eating healthily, can create aggregate benefits for society and the state. We might therefore consider the pro-self/pro-social distinction to be a categorical heuristic rather than a definitive cleavage. In this thesis I will consider acts which are *primarily* about enhancing benefits to the individual as pro-self, while those which are *primarily* about enhancing benefits to public goods or responses to collective action problems as pro-social.

It may be unsurprising that the most impressive examples of nudging are often those which fall into the pro-self category. For instance, the US 'Save More Tomorrow' programme, first proposed by Thaler & Benartzi (2004), appealed to employees' 'present bias' by asking them to increase their future pensions savings rate when they got their next pay rise, in order that their current take-home pay stayed the same. After roll-out, the scheme increased average participant's pension savings rate from 3.5% to 13.6% in just 3.5 years. In 2012, in what was regarded as a trailblazing study for the then newly formed UK BIT, they trialled switching defaults for employees considering taking out a company pension, so that they were automatically enrolled in a pension, rather than having to actively 'opt-in'. The trial was successful, with participation rates rising from 36% to 71% in those companies who previously required employees to make an active choice, meaning 400,000 extra people were now paying into a company pension (Behavioural Insights Team 2013b).

These two interventions can most easily be understood as pro-self in terms of attending to the rational, and explicitly financial, self-interest of individuals. But other examples may also fall into this category. The BIT also worked with the Ministry of Defence to try and improve recruitment for the Army Reserve, having noticed a high number of 'dropouts' between the initial expressions of interest and those who eventually signed up. In a five month trial they sent emails to the interested applicants containing a testimonial message from a real army officer encouraging them to follow through with their application. The trial thus harnessed the power of an appropriate messenger and increased the salience of the application, and the intervention saw application

rates (the proportion of applicants actually completing and submitting the forms) almost double from 4.5% to 8.3%. For these applicants, we might assume that they considered joining the Army Reserves to be in their own self-interest in terms of acquiring life experiences, developing new skills or earning extra income (hence their initial expression of interest), but required a nudge to make them follow through on this request for information (Behavioural Insights Team 2015).

In health policy, a US study by Kling et al. (2012) aimed to improve the rates of switching between healthcare insurance plans among the elderly, in order to maximise their access to healthcare. By providing a nudge in the form of personalised cost information to the treatment group, switching occurred at a rate of 28% compared to 17% in the control group who did not receive personalised cost information. All of these examples show impressive effect sizes, and they also clearly attend to self-interest in terms of finance and/or employment or health, and so may reasonably be labelled as pro-self nudges. Non-systematic reviews of the literature on existing nudges (see Egan 2013; Lourenço et al. 2016) do suggest that most reported interventions fall into the category of pro-self nudges (although it should be stressed there is no definite database of all trials, and it is highly likely that many 'failed' trials are rarely publicised).

However, there are examples of pro-social nudges being successfully implemented in the fields of charitable giving, recycling and which will briefly be illustrated here to show that pro-social nudges are, although less numerous, still possible. For instance, the BIT carried out five trials to encourage charitable payroll donations among employees at several large companies. They found that highlighting reciprocity (by offering to match employee donations with donations from the employer, or by giving away sweets as an incentive), flipping defaults (so that employees had to actively opt-out of donating from their monthly pay), and using social norms (particularly by showing pictures of colleagues who were already donating) all significantly increased charitable donations. They also found that asking employees to start donations in a few months' time (rather than right now) – a 'Give More Tomorrow' plan – also helped address loss aversion and present bias, in a similar way to the Save More Tomorrow programme mentioned earlier for encouraging pension savings (Behavioural Insights Team 2013a).

Cotterill et al. (2008) trialled nudge techniques to increase recycling rates in an area of Manchester. By canvassing and providing face-to-face feedback (for how much their street recycled), they improved recycling rates by 7.7% over the control group who did not receive such feedback. In a similar study into how to increase food waste recycling in Oldham, Nomura et al. (2011) provided weekly feedback to households in the form of postcards with smiley or sad faces to each house on how much food their street had recycled (compared with the average for their neighbourhood), similarly harnessing the power of collective norms. The study saw increases of

2.8% in the treatment group compared with their control group. As with many nudge-style interventions, these percentage changes may appear small, but can be considerable when rolled-out on a larger scale.

Two further examples show that nudges can be used to encourage behaviours which are already required by law but which may not be in in people's financial interest to comply with. Firstly, Shu et al. (2012) tried to 'prime' people to be honest by asking people to sign their name at the start of a form rather than at the end, when reporting how many miles they had driven their car for insurance purposes. In this case there was a clear financial incentive to report fewer miles driven, as reporting more would mean you pay more. Asking for a signature at the beginning of the document rather than the end clearly had an effect by reducing instances of 'cheating', and the BIT have also trialled similar nudges successfully to help avoid fraud (Cabinet Office 2012).

It may not immediately appear as if this really is an example of a pro-social nudge. It is a criminal act to be dishonest when completing an insurance form, so therefore it is likely to be pro-self behaviour at play if people are being honest in order to avoid punishment. However, in different contexts, where the likelihood of being punished is low, or distrust of the state is very high, the same may not be true. It is worth considering then how the BIT successfully implemented nudges in Guatemala (in collaboration with the government there) to try and increase tax compliance in a country with the lowest tax collection rates in South America. After trialling different messages in letters to citizens, the best performing treatments were a deterrent message framing non-declaration of taxes as an intentional and deliberate choice, rather than an oversight (designed to overcome status quo bias); and a social norms message which referred to the 64.5% of taxpayers that had already paid this tax (designed to emphasise that paying tax is the norm) (Behavioural Insights Team 2015).

### 2.1.7 System 1 and system 2 nudges

We can see that while it is challenging to create nudges which are pro-social, these examples show that it is not impossible. But this is not the only distinction which matters when considering which nudges are likely to be effective. Another distinction can be drawn between system 1 nudges and system 2 nudges. System 1 nudges appeal to our 'fast' intuitive mode of thinking, and examples might include default-switches in online forms, changes in road signs, or the physical design of buildings, shops or transport routes. They are 'non-educative', and work by 'exploiting' the bounded rationality of system 1 (Sunstein 2016, 6). The way an individual reacts to these kinds of nudges is likely to be 'fast', unreflective and possibly even unconscious. System 2 nudges appeal to our 'slow' deliberative mode of thinking, and usually involve giving people information

and asking them to process it (ibid., 5). It is perhaps unsurprising then that defaults have often been shown to be much more effective than providing information when tested for changes in the same target behaviours (Sunstein & Reisch 2014; Egebark & Ekström 2016; Pichert & Katsikopoulos 2008). While there are some critics who argue that nudges must by definition target system 1 thinking (see Hausman & Welch 2010) and other interventions are something different, the original authors of 'Nudge' disagree (Sunstein 2016b; Sunstein 2014b), and define nudging as inclusive of these more educative, slow nudges as well. While Thaler and Sunstein's original metaphor of a 'nudge' (which implies a quick, subtle action on the body) might be better suited to system 1 thinking, there are advantages for expanding the definition and enlarging what Sunstein calls the "paternalist's toolbox" (Sunstein 2014b, 51). A looser definition allows inclusion of system 2 nudges which are 'softer', less invasive and therefore less ethically contentious, when compared to the 'hard' system 1 nudges which can be very effective (especially the use of defaults) but are open to the charge of being manipulative. Broadening what a nudge can be is useful defence of nudging on ethical grounds (a point which will be returned to in Section 2.2), but is also useful in practical terms for the creation of effective and appropriate pro-social nudges.

Pro-self nudges can perhaps accommodate system 1 fast thinking easier than pro-social nudges, while pro-social target behaviours may be better suited to System 2 nudges in terms of effectiveness. Nudging people to drive safely, to choose healthier choices in a cafeteria, or to turn lights off when leaving a room are all target behaviours which are in the self-interest of the individual, so nudging the individual to do what she probably knows is in her own interests to do anyway may be 'pushing on an open door'. But when asked to do something which is not 'intuitively' in the individual's self-interest, such as recycling, giving blood, or donating to a charity, then the nudge may have to address the individual's slow system 2 thinking, and convince them to do the 'right thing'.

In terms of ethics, pro-social target behaviours (such as organ donation, many pro-environmental behaviours, or giving to charities) are not always unanimously agreed on by all in society, and so it may well be more ethically appropriate to use a softer system 2 nudge which is more transparent and easier to avoid. Recent work by Sunstein (2016) found that Americans were more accepting of system 1 nudges on less controversial issues such as encouraging voter registration or reducing child obesity, but strongly favoured system 2 nudges for abortion, a far more controversial and divisive issue. As defaults and other system 1 nudges are strong and often effective, using them is therefore more ethically problematic, because some people may accidentally be nudged against their own wishes (Willis 2013), or, because defaults are often interpreted as a 'recommendation' from the policymaker (Pichert & Katsikopoulos 2008), which may be entirely out-of-step with the

preferences of the individual. Their use is therefore arguably more appropriate for behaviours around which there is some kind of tacit or explicit acceptance. Often, though not always, such behaviours are likely to be pro-self.

*Table 2A: A typology of nudges by target behaviours and thinking systems*

| **Target behaviour/ System of thinking** | **Pro-self** | **Pro-social** |
|---|---|---|
| **System 1** | (1)<br>1. 'Save More Tomorrow' scheme<br>2. Auto-enrolment into pension schemes<br><br>*(Nudging may be more effective and less ethically problematic)* | (2)<br>1. Smiley/sad faces to encourage recycling<br>2. Changing letters to increase honesty/compliance<br>3. Donating to charity from payroll by default<br><br>*(Nudging may be more effective and more ethically problematic)* |
| **System 2** | (3)<br>1. Information provision to Army candidates<br>2. Providing personalised information to make switching healthcare providers easier<br><br>*(Nudging may be more effective and less ethically problematic)* | (4)<br>1. Providing information to encourage charitable giving<br><br>*(Nudging may be less effective and less ethically problematic)* |

The typology provided by Table 2A illustrates how different nudges might suit particular combinations of target behaviours and systems of thinking, whilst also showing that different combinations of target behaviour and mode of thinking can have consequences in terms of likely effectiveness of a nudge, and the ethical acceptability of it. In this thesis, I am interested in what some of the limits of nudging might be. As we shall see, the nudges chosen to be tested in this project relate to quadrant (4) as they target a pro-social behaviour (carbon offsetting) and attend to system 2 thinking (by providing information). This means that, as an intervention, we might assume its ethical acceptability to be high, but its effectiveness to be low. Testing these assumptions may therefore contribute to the debate about what kinds of behaviours are amenable to a nudge, and which ones are not, by purposefully operating at the 'limits' of nudging.

### 2.1.8 The types of nudges employed in this project

Three types of nudge interventions were selected for this study. They were selected in part because of the practicability of applying them in the context of carbon offsetting in an online survey-embedded RCT, and partly because of prior research which has shown them to work for other pro-social behaviours. The types of nudges are: (1) (Descriptive) social norms; (2) Third party endorsement; and (3) Affective messages. In the context of this project, I consider these nudges to reside in quadrant (4) of the above typology (see Table 2A). This section will briefly explain the rationale for choosing these types of nudges by referring to other instances where they have been deployed successfully.

Messages or nudges using descriptive norms tell the subject that other people are already behaving in a particular way, the idea being that we are heavily influenced by the actions of others and are likely to follow suit. Descriptive norm messages *describe* common behaviour, as opposed to 'injunctive norm' messages which *instruct* people on how to behave more explicitly. A descriptive norm message might be a park sign which says: "Most park-users pick up their litter", whereas an injunctive norm message might simply say: "Please don't drop your litter in this park". Interestingly, descriptive norm messages have been shown to be more effective than injunctive-norm messages in comparative studies (Cialdini 2003), and several trials have used such messages successfully.

Descriptive norms were used by Schultz et al. (2007) in a trial to reduce household energy consumption in a Californian community, by providing feedback on energy use to participants, accompanied by, crucially, details on how this compared to their neighbours. Households that consumed less than the average received a message displaying a smiley face whereas those that consumed more than the average received a message displaying a 'sad' face. Providing high-

energy-consuming households with descriptive normative information regarding the average home energy usage in their neighbourhood decreased energy consumption (ibid.). Similarly, Goldstein et al. found that, in the context of encouraging hotel guests to reuse towels (and therefore reduce a hotel's expenditure and energy use in cleaning them), guests were far more responsive to messages telling them that "the majority of guests re-use their towels" rather than to injunctive norm messages that appealed to their environmental conscience (Goldstein et al. 2008). While care needs to be taken to ensure that norms are communicated honestly and that one avoids 'Cialdini's Big Mistake' of informing people about 'undesirable norms' (Cialdini 2003), other studies have shown successful results with the use of norms as nudges. This is why, in the 'Mindspace' toolkit of behavioural interventions, where N stands for 'Norm' (Cabinet Office 2010b; see also Burchell, Rettie, and Patel 2012). In this project, the rationale for using a (descriptive) social norm nudge was that, if used appropriately, information on 'other people' who offset already could be shown to potential offset customers in my RCT to illustrate that offsetting is perhaps less of a fringe activity than people might instinctively assume. By making offsetting appear less marginal and more 'normal', other potential customers might be nudged to consider buying offsets themselves.

The second nudge which was chosen was a Third Party Endorsement. Third parties are a type of messenger – the 'M' in the 'Mindspace' toolkit (Cabinet Office 2010b) (also see Table 1 above). In marketing, the use of endorsements by influential third parties is common. The use of celebrities, professional associations and/or public institutions in information campaigns is known to be influential on the purchasing decisions of consumers (for a review, see Pornpitakpan 2004) and potentially on voters too (Garthwaite & Moore 2008; Zwarun & Torrey 2011). Celebrity endorsement was used successfully (in combination with other nudges) in a trial to improve organ donor registration (see John et al. 2011). Using people who are regarded as experts also seems to have an impact too. In a review by Webb & Sheeran (2006) into a series of health-based behavioural interventions, health educators were more persuasive than trained facilitators or teachers. It is broadly recognised that different audiences react better to different 'messengers', although identifying which messenger is appropriate for different audiences can be very challenging (Cabinet Office 2010b).

In this project, it was felt that as carbon offsetting is relatively unknown and potential offsetters may be wary about what their offset payments might actually go, it might be appropriate to use third party endorsement to allay fears over its credibility. Third party organisations which either use offsets themselves (mostly applicable to large companies) or which endorse carbon offsetting as a potential instrument for pro-environmental action (in this case, a government department and some high-profile NGOs) were identified and used for this purpose.

The third and final nudge was an affective message. Again, in the Mindspace toolkit, 'A' stands for 'Affect' (see Table 1). The rationale here is that we are receptive to words and images which provoke an emotional response. Previous work on the role of affect in decision-making suggests that our initial, emotional response to a stimulus – the 'gut reaction' – often guides the way we judge it and base decisions on it.

> "We do not just see 'a house': We see a handsome house, an ugly house, or a pretentious house… We sometimes delude ourselves that we proceed in a rational manner and weigh all the pros and cons of the various alternatives. But this is probably seldom the actual case. Quite often 'I decided in favour of X' is no more than 'I liked X'… We buy the cars we "like", choose the jobs and houses we find "attractive", and then justify these choices by various reasons…"
>
> (Zajonc 1980, 154-55)

In empirical studies, the use of affective framing has been found to influence decisions. In a trial in Ghana to encourage hygiene through using soap, messages which emphasised that not using soap was a matter of 'disgust' – an emotionally-loaded term – rather than as a health/hygiene issue were found to be effective. An intervention using this affective message in a very short TV commercial, led to a 13% increase in the use of soap after the toilet and 41% increase in reported soap use before eating (Curtis et al. 2007). Bertrand et al. (2010) look at the impact of affect using direct mail advertisements for loan offers, varying the advertisements for different deals. They found that including a picture of an attractive, smiling female increased demand for the financial product by the same amount as a 25% decrease in the loan's interest rate (Bertrand et al. 2010).

In this project, carbon offsetting might be viewed as a rather abstract concept with little apparent connection to people's lived experiences, and the very term 'offsetting' can appear technocratic and divorced from its purpose – the protection of the natural and human world. So in this project an affective message was included. This message described the benefits of carbon offsetting in terms of offset-funded projects in the developing world aimed at reducing deforestation and improving human health. The rationale was that if the 'cold', abstract concept of carbon offsetting could be communicated via an affective message which might arouse feelings of sympathy and a desire to help people now (rather than prevent climate change at some point in the future), then this might act as an effective nudge.

Here we have seen some examples of the types of nudges which were employed in this project, and why these types of nudges were deemed as having potential in encouraging carbon offsetting in this project. Further detail on the content of the nudges employed in the RCTs is presented in chapters 4 and 6.

This section has offered a brief and sympathetic history of how the insights garnered from behavioural economics and behavioural psychology have been translated into interventions and policies successfully in a range of different fields, collectively described here as nudges. It has also addressed some of the definitional issues which surround nudging, behavioural economics and behavioural science, as well as defining some different types of nudges, combining the dimensions of outcomes (pro-self and pro-social) and thinking systems (system 1 and system 2), whilst positioning this project within that framework (quadrant (4) type nudges). It has shown that nudge-style interventions have been successful in a variety of policy applications, and that even if we acknowledge that pro-social/system 2 nudges are perhaps the most challenging type of nudge, we have seen evidence from previous research to believe that such nudges could be effective when applied to carbon offsetting as well. The next section will show the other, more critical side of the literature surrounding nudge, one which suggests that nudging might be at best simply ineffective, and at worst a distraction from more radical but necessary strategies for changing behaviour.

## 2.2 A critical perspective on nudge

The first section of this literature review set out the appeal and potential of the policy instrument of nudging. This section will illustrate how nudge and its ideological partner libertarian paternalism have attracted criticism for being conversely too libertarian and insufficiently radical, or too paternalistic and infringing on autonomy, as well as offering responses to such criticisms. It will also show how nudge can be viewed as emblematic of a wider shift in contemporary neoliberal governance which is *both* excessively liberal in regards to macro-level regulation, and also excessively paternalistic in regards to micro-level behaviours. The section will argue that, like other elements of contemporary behaviour change policy and research, nudge individualises responsibility and disregards more supply-side regulation. As an alternative, the notion of 'budging' – "behavioural economic-informed regulation designed to budge the private sector away from socially harmful acts" – is introduced as a potential way of using insights from behavioural economics as a basis and rationale for more radical interventions in the economy, as and when nudging is shown to be ineffective and inadequate.

### 2.2.1 Critiques of nudging

I have briefly mentioned one of the ethical critiques of nudges, that they can be manipulative, especially when attending to system 1, fast thinking. These is just one critique of nudging and Thaler and Sunstein's notion of libertarian paternalism, which has come under critical scrutiny due to ethical concerns, concerns over (in)effectiveness, or broader concerns about what nudging can

tell us about the ideological direction of contemporary public policy making. As we shall see, these concerns are often interlinked. Most of the critiques which have been made fall into one of two camps: they either see libertarian paternalism as too liberal, or too paternalistic.

The first critique of nudge is that it is overly liberal, therefore insufficiently radical in policy terms, and might be illustrative of a broader neoliberal agenda in ideological terms does little about negative externalities including environmental problems and social injustices. Three main strands are evident in this critique: (1) Nudges which allow people 'too much' choice might be ineffectual, and may distract away from regulatory policies which are necessary but politically unpalatable (Loewenstein & Ubel 2010); (2) Nudges require 'shoves' (i.e. regulation) to accompany and underpin them to be effective (Hall 2013; House of Lords Science and Technology Select Committee 2011); and (3) Nudges might have no effect on habits or attitudes and thus only influence short-term decision-making (Mills 2013).

Firstly, nudges are criticised as being ineffectual, and not achieving their stated aims. On the issue of obesity, Loewenstein and Ubel (2010) argue that the reason people are overweight is often down to the simple fact that unhealthy and fattening food is too cheap. They argue that nudge approaches, such as attempts to reduce obesity through calorie labelling of food products are simply not up to the task. Loewenstein advocates 'old-fashioned' taxes on junk foods, or reducing government subsidies on corn (which is used for corn syrup in fizzy drinks), and warns that "behavioural economics is being used as a political expedient, allowing policymakers to avoid painful but more effective solutions rooted in traditional economics" (Loewenstein & Ubel 2010). The UK government's recent introduction of what has been derided by some as a "feeble" tax on sugary food and drinks – accompanied by clearer food labelling (McSmith 2016) – in spite of medical evidence calling for a much stronger tax (Mytton et al. 2012; Briggs et al. 2013) may be a case in point.

Connected to this theme is the second strand of criticism, that perhaps a 'shove' might often be more appropriate than a nudge. This may be especially pertinent in policy areas such as energy use and climate change, where there is a sense of urgency in steering behaviours to a more sustainable path, and nudges might simply be too slow and piecemeal (Hall 2013). For example, when it comes to reducing emissions from car use, rather than dabbling in social marketing campaigns to discourage car use (see Barr & Prillwitz 2014), or even the use of innovative new in-car technologies currently being designed to nudge drivers to use less fuel (McIlroy et al., 2013), maybe an old-fashioned tax on fuel would have the desired effect in instigating long-term behaviour change. On this issue, even the nudge authors themselves realise that a tax-based

shove is necessary to curb vehicle-based carbon emissions, yet they recognise how politically unpalatable such a policy would be.

> "[Richard] Thaler points to the experience of Cass Sunstein, his Nudge co-author, who spent four years as regulatory tsar in the Obama White House. "Cass wanted a tax on petrol but he couldn't get one, so he pushed for higher fuel economy standards. We all know that's not as efficient as raising the tax on petrol – but that would be lucky to get a single positive vote in Congress.""
>
> (Harford 2014)

Thirdly, other critics express concern that nudges are unlikely to in the long-term transform people's deeply-held but 'misguided' views which underpin behaviours (Avineri 2012; Mills 2013). For social practice theorists (see Reckwitz, 2002; Warde, 2005), certain behaviours are so embedded within habitual practices and routines that it will take more than 'one-off' nudges to shake them off: larger socio-technical shifts, or changes in values and provision of services (which may be facilitated by government legislation), will likely be required. It may be particularly difficult for nudges to engender longer-term change in behaviours or values in the face of competition from private sector marketers who nudge us to consume, and are likely to be much better-financed and persistent than 'nudgers' of the state (Marteau et al. 2011; Tapp & Rundle-Thiele 2016).

Here we see that nudge has been criticised as too-liberal for three overlapping reasons. Nudging might be ineffective in delivering policy outcomes; it may act as a distraction from more effective but controversial regulatory instruments; and it may be too superficial and 'short-termist' to change habitual practices and values.

#### 2.2.1.1 Too Paternalistic?

Libertarian paternalism has been criticised, with perhaps greater vigour, by those who take issue with it being overly paternalistic. Three strands are evident on this side of the debate. (1) Nudges are seen as sinister and manipulative (Goodwin 2012); (2) libertarian paternalism assumes a rather infantile view of human nature and denies the possibility for self-improvement and learning (Waldron 2014; Gigerenzer 2014); (3) libertarian paternalism places too much faith in a 'rational' elite as opposed to the irrational citizen (Sugden 2009).

Goodwin argues that nudges seek to exploit imperfections in human rationality and hence are manipulative (Goodwin 2012). Such a concern is perhaps most pertinent when nudges are delivered 'covertly' i.e. when the 'nudgee' is unaware that they are being nudged – this is often how nudges are expected to be most effective (House of Lords Science and Technology Select Committee, 2011). Yet by concealing the true intent of a nudge (or even its existence) especially

with subtle nudge techniques such as framing or priming, it may be argued that nudges can be 'autonomy-reducing' for the nudgee (Horton 2009).

Other critics go further, seeing nudge as being infantilising and divesting humans of their capacity for learning. In this second strand of critique, nudge is not only paternalistic, but patronising. Waldron expresses concern for a loss of "dignity" as citizens' heuristic flaws are exploited by nudges, whereas he would rather have those flaws corrected: "I wish… that I could be made a better chooser rather than having someone on high take advantage (even for my own benefit) of my current thoughtlessness and my shabby intuitions" (Waldron 2014). This reflects a desire, or hope, that people can improve their own ability to make complex decisions. Gigerenzer argues in his book 'Risk Savvy' (2014) that people can indeed be educated at a young age to make choices based on complex statistical data, something which the likes of Kahneman might say is not possible for most people (Adams 2014).

Sugden (2009) notes that libertarian paternalism does contain a certain contradiction in that it is assumed that a nudge is necessary due to the 'bounded rationality' of the individual, yet the nudge will improve the well-being of the 'nudgee' as judged by him. "Given [Thaler and Sustein's] account of the 'pretty bad decisions' that individuals are liable to make, it seems clear that they want the choice architect to try to work out what the individual would have chosen, had his decision-making not been subject to limitations of attention, information, cognitive ability or self-control, and then nudge him in that direction" (2009, 370). This implies an assumption that that the choice architect or 'nudger' can second-guess what someone else's 'rational' idea of 'well-being' is, as well as what is best for wider society. For Sugden, this is overly paternalistic in that it cedes too much power to the nudger, who may be just as 'irrational' as the nudgee. Gigerenzer argues that choice architects need to pass three tests, which go beyond rationality. Nudgers need to avoid self-defensive decision-making which serves their own interests; they need to understand scientific evidence and statistics; and they ought to have no conflicting interests. Gigerenzer notes that in many health care contexts, these tests – which he calls the 'SIC' Syndrome (Self-defence, Innumeracy, and Conflicts of interest) have been failed repeatedly, meaning that choice architects steer the public into directions that are not in their best interest (Gigerenzer 2015, 377).

Here we can see that nudge is open to criticism for being too paternalistic, with key arguments contending that Nudging is manipulative; that nudging prevents citizens' ability to 'learn'; or that nudges naively place too much power and trust in the hands of the nudger. The next section will examine how these too-liberal and too-paternalistic critiques have become relatively more or less visible in two different political contexts, before I offer some responses to these critiques.

#### 2.2.1.2 The "politics" of Nudge critiques

There may be specific contextual reasons for the critical reception nudge has received for being either too liberal or too paternalistic. Two countries where respective critiques of nudging have been most pertinent are the UK, where the 'too-liberal' critique has been most dominant, and the United States, where the 'too-paternalistic' critique has been most visible. As documented by Jones et al. (2013) nudge found its most enthusiastic champions in the UK under a Conservative-led coalition government (although this was preceded by Labour government interest, and followed by the continued support of the current majority Conservative government). In an age of austerity, critics on the Left may view nudge as an excuse for Conservative cuts in state expenditure, while also 'mimicking' the manipulating behaviour of the private sector and using nudges as a substitute for proper regulation of free markets (Wilby 2013). As the director of the BIT, David Halpern admits, "There's a degree of fit [with the Coalition], clearly, but it's less about this administration, and more about the time we're in" (Bell 2013), and it is clear that the political appeal of nudge goes beyond the coalition government. Enjoying support from all major UK parties, it seems to have tapped into something of the political zeitgeist. Perhaps this can be explained by Sunstein and Cass' assertion that they "are not for bigger government, just for better governance" (2008, 14), a claim which appears conveniently empty of political subjectivity, therefore making libertarian paternalism a potential bedfellow for politicians of any ideological hue. However, the fact that it appears ideologically neutral and uncontroversial reflects the fact that it is compatible with and broadly uncritical of some of the basic assumptions of neoliberalism.

As Jones et al. (2010) argue, while the emergence of libertarian paternalism in the UK is a response to the failings of neoliberalism (e.g. poor public health, environmental degradation), it is not a fully-fledged rival to neoliberalism, far from it. In fact, in its advocacy of the use of established business techniques by the state (which, in its application of psychology and marketing approaches, is exactly what nudge is), libertarian paternalism is characteristic of what Rose (1999) calls 'advanced liberalism', where the state not only promotes the free market, but starts to actually ape some of its principles and practices as well. Thus for some critics on the Left, nudge might not just be too liberal, but too neo-liberal. In particular, Wells notes that Thaler and Sunstein's work points to the fact "that a nudging state is likely to be a much smaller one" (Wells, 2010, 114), and Jones et al. express similar concern at the opening of a "worrying space between corporations and the citizen which has historically been filled by the state" (Jones et al. 2010, 87). Wilby also notes that nudging may represent the further erosion of the state's authority to intervene in markets, restricting itself to 'soft' behaviour change instruments intended "to make people fit for markets, not the other way about… Cameron's decision to embrace this philosophy

gives the game away" (Wilby 2010). The fact that nudge has been rolled out by a government led by a Conservative Party historically opposed to burdening business with regulation might have primed critics on the Left to view nudge through the prism of neoliberalism. Leggett (2014), however, makes the point that governments' interest in influencing behaviour shows that it is not as simple as saying that the state is retrenching, as in some ways the state is actually becoming more 'active'. This theme of the 're-politicisation' of state action will be returned to in section 2.2.3.

As with the too-liberal critiques of libertarian paternalism, the too-paternalistic critiques also need to be placed within their temporal and political context. Criticism of nudging in the United States has also been visible in the mainstream US media, especially among a libertarian commentariat who have been highly distrustful of nudge, viewing it as (another) attempt by the state to undermine individual liberty in an age of state surveillance and invasive bureaucracy. News that the Obama administration was planning to set up its own Behavioural Insights team (now named the Social and Behavioral Sciences Team) was leaked in late 2013. The proposed team was dubbed derisively by Fox News as a 'Nudge Squad', a label which appears to have stuck, whilst other commentators in academia and the media have expressed a range of concerns. Echoing some of the too-paternalistic strands outlined in Section 1.2, some critics see nudging as inherently manipulative and 'creepy' (Hansen 2013), or fear that the government might be just as irrational as the citizens it seeks to influence (Abdukadirov 2013). A separate concern has been that nudge may be the 'thin end of the wedge', where government eventually not only manipulates choice, but limits it and enforces its own outcomes (Minton 2013; Carruthers 2013). In the polarised nature of contemporary political debate in the United States, the fact that nudge found favour under a Democrat administration may have primed libertarian sceptics to be dismissive of it.

It is interesting to note how the nudge policy agenda has been viewed sceptically by the libertarian Right in the US as too-paternalistic, whilst being viewed by the Left in the UK as too (neo)-liberal. However, it is perhaps not entirely surprising that the wider political context within a country may be a factor in how policy instruments are regarded. Research by Tannenbaum et al. (2014) has shown that the political affiliations of laypeople as well as policymakers can produce a 'partisan nudge bias'. That is to say, if a left-leaning government introduces nudge-style policies (as has happened under the Democrat Obama administration in the US), then those on the right will be sceptical, and vice versa (as has happened under the Conservative-led administration in the UK). More widely, there is more to say on how different countries' culture, history and politics make them more or less receptive to the idea of behavioural interventions by the state, although

this is beyond the scope of this thesis (see Branson et al. 2012 for a comparative study on this theme).

### 2.2.2 Responding to the critiques

We have seen how nudge has been criticised for being too liberal in that it may be ineffectual, and may distract away from regulatory policies which are necessary but politically unpalatable; that nudges are nothing without shoves; and that nudges might have no effect on habits or attitudes and thus only influence short-term decision-making. We have also seen how nudge is open to criticism for being too paternalistic, because it is manipulative and elitist; it prevents citizens' ability to 'learn'; and is a poor alternative to public debate and engagement. We can now try to summarise some of the reservations which proponents of libertarian paternalism and nudging need to address.

Firstly, Nudges often need to be accompanied by shoves to have any impact. In fact, nudges often place legal responsibility on private industry to, for example, provide feedback to consumers (as with food labelling or Energy efficiency certification). In this sense, nudges do not need to be seen as purely placing demands on consumers/citizens and giving a 'free pass' to producers. Secondly, nudges can and should seek to inform and educate people, especially with the use of social norms which can educate people to the actions of others, or by system 2 educative nudges. Thirdly, decisions are always made in some kind of context. As there is always a default option and the existence of some kind of choice architecture present in any kind of decision, governments therefore have a valid opportunity to nudge people towards outcomes which promote individual well-being, and which are also socially beneficial. However, as these two ends will often be in dispute, nudges need to be made as ethically uncontentious as possible, they should recognise people's dignity and so always be made overtly. Fourthly, nudges should always have outcomes which are 'safe', and avoiding nudges should be cheap and easy. Fifthly and finally, there remains the perception that nudges are designed by well-informed 'scientific' elites and deployed onto irrational citizens – this boundary between nudger and nudgee needs to be addressed and narrowed. This can be achieved in part by making nudges overt, and furthermore by trying to involve citizens in the design of novel Nudge/Think style interventions. Also, by implementing institutional rules and procedures, elite nudgers can 'slow down' their thinking to try and avoid the very cognitive errors they seek to guide their nudgees away from (Kahneman 2011).

These qualifications have been made by Thaler and Sunstein in the past (Sunstein & Thaler, 2008; Sunstein, 2014a, 2014b), yet libertarian paternalism has still attracted criticism as we have seen, for being either too paternalistic or too liberal. I would argue that despite the authors' best

efforts, libertarian paternalism remains a difficult concept whose contradictions make it ripe for criticism from the two opposing philosophical camps it seeks it unite. There are also grounds for suggesting that libertarian paternalism is not either too-liberal, or too-paternalistic, but both.

### 2.2.3 Nudge as macro-libertarianism and micro-paternalism

This section will argue that the two critiques of nudge can be understood collectively, by reference to related discourses on the wider issue of the nature of contemporary governance. These are the discourses of de-politicisation and anti- or post-politics, and that of re-politicisation and so-called 'solutionism' which offer an explanation of nudge as not only too liberal or too paternalistic, but both. Using the lens provided by these related discourses, nudge acts as an illustration of governance which is liberal and 'de-politicised' at the macro-level of business regulation whilst also being paternalistic and 're-politicised' at the micro-level of individual behaviour change. If we firstly examine the discourses of depoliticisation and anti/post-politics, we can see how governance has taken a (neo)liberal turn where the state retreats from the arena of macro-economic regulation. If we then examine the discourses of re-politicisation and solutionism, we can see how governance has entered the domain of individual behaviours.

It is important to be clear about what depoliticisation means, and what forms it may take. Hay sees it as the way political elites place "at one remove the inherent contestability of decisions concerning the provision of collective public goods" (Hay 2014, 293). For Flinders & Buller (2006) depoliticisation represents a very narrow definition of what constitutes 'the political' that largely refers to "the institutions and individuals commonly associated with representative democracy (legislatures, elected politicians, etc.)" (ibid., 296). They suggest that depoliticisation can happen at three different levels: institutional depoliticisation (e.g. the creation of 'arms-length' institutions which operate away from day-to-day ministerial control); rule-based depoliticisation (i.e. the adoption of certain rules or conventions that constrains future ministerial powers); and preference-shaping depoliticisation. The latter is a far more subtle yet significant form of depoliticisation, which shapes societal expectations of governance through the use of "ideological, discursive or rhetorical claims in order to justify a political position that a certain issue or function does, or should, lie beyond the scope of politics or the capacity for state control" (ibid., 307). This creates an 'imaginary' separation of the economic and the political so that the political aspects of unequal social and economic relations are obfuscated and shielded from fundamental structural criticism (Wood 2015). These processes of preference-shaping depoliticisation may help to explain how the state is able to legitimately avoid responsibility for more intervention in policy areas in which it may not wish to become involved, for budgetary or ideological reasons or, in times of fiscal austerity, both. They also run in parallel with a neoliberal

governmentality which seeks to devolve responsibility onto autonomous, enterprising and self-sufficient individuals (see Mitchell, 1999; Rose, 1999).

Depoliticisation, as set out by Flinders and Buller, echoes more long-standing concerns over a perceived shift towards 'antipolitics' by the likes of Shedler (1997) who, similarly, observe a process whereby what is 'political' is continually being narrowed down. Antipolitics here refers not so much to the disaffection citizens express towards the policy process, but to the cynicism of elite policy actors at the core of that process (Boswell & Corbett 2015). For Shedler, real politics necessarily involves collective action, yet antipolitics sees collective action as unnecessary, and at worst, dangerous. Whereas Politics in Shedler's definition assumes difference among the polis, antipolitical discourses see uniformity. This means that politicians' roles become irrelevant and unnecessary and politics is replaced, according to Shedler, with instrumental antipolitics: "placing technocratic experts on the throne of politics [and] treating the social world analogously to the natural world as a set of dependent variables" (1997, 12-13).

Here we can see a resonance with the criticism of 'post-politics', as enunciated by Mouffe (2005) who is concerned that modern government in our 'post-political' world is attempting to transcend boundaries of Left and Right and see politics as a set of 'neutral' technical moves and procedures. Like Shedler's definition of antipolitics, in a post-political world the polis is assumed to be uniform and, among political elites there is an assumed consensus – for Mouffe, this consensus is an acceptance of market capitalism. Those who do not accept this consensus are ignorant and/or irrational (Shedler, 1997, 12-13), or traditionalist and/or fundamentalist (Mouffe, 2005, 49). It is on this basis that Mouffe is critical of the advocates of the so-called 'Third Way', such as Beck (1992) and Giddens (1994), who foreclose political contestation and accept certain 'truths' – there is no alternative to market capitalism and therefore systemic problems of inequality and power are overlooked. In this new 'post-political' consensus, politicians are increasingly irrelevant and social problems are to be dealt with via the inclusion of technocratic experts and a managerial approach to running the country aimed at keeping the peace rather than fundamentally changing things for the better (Clarke & Cochrane 2013). Here I argue that libertarian paternalism might well be seen through this post-political lens: as a theory of governance which *presents itself* as apolitical, driven by neutral, scientific behavioural insights rather than by any particular ideology, but one which in reality does not contest the 'truths' of a neoliberal market capitalism which espouses minimal economic regulation.

While these accounts may help to explain why and how the state is retrenching and depoliticising certain activities at a macro-level, they do not capture how – as the turn to nudging also suggests – the state is able to simultaneously become more interventionist at a micro-level, thereby 're-

politicising' individual behaviour. It is useful here to realise that depoliticisation is not a linear or static process. Woods helpfully delineates depoliticisation strategies across different levels and also suggests that, at times, it may be accompanied by *re*-politicisation, and the two processes can occur at the same time, at different levels of analysis. According to Wood's framework of macro-, meso- and micro- scales of depoliticisation, it is plausible that a (conscious or unconscious) strategy of depoliticisation is deployed at the 'critical-theoretical' macro-level, a strategy which seeks to create an (imaginary) separation of the 'economic' and 'political'; whilst at the same time, a different strategy of depoliticisation or re-politicisation can occur at a 'empirical' micro-level of observable acts of policy (Wood 2015).

This depoliticisation/repoliticisation dynamic fits with the rise of what Evgeny Morozov (2013; 2014) has called 'solutionism' – the application of technological solutions such as feedback loops, smartphone apps, and nudges to social problems. Morozov refers to the philosopher Agamben who discusses an epochal shift in the idea and purpose of government, from one concerned with eliminating the *causes* of problems, to one concerned with dealing with the *effects* of problems.

> "Since governing the causes is difficult and expensive, it is more safe and useful to try to govern the effects. We must realize that European governments today gave up any attempt to rule the causes, they only want to govern the effects. [This] makes also understandable a fact which seems otherwise inexplicable: I mean the paradoxical convergence today of an absolutely liberal paradigm in economy with an unprecedented and equally absolute paradigm of state… control*."*
>
> (Agamben 2016, 23)

According to Morovoz and Agamben, governments are increasingly liberal in regard to the causes of social problems – e.g. a decline in personal saving, unemployment, poor quality housing, etc. – because dealing with such issues would require a level of state regulation and intervention which does not sit comfortably with the predominant neoliberal, 'third-way' political consensus. I would argue that the corollary of this is that governments seek to deal with the effects of social problems in a more paternalistic manner, via, among other things, the use of nudge-style interventions including those mentioned earlier: nudges to encourage personal savings; nudges aimed at reducing the welfare bill; nudges aimed at improving domestic energy use, etc. I would also argue that one of the reasons why nudge-style policies have attracted criticism for being both overly liberal and overall paternalistic may well be that nudges are emblematic of the rather incongruous nature of contemporary policy-making which is, on the one hand, laissez-faire (too liberal) at a 'macro' level, where the causes of social problems ought to be addressed but are not. On the other hand, we see policy-makers increasingly interested in manipulating the 'micro-level'

behaviour of citizens (too paternalistic), as a response to the effects of social problems. This resonates with Peck and Tickell's (2002) characterisation of neoliberalism as a combination of both 'roll-back' neoliberalisation (associated with privatisation and the retrenchment of the state in market relations) and 'roll-out' neoliberalisation (associated with a more assertive and disciplinary social policy).

Gigerenzer (2015) argues that libertarian paternalism is, in some ways, more insidious than 'hard' paternalism, and is fuelled its own self-perpetuating logic. Rather than justifying government intervention in terms of temporary market failures which need to be corrected (the standard neoclassical economic argument for intervening), libertarian paternalism justifies intervention in terms of the "the enemy within" (ibid., 364), i.e. the irrationality which resides within every individual.

> "If, as libertarian paternalists say, the imperfections are engraved in our brains rather than in the market, there is little hope of redressing them. In this very sense, libertarian paternalism is more red-blooded than some forms of hard paternalism, even if it does not use coercion. Hard paternalists may justify intervention on the grounds that individuals rationally pursue their selfish goals instead of the welfare of the society. Libertarian paternalists, in contrast, advocate that people do not know how to pursue their own goals and may not even know what goals are worth pursuing in the first place."
>
> (Gigerenzer 2015, 365)

The critique of nudging as *both* (macro-)libertarian *and* (micro-)paternalistic also has resonance with wider sociological debates over behaviour change strategies. In particular, there are clear links with critiques of how policy-makers (in collaboration with much of the academic community) attempt to deal with 'wicked' problems by individualising responsibility 'down-stream', whilst maintaining a neoliberal status quo 'up-stream' which sees a diminished role for the state, and minimal regulation of private industry (see Shove 2010; Hall 2013).

In much of the literature on pro-environmental behaviour change, there is concern that he up-stream 'systems of provision', the existing socio-technical systems, institutions and structures which largely constrain consumer decisions, are often left un- or under-regulated (Southerton et al. 2004; Hall 2013), while the citizen or consumer, down-stream, is often incorrectly identified as focal point for behaviour change strategies. For Hall, this is the wrong focal point for two reasons. Firstly, in terms of sustainability, he notes that "consumers do not consume resources, they consume services or products which are made possible by resources" (Hall 2013, 1100). This is an

important distinction to make, and goes some way towards explaining how customers are able to distance themselves from the ethical or environmental consequences of their actions. In Barnett et al.'s (2010) work on ethical consumption, they note how their subjects rarely perceive themselves as 'consumers', and instead view their consumptive practices (a term they would not use themselves) in terms of their roles as parents, siblings, spouses or employees. In terms of self-perceptions then, there is a 'distance' between individuals' self-perceived identity and their role as (ethical/unethical, sustainable/unsustainable) consumers. There is a second distance – in terms of (un)ethical/sustainable *outcomes* - between an individual's practices and the systems of provision which service them. Placing responsibility with the consumer will fail to address people's self-perceived roles (i.e. they *do not see themselves as* a consumer), or the fact that the practical options for how to behave ethically or sustainably are often structurally constrained. For example, English parents flying with their children on a holiday to Scotland would be unlikely to view themselves as a passenger or a consumer, but would primarily regard themselves in their role as a parent. They would also not be mindful of the *resources* that their trip necessarily relies on (jet fuel, carbon emissions etc.), but only the practice (the family holiday) which is facilitated by the flight, because, as noted by social practice theorists, most practices are performed unreflexively (Giddens 1984; Warde 2005). The alternative, lower-carbon options for travelling to Scotland are curtailed by systems of provision which mean that flying is cheaper (as well as quicker and more polluting), a point I will return to in section 2.3.

Secondly, Hall argues that the systems of provision are not "neutral", and are intended to sway behaviours more in one direction than another (Hall 2013, 1100). This alerts us to the fact that there are certain vested interests in government and industry for whom certain sustainable behaviours may not be desirable, politically or economically. In the case of air travel, powerful actors have an interest in protecting and expanding the industry, including airlines, large corporations, banks, politicians, academics and politicians, a point illustrated by the membership of the pro-aviation lobby group "Let Britain Fly" (Let Britain Fly 2015). Such actors will have a strong interest in keeping systems of provision tilted towards high mobility behaviours. For Gigerenzer, whose focus has largely been on health-related behaviours, libertarian paternalism focusses "the blame on individuals' minds rather than on external causes, such as industries that spend billions to nudge people into unhealthy behaviour" (2015, 361).

Shove is critical of both the utilitarian approach to behaviour change (derived from classical economics) and the social/psychological approach (derived largely from behavioural economics) as they are both predicated on the 'ABC' model of behaviour change, which assumes that soft policy measures aimed influencing attitudes (A) will drive the kinds of behaviour (B) that individuals choose (C) to adopt. These policy measures may include green labelling, tax incentives,

education, nudging and social marketing. Shove argues that far from being solely a theory of behaviour change, the ABC paradigm is a convenient political discourse for maintaining the status quo, placing responsibility on consumers through these such policy measures, while absolving governments and other institutions of difficult decisions (Shove 2010).

> "The ABC is not just a theory of social change: it is also a template for intervention which locates citizens as consumers and decision makers and which positions governments and other institutions as enablers whose role is to induce people to make pro-environmental decisions for themselves … Could it be that the ABC is generated and sustained not by psychologists and economists but by the policy makers they serve, and could it be that this vocabulary is required in order to keep a very particular understanding of governance in place?"
>
> (ibid., 1280, 1283)

It is likely that both carbon offsetting and nudging can be placed within the ABC paradigm of which Shove is so critical. Both carbon offsetting and nudging can be viewed as 'soft' policy measures which *individualise* responsibility, maintaining the status quo, and circumvent arguments for 'harder' policy measures. In this case, 'hard' policy measures might mean the application of a meaningful carbon tax on flights, and/or greater public investment in cheaper low-carbon alternatives to air travel – politically difficult options which run against neoliberal market orthodoxy. Warde notes the irony of government pushing the burden for regulation away from itself and onto consumers: "You might think that if markets give us things that are bad for us individually and collectively (such as the many instances of market failure), it would be the government's responsibility to change markets. Apparently not: the preferred solution is to change us" (Warde 2011, 21). Again, we see echoes of the critique of libertarian paternalism as being part of a trend of governance which is liberal at the macro level of industrial regulation, yet paternalistic at the micro level of individual behaviour.

All this need not mean that behavioural economics and nudging are *necessarily* entwined with anti-political, post-political or depoliticised forms of governance, which always push responsibility towards the individual. Oliver suggests that behavioural economics insights can be used to enlighten government about why and how people make decisions (the work of the BIT suggests this is already happening in the UK), and that this knowledge should invigorate governments to not only nudge, but to properly regulate private industry as well. As Oliver argues, "the most effective way of preventing people or organisations harming others is to regulate their activities. Nudge is anti-regulation, but behavioural economics is not" (2014, 698). Oliver calls this approach 'Budging', or "behavioural economic-informed regulation designed to budge the private sector away from socially harmful acts" (ibid., 698). This suggests an interesting way for governments to

assert their authority to intervene on a 'macro' industry/regulatory level, rather than (solely) on a 'micro' citizen/behaviour one.

Similarly, Leggett argues that the state should not satisfy itself with attempting to become "simply… one more player in the widespread quest to gain citizen/consumer attention and shape behaviour" (2014, 14). Leggett sees the state "as the only institution that has the resources and legitimacy to direct – or push back against – other powerful corporate behaviour change seekers" (ibid., 16). Behavioural economics can provide our governing institutions with the insights necessary not only to nudge (and shove) citizens for both individual and societal benefit, but also to budge private actors who seek to influence behaviour in the interests of profit-maximisation, often to the detriment of the individual or society. Doing so would necessarily require far more expressly political action by government on a macro-scale, and not only the devolution of the management of micro-scale behaviours to experts. In the main, as the literature on anti- and post-politics illustrates, this does not appear to be the current direction of travel for Western governments. Interestingly however, David Cameron issued an executive order in 2012, forcing energy companies to put consumers onto the cheapest possible energy tariff as a 'default', a policy informed by behavioural heuristics such as present bias and status quo bias. This action might point the way to how governments, might budge private companies, rather than simply relying on nudging consumers to make better choices. In this way, behavioural economics can justify the state's (re-)entry into 'macro-scale' policy areas, rather than simply acting as one of many nudgers in a marketplace of micro-scale behaviours.

The previous two sections (2.1 and 2.2) have outlined the reasons why nudging has been a popular and in many cases effective policy tool, and then posited some of the criticisms made of nudge amid larger concerns over the direction of travel of contemporary neoliberal governance. Having established nudging as a potential policy 'solution', the next section discusses the policy 'problem' to which it is applied in this thesis – air travel, pollution and carbon offsetting – and will justify it being selected as a case study for the application of nudges.

## 2.3 Air travel and the Environment

This thesis is not intended to only examine the practical and conceptual 'limits' of nudging, but also to attempt to have some impact in a policy area of increasing environmental concern. This section explains why carbon offsetting is selected as the target behaviour for nudges in this thesis. To do so it first explains why aviation has a large impact in terms of pollution and its contribution to climate change, how this impact is projected to grow, and how neither technological nor regulatory progress in dealing with this pollution currently appear forthcoming. One simple solution to this problem might be for people to simply fly less, but section 2.3.4 outlines the various socio-economic reasons why this is highly unlikely in an age of 'hypermobility'. Therefore the final sub-section explains the concept of carbon offsetting as a potential instrument for dealing with aviation pollution, as well as the critical debates surrounding offsetting in terms of efficacy and moral legitimacy. It also shows evidence that carbon offsetting is currently a fringe activity, and hence how nudges might be used to increase the take-up of carbon offsets.

### 2.3.1 Aviation and pollution

Amid wider efforts to reduce our reliance on fossils fuels and decarbonise the global economy to avoid catastrophic climate change, aviation is a significant and rapidly growing industry. Using about 5 million barrels of oil a day, if the industry were a country it would be in the top 10 of global carbon emitters (Petsonk 2012). Individually, air travel is the most carbon-intensive transport-mode per passenger km (Aviation Environment Federation 2008), and for most people constitutes the most carbon-intensive activity (of any kind, transport or otherwise) they will ever engage in. As air travel grows, more people fly, and those who already fly, fly more, this becomes an increasing problem. Indeed, Gossling and Upham argue that "there is no other human activity pushing individual emission levels as fast and as high as air travel" (2008, 5).

Beyond the individual level, aviation is set to take up an increasingly large part of national and global carbon footprints, and formal carbon budgets, thus putting more pressure on other industries to decarbonise. On a global scale, the aviation industry calculates that it currently contributes around 2.5% of total global $CO_2$ emissions, and predicts emissions to multiply by a factor of between 2 and 4 by 2050 (ICAO 2010; ICAO 2016a). Looking back, global growth in air travel – as measured in Revenue Passenger Kilometres – has been at around 5% each year over the past thirty years, and has usually been double the annual GDP growth rate (Grote et al. 2014). In the UK alone passenger numbers have more than doubled since 1990, and looking forward, the aviation industry would like capacity to double again by 2050 to around 450 million passengers per year(Sustainable Aviation Council 2012). Globally, Boeing predicts that the number of planes

in service will more than double from 20,910 in 2013 to 42,180 in 2033 (Boeing 2014). This growth is good news for the airline industry, but makes national targets for carbon reduction look increasingly difficult. In the UK, since the adoption of the Climate Change Act in 2008, the government has committed itself to an 80% total cut in carbon emissions by 2050. Yet the growth in air travel, which currently accounts for around 6% of the UK's carbon emissions (ABTA 2012), may make this reduction seem ambitious, as the Committee on Climate Change project that aviation emissions could rise to as much as 25% of the UK's total by 2050 in line with current projections (Committee on Climate Change 2009). According to the Committee on Climate Change, if aviation grows as predicted, this will mean either huge (and possibly unfeasible) cuts in emissions in other parts of the economy of as much as 85%, or a drastic and unprecedented step-change in the energy efficiency of modern aircraft (Committee on Climate Change 2009). Bows and Anderson describe this situation as an aviation-environment "policy clash" (2007).

Aviation is a particularly damaging fossil fuel industry. As well as carbon dioxide, aircraft also emit nitrous oxide, sulphates and black soot (IEA/OECD 2009). The emissions from aircraft are also dispensed at higher altitude than ground-based emissions from cars, factories or power plants, and non-carbon emissions 'hang' in the atmosphere close to aircraft's flight-routes, and cause radiative forcing (RF), meaning they stop the sun's energy from being reflected back into space, thus leading to greater absorption of energy by the earth's atmosphere (Lee et al. 2009). These additional factors mean that aircraft emissions may have a global warming impact 2 to 4 times more than the simple effect of the emissions from carbon (King et al. 2010), although arriving at an exact figure on the 'average' RF is difficult, due to different aircrafts' flying altitudes and internal engine designs.

### 2.3.2 The limited potential for greater fuel efficiency in aviation

The environmental impact of flying would not be as problematic if the aviation industry were able to demonstrate its ability to reduce its contribution to carbon emissions – and hence, its contribution to climate change – in the short- to medium-term future. This could be achieved either through increased fuel efficiency, or through the adoption of alternative fuel sources such as biofuels. On the potential for fuel efficiency, there has always been an obvious financial incentive for airlines (and the aircraft manufacturers who supply them) to reduce their fuel costs, because airlines spend around a quarter of their operating costs on fuel (IATA 2014). Between 1960 and 2008, annual increases in fuel efficiency were around 1.5% (OECD/ITF 2012), although this aggregate figure masks two or three important singular leaps in engine and airframe technology. However, such constant annual improvements appear unlikely to be sustainable in the future (Grote et al. 2014). The International Civil Aviation Organisation (ICAO), the UN agency

responsible for regulating the aviation industry, has set a fuel efficiency target of 2% per annum, but has itself admitted that even achieving this ambitious target would only partially offset the forecast growth in aviation emissions, saying "even under the most aggressive technology forecast scenarios, the expansion of the aircraft fleet, as a result of air traffic demand growth, is anticipated to offset any gains in efficiency from technological and operational measures" (ICAO 2010). It is also worth noting that meeting these future targets for efficiency may well be contingent on all airlines using the most modern and fuel efficient aircraft available such as the Airbus A-380 and A-350s or Boeing 787 Dreamliner (OECD/ITF 2012). Yet switching to such new aircraft is extremely expensive, and if the current trend for cheap oil continues, there may be little incentive for airlines to make the switch, meaning that older, more fuel-hungry and less efficient aircraft remain in use for years or even decades to come.

Biofuels are often cited as a potential way forward out of the fuel-efficiency impasse described above, because, in theory at least, they can be an almost carbon-neutral energy source. Although burning biofuels in aircraft produces just as many GHG emissions as burning regular jet fuel, with biofuels these emissions are offset at the time that the plants (from which the biofuels are derived) grow, when carbon is sequestered from the atmosphere. Biomass-to-Liquid (BTL) fuels, derived from plants such as palm, coconut, rape and soy, have been proven already. Light aircraft in Brazil have been running for years on ethanol, an alcohol-based fuel acquired from fermented sugar and corn (Marsh 2008). One technical challenge is scaling up biofuels to large aircraft so that they can be integrated into existing processes for manufacturing jet fuel (Barrett 2014). Larger challenges remain, however, one of which being that biofuels require large amounts of land, and it may be legitimately questioned whether it is ethical to use scarce agricultural land for jet fuel instead of food production. Using existing plants such as soy or rape for biofuels has already caused controversy for pushing up the price of these staple foods, particularly in South America (Marsh 2008; Cremonez et al. 2015; Mackay 2009).

### 2.3.3 Regulatory challenges facing the development of 'sustainable aviation'

The third issue with regard to air travel is the way that the aviation industry is regulated. By its very nature, aviation is an industry which is global and which crosses national borders. The industry has managed to escape global regulation on carbon emissions, most notably being excluded from the Kyoto protocol due to difficulties in allocating emissions to different parties, with the responsibility for the industry's emissions being delegated to the International Civil Aviation Organisation (ICAO) (United Nations 1998). Aviation was also excluded, along with shipping, from negotiations at the 2015 Paris CoP, with responsibility for the industry's emissions again delegated to the ICAO, of which 191 countries are members. However, the ICAO does not

have formal legislative powers and therefore member states need to pass laws domestically in order to regulate the airlines which operate within their borders. If member states or organisations and companies within member states do not wish to adhere to the guidelines which the ICAO sets, then the ICAO has no legal powers to enforce compliance (Grote et al. 2014). Whilst there has for many years been talk of a multinational market-based mechanism (MBM) for curbing aviation's GHG emissions on a cap-and-trade basis, the ICAO has been unable to find a consensus for such a scheme among its members and their various internal vested interests. The EU, frustrated by this lack of progress, acted unilaterally to include aviation in the EU Emissions Trading Scheme (EU-ETS) from January 2012, using a cap-and-trade mechanism to force airlines to buy carbon credits for emissions caused by all flights (domestic, intra-EU or international) starting or ending in the European Economic Area (EEA). As a major region for air travel, the EU ETS had the potential to affect a substantial 35% of all global aviation emissions (Preston et al. 2012) but ultimately ended in failure.

The difficulties which the draft EU ETS has faced illustrate the wider problems with regulating this truly complex and multinational industry. Even before January 2012, China, the United States, Russia and India argued that the planned EU ETS, as it affected airlines which were from non-EU states, would be illegal and threatened retaliatory measures on EU-based airlines. After its implementation, the US Congress passed a law exempting US airlines from paying their contributions to the EU ETS (GreenAir Online 2012b), and several Indian and Chinese airlines, under direction from their respective governments, simply did not submit records of their EU flights to the ETS authorities (GreenAir Online 2012a), with China also blocking a lucrative order for 27 Airbus aircraft from Europe unless the plans were changed (BBC News 2012). Despite a ruling from the European Court of Justice finding that the EU ETS was legal and did not contravene any pre-existing international agreements on aviation, such hostility and non-compliance persisted. Ultimately the European Commission backed down with its so-called 'Stop the Clock' ruling exempting international flights arriving and departing from outside the EU from inclusion in the ETS (Sandbag 2013). The EU ETS now only covers emissions from flights which both start and end within the EEA, meaning around 75% of the emissions originally targeted for inclusion are now omitted (Transport & Environment 2014). The ICAO has been tasked again with finding a global market-based-mechanism (MBM) which all parties are scheduled to sign up to by 2017 (ICAO 2016b), although its track record of consensus building for self-regulation in the industry may not inspire confidence that it will be able to do so (Grote et al. 2014).

One of the main drivers for the growth of air travel has been the historically low ticket prices passengers are now able to pay. One of the more recent reasons for low fares is fierce competition between airlines, facilitated by liberalisation of the aviation sector since the late

1980s, and the subsequent entry of Low Cost Carriers (LCCs), particularly in Europe (see Aguiló et al. 2007; Butcher 2010). But longer-term structural factors are also relevant in understanding how air travel is able to be as cheap as it is. Placing taxes on fuel is a well-established policy tool available to governments around the world, allowing them to raise revenue for investment in public transport and infrastructure, whilst also sending external cost signals through the market. But while vehicle fuel duty is an established source of government revenue, airlines pay *no* tax on jet fuel for international flights. This situation has existed since the 1944 Convention of International Civil Aviation (known as the 'Chicago Convention') which was subsequently ratified by almost every country in the world, and intended to help kick-start what was then a fledgling aviation industry (Seely 2012). While individual countries or the EU have long wanted to renegotiate this treaty on the basis of bilateral agreements, such a process has been avoided due to fears of creating a competitive disadvantage, and members of the ICAO have been unwilling to change the status quo (Seely 2012; Broderick 2009).

Looking ahead, The Air Transport Action Group (ATAG), a coalition representing the commercial aviation industry and focused on "aviation's sustainable growth" (ATAG 2015), has set aims for a MBM for the air industry to begin from 2020. The point of an MBM for ATAG is to underpin other industry efforts to improve engine efficiency, research into biofuels and improved flight management systems, to achieve an aim of "carbon-neutral growth" after 2020, and an amibitious 50% reduction in emissions by 2050 compared to 2005 levels. However, price increases are not part of this plan. "An MBM for aviation should only be considered as part of a broader package of measures to address aviation's $CO_2$ emissions; it should not be focused on suppressing demand for air travel or raising general revenues" (ATAG 2013). However, Grote et al. (2014) estimate that it will be impossible to meet such targets without increasing prices and thus restraining demand. Given an annual average growth rate in the air industry of 4% in Revenue Passenger Kilometers, and a forecast of likely efficiency improvements in aircraft of 2.3% annually (based on a projection by King et al. 2010), they estimate that an annual demand reduction of 1.6% is required to achieve carbon neutral growth from 2020 onwards. Given a mean price-elasticity-of-demand in air travel of -1.146 (based on work by Brons et al. 2002), this would mean that air ticket prices are required to increase, in real terms, by 1.4% each year. But in reality, prices have actually decreased by an average of 0.5% per year since 1990, and it seems highly unlikely that prices will go up without regulation from outside the industry.

The aviation industry has also enjoyed VAT breaks on the production of aircraft and VAT is not payable on international flights. The UK has been able to apply Air Passenger Duty (APD) to tickets sold in the UK (currently set at around thirteen pounds per flight within the EU), although this is not, strictly speaking, a 'green' tax, nor has it been copied by other states (Daley & Preston 2009).

As was mentioned earlier, the EU ETS has affected airlines which run intra-EEA flights, but so far the low carbon price has meant that airlines have been able to soak up the extra cost without it affecting ticket prices or customer demand. The NGO and lobbying group Sandbag claim that Ryanair charged €0.25 per passenger for the ETS, but it cost them just €0.13 per passenger, resulting in a €8 million windfall (Sandbag 2013, 4), hardly the original purpose of the scheme. There are also broader concerns about the effectiveness of the EU ETS itself and the ethics of carbon markets (see Steffen Böhm 2013; Böhm & Dabhi 2009).

As mentioned in the introduction, the ICAO assembly session in October 2016, announced plans for a market-based-mechanism to mitigate aviation emissions – the first such commitments the ICAO has made on the issue. Although the full implications of the deal are not yet entirely clear, it has already been criticised for postponing emissions reductions until 2027, for excluding many countries, and for avoiding a legal cap on emissions (Murphy 2016; Vidal 2016). The plan makes no mention of increasing customer fares, or of decreasing consumer demand.

Overall, we can see that government regulation and market-based measures have done little to affect ticket prices for consumers or to incentivise greater fuel efficiency among aircraft manufacturers, who still design engines to use cheap, tax-free aviation kerosene. Although air passenger numbers did suffer a small dip following the recession of 2007-8, the trend seems to have been restored to its upward trajectory, as can be seen in Figure 1 which shows predictions of 4.6% annual air traffic growth between 2014 and 2034, during which period total air traffic will double, according to forecasts by the aircraft manufacturer Airbus.


*Figure 1: Past and projected aviation growth in Revenue Passenger Kilometres*

(Airbus 2015)

### 2.3.4 Aeromobility and complexity

To conceptualise this growth of aeromobility, and the apparent difficulty in governing its global environmental impact which the preceding sections have discussed, the notion of complexity as used by Urry may be of use here. Urry (2004; 2005) describes how different technological, cultural and/or political phenomena have become complex global systems which are self-reproducing or 'autopoietic'. Due to small, often unplanned events at their inception, and the snowball-like energy which subsequently propels them along trajectories of path dependence, these systems effect profound, unpredicted, and unpredictable consequences for other aspects of social or environmental life. These consequences can take the shape of negative (or positive) feedback loops which were not pre-ordained and can, once set in motion, appear intractable. These systems may be either 'global networks' – referring to standardised global products, services and companies – or 'global fluids' – more nebulous, heterogeneous entities. Of 'global fluids', Urry gives examples such as world money, social movements, the anti-globalization movement, international terrorism, smart mobs (2005, 246), and gives special prominence to the internet and automobility as two iconic 'global fluids' – complex systems which were unplanned, but are now all-encompassing.

> "Global fluids travel along various routeways or scapes, but they may escape, rather like white blood corpuscles, through the 'wall' into surrounding matter and effect unpredictable consequences upon that matter…. Such fluids result from people acting upon the basis of local information and relationships, but where these local actions are, through iteration, captured, moved, represented, marketed and generalized, often impacting upon hugely distant places and peoples. Such fluids demonstrate no clear point of departure, just self-organization and movement at certain speeds and at different levels of viscosity with no necessary end-state or purpose. Fluid systems create over time their own context for action rather than being 'caused' by such contexts. This self-organization can occur dramatically and overwhelmingly, like a flood or a torrent moving between or across borders or boundaries."
>
> (2005, 246)

In discussing automobility, Urry describes how cultural norms, economic and institutional arrangements and infrastructural provision have all been subverted to the cause of the petrol-fuelled car. The circular, or symbiotic, relationship which is engendered between the automobile and other actors and institutions means a system of 'lock-in' is created, which individuals, civil society groups and governments are unable to do very much about, until a potential unforeseen 'tipping point' may come along and either render a system obsolete or replace it with something

quite different, possibly very rapidly indeed (see Gladwell 2000). Aeromobility might be another such example of a complex global system, which like other 'global fluids' has become increasingly pervasive in modern globalised society. This has had profound consequences for the way business is done, for tourism, for the environment, and as the following section will show, for social and economic norms of 'hypermobility' as well. As far as carbon emissions go, due to the inherently global nature of air travel, and the complexity involved in attributing emissions to particular departure/arrival countries, airlines and/or national/regional airspaces, governments have been thus far unable to find a way to regulate aviation in a meaningful way. Indeed, the original governance structures of the aviation industry which were put in place by the 1944 Chicago convention when international air travel was a tiny fraction of what it is today, appear to have been completely outgrown by the industry (Grote et al. 2014). Urry's metaphor of a 'global fluid' in a globalised age of complexity is a useful way of conceptualising air travel and understanding the difficulties in regulating it, and in understanding how it has, to use Urry's words, "escaped through the 'wall'" of being simply a mode of transport, and "into surrounding matter", with deep and lasting consequences (2005, 246). The last section discussed consequences of air travel in terms of the environment, pollution and governance. The following section will discuss consequences in terms of social norms of travel, mobility, status and identity, to show how aeromobility has become normalised and hence why hoping that people may (voluntarily) fly less – the 'simple' solution to aviation's environmental impact – is unrealistic.

### 2.3.5 The normalisation of flying in an age of "hypermobility"

A holistic understanding of why aviation is environmentally problematic cannot only focus on the industry and regulators, but on the customers it serves. In order to understand why demand for flights continues to grow, and why we cannot expect to resolve aviation's environmental impact by simply expecting people to fly less, I now turn to a fourth, more sociological issue: the normalisation of hypermobility, including 'aeromobility', in wealthy societies.

Every day more than 8 million passengers around the world travel by aeroplane, made possible by airfares which are one-third lower in real terms than they were 20 years ago (IATA 2013). In total it is estimated that around 2.8 billion flights are taken each year, although many of these flights will be taken by the same people and there are vast differences in aeromobility (Hall et al. 2015). Despite industry talk of 'global travel', it is likely that a few 'binge travellers' massively skew these figures, and over 95% of the world's population will *not* fly in any given year (Gössling & Cohen 2014). The majority of flights are, unsurprisingly, clustered in the global North, and particularly in North America and Europe which account for over half of global air passenger movement (ICAO 2013). The UK has high aeromobility, with the third highest number of passengers in the world –

behind only the USA and China (World Bank 2014) – and around half of the UK population flying in any given year (Department for Transport 2010). In wealthy societies such as the UK, sociologists have examined how, in only a few decades, flying has become 'democratised' from the preserve of the very rich, to a common, almost unremarkable activity. While the increased availability of cheap flights is certainly one key supply-side factor, the consumer demand for flying (and for greater mobility - or 'hypermobility' more generally) also needs to be recognised in order to appreciate just how entrenched air travel has become, and how difficult it may be to reform it.

Four complementary explanations for the increase in mobility, or 'hypermobility', shall be explored here. Firstly, that travel is increasingly connected to the preservation and presentation of the 'self' and of one's identity. Secondly, air travel continues to be an aspirational activity which signifies both economic and cultural capital. Thirdly, hypermobility is a reaction to the globalisation of strong familial and friendship ties, as well as the maintenance of 'weak' ties as a cause of business and academic travel. Fourthly, increased access to non-proximate forms of communication, such as email, social media and Skype, have paradoxically perhaps, increased the desire for proximate 'authentic' face-to-face communication, rather than acted as a replacement for it. Fifthly, flying has become deeply ingrained in many social practices.

#### 2.3.5.1 Hypermobility and identity

Firstly, it is crucial to understand the role of identity and perceptions of 'self' with regard to mobility. This is of particular relevance to leisure-based or VFR-based travel (the two largest growth markets for aviation (UNWTO 2014)). Our identity as a member of a family is one of the most basic facets of 'who we are', and the subsequent desire or duty to perform one's role as a family member can be a powerful reason to travel large distances. Other identity-related reasons to travel may also help explain hypermobility, particularly leisure-related travel, where the search for a different 'possible self' (Morgan 1993); the construction of a 'narrative' in our life-story (Giddens 1991); the desire for, on the one hand, personal differentiation away from particular people, whilst, on the other hand, membership of particular 'in-groups' (Hibbert et al. 2013; Cohen 2010), may all be relevant causal factors.

Belk (2009) discusses how our sense of self, our 'self-concept', spans the past, present and future. Not only do we have a sense of who we are now and who we have been, but we have a sense of what we might become, and these 'possible selves' act as motivators in what we choose to do and what we choose to consume. Markus & Nurius (1986) talk of possible selves representing "...what we could become, what we would like to become and, most importantly, what we are afraid of becoming" (ibid., 954). Tourism can provide a space where people can play out the future self which we aspire to, and avoid one which we do not. Hibbert et al. (2013) discuss this concept in

relation to the way their interviewees discussed their travel behaviours. One young traveller from a small village, called Tom, said that he did not want to be a "carrot cruncher" – 'someone from a rural area, and thought to be a bit backward' (ibid., 1008) – but he rather aspired to a possible self which was more wordly-wise and cosmopolitan, and indeed, after he left home he engaged in extended long-haul travel. One might interpret this travel as motivated by a desire for a better 'possible self'.

In a similar way, Hibbert et al. also talk about older travellers and how they want to travel to "seize the day", because, sadly, they might not be alive much longer to enjoy the benefits of travel. In the case of interviewees Heather and Paul (a couple in their fifties), their wish to travel was sparked by death of a friend who was the same age as them (2013, 1008). It can be said that these older travellers are motivated by a fear of an unfulfilled self, they might miss out if they do not take the opportunities to see the world before their death. Markus & Nurius (1986) say that the possible selves we consider are presented to us by our peers, as well as by the media: "(t)he pool of possible selves derives from the categories made salient by the individual's particular sociocultural and historical context and from the models, images and symbols provided by the media and by the individual's immediate social experiences" (ibid., 954). The range of possible selves will vary depending on an individual's age, marital status, social class etc., as well as the influence of dominant cultures and discourses (which may endorse mobility to varying degrees), but the main point here is that tourism is valuable as it provides us with an opportunity to act out a desirable self and avoid a feared self.

Tourism also gives us the chance to build a narrative to our lives, a valuable way for us to construct our own self-concept and present it to others, as part of what Giddens described as the reflexive project of the self. "A person's identity is not to be found in behaviour, nor – important though this is – in the reactions of others, but in the capacity to *keep a particular narrative going*" (Giddens 1991, 54). The stories we are able to tell on the basis of our travel behaviour can also be an important basis not only the way we see ourselves, but, crucially, how we present ourselves to our peers. Indeed, holidays can be seen as a very good way of keeping a narrative going because they are, in themselves, 'stories' with a beginning, a middle and an end, a particular location and a certain 'cast', each aspect having particular connotations and socio-cultural meanings attached to them. These aren't just 'stand-alone' stories, but certain travel experiences can have lasting effects on people which they will cite as pivotal moments in their life narrative. O'Reilly's (2006) research looks at the reflections of people who had spent long periods travelling as backpackers or on a gap-year. Ann's testimony illustrates how, even ten years on, she still viewed her eighteen months of backpacking as a key phase in her life, almost equal to motherhood in its impact.

> "Looking back, of all the things I've done apart from being a mother, [traveling] is the thing that helped me evolve the most as a person. It made me self-sufficient and flexible, un-phased by most things. It made me more open-minded. I think these are long lasting effects that change who you are. Having children shows that who you are is etched into you from the day you're born, but traveling makes that person who is already there different—it moulds you. For some people maybe it doesn't last, but for me it did"
>
> (ibid., 1007).

As with other forms of consumption, certain types of holidays will feed into particular narratives which will signify membership of a particular in-group and the – possibly intentional – exclusion from others. Gram (2005) illustrates this point with reference to family holidays.

> "In the postmodern lifestyle where life conditions are not given as in former days where tradition, to a much higher extent, dictated lifestyle, identity is today built up carefully by a number of choices, which are not necessarily stable. Holidays (as other forms of consumption) are one brick in the identity building process. Holiday-making is one part of the answer to the question: ''What kind of a family are we?'' (Do we choose nature or culture; Norway and Sweden or Italy and Spain; swimming pool or raincoats; the non-commercial or luxury, do we have imagination and nerve or not?)"
>
> (ibid., 17).

More broadly it is what Baudrillard termed the *sign* value of a product – in this case a particular holiday choice – which denote membership of certain groups, in terms of broader social (self-) identification, and levels of cultural capital (Baudrillard 1981). Whether it be an '18-30' holiday to the Mediterranean; a backpacking tour of South East Asia; a safari trip to sub-Saharan Africa; or a Caribbean cruise – all of these types of holiday carry with them particular socio-cultural signifiers and suggest membership of particular in-groups to the exclusion of others. Being aware of these signifiers, some travellers may actively seek holiday choices which are intentionally different to what 'other people do'. Crick (1989, 307) observes this idiosyncrasy: "Why do so many tourists claim that they are not tourists themselves and that they dislike and avoid other tourists?'". Gillespie (2007) sees travellers seeking ever more remote destinations 'off the beaten track', but as Hibbert et al. (2013) note, the growth and reach of the tourism industry means this is increasingly difficult to do so, and trying to do so usually entails ever more long-haul flights, and hence, more carbon emissions from tourism. In a related way, the issues of identity and tourism become complicated because whilst, as has been argued, tourism choices can act as a way of

fitting and strengthening an individual's wider life narrative, the fact that tourism takes place outside everyday life means that people can behave very differently on holiday to how they would at home (Dickinson et al. 2011), sometimes contradicting their own values and norms (see Barr et al. 2010, on how pro-environmental attitudes at home can 'disappear' on holiday) – in fact, this feeling of freedom from responsibility and norms of behaviour can often be the very point of taking a holiday in the first place.

#### 2.3.5.2 Hypermobility for status

Secondly, and related to identity, is the fact that air travel continues to be a high-status activity, enabling people to display both economic and cultural capital through mobility (Barr et al. 2010). The expansion of air travel has meant that, in wealthy countries at least, it is less mysterious and glamourous than in the past when it was a distinctly elitist form of travel. However, the notion that flying has become 'democratised' and 'cheap for all' should not be exaggerated. In the UK, leisure-related flying is still skewed in favour of those of ABC1 socio-economic groups, as opposed to those in C2DE groups (CAA 2013), and in the period 1996-2009, a period of falling ticket prices, it was the ABC1 group which benefitted the most from these cheaper tickets, with their share of the total number of flights rising (Stop Stansted Expansion 2011). Globally, only around 2-3% of the world's population fly annually (Peeters et al. 2006), and even among those who do fly there remain significant disparities between a small elite group of frequent flyers, who have a disproportionate flying-related carbon footprint, and the rest (Gössling & Cohen 2014). Bauman talks of how post-modern consumers are increasingly 'stratified by their degree of mobility – their freedom to choose where to be' (Bauman 1998, 87). Mobility seems to be something we aspire to, Shaw & Thomas (2006) note how, between 1992-2002, despite relative declining costs in air travel, the UK as a whole spent 250% more personal income on flights. Price is evidently not the only causal factor of hypermobility.

#### 2.3.5.3 Hypermobility as a facet of globalisation

A third explanation for the rise of air travel is that people simply have more people to visit in faraway places than ever before. According to the UN World Tourism Organisation, visiting friends and relatives (VFR) is now the second most important reason for international travel, after leisure and before business travel (UNWTO 2014), with over a quarter of people crossing borders for this reason. As Wellman (2002) describes it, we are moving away from living in a society of 'little boxes', where friends and family live in small, dense, broadly homogenous groupings where the scope for meeting people in one's community are high, towards social networks, which are temporally and spatially dispersed, and which therefore require transport and technology to maintain. As Axhausen (2002: 9) puts it: "We do not live next door to our work colleagues

anymore, our aunt does not serve us in the corner store, nor is the foreman/union steward/local councillor godfather to our children". (9) This means that our social networks often consist of discreet social groupings (work colleagues, friends, family), memberships of which do not 'overlap' as perhaps it may have done in the past. Maintaining our relationships at the same level of quality with those 'closest' to us requires great effort. As our family is often the strongest social grouping we are members of, it is therefore unsurprising that we seek to nurture membership of this particular social grouping, through our physical presence at family gatherings and key events as much as possible (Hibbert et al. 2013).

When a family take a holiday together as a unit (which may count as a 'VFR' or a 'leisure' trip), this can – if the trip is 'successful' – be an important site for maintaining our most important and closest relationships, requiring what Putnam calls 'bonding capital' (Putnam 2000; Gram 2005). Indeed, on holiday, the proximity of the family is often more important than the chosen location. The family holiday is more about time than place, it is a "way of being together" (Haldrup & Larsen 2003, 24) and perhaps, as Larsen et al. suggest, "families are most at home when away from home" (2006, 45).

For business relations, Urry (2003) notes that developing trust is vital, and despite the explosion of digital communication, video-conferencing, emails and social media, there really is no substitute for face-to-face contact. In fact, the explosion in 'superficial' communication technologies may be a reason why 'authentic' physical proximity is more valuable than ever before. Proximity may be essential in building what Putnam (2000, 23) calls 'bridging capital', that which is fundamental to the reinforcing of the 'weak ties' (Granovetter 1973) of business relationships. Urry also suggests that what he calls 'meetingness' is crucial to the nature of contemporary networks:

> "Such meetingness varies as to how often the network or some sub-network meets up, the exchanges of information, gossip and informal pleasure that occur, the significance of meetings in producing outcomes and generalizing trust, and the degree to which weak ties extend through such intermittent but selective meetings…. What gets exchanged in such meetings through intense and dynamic conversational interactions are rich social goods. These include friendship, power, projects, markets, information, rumours, job deals, sexual favours, gossip and especially trust. Central to networks are the forms and character of 'meetingness' and hence of travel in order both to 'establish' and to 'cement' at least temporarily those weak ties"
>
> (2003, 161).

#### 2.3.5.4 Communications technologies don't replace hypermobility, they drive it

Urry (2003) also contributes to the fourth explanation of hypermobility by arguing that the growth of non-proximate forms of communication reinforces the need for proximate communication, rather than becoming a substitute for it. Rather than social networks existing separately of material worlds, it is material networks which make possible the emergence of new social networks. Here, material networks refer to train lines, flight routes, telecommunication and broadband infrastructure, which not only facilitate social networks but help *create* them, in a similar way to how Reckwitz in the social practices literature describes how certain objects 'mould' particular practices (Reckwitz 2002, 253).

This is not to dismiss the emergence of what Turkle (1997; 2013) has described as 'life on the screen' where online 'netizens' can engage in an online conversation in cyberspace, sharing information and gossip in real time upon "distant but temporally coordinated mobile phone screens" (Urry, 2003, 171). Those kinds of 'social' networks do not seem to require any kind of proximate communication at all. Indeed, participants often converse as anonymous strangers. But for most people who are interested in maintaining strong bonds with family or friends, or nurturing 'weak ties' – with business associates, contractors, clients or collaborators etc. – physical co-presence, however sporadic and occasional, will be perceived as a necessity. The recent explosion in communication technologies has not rendered physical co-presence as unnecessary. It is likely that the more we communicate with our associates virtually, the more (not less) likely we are to try and meet them physically. Non-proximate communication seems to have a symbiotic relationship with proximate physical co-presence, with the two forms of communication reinforcing one another, and one consequence of this is a trend for more international travel and flying.

#### 2.3.5.5 Hypermobility and social practices

Beyond the obligations to family, friends and work, other social practices related to leisure are facilitated by air travel as well. As the previous section noted, tourism is increasingly associated with 'self-concept' and the notion of building a 'narrative' to our lives. But travel is not only about the *conspicuous* status it may denote to the traveller. While critical cultural theorists such as Baudrillard have focussed on this fetishlike, conspicuous nature of consumption, that is, consumption for the sake of 'sign value' (Baudrillard 1981), social practice theory (see Warde 2005; Spaargaren 2011; Shove 2003) reminds us that many products or services are consumed simply for their 'use value', i.e. because they facilitate a particular practice, whether that be cooking, studying, playing music or eating lunch.

> "Wants are fulfilled only in practice…The practice is the conduit and *raison d'etre* for the gratifications which arise from its component moments of consumption. Consumption rarely occurs purely for its own sake, but contributes to the delivery of a range of varied rewards"
>
> (Warde, 2005, 142, emphasis in original).

Travel, in this view, is not undertaken because it is a desirable end in itself, but rather as a means to an end. This may be particularly true as flying loses the mystical appeal of the past and becomes a cheaper, more unremarkable (and occasionally unpleasant) activity. The 'ends' which travel facilitates – or the social practices it enables – are becoming ever more numerous. As Randles & Mander (2009) observed in their study of frequent flyers, many people choose to fly to allow them to go on hen or stag parties, take part in sporting events or get-togethers or to attend festivals, but the flight is often the least noteworthy part of the trip.

A useful contribution made by Shove (2003) is the metaphor of a ratchet, to show that as practices change, our expectations and social norms change (as with a ratchet, in *one* direction), so that what was once acceptable (e.g. cooler indoor temperatures) becomes unacceptable (and we require, or demand, warmer indoor temperatures), and movement back to the previous accepted practice becomes impossible.

> "In terms of consumption, the [metaphor of the] ratchet does a good job of graphically representing the impossibility of backward movement and the locking in of technologies and practices as they move along a path dependent trajectory of sociotechnical change"
>
> (Shove, 2003, 400).

In the context of air travel, Randles & Mander (2009) observed how cheap flights have, for many people in the developed world, become an integral part of several social practices such as stag and hen parties, music festivals or the pursuit of a special interest such as golfing or climbing, leading to frequent flying becoming seen as 'normal'.

> "Understanding this has implications for reversing the trend; for once an activity becomes integrated into everyday practices, the political stakes for a government wanting to change the situation for reasons of climate policy are raised… ratchets appear to be driving the tendency to fly for leisure upwards"
>
> (Randles & Mander, 2009, 11).

We can certainly see that the political stakes for regulating air travel have been raised. Curbing mobility of any kind, and especially air travel, would be extremely difficult for any sitting

politician. Tony Blair said in 2005, then as UK Prime Minister, that “no politician facing… a potential election … would vote to end cheap air travel” (Seely 2012, 8). It is understandable. Both quantitative and qualitative data findings point to a deep reluctance to fly less. The British Social Attitudes survey found that 61% of the UK population think people should be able to fly as much as they want to (Park et al. 2012). Interestingly, there is little correlation between the flying frequency of those who are “very” concerned about the effect of transport on the environment, and those who are less so. Of those who said they were “very concerned about the effect of transport on climate change”, 16% took three or more flights in the previous year. Of those who said they were “not at all concerned about the effect of transport on climate change”, 14% took three or more flights in the previous year (Park et al. 2012, 74). In Ryley & Davison's (2008) sample, a large majority (76%) agreed with the statement, “air travel is essential to the UK economy and to the country’s continuing prosperity”, while most (66%) also agreed that “air travel is a significant contributor to climate change”.

In more qualitative studies, participants have repeatedly expressed a deep reluctance to give up flying, even when the climate change impacts of flying were explained to them (Becken 2007; Eijgelaar 2011; Sustainable Consumption Roundtable 2006). We often see patterns of differentiated responsibility, where people express concern about the environment and ‘justify’ their flying habits by reference to their ‘green behaviours’ elsewhere. These may include consciously reducing home energy use (by switching off lights and appliances when not in use) or recycling. These behaviours act as a kind of ’lifestyle offset’, legitimising their decision to fly (Dickinson et al. 2011; Barr et al. 2010), despite the fact that, in terms of their impact on the environment, these domestic behaviours are barely comparable, with flying have a much more damaging effect.

#### 2.3.5.6 Hypermobility – a summary

The growth of so-called ‘hypermobility’ has been explained here in five ways. Firstly, by observing that travel is closely connected to aspects of the ‘self’ and identity; secondly, by recognising that travel in general, and air travel in particular, is an aspirational activity which denotes economic and cultural capital; thirdly, by seeing increased mobility as a natural consequence of the globalisation of strong familial and friendship ties, as well as the maintenance of ‘weak’ ties in business; fourthly, by relating the growth of non-proximate forms of communication to the accompanying desire for proximate ‘authentic’ face-to-face communication; and fifthly, establishing air travel as an ingrained component of many social practices. These explanations point to the difficulty in achieving meaningful voluntary reductions air travel, due to the deeply held needs, desires and practices which it services.

In the light of the four issues covered in this section of the literature review – the growing environmental impact of aviation; the lack of forthcoming improvements in aviation efficiency; the apparent deadlock in agreeing structural regulation for a more 'sustainable aviation'; and the normalisation of flying as an acceptable social practice – carbon offsetting has emerged over the last decade or so as a way for people who fly to mitigate their flights' carbon emissions, and a potential route out of this seemingly intractable aviation/environment impasse.

### 2.3.6 The potential for carbon offsetting

#### 2.3.6.1 What is offsetting?

A carbon offset is a reduction in emissions of carbon dioxide or greenhouse gases made in order to compensate for or to offset an emission made elsewhere, the standard unit of transaction is $tCO_2$-eq – one tonne of carbon dioxide, or its equivalent in terms of their warming potential if it includes other greenhouse gases such as methane, nitrous oxide, etc. Offsets can be based in either the 'compliance' or 'voluntary' markets. Most compliance and voluntary markets structures are derived from UNFCCC's Clean Development Mechanism (CDM), a key part of the Kyoto protocol. The CDM allows developed countries to create more pollution capacity via offsetting projects in developing nations (which do not have emissions caps), meaning that most of these 'compliance' credits are generated by schemes in the developing world, a large proportion of which are in India and China (Broderick 2009). Offset projects might include reforestation, investment in renewable energy or industrial gas destruction. While reforestation used to be the most popular kind of offset project, it is slowly being replaced by other ways of reducing carbon which are more sophisticated and which deliver more quantifiable and certifiable results (Broderick 2009; Peters-Stanley & Hamilton 2013).

Through the CDM, an estimated 2.17 billion tonnes of $CO_2$ equivalent ($tCO_2$) have been offset in the first commitment period of the Kyoto protocol (2008-2012), which equates to around $15-24 billion dollars of carbon revenues for developing countries (Newell et al. 2012). In contrast, the voluntary market is currently much smaller, but not insignificant. According to the NGO 'Forest Trends' who compile a yearly report on the state of the voluntary market, around 990 million tonnes of $CO_2$ equivalent were offset between 2007 and 2015, which, at an average historical price of $\$5.9/tCO_2$ is worth around $4 billion (Peters-Stanley et al. 2014; Hamrick & Goldstein 2016). More recent reports suggest a voluntary carbon market which is stable but "stagnant" (Hamrick & Goldstein 2016, 11). Voluntary offset purchases have grown incrementally between 2013 and 2016 at a rate of around 10% a year, but prices per $tCO_2$ have dropped, largely due to a lack of new entrants to the market. For instance, in 2016, 95% of buyers were repeat customers

(Hamrick & Goldstein 2016). Although precise data on who these customers are is not available, by far the largest group appear to be large multinational corporations, who purchase offsets for corporate social responsibility reasons, to demonstrate climate leadership, and/or to be 'ahead of the curve' in anticipation of their voluntary offset behaviour becoming mandatory, due to potential climate change legislation in the future (ibid.).

Voluntary carbon trading does not have a single unified authority which structures and regulates the voluntary carbon market. It is also a fairly new market: while some companies have voluntarily transacted carbon credits to offset their emissions for over two decades, the vast majority of market activity has occurred within the last 5 or 6 years (Peters-Stanley & Hamilton 2013). In industries which are not subject to mandatory carbon trading, such as aviation, a participant can choose any offset provider and verification standard they wish. In recent years, a few verification schemes have risen to prominence in this market, notably the Gold Standard and the Verified Carbon Standard (VCS). Each verification scheme differs slightly. The gold standard requires local stake-holders to be closely involved in offset projects, and has an emphasis on projects related to on clean energy and energy efficiency. It also supports small-scale projects. The VCS is more flexible, with no requirement for additional social or environmental benefits beyond simple carbon abatement. VCS projects include large hydro, nuclear, forestry and industrial gas destruction projects. By 2015, 98% of voluntary offsets transacted were verified by a third party standard, with the VCS being the most popular (Hamrick & Goldstein 2016) The following chart illustrates which kinds of projects have been funded by voluntary carbon offsetting in recent years.

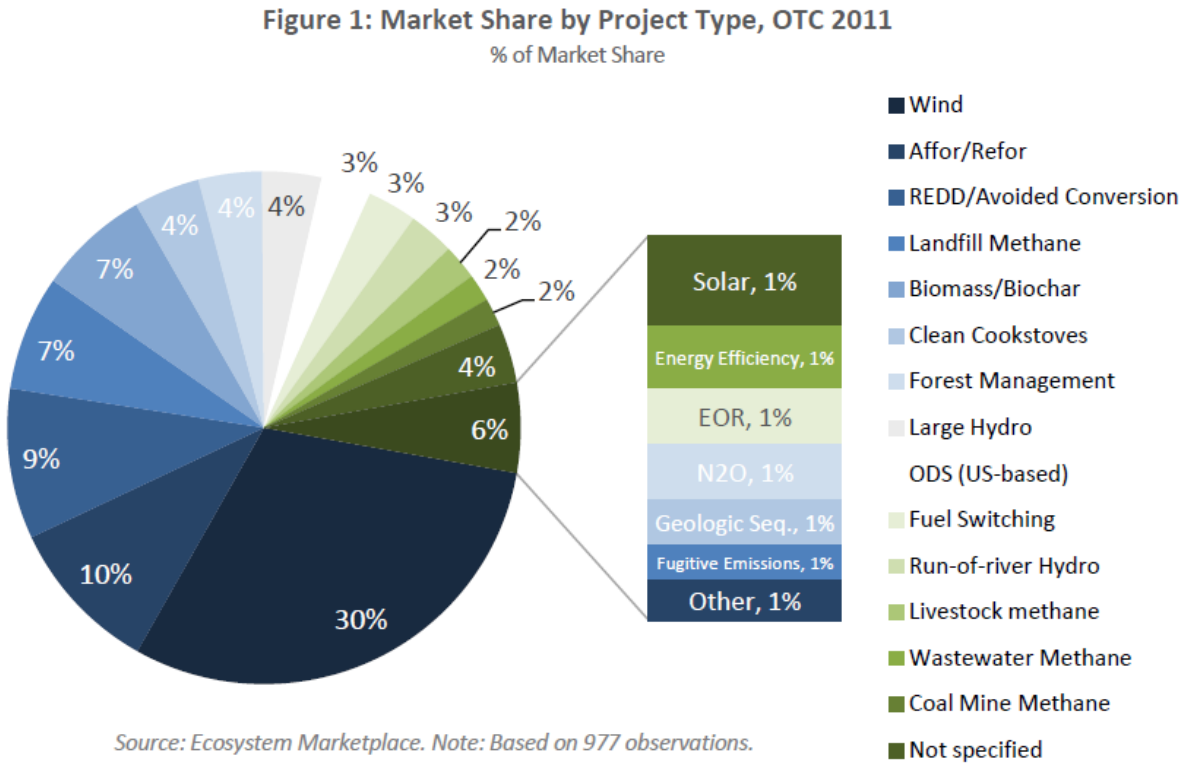



*Figure 2: How carbon offset revenues are spent*

(Peters-Stanley & Hamilton 2012, iv)

It is this voluntary market that air passengers are contributing to when they buy an offset for their flight. Customers can either buy offsets from dedicated carbon offset providers such as 'climatecare', 'atmosfair' or 'myclimate', or at the online point of purchase – i.e. through their airline. The following airlines have, at some point since 2007, offered offsets directly at the point of sale: Air France, Austrian Airlines, British Airways, BWIA, Cathay Pacific Airways, Continental Airlines, Delta Air Lines, easy Jet, First Choice, Flybe, Icelandair, KLM, Lufthansa, Malaysia, Monarch, SAS, Swiss, and Virgin Atlantic (Manchester Airport 2013), although several of these schemes have lapsed since their inception, and among those airlines who do still offer offsets, many of their schemes are not integrated into the payment process, are difficult to locate on airline websites, and are not widely publicised. There may be a case that, despite PR claims to 'sustainable aviation', airlines do not wish to draw attention to the climate impact of flying, fearing it may damage them commercially (Burns & Cowlishaw 2014).

Despite a lack of reliable information in this area, it does seem that there is a small take-up of voluntary offsets. The offset provider, carbon clear, has put the total figure at 1-2% of customers for the whole UK offset market (House of Commons 2007), an estimate by magazine Business Traveller put the figure at 6.4% for its readers (Business Traveller, 2009), and in 2006 there were an estimated 1.5 million people in the UK who voluntarily offset a flight (Daley & Preston 2009).

More recent data on voluntary offsetting for air travel are hard to acquire, which may in itself reflect a more general decline in interest in it. Looking at the entire voluntary offset market (and not just for air travel) in 2014, Hamrick & Goldstein (2015) calculate that less than 1% were purchased by individuals, although they do admit that some "individual" demand may be hidden within the private-sector numbers, particularly in the travel sector, as airlines, hotels, and other travel companies offer opt-in offset options for their customers (ibid., 37). It is also conceivable that some multinational companies will buy offsets to cover activities which may include their staff's air travel. Notwithstanding this rather patchy data, we are presented with an overall picture of voluntary offsetting for air travel being very much a minority activity, particularly for individuals.

#### 2.3.6.2 Controversies over carbon offsetting

Carbon offsets are controversial for three main reasons – ethics, consistency and credibility. These controversies matter, because they may weaken the social acceptability of carbon offsetting and hence make it less amenable to a nudge.

Firstly, offsets are ethically problematic, as they can be seen as an easy way of throwing money at a problem, rather than making lifestyles genuinely more sustainable and less carbon-intensive (WDM, 2009). They have been compared to the past tradition of paying indulgences to priests to secure oneself a place in heaven (Monbiot 2006), or as a way of alleviating our guilt without changing our behaviour (cheat neutral 2013). There is a genuine concern that offsetting might just encourage customers to continue to fly, or even to fly more – the so-called rebound effect. In a joint statement, the WWF, Friends of the Earth and Greenpeace have given their support to carbon offsetting, but only as a last resort (Friends of the Earth et al. n.d.). Clearly, those who consider themselves as 'green' should consider avoiding flying altogether as the best thing they can do for their individual carbon footprint, but as air travel has become a key part of modern hypermobile lives (as discussed at length in section 2.3.4), expecting people to fly less seems unrealistic, while offsets provide some means of action. Offsetting is no panacea but it does allow for immediate action on the part of 'green' individuals and organizations (Daley & Preston 2009).

Secondly, there are issues of consistency, as carbon offsetting schemes are notoriously complex and the existing patchwork of offset schemes and verification methods has done little to assure many would-be participants that they are a good use of money (House of Commons, 2007). Indeed, looking at different offset companies' websites shows how much carbon calculators can vary. Here, a roundtrip, economy class journey from London Heathrow to New York JFK Airport for one passenger was used to compare estimated $CO_2$ and offset costs from three different companies:

| Name of offset provider | Estimated $CO_2$ amount (tonnes) | Cost of offset |
|---|---|---|
| Carbonfootprint.com | 1.63 | £13.02 |
| Climatecare.org | 1.52 | £11.39 |
| Atmosfair.de | 2.72 | £56.73 |

(Checked 31st October, 2016)

All three of these providers use Gold Standard verified projects. Some of the discrepancy between offset costs can be explained by the fact that different carbon calculators use different multipliers to account for the fact that greenhouse gases emitted from aircraft are at high altitude and therefore have a greater impact on global warming, and that those different greenhouse gases must be accounted for at different rates of impact (Broderick 2009), while such calculations of 'radiative forcing' are scientifically contentious. Such big differences in cost may confuse potential customers and reduce confidence in such schemes. Agreeing on a consensus on the radiative forcing impact of flying would therefore set more standardised figures for aviation emissions, and therefore towards equalising these different offset purchase prices.

Thirdly, in regards to credibility, perhaps the greatest problem with offsets is that of 'additionality': this is the idea that offsets must provide a demonstrable benefit in reducing carbon dioxide (or equivalent) *which would not have occurred without the offset,* and in this sense offsets deal in counterfactuals which are hard to prove and quantify. As Welsh puts it: "offsets are an imaginary commodity created by deducting what you hope happens from what you guess would have happened" (in Broderick 2009, 339). However, verification of offsets is becoming tighter, and partly as a response to the problem of proving additionality, land-use/afforestation offset projects have declined in popularity in recent years as costumers seek genuine and more reliable offsets (Gutiérrez 2011).

These controversies surrounding offsetting may make it a more difficult target behaviour for a nudge, because the positive social norms surrounding other, more well-established pro-environmental behaviours such as recycling or reducing litter might not be present when it comes to offsetting (Goldstein et al. 2008; Thomas & Sharp 2013).

#### 2.3.6.3 Existing support for offsetting

In spite of these controversies, there still appears to be an appetite for carbon offsetting. A study by Brouwer et al. (2008) found that, according to surveyed air travellers' stated Willingness to Pay

(WTP) to offset their emission, funds in the region of €23 billion (around $30 billion) could be generated every year to finance climate change mitigation activities. Using a carbon price of $15 per tonne, this could generate 2 billion tonnes of carbon offsets each year. MacKerron et al. (2009) also looked at WTP for young fliers and found significant support for voluntary offsets, especially if such offsets were certified, and especially if offset projects were shown to have social or economic co-benefits. Other studies have found large-scale ignorance of offsetting by both passengers and travel agents (Dodds et al. 2008), suggesting that if offsetting was more widely publicised (and incorporated into the buying practices of passengers) then there may be a sizeable market for them.

We can observe three potential benefits from voluntary carbon offsetting. If voluntary offsetting is taken up on a large-scale, it could not only generate large amounts of finance for low-carbon projects (Brouwer et al. 2008), but it could also facilitate investment into innovative, high-risk, high-reward projects that might not be supported through compliance schemes that require more rigorous verification (MacKerron et al. 2009). Secondly, if customers were to show a large-scale demand for voluntary offsets, then this would send a message to airlines and the governments that individuals expect greater action to mitigate the damaging effects of air travel on the environment (HM Government 2006), and airlines might possibly start to incorporate offsets into their own prices as a default (something many customers and environmentalists already expect them to do) (Becken 2007; Dodds et al. 2008). Thirdly, carbon offsets offer a way for environmentally-concerned travellers to "take matters into their own hands" (Kotchen 2009). If someone has 'no choice' but to fly, but is concerned about their flight's impact on climate change, then carbon offsetting gives them a means to mitigate that impact. As offset provider Carbonfund.org states, this motto is, "reduce what you can, offset what you can't" (ibid.).

If one accepts that voluntary carbon offsetting represents a valid mitigation strategy, then this begs the question of how offsetting might be made more popular. It is the focus of this project to examine whether nudges could be used to encourage voluntary carbon offsetting for flights. Firstly, it may be helpful to identify those people who already offset, or who may be more likely to offset, as this knowledge informs the choice of sample for the project.

#### 2.3.6.4 Who might buy offsets?

Voluntary carbon offsets (VCOs) have only been widely available to air passengers since around 2006 (Peters-Stanley & Hamilton 2013). Due to this relative novelty, and the fact that offsetting is a minority activity, academic research on the topic is relatively thin on the ground. However, some attempts have been made to find out what kind of people are most likely to offset and what motivates them to do so (McLennan et al. 2014; Hooper et al. 2008; Mair & Wong 2010; Gössling

et al. 2009), and in particular, there have been several studies into air passengers' reported Willingness to Pay (WTP), which is used as an financial representation or proxy for people's enthusiasm for VCOs (Lu & Shon 2012; Yang et al. 2014; MacKerron et al. 2009; Brouwer et al. 2008). A reading of these studies shows some broad similarities in the characteristics of the 'typical offsetter' in terms of nationality, age, flying frequency, status as a solo or group traveller, and green attitudes.

#### 2.3.6.4.1 Nationality/Destination

People from Europe seem to be more aware of offsetting, more likely to offset, and display a greater willingness to pay, compared with people from other parts of the world, particularly Asia. Brouwer et al. (2008) found significantly higher awareness of carbon offsetting among Europeans compared to North Americans and especially in comparison with Asians, a trend also supported by Lu & Shon (2012).

#### 2.3.6.4.2 Age

There seems to be a common picture of carbon offsetting being more popular among younger travellers. In the case of Australia, passengers aged between 20-34 years of age were most likely to offset, and passengers aged 45-64 the least likely (McLennan et al. 2014). Hooper et al.'s (Hooper et al. 2008) study of passengers at Manchester airport also found a similar trend. In terms of WTP, Lu and Shon (2012) also found that younger people are more willing to pay a higher amount for offsets compared to older people. Yang et al. (2014) looked at carbon offsetting more generally (i.e. not only for air travel but for all personal carbon emissions) and also found a similar trend in terms of age with people under 29 expressing the highest WTP.

#### 2.3.6.4.3 Frequency of Flight

From the reviewed literature here, there does appear to be a positive relationship between carbon offsetting and those who fly frequently (Lu & Shon 2012; Brouwer et al. 2008; Hooper et al. 2008; Gössling et al. 2009).

#### 2.3.6.4.4 Group/single travellers

One interesting pattern is that solo travellers, and particularly those who described themselves as 'backpackers' were more likely to offset in two of the studies mentioned here (McLennan et al. 2014; Hooper et al. 2008), which also reported that people travelling as part of a larger group or as part of a package holiday were much less likely to either be offsetters (McLennan et al. 2014) or express any interest in becoming offsetters (Hooper et al. 2008).

#### 2.3.6.4.5 Green attitudes

Although it should be noted that determining 'green attitudes' is problematic, there is, perhaps unsurprisingly, evidence of a relationship between holding pro-environmental attitudes, and expressed interest in offsetting. Brouwer et al. (2008) found that passenger concern over the impact of flying on climate change was a significant predictor of higher WTP, as was travellers' perception of their own individual responsibility to do something about it. Hooper et al. (2008) also found that the people most likely to offset strongly agreed that climate change is a genuine threat; that aviation contributes to climate change; and that individuals can limit the impact of air transport on climate change through their actions. Mair (2011) also found a similar relationship among her survey sample, that those who purchase VCOs are more likely to hold 'ecocentric' attitudes, where 'ecocentric' is defined according to the well-used New Ecological Paradigm (NEP) of Dunlap et al. (2000).

Beyond curiosity, this data on the characteristics of VCO customers is useful in informing the choice of sample for this project – university students – who broadly may fit many of these demographic qualities, as will be explained further in section 3.6. The rationale for using this population was that if nudges are going to be effective at all, they are mostly likely to have an effect on those people most sympathetic to the idea of carbon offsetting in the first place.

## 2.4 Literature Review Summary

This literature review began with a brief history of nudge and libertarian paternalism, of how the nudge paradigm draws from behavioural science to produce a way of creating soft behavioural interventions in a range of different policy areas, which are usually tested through the nudger's preferred method of RCTs. A typology of different types of nudge was offered, both regarding the target behaviour of different nudges – pro-social and/or pro-self, and systems of thinking – system 1 or 2. Here I argued that system 2 nudges for pro-social behaviours are arguably more challenging, if less controversial. Despite these challenges, previous examples show that system 2/pro-social nudges have been effective, and hence why it might be hypothesised that there is potential in using nudges to encourage carbon offsetting for air travel. The use of system 2 nudges for carbon offsetting has not been attempted before, and hence this project attempts to fill this gap in academic research.

The second section of the literature review illustrated a more critical side of the literature on nudge, which has usually coalesced into seeing libertarian paternalism as either too liberal or too paternalistic. My own contribution here has been to show how libertarian paternalism might be seen as both too liberal at a macro-level of economic regulation, and also too paternalistic at the

micro-level of individual behaviour. Seen in this way, there are synergies here with literatures of anti-politics post-politics and de/repoliticisation, as well as with sociological critiques of the direction of government behaviour change strategies and also much academic research. These critiques concern the pervasive individualisation of responsibility 'down-stream', whilst maintaining a neoliberal status quo 'up-stream' in the way we deal with 'wicked' social and environmental problems. According to these views, both nudging and carbon offsetting would fall into a mode of neoliberal governance which sees a diminished role for the state and minimal regulation of private industry. The ethical-normative question here is whether we should be using 'soft' instruments such as carbon offsetting and nudges at all, if they only serve to distract from vital, if politically difficult, private sector regulation. Oliver's notion of 'budge' offers a way to keep behavioural insights, but to dispense with nudges, when particular situations show them to be insufficiently radical. If this project were to provide evidence for such a situation – i.e. if nudges were shown to be ineffective in encouraging carbon offsetting – then it may be seen as a case for budging rather than nudging in this field.

The third section of the literature review shows why air travel is an important case study. Aviation is a polluting industry, and is growing rapidly. So far, aviation has enjoyed years of fairly low-regulation and low taxes, which has provided a supply of cheap flights to a growing number of passengers. On the demand-side, passenger numbers have grown because air travel serves a range of social and economic functions in a hypermobile, globalised world, making it highly unlikely that we can expect demand to decline any time soon. Given governments' carbon emission reduction targets on the one hand, and this swift and ongoing expansion of air travel on the other, we can clearly see the 'policy-clash' which Bows & Anderson (2007) have described. Carbon offsetting appears as the only way in which environmentally-concerned flyers can do anything about this situation. As we have seen, take-up of voluntary offsets and their general visibility remains very low, and the kind of pro-social/system 2 nudges which this project employs to encourage offsetting are perhaps less certain to work than other types of nudge (as discussed in section 2.1.7). Yet, the decision to offset or not may well be one which fits Thaler and Sunstein's definition of a behaviour which is ripe for a nudge, and previous research has shown that people can be receptive to offsetting when it is explained to them (as shown in section 2.3.6). Despite these conflicting suppositions, the main expectation at the outset of data collection was that carefully constructed nudges might encourage offsetting. The following chapters will explain how I tested that expectation. Was evidence found to show that nudging could be used to encourage carbon offsetting – thereby expanding the repertoire of nudges' target behaviours, and also negotiating a way through the aviation/pollution policy-clash? Or was evidence found to show that nudging is ineffective for this target behaviour, and that rather than placing

responsibility with consumers through voluntary carbon offsetting, we ought to find a stronger legal mechanism to make producers and consumers take responsibility instead?

# Chapter 3: Methodology

## 3.1 Overview of data collection process

This project employed a mixed methods research strategy, combining both randomised controlled trials (RCTs) and focus groups. The data collection was composed of three inter-related stages: 1) an RCT; 2) a series of focus groups, and 3) a second RCT. The first RCT was conducted in spring of 2014, the focus groups were held in autumn of 2014 and spring of 2015, and the second RCT was conducted in autumn of 2015. The reasons why this strategy was employed will become apparent in chapters 4, 5 and 6. The purpose of this chapter is to explain why a mixed methods strategy was considered appropriate for this project. In order to do so, the following sections will outline the characteristics of both quantitative and qualitative research strategies; and will briefly discuss the paradigmatic differences between them at ontological, epistemological and practical levels, and how these might be reconciled in a mixed methods research strategy. There then follows a justification for my use of an iterative, mixed method approach in order to address my research questions, and a discussion of how the use of focus groups in particular were selected in order to enhance the RCT data and to compensate for the shortcomings of the RCT method. Finally there are short sections on the rationale for my population and sample, as well the ethical considerations of the project.

The RCT tested to see whether three different types of nudges could be employed to encourage, firstly, interest in carbon offsets for their flights; and secondly, to encourage people to actually purchase an offset for the last flight they took. The second stage was a series of focus groups aimed at providing explanatory data to accompany and complement the RCT data. The main finding of the first RCT, which required some kind of explanation, was the fact that the nudges did not cause any statistically significant effect on either respondents' offset interest or their offset behaviour. Therefore the focus groups were arranged in order to generate some richer data regarding participants' perceptions, opinions, beliefs, and attitudes regarding the nudges used in the RCT in particular, and carbon offsetting for flying in general. The third stage was a second RCT, which was an attempt to integrate the findings from the focus groups and test 'new and improved' nudges, in order to ascertain whether the 'failure' of the first RCT was merely an issue of poor design, or whether there was something more substantive at play in regard to the suitability of nudging people towards carbon offsetting for flights. The samples, in all three stages, were taken from the population of students at the University of Southampton. In the RCTs this was a 'randomised' sample, and for the focus groups the sample was selected on the basis of

particular characteristics (field of study; under/postgraduate status; UK/international status), the rationale for which will be explained in greater detail in section 3.6.

## 3.2 Combining research paradigms in mixed method research

### 3.2.1 Quantitative methods and the rise of experiments

Quantitative research methods have been perhaps the most visible and dominant social research strategy for much of the twentieth century (Teddlie & Tashakkori 2009). Quantitative research strategies in social science are primarily concerned with the isolation and measurement of variables in order to find causal relationships between them. In this sense quantitative social research shares many of the same principles which can be observed in physical science research, with an assumption, or at least an aspiration, that the researcher can remain detached from the research subject. Common quantitative research methods include questionnaires, surveys or closed-answer questions, providing data which is usually analysed and presented in numerical form. Quantitative research strategies entail deductive approaches which are intended to prove or disprove hypotheses derived from pre-existing theories, with the aim being to generate generalizable results (Bryman 2008).

One type of quantitative research method is the use of experiments. This is the main method used in this study, and one which has in recent years become increasingly applied by both social scientists and public officials (Halpern 2015; Gerber & Green 2008; Morton & Williams 2008). Experiments are perhaps the clearest example of a social science research method which has many similarities with those employed in physical sciences, most noticeably in trials of new medicines. In a 'classic' experimental design – that of the randomised controlled trial (RCT) – independent variables are wilfully manipulated in order to see if there are causal relationships with the dependent variable. This is mainly done by assigning participants to one or several intervention groups. To control for the influence of other factors (for instance demographic characteristics or attitudes) which may influence the result, subjects are assigned to groups in a randomised fashion, and there is usually a control group (which receives no intervention). In this way, the trial produces a counterfactual of what would have happened without the treatment(s), and researchers can be reasonably sure that if there is a difference in the dependent variable between intervention groups, and the intervention and control groups, then it can be attributed to the influence of the intervention. RCTs also have the advantage of measuring actual behaviours rather than stated intentions, unlike surveys or interviews. For these reasons, there appears to be growing support for their use as the 'gold standard' or 'killer evidence' necessary to make convincing research outputs (Haynes et al. 2012; John et al. 2011). RCTs have been used in

educational studies, behavioural sciences, psychology, and both commercial and social marketing, among other applications (Schultz 1999; McKenzie-Mohr et al. 2012; Hammersley 2008; Haynes et al. 2012). We can also observe a dramatic increase in the use of experimental research in the social and political sciences. For example, experimental articles published by decade in three major mainstream journals – the American Political Science Review (APSR), American Journal of Political Science (AJPS), and Journal of Politics (JOP) – increased by a factor of ten between the 1950s and the 2000s (Morton & Williams 2008). A driving factor for this growth in RCTs is the availability of cheap and easily-programmable IT technology, as well as online laboratories and experiment platforms which have enabled large-scale experiments to be conducted at relatively low-cost (ibid., 2). New applications for laboratory experiments, field experiments, natural experiments and quasi-experiments have been identified in topics as diverse as public housing, crime deterrence, public corruption and voting behaviour (Gerber & Green 2008). We also see experimental methods being used increasingly by civil servants, exemplified not only in the BIT (as discussed earlier in section 2.1.3), but more widely across government in 'What Works Centres'. The argument for many senior public servants has been that if medical treatments are subject to RCTs, then why shouldn't many more public policies likewise be exposed to the same 'gold standard', wherever possible? (Halpern 2015).

Of particular relevance to this project, RCTs are commonly used to trial social marketing interventions and nudging, most notably in trials organised by the Behavioural Insights Team within the UK government (Haynes et al. 2012). An RCT therefore appeared to be a logical and appropriate research method to test the relative effectiveness of a variety of nudges for the target behaviour of this project, carbon offsetting. Controversy over their suitability for social research persists however, and this will be discussed further in section 3.5, where I show how combining focus groups and RCTs can help to ameliorate some of the weaknesses of each research method within a pragmatist research paradigm.

### 3.2.2 **Qualitative methods and the advantages of focus groups**

Qualitative research strategies became more prominent in the last quarter of the twentieth century, being primarily concerned with the gathering, analysis and interpretation of *narrative* information (Teddlie & Tashakkori 2009). Qualitative research does not view the social world as analogous to the physical world because people's behaviour and the patterns that arise from it are based on people's perceptions and interpretations of the world which can never be "pure" or "objective". It therefore suggests that different research methods be employed to understand how and why people behave or think in given ways. Common qualitative research methods are in-depth interviews, focus groups, and participant observation, which produce textual (and/or

visual) data which is usually analysed in terms of themes, meaning that perhaps the most common form of qualitative data analysis is 'thematic analysis' (Teddlie & Tashakkori 2009), notwithstanding other forms such as narrative, framework, and discourse analysis (Silverman 2011). Qualitative research often entails an inductive approach, attempting to generate theories and hypotheses from the data produced, rather than simply testing existing ones as is usually the case with quantitative research (Bryman 2008). Qualitative research is less concerned with the usual aim of quantitative research – establishing causality between variables which can be *generalised* to larger populations from the research sample – than with developing explanations through detailed scrutiny of how social processes work within a *particular context*. Having said all this, as we shall see, these distinctions between quantitative and qualitative approaches are far from fixed.

In the post-war period, the use of focus group interviews was historically and primarily associated with marketing research, in which they remain a popular tool, but more recently their use has expanded into social research, media and cultural studies and even political opinion polling. Henderson defines a focus group as "a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs and attitudes towards a product, a service, concept, advertisement, idea or packaging" (Henderson 2009, 28). In contrast to individual interviews, focus groups have several advantages. Firstly, they allow a perception into how group dynamics can affect how people jointly construct meaning (Bryman 2008, 474), this can be particularly true when the group is relatively homogenous and members have similar characteristics in common (such as age, occupation, social class, ethnicity etc.). Indeed, focus groups may be used to examine how such characteristics affect attitudes, by comparing the discussions across different, internally 'homogenous' groups. My focus groups did this by stratifying focus groups according to student faculty, nationality, and under/postgraduate status.

Thus a second advantage is that, in comparison with interviews, this homogeneity and sense of 'group solidarity' can create the potential conditions for greater honesty and depth in the responses participants give – particularly when the interviewer is perceived as an 'outsider' by the participants. Thirdly, focus groups also allow participants to probe each other's reasons for holding a certain view, meaning that interesting and unexpected responses may arise, which can often be quite different to the preconceptions of the researcher (Bryman 2008, 475).

Focus groups were employed in this project to add explanatory power to the findings from the RCT, meaning that the project employed a mixed methods strategy. The use of mixed methods is not universally accepted. It is necessary to briefly outline the ongoing debate and dispute over whether and how the 'paradigms' of quantitative and qualitative can be reconciled.

### 3.2.3 **Paradigmatic positions of quantitative and qualitative research**

As noted above, the late twentieth century saw a shift in the social science away from the dominance of quantitative research strategies and towards the inclusion of qualitative research strategies as well. However, in spite of this broadening of acceptable research strategies, the two approaches have often been perceived as being mutually incompatible, and so-called 'paradigm wars' have repeatedly come into view. The paradigm wars are posited on the belief that quantitative and qualitative approaches necessarily entail a commitment to particular ontological and epistemological assumptions which are inherently incompatible (Howe 1988; Kuhn 1970).

We see differences between the quantitative and qualitative paradigms on three levels: at the level of ontology; of epistemology; and their respective orientations to the relationship between theory and research practice. Quantitative research is associated with an ontological orientation which is *objectivist*, seeing social phenomena as facts which are external to us and which are beyond our reach or influence. In contrast, qualitative research is associated with a *constructionist* ontological orientation, seeing social phenomena as being constructed or negotiated by and between social actors (Bryman 2008, 18-20). At the level of epistemology, this implies that quantitative researchers follow a more traditional *positivist or post-positivist* scientific model in the pursuit of knowledge, meaning that reality can be observed independently of the researcher's opinions, personal values and position in society. For qualitative researchers, more interested in how social actors construct meaning, the pursuit of knowledge is to be achieved through an *interpretivist* epistemological model, which recognises that social reality is constituted of the meanings which social actors ascribe to it, and researchers should thus attempt to understand that meaning from the point of view of the social actors in question (Teddlie & Tashakkori 2009). Finally, in relation to the orientation of theory to practice research, quantitative research is most closely associated with a deductive model where existing theories and hypotheses are tested. Qualitative research is more commonly associated with an inductive model where theories are generated from research findings, or with the hypothetico-deductive model where theories provide predictions for behaviour, which are then tested through research, thus providing a basis on which to either confirm the theory or adapt it to accommodate the research findings (Schwandt, 1997, in Teddlie & Tashakkori 2009, 67).

It should be said that quantitative researchers perhaps obsess less about these strict assumptions than qualitative researchers, who have often ascribed such assumptions *onto* quantitative research on their behalf. Brannen writes that "qualitative researchers have spent more time defining quantitative methods than quantitative researchers have themselves" (2005, 7). It is

important to stress that these dichotomies between the quantitative and qualitative paradigms are not as discreet and simple as it may appear, and in reality quantitative researchers will often use at least some elements of qualitative approaches, and vice versa. The next section will suggest that, in practice, mixed methods (using both quantitative and qualitative methods) are used quite often; and to overstate their incompatibility might suggest, wrongly, that much contemporary social research is of little practical worth, and might also overlook the fact that at a theoretical level there is much that both quantitative and qualitative approaches have in common.

### 3.2.4 **Mixed methods research and the paradigm of pragmatism**

Howe (1988), along with other advocates of mixed methods (e.g. Brannen 2005; Teddlie & Tashakkori 2009; Johnson & Onwuegbuzie 2004; Sechrest & Sidani 1995), suggest that we consider a third paradigm, one of pragmatism, to accompany the more well-established quantitative and qualitative paradigms. Howe responds to a key concern of advocates of the 'incompatibility thesis' who suggest that the mixed methods approach ignores the fact that quantitative and qualitative approaches have fundamentally inconsistent epistemological and ontological assumptions accompanying them, and that pragmatism is thus accused of "holding truth hostage to 'what works' and of therefore being committed to relativism and irrationalism" (Howe 1988, 10). In response, other theorists of research methodology see that all social science research has some basic commonalities which might assuage such worries. Four pertinent points can be made here. Firstly Johnson & Onwuegbuzie (2004) argue that, at the most basic level, "both quantitative and qualitative researchers use empirical observations to address research questions" (ibid., 15). Secondly, Sechrest and Sidani (1995, 78) note that both methodologies "describe their data, construct explanatory arguments from their data, and speculate about why the outcomes they observed happened as they did". Johnson and Onwuegbuzie also contend that all social science researchers attempt to reduce bias, and increase internal and external validity in their work, regardless of their supposed paradigmatic allegiance. Lastly, Brannen (2005) notes that while there is ostensibly a division between quantitative research's concern with *behaviours*, and qualitative research's concern with *meanings*, these two things can overlap to a great extent when it comes to data collection. "A quantitative researcher may be more concerned with the actions and behaviour of informants while they may also have an interest in informants' meanings, framed in terms of attitudes. Moreover a focus on meaning within quantitative research is often inescapable since researchers typically study people's behaviour via self-reports of behaviour" (ibid., 8).

As Brannen (2005) notes, a research project and the methodologies chosen for it is often informed, consciously or not, by one of the "Three P's": Paradigms, Pragmatism, and/or Politics.

Research driven by a particular paradigm will reflect and adhere to the researcher's ontological and epistemological perspectives, therefore prescribing and proscribing particular methods from the outset. Research driven by pragmatics will place the *research question* at the heart of the decision over methods, as well as issues of practicality, feasibility and flexibility (especially the ability to change and adapt research questions during the project). Research driven by 'Politics' refers here to research which is intentionally aimed at making certain marginalised voices heard, for example in much qualitative feminist research.

The pragmatic approach is the one most closely adhered to in this project. While it is important to be mindful of philosophical (i.e. ontological and epistemological) issues which underlie particular research methods, I contend that in order to give a holistic and convincing response to the research questions in this project, the combination of a quantitative method (RCTs) and a qualitative method (focus groups) is an appropriate strategy to arrive at some plausible and valid responses to my research questions.

In this section I have attempted to show how quantitative and qualitative methods can be combined by the use of a pragmatic rather than a strictly philosophical level. The following section will illustrate how the methods employed in this project answer the specific research questions of the project, how the application of an iterative approach was helpful, and the benefits of my specific mix of methods, RCTs and focus groups.

## 3.3 The use of an iterative research design

If we look again at the research questions for this project, it may become apparent why the particular research methods were selected.

1. *What are the potential and limitations of nudging in encouraging carbon offsetting for flying?*

This question was operationalised through the first RCT, to look at whether (a) any nudge could influence participants' offset interest and behaviour (the dependent variables), and (b) if so, which nudge(s) was most effective. As can be seen in the results of RCT1, the results showed that none of the nudges created a significant impact on the dependent variables. This logically implied a second question:

> *2. If limitations exist for nudging for carbon offsetting, what could possible reasons be, including the design of nudges, and substantive problems with the application of nudges for carbon offsetting?*

This question could be addressed by the focus groups, and then by a second RCT, which integrated the findings of the focus groups with 'improved' nudges and followed a similar format to RCT1, in order to make meaningful comparisons and detect if there was any difference in the effect of any of the nudges on the dependent variables. If the nudges were successful in RCT2, then one might be able to conclude limitations exist for nudging for carbon offsetting and *are* due to technical issues (which can be overcome). If they nudges still remained unsuccessful, then one might be able to conclude that, alternatively, there are deeper normative problems with the policy paradigms of nudge and/or carbon offsetting.

In a way, this project follows the 'grounded theory' model of inductive qualitative research, associated primarily with Glaser and Strauss (1967), where, rather than simply testing theories by collecting empirical data, the data itself can lead to new theories being formulated and, if necessary, re-tested. It is therefore an iterative and flexible process, and has served this project well. The process is outlined in figure 3.

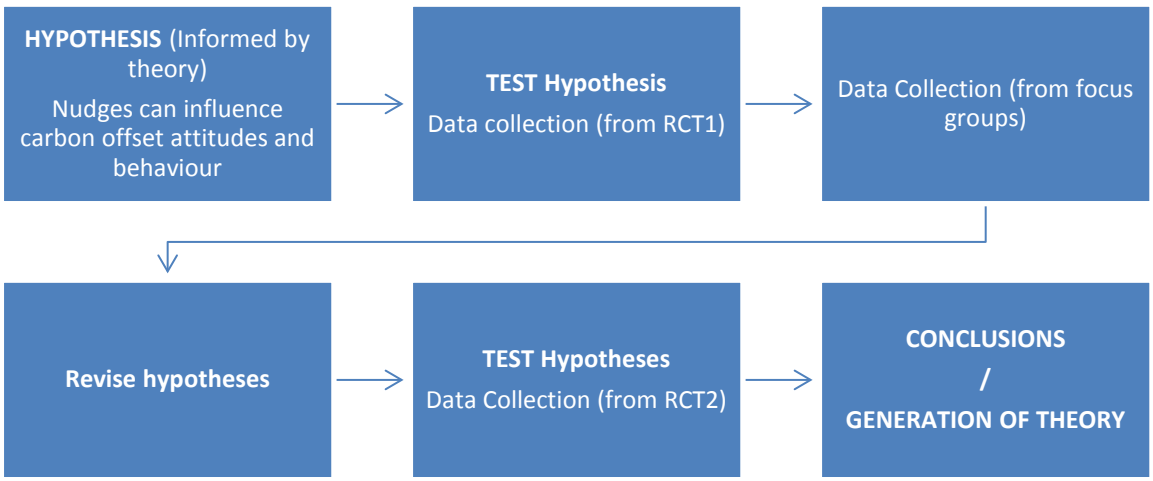



*Figure 3: Flow-chart showing iterative design of research process*

In the use of mixed methods, there is obviously a wide variety of different combinations of qualitative and quantitative methods that can be used, as well as options as to whether the methods are used simultaneously or sequentially, and the selection of one 'dominant' method. Morse (2010) has created the following typology in Figure 3.2. Capital letters denote the dominant method, '+' symbols denote a simultaneous use of methods whilst '→' denotes the sequential use of methods

## 3.4 Typology of potential mixed method designs

| *Different paradigms* | *Same paradigm* |
|---|---|
| 1. QUAL + qual | 5. QUAL + qual |
| 2. QUAL → quan | 6. QUAL → qual |
| 3. QUAN + qual | 7. QUAN + quan |
| 4. QUAN → qual | 8. QUAN → quan |

(Morse 2010, 341)

This project follows combination 4, where the dominant method (the RCT) is quantitative and is followed with a qualitative method (focus groups), although it would be more accurate to describe it as QUAN → qual → QUAN, as the RCT was repeated. Brannen (2005, 14), in a review of different mixed methods research designs, notes that the combination of qualitative research following statistical enquiry is perhaps one of the least utilised combinations. It might well be more common for researchers to do the reverse, for example using focus groups or interviews to pilot-test surveys or questionnaires.

It may be that one novelty of this project – and potentially a strength – is the combination of focus groups with RCTs. In my case, one reason for this was the practical constraint of having access to a large enough sample to create statistical power for the RCT. Given repeated access to large enough populations, it is conceivable that I could have simply tried and tested a variety of different nudges, continually tweaking and adapting them, attempting to exhaust all reasonable combinations and possibilities, until successful nudges were either identified or nudges could be conclusively dismissed as ineffective. For large research institutions, governments and companies trialling marketing campaigns (with a large enough customer base), this approach might be feasible. For example, the BIT ran one trial to encourage organ donation over five weeks, during which time over one million people saw one of the eight nudge variants being trialled (over 135,000 people for each) (Behavioural Insights Team 2014b). In my project, such scale is impossible. I considered it fortunate that I was given access to email all the students at Southampton University on two occasions to invite them to take part in my research, giving me access to a 'population' of around 20,000 each time. My focus group data was carefully analysed to ensure that lessons were learnt and integrated into RCT2, and to maximise the access I had been given to try and make the trial as effective and exhaustive of the possibilities of nudging

participants towards carbon offsetting as possible, as I would not get another chance to adapt the trial and run it again. Being able to 'test, learn and adapt' in the words of the BIT is no doubt a worthy aspiration, but in practical terms there is often a limit to how many RCTs any researcher or group of researchers can realistically conduct (Haynes et al. 2012).

The next section will discuss why RCTs were combined with focus groups in my project. Following that there will be an examination of some of the broader critiques of the use of RCTs in the social sciences, on both practical and philosophical grounds. The section will conclude by justifying the use of mixed methods and triangulation as a way to 'offset' the weaknesses of one method by incorporating another.

## 3.5 The weaknesses of RCTs and the benefits of triangulation

Focus groups were employed in this project to add explanatory power to the findings from the RCT. Whilst RCTs in the social science may indicate a *cause* of certain behaviour; they do not illustrate *the reasons why* respondents behave in a particular fashion. Hence it was useful to use focus groups as a follow-up method intended to shed further light on the RCT. Focus groups are used to ask a group of people about their perceptions, opinions, beliefs and attitudes (POBA) about particular subjects or ideas (Henderson 2009, 28). In this case, the particular subjects being explored were specifically the three nudges I had trialled in the RCT, as well as broader 'ideas' about carbon offsetting, and the relationship between air travel behaviours and environmental governance.

The results from the RCT produced unexpected but quite conclusive results. If they had been different then the next stage of data collection could well have been different. As it happened, the RCT results begged the question 'why' which only qualitative data could answer. Simply repeating another phase of quantitative study would not have been able to explain this large discrepancy between hypothesis and actual results. In particular, it was not clear, from the RCT findings, whether it was technical issues or deeper structural issues which produced this discrepancy. Focus groups were selected as a method for examining the underlying reasons for the RCT findings for several reasons. Focus groups can quickly generate talk-data which shows not only the 'horizontal positioning' between participants by generating conversations between them, but also 'vertical positioning' by the facilitator shifting and framing the conversation around specific topics and questions (Barnett et al. 2010, 121-122). This was very useful for this research topic, as it involves concepts such as carbon offsetting which require some introduction and explanation from the facilitator before participants can give their reactions and opinions to it. This 'two-way' process was valuable, and also allowed me, as facilitator, to display visual and textual

vignettes to participants (explain carbon offsetting, and also show examples of the nudges used in the RCT) to provoke their in-group evaluation and deliberation (Bryman 2008). The focus group data thus helped illuminate the RCT data, generating novel new findings, discussion points, and directions for future research. Indeed, the focus group feedback paved the way for a second RCT which was an attempt to integrate the findings from the focus groups and test 'new and improved' nudges, in order to ascertain whether the 'failure' of the first RCT was merely an issue of poor design, or whether there was something more substantive at play in regard to the suitability of nudging people towards carbon offsetting for flights.

The use of RCTs in social sciences is not uncontroversial. Here I identify five issues with the use of RCTs, both from existing literature, and my own experiences. They can be summarised as follows: (1) the fact that caution should be taken in the assumption that RCTs can necessarily and always produce generalizable findings with external validity, (2) the problem that to make RCTs truly randomised and truly controlled, one may sacrifice relevance for rigour; (3) the design of interventions in RCTs may benefit from the involvement of the participants, but there is usually no mechanism to do this; (4) RCTs can show statistical relationships between variables clearly, but do not offer *explanations* for this relationships; and (5) the challenge of testing many interventions while maintaining statistical power.

While RCTs can produce results which are intuitively easy to understand and may be persuasive, caution should be exercised in making generalizable inferences from them. In epistemological terms, RCTs can be criticised as being too wedded to a positivistic scientific model of research which treats the social world as analogous to the physical world. This can be a problem because, unlike the physical world, the social behaviour of *people* can often be highly circumstantial (e.g. varying due to historical or cultural factors) and contextual (e.g. varying in different places and/or at different times), and might not be replicated in different circumstances or contexts. John et al. in their book 'Nudge, nudge, think, think' (2011), which trials the use of nudge-style interventions in a range of contexts, recognise this weakness. Findings gained from RCTs might not always be generalizable, so they argue for a "localized and experimental political culture and practice" (John et al. 2011, 163), rather than rolling out permanent and widespread policies on the basis of experimental findings. In addition, there is certainly a need to be sensitive to internal variation among a particular population. Sunstein argues that researchers using RCTs to test behavioural interventions may need to disaggregate results and recognise that different segments of a research sample may act differently to each other, and to the overall sample (Sunstein 2016a). So as to avoid the misapplication of behavioural policies on a one-size-fits-all basis, when conducting RCTs it can be advisable to try and capture descriptive demographic information about one's sample in order to discern which segments might be amenable to a nudge, and which ones might

not. Using survey-embedded experiments can help researchers to address this potential problem, by identifying segments of their population for whom an intervention might be most appropriate and effective. Embedding an RCT in a survey was used for this purpose in this project, as well as in previous similar studies (Löfgren et al. 2012; Araña & León 2013).

A second criticism focuses on the technical challenges presented by RCTs. Cartwright (2007) notes that constructing of RCTs, so that valid and meaningful comparisons can be made between different intervention groups, can be very difficult. In satisfying the demands of an RCT, one can produce results which are conclusive, but with a focus so narrow that it might not always be useful, a problem Will (2007) calls placing 'rigour above relevance' (see Wahlberg & McGoey 2007 for a review of the debate over this method).

A third issue with RCTs is that they are constructed by the researcher(s) in a rather contrived way, and do not usually involve the participants' involvement in the construction of the interventions. Although they are (or should be) constructed on the basis of theory, prior research and/or substantial pilot testing, they remain 'top-down' interventions, and they may not be as effective as they could be were the recipients or 'users' of the interventions involved in their construction. There is little opportunity for participants to feed back on their experiences of an RCT which means that opportunities to fine-tune or improve the effectiveness of interventions may be missed or overlooked. A fourth and related issue is that RCTs might show causal relationships (or a lack of casual relationships) but do not give any indication of *why* those relationships might be.

A fifth practical issue with RCTs for nudges concerns the small quantitative effects that nudges can have, which can create challenges in terms of gaining a large enough sample to have statistical power. As John et al. write, nudge interventions "tend to have weak effects, which is not particularly surprising because these interventions are light-touch in character" (John et al. 2011, 159). Therefore there is a trade-off at play when one constructs an RCT. Whilst there is a temptation to have many intervention groups – in order to test many different nudges – each intervention group needs to be of sufficient size to produce results that will (potentially) have statistical significance. In my project this was an issue. The sample I obtained (around 1600 participants, from a total student population of around 24,000) was divided automatically and randomly into four intervention groups, giving each group around 400 members. None of the nudges had any statistical effect. In designing RCT2 there was a decision to be made about whether to continue with four intervention groups (therefore testing more interventions), or to limit the groups to three in order to make each group larger and thereby making the conditions where a significant result was more likely. As response rates for the RCT cannot be predicted with

any certainty, this is a difficult decision to make, and one which illustrates the practical problems of creating enough statistical power in the design of an RCT.

Here I have presented five issues or challenges which the use of RCTs presents. I contend that the use of mixed methods can help to compensate for these shortcomings in my project. Bryman (2006) offers a detailed fifteen-point list of potential rationales for combining methods, some of which can be applied to this project to address the five issues highlighted here with RCTs. Taken together they can provide a rationale for the use of a mixed method strategy in general, and in my project specifically.

On the first issue, if we accept the fact RCTs cannot necessarily and always produce generalizable findings with external validity, then in this project we might (only) accept that the findings can have relevance for the population sampled *in this study* (young flyers who attend university) or other people with similar attributes and experiences. If we want to understand *this* segment of society in relation to carbon offsetting, questions over environmental responsibility, and nudging, then focus groups can offer a sense of what Bryman terms "completeness" which "refers to the notion that the researcher can bring together a more comprehensive account of the area of enquiry in which he or she is interested if both quantitative and qualitative research are employed" (Bryman 2006, 106). By combining RCTs and focus groups, this project produces findings which illustrate not only *behaviour* but also *meaning* and *process* in relation to carbon offsetting, questions over environmental responsibility, and nudging. The project's findings may not be generalizable to wider society in the UK (let alone the rest of the world), but they can provide a richer, more complete sense of the situation among this small but not insignificant segment of it.

On the second issue – that to make RCTs truly randomised and truly controlled, one may sacrifice relevance for rigour, the use of focus groups can partially 'offset' this issue. Bryman (2006) refers to "offset" in this context as "the suggestion that the research methods associated with both quantitative and qualitative research have their own strengths and weaknesses so that combining them allows the researcher to offset their weaknesses to draw on the strengths of both" (ibid., 106). RCTs will always suffer from the problem that, in making them truly randomised and controlled in their construction, they will not fully reflect the full range of substantive issues, problems, challenges and opportunities in a given area of social behaviour. However, this weakness can be, to an extent, offset by the provision of richer textual data provided by focus groups (or, for that matter, another qualitative method).

On the third issue discussed here, that while the design of interventions in RCTs may benefit from input by the participants, there is usually no mechanism to do so, we can invoke the suggestion

that Bryman makes that mixed methods can offer a "diversity of views". Bryman (2006) suggests this can have two dimensions, the first is a "combining [of] researchers' and participants' perspectives through quantitative and qualitative research" (ibid., 106). The focus groups as the middle stage of this research project allowed the perspectives of the participants to be heard, which directly contributed to the design of the second RCT. Participants raised objections and problems with the nudge interventions which could easily have been overlooked otherwise.

On the fourth point, that RCTs can show causal relationships between variables clearly, but do not offer *explanations* for these relationships, the use of focus groups helped in two ways. Bryman's rationales of "illustration" and the second meaning of "diversity of views" are both relevant here. "Illustration" refers to the use of qualitative data to illustrate quantitative findings, often referred to as putting 'meat on the bones' of 'dry' quantitative findings. Also, 'diversity of views' can refer to "uncovering relationships between variables through quantitative research, while also revealing meanings among research participants through qualitative research" (2006, 106).

The fifth issue relating to RCTs, the challenge of testing many interventions while maintaining statistical power, cannot be alleviated by simply including another method. It is simply a fact of life and an issue of judgement which one has to contend with when using experimental methods. However, the insights gained from the focus groups (combined with the findings from RCT1) did provide some helpful evidence for how to make my decision on about how many intervention groups to have in RCT2, rather than having to simply make a blind choice.

Despite the evident advantages of mixed methods research given here, challenges still remain. Triangulation is supposed to mean that different methods and findings can 'corroborate' one other (Brannen 2005; Bryman 2009; Mason 2006), but what happens if different methods *contradict* one another, or at least, present inconsistencies? One particular example is illustrative of this conundrum. In the RCT the 'third party endorsement' nudge was the least effective, yet in the focus group the discussion of this nudge was divided, ambivalent and inconclusive, with some participants liking it and others not. It is here that the judgement of the researcher may come into play. Bryman quotes the research of Newby (1977, 127) who combined surveys and participant observation in his research into UK farm workers. When the findings of the two methods were inconsistent, he "instinctively trusted the latter" due to the richness of the qualitative data and his proximity to the research subjects. Yet Bryman questions whether "simply and arbitrarily favouring one set of findings over another is … an ideal approach to reconciling conflicting findings deriving from a triangulation exercise" (Bryman 2008, 611). In my study, this judgement was less problematic than Newby's, as the RCT was conclusive regarding the weakness of the third party endorsement nudge, and the focus groups were, at best, simply divided on it.

Moreover, in times of completely contradictory results, disregarding quantitative findings in favour of qualitative data is perhaps more problematic and harder to defend, than vice versa.

In this section I have attempted to show how quantitative and qualitative methods can be combined by the use of a pragmatic rather than a strictly philosophical level, and the benefits of my specific mix of methods, RCTs and focus groups. I have also shown how my choice of methods can overcome some of the weaknesses related to the use of RCTs, whilst conceding that some problems with RCTs persist, and that there are challenges with triangulation when research findings from different methods do not neatly corroborate each other. Finally, the chapter will conclude with a note on the selection of the research population and the sample used in the study, as well as a short section on ethical issues.

## 3.6 Sample rationale

The samples for both the RCT and the focus groups were taken from the student population at the University of Southampton. The rationale for using this sample was that students fit many aspects of the profile of people most likely to offset, as provided in the literature review. People who purchase offsets are likely to be under 35, educated to university degree, travel alone, go on backpacking holidays, and have high levels of environmental concern (McLennan et al. 2014; Hooper et al. 2008; MacKerron et al. 2009). It can be argued that the student population may plausibly fit many of these characteristics. The rationale for using this population was that if nudges are going to be effective at all, they are mostly likely to have an effect on those people most sympathetic to the notion of carbon offsetting in the first place. If those people cannot be nudged towards offsetting, then, it might be argued, no-one can.

For the first RCT, emails were sent from all faculties at the university in co-ordination with the academic registry inviting them to take part in my research. Of 24,040 students at the University of Southampton registered during the 2013/14 academic year, 1626 students responded to the email and took part in the survey and RCT, representing a 6.73% response rate.

For the focus groups, participant groups were stratified in terms of field of study, international/domestic student status, and undergraduate/postgraduate cohorts, giving six different focus groups. The groups were stratified for two reasons. Firstly, to attempt to achieve greater homogeneity among participants in terms of their background, which can encourage participants to feel more relaxed and express themselves openly and honestly, ultimately producing data of greater quality (Corfman 1995). Secondly, it was thought that different backgrounds for each focus group might produce different data, because certain demographic characteristics have been shown to be related to levels of environmental concern and knowledge

of carbon offsetting. For example, previous studies into levels of environmental concern and environmental knowledge (Ewert & Baker 2001; Kaplowitz & Levine 2005; Müderrisoglu & Altanlar 2010; Tikka et al. 2000) supported the general hypothesis that students of Geography would exhibit high levels of environmental concern and environmental knowledge, whilst students of business and management would exhibit low levels of environmental concern and environmental knowledge, and that this might produce different data from the focus groups. Previous research into carbon offsetting has shown that nationality influences awareness of carbon offsetting, WTP levels, and likelihood to offset (Brouwer et al. 2008; McLennan et al. 2014; Lu & Shon 2012). In particular, Brouwer et al. (2008) found Europeans to have higher awareness of carbon offsetting than Americans, who in turn have greater awareness than Asians. While it was not possible to stratify focus groups in terms of region or country, it was possible to stratify them in terms of whether they were domestic students (i.e. holding a UK passport) or international students. Again, it was thought that, based on this prior research on carbon offsetting awareness levels across different countries, that using this stratification might produce different data between different focus groups, thereby allowing a full range of possible 'stories' to be produced until a descriptive 'saturation point' was reached. The final stratification, separating undergraduates from postgraduates, was an attempt to increase homogeneity in terms of age and social background. Previous research found no consistent pattern with regard to gender and carbon offsetting awareness/WTP, so the focus groups were roughly split evenly along gender lines. Taken together, these stratifications were intended to enable comparative analysis, to examine possible explanatory factors in more depth, informed by previous research which indicated that there might well be differences in the data produced. The six focus groups, comprising 51 participants in total, were thus made up as follows:

*Table 3: Focus group Participant characteristics*

| | |
|---|---|
| 10 Geography Domestic Undergraduates<br>(5 male, 5 female) | 8 Geography Domestic Postgraduates<br>(3 male, 5 female) |
| 10 Geography International Postgraduates<br>(5 male, 5 female) | 9 Management International Postgraduates<br>(5 female, 4 male) |
| 8 Management Domestic Undergrads<br>(3 male, 5 female) | 6 Management International Undergrads<br>(3 male, 3 female) |

Prior to these main focus groups, four pilot focus groups were also conducted, with a range of undergrad and postgraduate students from social science and geography departments. These

pilot focus groups helped me improve my schedule of questions, pre-empt time-management problems, and improve my rapport as a facilitator in advance of the main focus group discussions. Pilot focus group discussions were transcribed along with the main focus groups, and some findings from the pilot focus groups are reported in the findings (chapter 5).

## 3.7 Ethical Considerations

### 3.7.1 Ethical considerations for the RCTs

Ethical approval for both the RCT and the focus groups was sought and granted by the University of Southampton, Faculty of Social and Human Sciences' ethics committee. Possible ethical problems were addressed in each respective application, but they warrant brief discussion here. Firstly, in the RCT, it may be considered dishonest and manipulative that participants were automatically allocated to different treatment groups without being aware of it. However, it was recognised by the ethics committee that it was necessary in order for comparisons to be made between the groups, that they not be aware of the fact they were being 'nudged' and their responses tested in an experiment. Being aware of this process might have affected the honesty of their responses. (On this, the charge of nudge being manipulative is one of the fundamental concerns of its critics, as noted in section 2.2.1 of the literature). Secondly, in the RCT, participants were given an opportunity to buy an offset with their own 'real' money, via a portal to the website of a carbon offset company, 'Carbon Footprint', who collaborated with this project. Participants were unaware of this before they started the survey. However, the offset company website made it clear what participants would be paying money for, and there was little or no opportunity for participants to make a payment in error on an uniformed basis.

### 3.7.2 Ethical considerations for the focus groups

In the focus groups, two potential ethical issues arose. Firstly, although participants were informed that the conversations should remain confidential, there is always scope for participants to reveal the content of the conversations once they leave the confines of the focus groups. There is little that can be done about that, beyond my 'briefing' as facilitator that the content of all the conversations should remain confidential. In any case, the subject material being discussed was not highly sensitive or intrusive and the scope for embarrassment or the revealing of highly personal information was limited. In terms of my role as data collector, I also have a responsibility to keep participants' information anonymous. To this end, all names were changed at the earliest possible stage of transcription, and care has been taken to ensure that, when quotes are used in

this and other documents arising from this project, any identifying information (names of other people they mention, or places such as hometowns) are changed or omitted.

# Chapter 4: Stage One – Randomised Controlled Trial 1

## 4.1 Detailed Method

The first stage of the project was a randomised controlled trial (RCT), which was embedded in a short survey about air travel behaviour. This survey/RCT was conducted online using a sample of students at Southampton University. In May 2014 and with help from the university academic registrar, an email was sent to all 24,040 students at the University of Southampton registered during the 2013/14 academic year. 1626 students responded to the email and took part in the RCT, representing a 6.73% response rate. As an incentive to respond, respondents were entered into a prize draw for a £50 STA Travel voucher, donated by Southampton's STA Travel shop.

Upon receiving the email invitation to take part, respondents were asked to click a link which took them to a webpage hosted by Southampton University's iSurvey platform. After giving their consent to take part, they were taken to a survey page, which was the same for all respondents. The questions asked were as follows:

1. **How many flights have you taken in the last 12 months?**
   (Please count a return flight as two flights)

2. **How do you usually book flights?**
   - Online directly from an airline
   - Online through a travel agent
   - At a shop from a travel agent
   - On the phone from a travel agent
   - On the phone directly from an airline
   - Other

3. **What was the main purpose of your last flight?**
   - Leisure/holiday
   - To see friends or family
   - For business/study-related reasons
   - Other

4. **Where was your most recent flight to?**
   - Somewhere within the UK
   - Somewhere outside the UK, but within the EU
   - Outside the EU

5. **To what extent are you concerned about climate change?** (On a scale of 1-5 where 1 means "Not at all concerned" and 5 means "Extremely concerned")

The main intention of the survey was to recruit? participants to the nudge intervention, the main focus of this stage. However, the survey questions were designed to capture variables (flight frequency, purpose of flight, length of flight, and climate change concern, in particular) which had been shown in previous studies to have some kind of correlation with offsetting behaviour (see section 2.3.5.4). Therefore these questions were used to detect any possible relationships between offset behaviour/interest and these variables. Having answered the five survey questions, participants were randomly taken to one of four webpages, which corresponded to the three treatment groups and control group for the RCT element of the trial. Participants were not aware that they had been allocated to different treatment groups, and randomisation was achieved through a function of the iSurvey platform.

Whilst the survey responses were collected so that any potential correlations with the outcome variables could also be observed, the primary aim was to test three different 'nudges' to see if they had any effect on two outcomes variables: (1) respondents 'interest' in offsetting the carbon from the last flight they took (*attitudes* to carbon offsetting); and (2), respondents' likelihood to purchase an offset for the carbon from the last flight they took (carbon offset *behaviour).* Outcome variable (1) was measured by the number of respondents who, below their 'nudge', answered 'yes' to the following question:

**"Do you want to calculate the carbon generated from the last flight you took, with the option to offset it?"**

If respondents clicked 'yes' a new browser window opened which took them to a carbon calculator provided by partner company Carbon Footprint where respondents could enter details (origin destination location) of their last flight, and were given a carbon amount for that flight and a price to offset it. They then had the option to go to a payment page and purchase a real offset for that flight.

Outcome variable (2) was measured by collecting data from Carbon Footprint on which respondents had actually *paid* for an offset. This was done by comparing IP addresses from Carbon Footprint's payment records with IP addresses collected by my online survey client 'iSurvey'.

Figure 4 shows a screenshot of the nudge page – in this case for the social norm nudge. Figure 5 shows the same page if the participant clicked 'yes' to the question "Do you want to calculate the

carbon generated from the last flight you took, with the option to offset it?" and Figure 6 shows the carbon calculator page which participants were directed to.

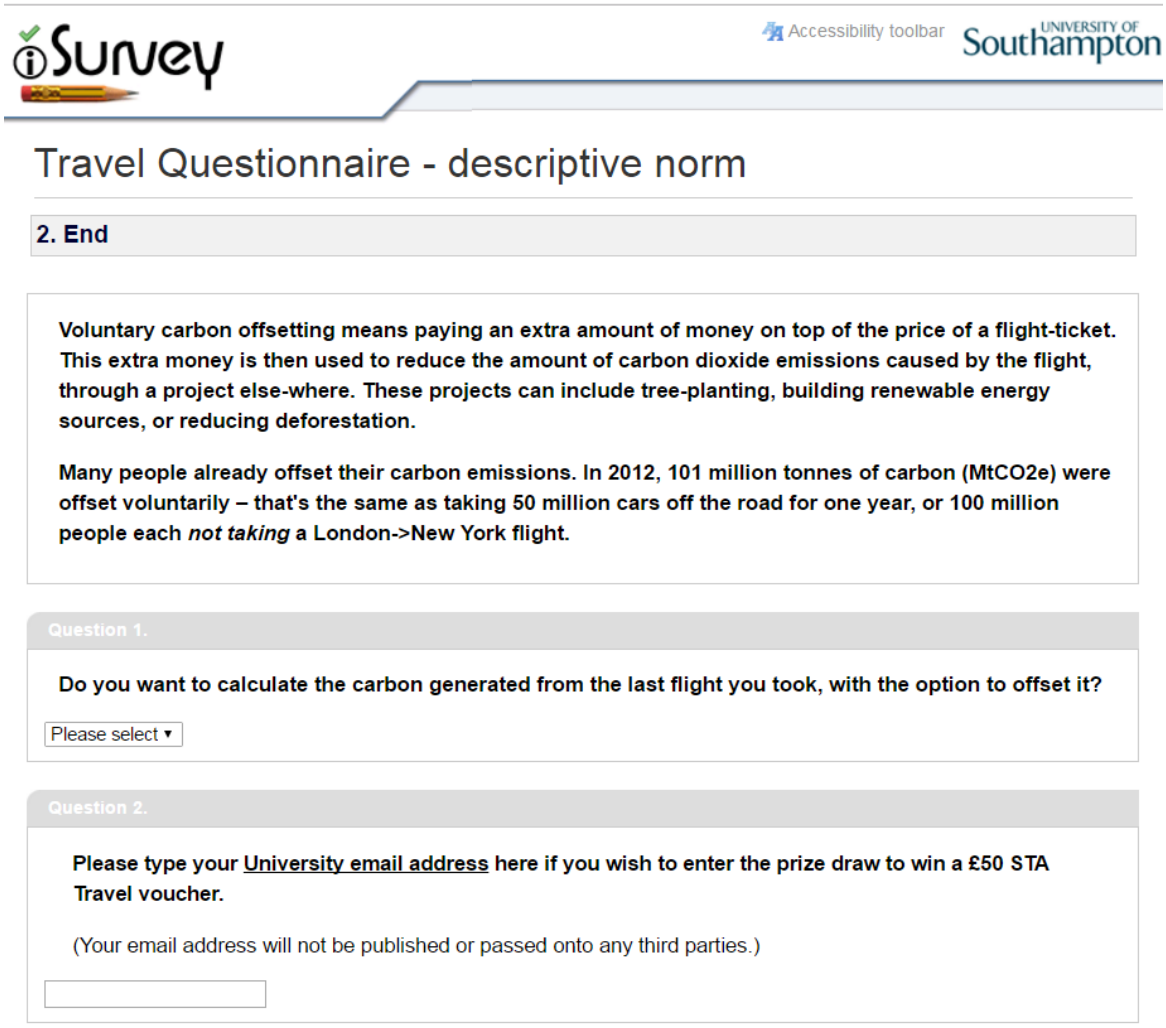



*Figure 4: Screenshot of social norm nudge end of survey with 'offset interest' question*

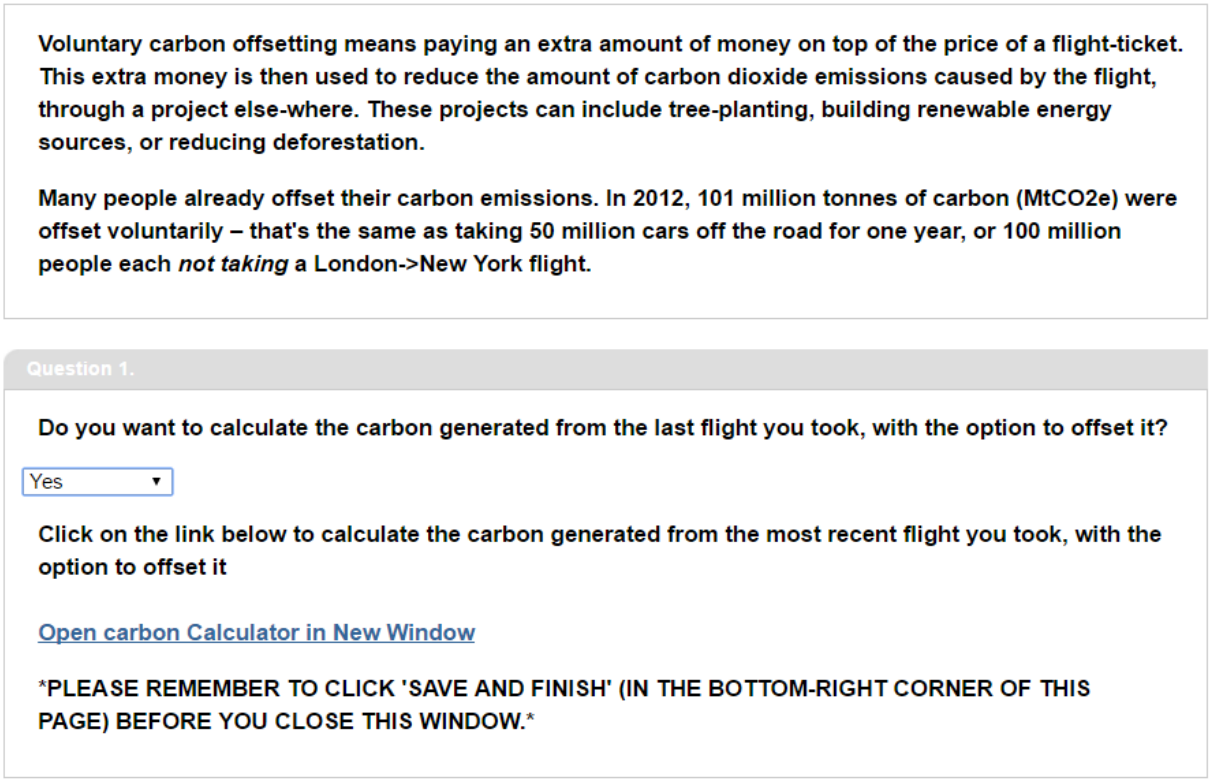



*Figure 5: Screenshot of social norm nudge once participant had answered 'yes' to the 'offset interest' question*

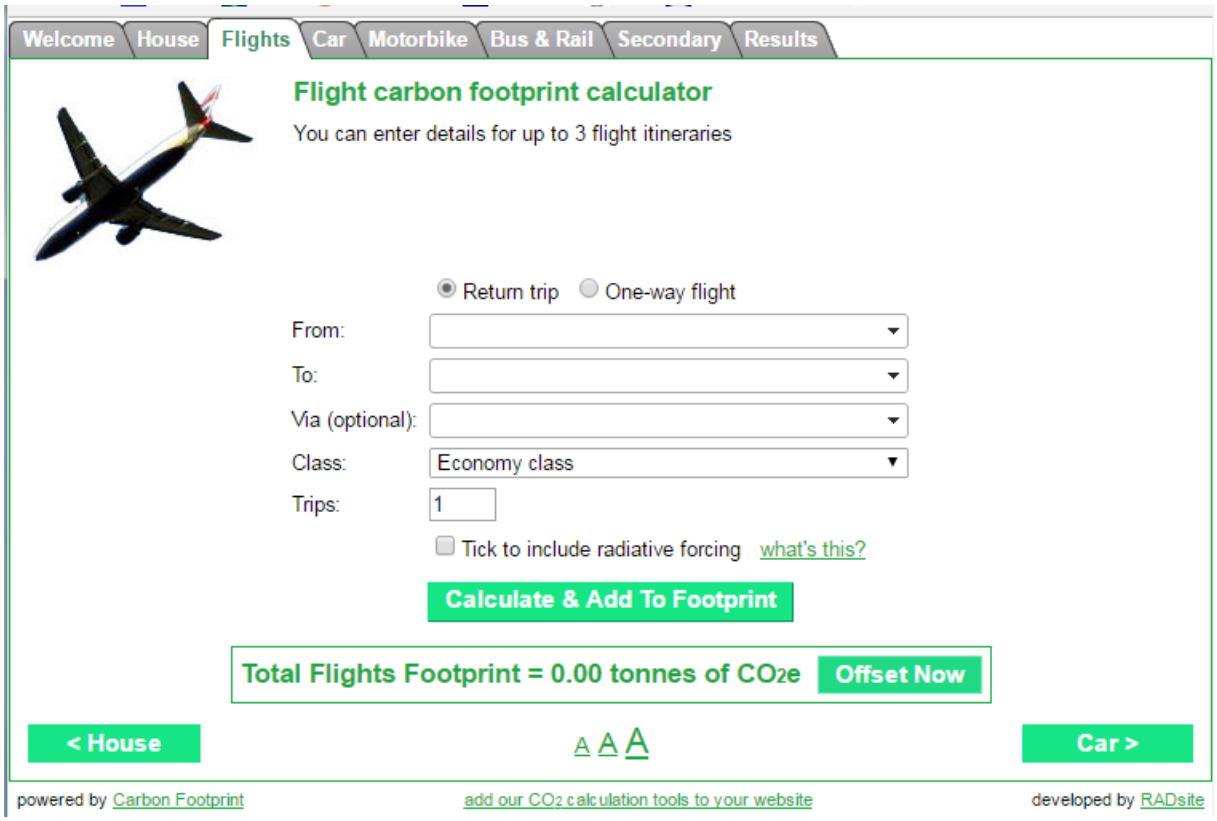



*Figure 6: Screenshot of carbon calculator participants were directed to if they clicked 'yes' to 'offset interest' question*

### 4.1.1 Content of nudges

Three nudge interventions were selected for this trial. These were (1) a (descriptive) social norm nudge; (2) a third party endorsement; and (3) an affective message. A fourth non-intervention 'control' group was also included that were not exposed to a nudge. Previous instances of the use of these types of nudges are explained in section 2.1.8. This section will outline how I adapted these types of nudges for the purposes of encouraging carbon offsetting.

In this study, the descriptive norm that was used was one which suggested that carbon offsetting was already a tool which other people used. Communicating the fact that, as a proportion, very few airline passengers offset their flights would have been counterproductive, so the 'raw' numbers on the amount of carbon saved through offsets was communicated instead. This was to avoid what is called "Cialdini's Big Mistake" where the recipient of an intervention is informed that the target behaviour is actually a minority behaviour, and the 'problem' behaviour is actually what most people do (Cialdini 2007). The following figures were obtained from the most recently available edition of the annual 'State of the Voluntary Carbon Markets' report compiled by the NGO Forest Trends (Peters-Stanley & Hamilton 2013). The message was as follows:

> **"Many people already offset their carbon emissions. In 2012, 101 million tonnes of carbon ($MtCO_2e$) were offset voluntarily – that's the same as taking 50 million cars off the road for one year, or 100 million people each *not taking* a London->New York flight".**

The second nudge which was chosen was a *Third Party Endorsement* message. It was felt that as carbon offsetting is relatively unknown and potential offsetters may be wary about where their offset payments might actually go, it might be appropriate to use third party endorsement to allay fears over its credibility. Third party organisations which either use offsets themselves (mostly applicable to large companies) or which endorse carbon offsetting as a potential instrument for pro-environmental action (in this case, a government department and some high-profile NGOs) were identified and used for this purpose. The message was as follows:

> **"Many organisations, NGOs, charities, companies and government departments endorse carbon offsetting and use it themselves, including:**
>
> **Friends of The Earth, Greenpeace, the Worldwide Fund for Nature (WWF), the UK Department for Energy and Climate Change (DECC), Microsoft, Marks and Spencer, Aviva, Jamie Oliver Ltd, and the Co-operative Group, to name a few".**

The third and final nudge was an *affective message,* the rationale being that we are receptive to words and images which provoke an emotional response. Carbon offsetting might be viewed as a rather abstract concept with little apparent connection to people's lived experiences. In this

sense, the scope for creating an affective message appears limited. For this nudge, the participants' attention was directed towards particular projects which are funded through carbon offsets – the production of cook stoves in the developing world. These projects produce both environmental benefits in reducing deforestation, and also social benefits to those who use the cookstoves as a cleaner and safer alternative to cooking on open fires. Two pictures (in figure 7) were also included in this nudge, as previous studies in marketing generally, and in attracting charitable donations specifically, have found the use of pictures to be effective (Haynes et al. 2012; Behavioural Insights Team 2013a).

The text read as follows:

> **"Voluntary carbon offsetting means paying an extra amount of money on top of the price of a flight-ticket. This extra money is then used to reduce the amount of carbon dioxide emissions caused by the flight, through a project else-where. These projects can include tree-planting, building renewable energy sources, or reducing deforestation.**
>
> **One type of project funded through carbon offsets is introducing more efficient cookstoves to families in the developing world, instead of using traditional cookstoves or open fires like the picture on the left.**
>
> **These projects have introduced efficient cookstoves to families in in many developing countries such as India, Honduras and Ghana. Simple modern cookstoves, like the one in the picture on the right, cook food more quickly and are insulated, requiring 50-60% less fuel and releasing much less smoke.**
>
> **So as well as cutting carbon emissions by reducing the need for firewood, this kind of project also improves health by reducing exposure to toxic smoke and fumes - a serious problem for the health of millions of women and children".**

*Figure 7: Pictures used in affective nudge*

## 4.2 Findings

**Randomisation test: Relationship between Climate Change concern and Intervention Group**

To ensure that the randomization process was successful in terms of each intervention group having a roughly 'equal' spread of participants with different levels of concern about climate change, as this was shown to be a significant predictor of interest in carbon offsetting, a $chi^2$ test was used on a crosstabulation of 'intervention group' and 'climate change concern', with the following results (Table 3). As $p>0.05$, there is no relationship between intervention group and climate change concern. We can therefore be assured that, in this sense at least, the randomisation process was successful.

*Table 3: Chi-square test for randomisation of intervention groups*

**Chi-Square Tests**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 7.320[a] | 12 | .836 |
| Likelihood Ratio | 7.344 | 12 | .834 |
| Linear-by-Linear Association | .056 | 1 | .813 |
| N of Valid Cases | 1626 | | |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.93.

### 4.2.1 Offsetting interest

Table 4 shows that the allocation to treatment groups was roughly even. In terms of offsetting interest which was measured by the number of respondents who the number of respondents clicked 'yes' to the question *"Do you want to calculate the carbon generated from the last flight you took, with the option to offset it?"* the results in Table 5 show that, in total, 51.9% expressed interest in offsetting and used the carbon calculator. However, none of the nudges had any statistically significant effect on this outcome variable compared with the control group ($p>0.05$) ($chi2=5.918$, $d.f.=3$, $p=0.116$). In this sense, the nudges all 'failed' to have any influence.

*Table 4: Allocation to treatment groups*

| **Treatment Group** | **Frequency** | **Percent** |
|---|---|---|
| Control | 423 | 26.0 |
| Third Party Endorsement | 421 | 25.9 |
| Descriptive Norm | 398 | 24.5 |
| Affective Message | 384 | 23.6 |
| **Total** | 1626 | 100.0 |

*Table 5: Offset Interest by Treatment Group in RCT1*

| | | | Offset Interest | |
|---|---|---|---|---|
| | | | No | Yes |
| Treatment group | Control | Count | 203 | 218 |
| | | % within treatment group | **48.2%** | **51.8%** |
| | Third Party Endorsement | Count | 222 | 199 |
| | | % within treatment group | **52.7%** | **47.3%** |
| | Descriptive Norm | Count | 177 | 217 |
| | | % within treatment group | **44.9%** | **55.1%** |
| | Affective Message | Count | 176 | 207 |
| | | % within treatment group | **46.0%** | **54.0%** |
| Total | | Count | 778 | 841 |
| | | % within treatment group | **48.1%** | **51.9%** |

### 4.2.2 Offsetting behaviour

For the first measure of offsetting *behaviour*, results collected from Carbon Footprint.com showed that none of the interventions were successful in terms of actual offsets purchased. Only 1 out of 1626 respondents paid for an offset! This equates to <0.1% of respondents.

### 4.2.3 Other findings

The survey data was also analysed through binary logistic regression, using SPSS software, to observe whether other factors were correlated to the dependent variable of interest in carbon offsetting. It does appear that the three variables 'number of flights' (taken in the previous 12 months), 'purpose of respondents last flight', and 'concern about climate change' (measured on a Likert scale) are significantly related to 'offsetting interest', and so are kept in my model as can be seen in Table 6.

*Table 6: Logistic regression on 'carbon offsetting interest'*

| | Sig. | Exp(B) |
|---|---|---|
| Number of flights | .000 | 1.066*** |
| Climate change concern – 1 (not concerned) | .000 | |
| Climate change concern – 2 | .218 | 1.543 |
| Climate change concern – 3 | .090 | 1.747 |
| Climate change concern – 4 | .000 | 3.713*** |
| Climate change concern – 5 (very concerned) | .000 | 5.528*** |
| Purpose of trip - leisure | .029 | |
| Purpose of trip – visiting friends/family | .011 | 1.407** |
| Purpose of trip – Business/study | .640 | .934 |
| Purpose of trip – other | .512 | 1.285 |
| Constant | .000 | .285 |

#### 4.2.3.1 Number of flights

For every additional flight a respondent took, the odds of being interested in offsetting their last flight would increase by 1.066 ($p<0.001$).

#### 4.2.3.2 Concern about Climate Change

As might be expected, the more concerned respondents were about climate change (on a Likert scale from 1 to 5, where 5 signified 'extremely concerned' and 1 signified 'not at all concerned'), the more likely they were to be interested in offsets (Table 7).

*Table 7: Crosstabulation of climate change concern with offset interest*

| Climate Change concern * offset interest Crosstabulation | | | | | |
|---|---|---|---|---|---|
| | | | Offset interest | | Total |
| | | | No | Yes | |
| Climate Change Concern | 1 | Count | 43 | 16 | 59 |
| | | % within Climate Change concern | 72.9% | **27.1%**** | 100.0% |
| | 2 | Count | 122 | 73 | 195 |
| | | % within Climate Change concern | 62.6% | 37.4% | 100.0% |
| | 3 | Count | 268 | 180 | 448 |
| | | % within Climate Change concern | 59.8% | 40.2% | 100.0% |
| | 4 | Count | 255 | 373 | 628 |
| | | % within Climate Change concern | 40.6% | **59.4%**** | 100.0% |
| | 5 | Count | 90 | 199 | 289 |
| | | % within Climate Change concern | 31.1% | **68.9%**** | 100.0% |
| Total | | Count | 778 | 841 | 1619 |
| | | % within Climate Change concern | 48.1% | 51.9% | 100.0% |

#### 4.2.3.3 Purpose of Trip

The reason why respondents took their last flight was statistically significantly related to their interest in carbon offsetting if they flew for a holiday or to visit family and friends. Travelling for business/study, or other reasons did not seem to be statistically significant (see Table 8), perhaps because these flights were perceived more as being taken out of 'necessity'.

*Table 8: Crosstabulation of purpose of Trip and offset interest*

| | | | Offset interest | | Total |
|---|---|---|---|---|---|
| | | | No | Yes | |
| Purpose of trip | Leisure/holiday | Count | 322 | 314 | 636 |
| | | % within purposeoftrip | 50.6% | 49.4%** | 100.0% |
| | To see friends or family | Count | 175 | 256 | 431 |
| | | % within purposeoftrip | 40.6% | 59.4%* | 100.0% |
| | For business/study-related reasons | Count | 144 | 161 | 305 |
| | | % within purposeoftrip | 47.2% | 52.8% | 100.0% |
| | Other | Count | 15 | 16 | 31 |
| | | % within purposeoftrip | 48.4% | 51.6% | 100.0% |
| Total | | Count | 656 | 747 | 1403 |
| | | % within purposeoftrip | 46.8% | 53.2% | 100.0% |

## 4.3 Summary of Findings from RCT1

The main two results here are that the nudges failed to have any significant influence on respondents' interest in offsetting, and that, across all treatment groups, only one person actually purchased an offset. Interest in offsetting was shown to be positively associated with concern about climate change (i.e. the more concerned they were, the more interested they were in offsetting); the purpose of the last flight being for a holiday, or to visit family and friends; and the number of flights a respondent took (i.e. the more flights they had taken in the previous year, the more likely they were to be interested in offsetting). The failure of the nudges and the large discrepancy between the attitudinal outcomes (many people expressed interest in offsetting) and behavioural outcomes (very few people actually bought an offset) is not explained by these results. Therefore, a series of focus groups were conducted to examine possible reasons for the failure of the nudges, the results of which are shown in the following section.

# Chapter 5: Stage Two – Focus Groups

## 5.1 Detailed Method

Focus groups were held on campus at the University of Southampton. Participants were recruited by my attendance at lectures and seminars within the respective student cohorts, arranged with teaching staff in the business school and in the geography department. Participants were paid £10 each for their time, and the focus groups lasted between 50 minutes and one hour. The rationale for the focus group participant selection, and the way they were recruited, is elaborated in section 3.6, but the characteristics are shown here in Table 9.

*Table 9: Focus Group participant characteristics*

| | |
|---|---|
| 10 Geography Domestic Undergraduates<br>(5 male, 5 female) | 8 Geography Domestic Postgraduates<br>(3 male, 5 female) |
| 10 Geography International Postgraduates<br>(5 male, 5 female) | 9 Management International Postgraduates<br>(5 female, 4 male) |
| 8 Management Domestic Undergrads<br>(3 male, 5 female) | 6 Management International Undergrads<br>(3 male, 3 female) |

The focus groups were conducted to try and discover the following:

(1) Participants' evaluations of the nudges, and their opinions on why the nudges in the RCT had not worked?;

(2) Participants' explanations for the low level offsetting behaviour in RCT;

(3) Participants' views on how they themselves and other air passengers might be 'nudged' or encouraged to buy offsets.

In line with the theoretical framework advocated earlier, participants were encouraged to not only think about instrumental reasons to offset or not (in line with the utilitarian model of behaviour), but also to think about social norms, social practices, and the infrastructural constraints which are involved in air travel decisions. Broader discussion was also invited into wider related issues, which included the ethical and practical merits/problems with carbon offsets; the pricing of offsets vis-a-vis the pricing of flights; the question of where responsibility

for mitigating air travel's environmental impact lies; and how to be a 'green person' in a 'hypermobile' society.

Focus groups were arranged so that participants were clustered in terms of their programme of study, their status as undergraduates or postgraduates and as UK or international students, in order to try and achieve some sense of inter-group homogeneity and solidarity which might make participants more relaxed, open and honest in the discussions (Silverman 2011). My positionality as a UK postgraduate research student studying at the same university as my participants was an issue in both a positive and negative sense. Research represents a shared space, shaped by both researcher and participants (England, 1994), a point which is true of focus groups in both a physical and figurative sense. As such, the identities of both researcher and participants inevitably play into the research process (Bourke 2014). In one sense, my similarity to my focus group participants was an advantage in that it may have helped participants feel more comfortable speaking to someone who was – in the sense of my occupation, place of study and (to different extents) my age – similar to them. However, this similarity could also have been a disadvantage. Consider a question which addressed research aim (2) above, such as "Why do you think so few people actually bought an offset in this experiment?" Students – and particularly postgraduate students – who had experience of conducting research themselves may have approached the question considering themselves as researchers rather than as respondents. To try and avoid this, I placed questions relating to research aim (2) at the end of the focus group discussions (rather than the middle or beginning), so that participants would not be minded to consider all subsequent questions regarding themselves as researchers who were considering issues of research design, rather than as travellers and consumers of air travel considering issues of carbon offsetting and nudges. In this way, I tried to minimise the potentially problematic effect of the participants' identities as students.

I transcribed the focus groups verbatim. Thematic analysis of those transcripts was conducted with the help of NVivo computer software, which was used to apply codes to particular themes arising from the transcripts. Some themes were conceived in advance of analysis, based on the prior aims of my focus groups, for example "evaluations of social norm nudge", "evaluations of affective nudge", other themes were created as I detected patterns in the words and phrases participants had used, a standard practice in thematic analysis (Silverman 2011; Bryman 2008; Lofland & Lofland 2004). Codes that emerged following repeated reading of the transcripts included but were not limited to the following: "responsibility for aviation emissions", "cost of offsets", "compulsory offsetting", "ethics of offsetting" and "prior awareness of offsetting". The next section shows how I interpreted the data following coding, primarily to try and shed light on

why the first RCT had failed and to inform an 'improved' second RCT, but also to uncover other complementary findings which arose about carbon offsetting and air travel.

## 5.2 Findings

### 5.2.1 Participants' evaluation of the Nudges

In the focus groups, participants were shown the different 'nudges' and the rationale behind each was explained. They were then encouraged to evaluate each one in turn.

#### 5.2.1.1 Descriptive Norm

*"Many people already offset their carbon emissions. In 2012, 101 million tonnes of carbon ($MtCO_2e$) were offset voluntarily – that's the same as taking 50 million cars off the road for one year, or 100 million people each not taking a London->New York flight".*

The descriptive norm nudge received by far the most positive comments from participants compared to the other two, which reflects the RCT results where, measured by 'interest in offsetting', this intervention group saw the largest positive effect (see Table 5 in Section 4.2.1). Participants tended to appreciate the motivational power of social norms, especially when quantifiable data was presented. Many participants also said they liked the fact that the "meaningless figure" (of 101 million tonnes of carbon) was converted into something more "tangible" although the fact that the focus groups were made up of students may mean they were more interested in the presentation of quantifiable 'evidence'.

> Eli (International Geography Postgrad): "You can imagine 500 million cars, it's an attempt to make you realise what kind of influence it can have and I think this could help people understand the problem, and also understand the influence you could have, possibly."

Participants also often talked about being 'part of something' bigger than their own individual action, which might otherwise seem pointless or insignificant.

> Maddie (UK Geography Undergrad): "It kind of seems quite impressive, if you read that statement it's like 'Ooh that's really good maybe I should join in' and might make you wanna contribute as well."

But on the other hand, Lucas thought that seeing a large number of people who already offset might make one's own contribution seem small and therefore increase the chance of free-riding.

> Lucas (UK Management Undergrad): "I think they're already handling it pretty well if they've already covered 101 million tonnes, so I'm not sure how much I'd feel that my input would help. They seem to have it ok."

Finally, the wording of the nudge was interpreted in different ways. According to the literature of descriptive norms, telling people what other people already do, rather than what they should or should not do (injunctive norms) can influence behaviour (see Burchell, Rettie, and Patel 2012). Yet in the discussions we had, one participant thought that the motives of the message were too transparent:

> Martin (UK Geography undergrad): "The way that it's worded would lead people to think that it's trying to make you think that everyone else is doing it, and you should be doing it as well. It's too obvious."

#### 5.2.1.2 Third Party Endorsement

*"Many organisations, NGOs, charities, companies and government departments endorse carbon offsetting and use it themselves, including:*

*Friends of The Earth, Greenpeace, the Worldwide Fund for Nature (WWF), the UK Department for Energy and Climate Change (DECC), Microsoft, Marks and Spencer , Aviva, Jamie Oliver Ltd, and the Co-operative Group, to name a few."*

Largely this nudge was viewed negatively by almost all participants, mainly for the inclusion of the large companies in the list, whom participants did not wish to be aligned with. In some cases this was for reasons connected to the companies' perceived unethical practices, as with Krystal.

> Krystal (International Social Science postgrad - Pilot): "I don't let Marks and Spencer set my ethics, considering that they are using children to make their garments. Actually Marks and Spencer is not the worst of them but… No I don't take my ethical cues from these people".

Other participants saw a problem with the size of these big companies. As in the case of the descriptive norm, the large size of the 'people who already offset' – in this case, large companies – made the participants' own individual behaviour (and therefore the effect of their offset) seem small and insignificant, and a reason to 'free-ride'.

> Chas (UK Geography Undergrad): "Listing all the big companies that do it make me think 'well if all the big companies do it, why should I, because they contribute more than I do?' Is that really really bad?
>
> Because all the big companies do it, and they must have a much greater need for it, because of lots more travel, then like, why should I bother because, to be fair, my contribution compared to theirs would be really small, so it would be fairly pointless."

Participants were asked to mentally disaggregate the list of organisations and consider if the presence of only the non-for-profit ones (i.e. Friends of The Earth, Greenpeace, the Worldwide Fund for Nature (WWF), and the UK Department for Energy and Climate Change (DECC)), would be a stronger nudge. Before the focus groups, it was assumed that, as carbon offsetting is often perceived as an 'unknown quantity' that having the endorsement of these high-profile organisations might act as a 'stamp of approval' and assuage potential users' misgivings about offsetting. However, the focus groups participants seemed to take the endorsement of these organisations as a given, as unsurprising, and therefore unlikely to act as an effective nudge.

> Stan (UK Geography Undergrad): "If it was just the NGOs you might think 'well they're environmental NGOs, of course they're going to endorse it because it falls under what they believe in' so it's not really showing you a wide perspective of the amount of people who think it's effective. It's just people who are already interested in that issue."

It is possible that, had the list of organisations been split into two groups: one with NGOs and public institutions, and another with companies, the results would have been different. The lively discussion which this nudge provoked illustrates the importance of using an appropriate 'messenger' (for any given audience) when designing nudges (see Cabinet Office 2010b; Savage et al. 2011). As it stands, the negative responses to the 'third party endorsement' nudge in the focus group seem to mirror the results from the RCT, where this nudge had a negative effect of -4.5% on the likelihood to be interested in offsetting, when compared with the control group (although this was not statistically significant).

#### 5.2.1.3 Affective Message

"*One type of project funded through carbon offsets is introducing more efficient cookstoves to families in the developing world, instead of using traditional cookstoves or open fires like the picture on the left.*

*These projects have introduced efficient cookstoves to families in in many developing countries such as India, Honduras and Ghana. Simple modern cookstoves, like the one in the picture on the right, cook food more quickly and are insulated, requiring 50-60% less fuel and releasing much less smoke.*

*So as well as cutting carbon emissions by reducing the need for firewood, this kind of project also improves health by reducing exposure to toxic smoke and fumes - a serious problem for the health of millions of women and children."*

*(Also accompanied by pictures, see above).*

Reaction to this nudge was perhaps the most divided of all. While many participants thought that providing a human story with pictures made the benefits of offsetting seem more "real", others thought that it was confusing as it looked more like 'charity' than offsetting, which, surprisingly perhaps, was often not seen as a positive thing. Also, some participants said that it was too much to read and that, in a real situation or in the RCT, people would likely skip over it.

Echoing findings in previous studies, participants reported concerns about how offsetting money might be spent, and whether it would actually achieve real carbon reductions (Brouwer et al. 2008; Choi & Ritchie 2014). For some participants, this nudge allayed some of those fears by illustrating one specific type of project which is funded by offset payments.

> Ava (International Management Postgrad): "This one is clearly much more about emotions, clearly, but it's very more concrete and it explains how the money is used to reduce and to cut carbon emissions, and with the pictures it gets even more concrete, so. For me that's the strong point of this message."

> Orla (International Social Science Undergrad – Pilot): "This is the most effective, because when you read words like 'deforestation' and 'supporting renewable energy' then that's kind of abstract and you don't know exactly what it is or how it's going to happen, but when you see these pictures you can't really be like 'I'm not helping this woman'."

Many participants seemed to appreciate the fact that the message referred to the benefits that carbon offset finance can have for people, and not just for the environment.

> Ava (International Management Postgrad): "What I like also about this message is that it shows people in western countries how it's important to do stuff for the environment but how much it's also important to do stuff for the people and for society. And that's what makes us humans and I think that's what the core of the message is for me, the people who matter, not only for the environment for an ideal."

One participant described this as a 'positive' nudge which, rather than berating people for flying, or guilt-tripping them into offsetting, showed that they could do something worthwhile and constructive with their offsetting contribution. This is in line with much of the literature on nudging which emphasises that people are more receptive to messages which make them feel better about themselves (Dolan et al. 2012; Cabinet Office 2010b). One participant, Stan, compared this nudge with the 'descriptive norm' nudge.

> Stan (UK Geography Undergrad):: "if an airline are saying 'we [passengers] are doing this really bad thing which is… you know you could take fifty million cars off the road if we stopped flying this number of flights' or whatever, it's kind of blaming them as the problem, whereas if they put this one up with the human touch it's kind of like they're the saviour in a way coming to help people rather than the bad person."

An interesting response from several participants was that this nudge made offsetting seem quite removed from the original idea of reducing carbon emissions. Whilst all participants agreed that the clean-cooking stoves project was a laudable one, they thought it moved too far into the realm of charitable donations, and as many of them reported something which might be described as 'charity fatigue', this was unlikely to make them offset, or, as many of them tellingly put it, to "donate".

> Maddie (UK Geography Undergrad): "It kind of feels like carbon offsetting which is kind of a new thing, it feels like you're giving to charity which a lot of people already do. It kind of flips what you're doing. It doesn't really feel like you're helping the environment any more, you're helping people instead….It's a bit confusing, but maybe still effective."

> Josie (UK Management Undergrad): "I think it's hard-hitting seeing pictures, but, it's really bad for me to say, but there's so many charities and things out there, like this sort of comes up all the time, helping people, so for me I know I'm probably not even gonna read the text, I'll just look at the picture and assume that it's another one. I know that sounds bad but there's quite a few out there so…"

> Ann (UK Management Undergrad): "I think I agree. Like, I think there's a lot of problems in the world and it sounds selfish but there's a lot of bad things in this country that need to be fixed before helping others."

Yet for some participants, particularly international students, they seemed to think that the charity approach was likely to be more effective than the environmental one, because the human element was much more compelling.

> Charles (International Management Postgrad): "If you directly see that those carbon offset[s] will [be] better for [the] climate, less people will donate. If you see that those offsets are for charity at the same time, it might be better for the environment or something, I think more people will donate.
>
> Interviewer: "So more people will donate if it's connected with charity?"
>
> Charles: "There's more motivation if it's for charity, but at the same time you save the carbon. Because if we only talk about climate, most people don't care. To me, if I take a flight, I don't care about carbon, I just go back to China."

Finally, for one participant, this nudge illustrated a broader ethical problem with carbon offsetting, that it represents wealthy people in the global North, who have a disproportionately large carbon footprint, paying money for climate change mitigation in the global South by people who do not. This echoes larger debates about equity and differentiated responsibilities in climate change mitigation (see Dobson 2003; Doherty and De Geus 1996).

> Tom (International Social Science postgrad – Pilot): "A few weeks ago I looked at NASA's monitoring of carbon emissions and most of it is just the North. I was surprised to see that South America… it's almost no emissions whatsoever. But everything is just North Europe and United States, it's not even funny compared to… So then the idea that you would make this… that you would focus on the South, where the problem doesn't really lie. That's an issue."

### 5.2.2 Participants' offered explanation for the low level offsetting behaviour in RCT

Participants were asked to reflect on the fact that only 1 person of 1626 respondents in the RCT actually purchased an offset, despite over half (51.9%) of respondents expressing 'interest' in offsetting. Their offered explanations fell broadly into two categories, the first of which relates to design problems in the construction of the RCT, the second of which relates to far more substantive problems with either carbon offsetting, nudging, or both.

#### 5.2.2.1 Design issues

Firstly, participants said that the fact that the sample consisted of university students may have meant that they were unlikely to buy offsets, because students don't generally have much money.

> Chas (UK Geography Undergrad): "It's because it's students. No-one really has any money as a student, or any spare money, so it's usually going towards going out or food or rent or whatever, which seems a bit more relevant than a flight you took last year."

This explanation is intuitively appealing, although previous research into 'likely offsetters' indicates that young well-educated travellers might actually be more likely to offset than the average air passenger (Hooper et al. 2008; McLennan et al. 2014). Perhaps more compelling is the second explanation: that it was simply unrealistic to expect respondents to get their credit or debit card out and make a payment for an offset when they were only expecting to answer a few questions in an online survey.

> Em (UK Geography Postgrad): "I imagine it's because it's an effort to get your card out if you're not in a process of already making a purchase."

> Elsie (UK Geography Postgrad): "Yeah, it's like when you go shopping, you have to be in the mindset to spend to buy something, rather than in the mindset of looking."

This chimes with the notion of the 'pain of paying', a commonly-found phenomenon in behavioural economics, where people are less likely to pay if the perceived burden of paying is high (Rick & Loewenstein 2007). Certain situations are conducive to paying, some are not. When one is already mentally prepared to spend money – for instance on a shopping trip, or when already making online purchases – the pain of paying is likely to be relatively low (Ariely 2008). Yet spending money during what was expected to be a short online survey may plausibly be a situation where the pain of paying would be high, and so participants would be unlikely to actually part with their money.

The third explanation, that the experiment created an unrealistic expectation for people to offset a flight which was made *in the past*, the carbon from which was considered 'spent' is also interesting. Respondents were asked if they were interested in offsetting the 'last flight they made'. In some cases this 'last flight' may have been several months or years ago. Focus group participants indicated that past carbon emissions are viewed as 'gone' and no longer of interest.

> Frankie (UK Geography Undergrad): "If you were buying an offset at the same time as booking I think it's more likely you'd get people to contribute…as opposed to a year later when they're a student and they might be struggling with money, they've already taken the flight, they don't have to do this extra ten pounds. It feels more like it's coming out of your pocket, afterwards."

> Ron (Social Science Postgrad, Pilot): "Yeah in the booking process. Yeah if it's asking me to do something for a flight I took six months ago I'd say no that's the past, gone, it's about the future now."

This is interesting because it suggests that unless passengers are asked to offset the emissions of a

flight at the time of booking it, it is highly unlikely that they ever will. Once the flight is booked, and especially once the flight is actually taken, the emissions are forgotten about. This also chimes with arguments over climate change negotiations at a global level, where arguments over responsibilities for 'historical emissions' are a recurring theme with developed countries often very unwilling to account for carbon emissions they produced in the (often quite distant) past (for a flavour of this debate, see Gosseries 2004).

Fourthly, participants noted some technical or presentational issues which may have dissuaded respondents in the RCT from parting with their money. The webpage where participants could pay for an offset was hosted bya a collaborating company called Carbon Footprint. Participants in the focus groups were also shown the ClimateCare website, which they seemed to think looked more professional and trustworthy.

> Becca (UK Geography Postgrad): "It could have been a trust thing as well. Not necessarily trusting a link from a survey somewhere".
>
> Barry (International Management Undergrad): "I think this page is also, if you had the link to the climatecare page instead, it looks a bit nicer, maybe people would pay more".
>
> Tim (International Management Undergrad): "I think I'm more likely to trust a website that's well-designed. It shows that they've put money and time into it which in some senses shows they are a proper company so…".
>
> Paddy (UK Geography Postgrad): "So that's probably the reason. And also, it might be a reason that a lot of people do it on their phones and it might be fiddly".

It is an intuitive and empirically proven fact that trust is a major influence affecting whether customers will spend money with a particular website (Lee et al. 2001), and reputation and graphic design can be factors in garnering trust from potential online shoppers (Fathollah & Aghdaie 2011). The fact that the collaborating company, Carbon Footprint, is not well-known and some participants thought their website did not look very attractive may have dissuaded would-be offsetters.

These four technical/methodological issues have some appeal, and the second RCT tried to address these issues as much as practically possible. However, other responses from the participants suggest that there were deeper problems with the premise of carbon offsetting and of nudging which might suggest that, even if these technical issues were all addressed, a similar outcome would still be reached.

#### 5.2.2.2 Substantive Issues

Participants expressed broader issues with carbon offsetting. Some of these were down to concerns about accountability, and a lack of trust in 'where the money goes'. For others it was more of an issue with paying money for something from which there would be no benefit to the passenger themselves, especially when other financial considerations were taken into account. There were notable differences between focus groups on this issue, with more of the geography students expressing accountability concerns, and more of the management students' concerns being linked to the rational-actor model of self-interest. Others said that it was not their responsibility to pay for the emissions from flights, but that airlines or governments should take the lead. Some participants stated that they would be more likely to use a 'lifestyle offset' (see section 5.2.2.7 below) by taking pro-environmental action in other aspects of their lives, rather than paying for a formal offset.

Those who were positive about carbon offsetting said that the main motivation for doing it would be to feel better about themselves and that they had 'done their bit'. Several participants said that another positive consequence of learning about carbon offsetting (by participating in the focus groups) was that it made the issue of carbon emissions more salient, and this might lead to them making other behaviours more sustainable in future through 'lifestyle offsets'.

#### 5.2.2.3 Lack of trust in offsetting

Firstly, participants did not feel that airlines could be trusted to pass on offset money to the right place. Suspicion of profit-motivated airline companies was a common theme in the focus groups.

> Zak (International Geography Postgrad): "I don't believe in this concept, because these flight companies already take so much money, they're saying this is for taxes, which means that, because we participate in these carbon offsets, like, so why do they need this one pound or one dollar whatever."
>
> Interviewer: "So you don't trust it?"
>
> Zak: "I don't trust it, no."

Other students, particularly in the geography student cohort, expressed faith that the money would go to offset projects, but questioned the effectiveness of those projects in actually reducing emissions.

> Eli (International Geography Postgrad): "It's not that I don't trust them. Let's say that they do what they say. I'm not so sure if that is actually balancing, y'know, evening out the impact on the environment. I mean, does really planting trees help?
>
> Esther (International Geography Postgrad): "And you don't know how long those trees are actually gonna stand for."
>
> Becca (International Geography Postgrad): "Or when they'll be replaced."
>
> Elsie (International Geography Postgrad): "'Cos when the trees get knocked down the carbon is released anyway, so if the trees aren't there for very long you feel as though you've done the right thing but then, next thing, for all you know, a couple of years down the line, tree gets knocked down and all the carbon's in the atmosphere again."

This rather detailed discussion of the effectiveness of carbon sequestration went on for a long time, and reflects the high level of knowledge of this topic area among postgraduate geography students, which is not entirely unsurprising. The debate over carbon offsetting by reforestation is a live one, however, and there are suggestions that reforestation might not always be an effective way to reduce carbon from the atmosphere (Schneider 2007; Mair 2011; Böhm & Pearse 2015).

#### 5.2.2.4 Concerns over the ethics of offsetting

Particularly prevalent among the geography students was the argument that, as discussed in the literature review, carbon offsetting is merely a way of alleviating guilt on the part of hypermobile affluent classes, and does little to change unsustainable western behaviours. In fact, offsetting might lead to a 'rebound effect' whereby the unsustainable behaviour, in this case flying, might actually increase as a result of being legitimised by the purchase of offsets.

> Esther (UK Geography Postgrad): "It's not like a sustainable long-term solution really. You're producing the $CO_2$ and then trying to remove it from the atmosphere as opposed to trying to reduce the amount that is emitted anyway."
>
> Krystal (International Social Science Postgrad – Pilot): "I predominantly see it as rich people paying off their bad conscience. I have a problem with this thing, well not a problem, but it somehow feels weird that you're buying your way out of it, like as long as I pay for it, I can just fly as much as I can."
>
> Mary (International Environmental Science Undergrad – Pilot): "Yeah. It's easy to just pay without doing anything else sometimes … you know I'm not doing the right thing,

> I'm just using my money to compensate some attitude, so I'm not changing my behaviour, nothing conscious, nothing like this."

#### 5.2.2.5 No personal benefit from offsetting

For others, the main problem with offsetting was the fact that it costs money, time and may be an inconvenience, for which the passenger receives nothing tangible in return. This point of view was especially prevalent among the management students.

> Ann (UK Management Undergrad): "Will it make that much difference overall? I mean if I was buying a flight and they're like 'donate ten extra pounds' I'd be like well the flight's enough already. I wouldn't really wanna pay that. But that might be because of my financial situation at the moment but I don't think I will".

> Bianca (International Management Postgrad): "It's like the travel insurance thing, people might buy it at a later time, but at the time the airline tells you 'do you need travel insurance? No I don't!'"

> Pat (International Management Postgrad): "Travel insurance, extra bags, and you're like 'skip, skip, skip'".

Some participants pointed out that paying for an offset seemed like a something of a luxury and they would only be likely to pay if they were buying an already-expensive ticket.

> Ann (UK Management Undergrad): "With people who use like British Airways and Emirates, it would work, but the Ryanair or Easyjet, to be fair you're paying for a rubbish seat so I'm not gonna want to pay any more money."

For Lisa and Jay, both management students again, the whole concept of carbon offsetting just seemed pointless.

> Lisa (UK Management Undergrad): "I understand it but I feel that it's maybe a little bit pointless. Like, I've never heard of it and I've never looked at it on airline websites or anything. I get it, I get the point of it, but I don't, it probably sounds bad for me to say it but I don't really care. That probably sounds really bad but…"

> Jay (UK Management Undergrad): "I don't really…not saying that I don't care I just don't really have, I just don't really bother. It probably is a good thing releasing the carbon and that but, I'm not really sure but I just don't really have a care or passion for it really. But it probably could make a difference if they pushed it more."

#### 5.2.2.6 Responsibility

For many respondents carbon offsetting was seen as something which should be the responsibility of airlines, not passengers, because ultimately it is the airlines and their aeroplanes which produce pollution.

> Eli (International Geography Postgrad): "I think the major responsibility is with the airline because yeah, they are the ones that are doing it. I mean the customers, if they participate into that it's like their own choice. It's the airline that people will blame, that are polluting the environment or whatever."

Ali argued that carbon offsetting was letting airlines get away without taking their share of the responsibility.

> Ali (International Geography Postgrad): "It seems like a very individual responsibility approach, that everyone is responsible for something that eventually rids these big companies of responsibility. It doesn't sound right. In these terms it sounds right environmentally if it actually works, but why should each of us get into that. What do those companies actually do themselves?"

This reflects similar findings by Gossling et al. (2009) where a majority of survey respondents said that airlines should be responsible for mitigating the environmental impact of air travel, although Gossling, along with Burns & Cowlishaw (2014) have found that airlines, conversely, place environmental responsibility with the passenger in many of their public statements.

Participants also placed responsibility with other companies, and not just airlines. Becca (a UK Geography Postgraduate) suggested that if we buy products that have imported by air, then the producer of those products should be responsible for any offsets.

> "So, when I buy something from Marks and Spencer, they should be the ones who are dealing with the offsetting, rather than me."

Baji (also a UK Geography Postgraduate) said that many trips are taken for business reasons, and so the employer should be responsible for any offsets.

> "If I'm making a travel from the University, it's because of the University I'm making this travel, it's not for my personal reason. So the University should take care of that carbon offset."

This is an interesting point, and one which links to the finding from RCT that offset interest was significantly related to flying 'voluntarily' (for a holiday or to visit family and friends) and not to

'essential' flights (for business or study reasons). Baji, like other PhD students, is not entirely duty-bound to travel abroad by the university but like many graduate students has a choice in the matter. He also admitted that, like many other people in academia and business, he combines foreign travel for his research with trips to see his family (who live in a distant foreign country) and tourism. The question of who is responsible for the carbon emissions and carbon offset therefore becomes more complicated when leisure/VFR trips 'piggy-back' onto 'business' trips (Randles & Mander 2009).

Stan (UK Geography Undergrad) argued, perhaps quite realistically, that ultimately the only way anyone was going to offset would be if the government took responsibility for the issue, and forced airlines to include the environmental costs of flying in the ticket prices.

> "I was thinking that maybe if there was a law and the government just enacted it on every flight, because the taxes are so high on every flight anyway, if they just added that extra bit on, whilst people would probably not be happy about it and people would moan, at the end of the day I think it would have a huge impact."

#### 5.2.2.7 Lifestyle offsetting

Several participants said that, rather than buy a carbon offset for a flight, they would be more inclined to reduce their environmental impact in other aspects of their lives – what I have termed a 'lifestyle offset'. A few people, like Stan, seemed to equate action in other areas as with carbon offsetting, although the relative carbon impacts of domestic consumption compared to flying are, in reality, highly disproportionate. This attitude seems to reflect Barr et al.'s (2010) work that suggests many people who perceive themselves as 'environmentally friendly' at home appear to change or suspend such beliefs when they go to an airport.

> Stan (UK Geography Undergrad): "I think that if you're offsetting it then you are, it's almost the same as recycling or cycling to work or other things which reduce your emissions, so I think it's just a different way of doing it really, sure you are giving off the emissions rather than just not in the first place but if you're also reducing it, I think you can be green and fly a lot as well."

For some participants, like Mary, lifestyle offsetting seemed to be linked to a sense of distrust of the idea of paying for a carbon offset, and wanting to take ownership of her own carbon footprint. She also talked about how she wanted to have a job related to some aspect of environmental protection, so that her future career would justify her air travel habits.

> Mary (International Geography Undergrad – Pilot): "I'd rather change some habits in my routine than pay for a company like this to do it for me, I don't know. I don't think I would buy".
>
> Interviewer: "So what would you do instead? You said you would change some of your habits?"
>
> Mary (International Geography Undergrad – Pilot): "I don't know. I would try to recycle more, use less car [travel]. I also try to use a bike, to walk. Don't have much, don't produce much waste, something like this. Or I think I'm going to be a professional who's going to deal with this so I'm going to do my part. I'm going to do my part in my life so I'm donating my time and time is money, like."

Ali seemed to think that flying was so hard to replace as an activity, that it was far easier to think about being 'green' in other transport behaviours instead.

> Ali (International Geography Postgrad): "How big is the impact of flying? Maybe we can reduce something else which we can actually you know we can do something about, we don't have to have all these cars, there's public transport, so. Because flying, you need an aeroplane to get to Thailand, but you can go to Portsmouth on the coach, not in your car."

A few participants seemed excited by the idea of planting their own trees as their own, personal offset, although the practical limitations of doing this on a large-scale often quickly became apparent.

> Des (International Management Undergrad): "Actually, we can do it ourselves. You can plant your own tree! It would contribute more, rather than just paying someone else."
>
> Barry (International Management Undergrad): "Yeah. 'Cos if you pay eleven quid in, how much of that actually goes to the project, 'cos some of that's gonna be an administration fee, they'll have an office somewhere so you gotta pay for the office people, this, that and so on. So maybe by the end, only a fiver of your eleven pounds actually goes towards providing safe water or whatever the offset is. But if you're planting a tree yourself there's none of that stuff. You literally plant the tree and that's it.
>
> Interviewer: "But can everybody plant trees?"
>
> April (International Management Undergrad: "In China maybe not because the land is owned by the government and you can't just plant trees without permission."

#### 5.2.2.8 Practices and obligations

There was little comment about how flights facilitate particular practices, which is perhaps not surprising if, as remarked upon in the literature review, most practices are performed unreflexively. This might also be because participants might not have been aware of the concept of social practices and thought in those terms. When asked about the last flight they had taken, the vast majority of participants said that they had travelled for a holiday (usually but not always with family), or, in the case of international students, to come to the UK for their studies, indicating that flights facilitated certain obligations. Almost all participants were surprised that offsetting was relatively cheap, although many said that for families the costs of flights and offsets could soon stack up and be prohibitive. In the case of families, this might possibly be a 'cost' explanation for findings that suggest that solo travellers are far more likely to offset than group travellers (McLennan et al. 2014; Hooper et al. 2008).

> Becca (UK Geography Postgrad): "I think flights are too cheap until you think about paying for a family to go. They're too cheap for an individual because it's more expensive to get the train than it is to fly, but when you're talking about asking four people, I think it's prohibitively expensive."

> Elsie (UK Geography Postgrad): "I'd agree with that, especially when you've got to pay adult fares to twelve year olds. That would be my prohibition at the moment, it's crippling to pay for a family."

> Mike (UK Geography Undergrad – Pilot): "People would consider offsetting as an extra tax on the flight itself if they actually pushed up the price by ten pounds each time. I think it's a really good idea and I support it but I'd imagine lots of people would be annoyed at having to pay, if it's a family of four, of having to pay an extra forty quid for something they see as an essential purchase really."

#### 5.2.2.9 Positive aspects to offsetting

Despite the reservations noted above, most participants were broadly in favour of the idea of offsetting the carbon from their flights. Most had not heard about the idea before (especially the international students, echoing previous research findings), but once the concept was explained they broadly thought it was a positive and novel idea, although most said they thought it would be difficult to 'sell' the concept to people, for the reasons outlined above.

Baji and Em agreed that using a carbon calculator and at least being made aware of the carbon emissions of a flight was a positive piece of feedback which this project provided, and that such knowledge could make the carbon emissions from our behaviour more salient in future.

> Baji (UK Geography Postgrad):"I think the first thing is that we are keeping track of the emissions, that's the key thing. Whether we are actually offsetting the amount of $CO_2$ or not, at least we are keeping track of how much $CO_2$ could be emitted because of travelling by bus or by flying."

> Em (UK Geography Postgrad): "I agree. Even if people don't go so far as paying to offset it's something that they are then aware of, and they're aware of that there's a reason why they might want to offset. So even if it doesn't change their habits right there and then it's just another one of those things that kind of gets people thinking about their behaviour, and over time that kind of grates on people a bit, I think, in terms of feeling a bit guilty."

Em was the only participant out of all of the focus groups who had actually bought an offset herself. Her motivations for doing it seem to have been more connected to positive self-regard and 'doing her bit', rather than being overly concerned with whether the offsets had their stated impact. A similar point was made by Büchs (2016) who found that some environmentally motivated people voluntarily reduce their air travel due to their intrinsic pro-environmental values, and not due to 'outcome efficacy' (i.e. the judgement that such reductions would actually 'make a difference').

> "I have offset, once, which was when I to Florida, and I think that was partly because it's the longest flight I'd done in a while… and I'd already booked my flight, so I went online and just googled, and I can't remember who I did it through now…I didn't spend much time researching their credibility or you know, where my money was going, I think I just wanted to know that I'd like, done it, to the best of my knowledge."

In fact, most of those who said they would consider offsetting said they would do it to "feel better", and expressed "guilt" when they were shown figures comparing the carbon emissions from flying to annual carbon emissions per capita. There is clearly an emotional appeal to offsetting which should not be dismissed (Mair 2011; Brouwer et al. 2008).

### 5.2.3 Participants' views on how offsetting could be encouraged

#### 5.2.3.1 Prior awareness is necessary

What permeated the discussions of each of the nudges was an overarching and recurring theme that participants reported low levels of awareness of carbon offsetting, either conceptually or practically, or sometimes both. In some cases, with participants who were not native English speakers, there was a language barrier which prevented them understanding what 'offsetting' literally meant, although after an explanation was offered, most of these participants recognised the phrase and the basic concept it represents. Most participants said that while they personally knew what carbon offsetting meant, they thought that "most people haven't heard of it" and that it lacked "prominence". Very few participants reported having seen the opportunity to offset a flight in the past, and, as discussed above, only one had actually bought an offset before. Participants were broadly supportive of the concept of offsetting (with a few vehement exceptions) but held issues with certain problems of "where the offset money goes" and "who oversees the projects". It was within this context, where offsets were viewed as a something of an 'unknown quantity', that the discussion of the nudges was framed. A particular responsibility here lies with airlines, who are the primary source of information about air travel for both customers and the media, particularly via their websites (Burns & Cowlishaw 2014).

> Ann (UK Management Undergrad): "The flight companies should endorse it as well, because if they… I mean I don't book flights but my parents do, but the ones I book with, cheap ones, if they all endorse it and they explained it then I might be more willing to, but none of them are doing it and I'm not gonna go out of my way to a third party website."

Participants argued it was unlikely that any of the nudges would be effective without increased awareness, visibility and understanding of carbon offsetting – which could be achieved through media promotion and particularly via airline websites. One participant interestingly suggested that airlines could promote offsetting through their air crew during flights, whilst the passengers are a 'captive audience', and even suggested collecting unused currency from passengers to pay for carbon offsets.

While there are clearly problems with the utilitarian 'information-deficit' model of human behaviour, the fact that most participants were unaware of offsetting even existing (especially true among the management students) suggests that there may be potential for greater numbers of offsets were airlines to make the concept more visible. However, as Becca and Em (both UK Geography postgrads) suggested, there may be good commercial reasons why airlines are

unwilling to make the carbon emissions of air travel more transparent and salient.

> Becca: "Maybe it that, we all know, airlines aren't green. It might seem disingenuous to promote something green when people actually understand that flying isn't green anyway. That might be the airline's perception.
>
> Em: "And they don't want to draw attention to it, and attract questions."

#### 5.2.3.2 Norm-based nudges need to be more 'personal'

Several participants argued that both the 'third party endorsement' and 'descriptive norms' nudges lacked power because the 'people' that were involved in those messages seemed anonymous, impersonal and unconnected to the participants themselves. If nudges could be adapted to harness the norms of passengers' *peers*, perhaps via incorporating social media, many participants said they would be far more likely to offset themselves. Krystal summed up this position elegantly.

> Krystal (International Social Science Postgrad – Pilot): "If I saw a list of my friends I would kind of go 'yeah if they're offsetting then maybe I should as well'. I don't want people I care about to think less of me. But people I don't know, what they think about me, I don't give a shit. But it's like, you need to create a kind of a nudge which hits closer to home."

This goes back to the now well-understood power of social norms as a motivational tool for behaviour change. This is a key part of the nudging literature, indeed, the N in the 'MINDSPACE' acronym stands for 'Norm' (Cabinet Office 2010b). The problem with the 'social norm' nudge in this experiment seems to have been that the 'people who already offset' seem anonymous and distant. The identity of those 'people' needs to be clear, and they need to be people who 'matter' to the nudgee. So we might argue that the Messenger (M in the 'MINDSPACE' acronym is for 'Messenger') is important here. As Krystal points out, such a nudge needs to be more personal and relevant if it is to have any effect. The proposition that social media could be used to inform someone that their peers offset was well-received by many participants.

> Frankie (UK Geography Undergrad): "With a facebook link 'your friends do this'. That would probably be better."
>
> Chas (UK Geography Undergrad): "I'd do it. I'd think if they're doing it then I should too!"
>
> Frankie: "Make me feel bad (laughter)"
>
> Tess (UK Geography Undergrad): "I think that's more effective than any company."

> Frankie: "Yeah it just personalises it. Especially if it was someone you went on holiday with! And he offset his flight and you're sitting there like, and you'll get guilted into doing it, even if you didn't really want to."
>
> Tess: "Yeah I think that's better."

Similarly, some international students from China also suggested that if offset behaviour in a given local area was publicised, then other residents of that area might well follow suit. This is similar to the findings of Schultz et al. (2007) and Nomura et al. (2011) who used the behaviour of neighbours to promote reducing energy-use and recycling, respectively.

> April (International Management Undergrad): "So maybe, just a suggestion. Maybe add 'where are you from?' and if you say 'Beijing' you can click and check how much people in Beijing are involved in this, and if he or she discovered 'oh there is a lot of people involved in this activity' then I think I will be more willing to…"
>
> Jasmine (International Management Undergrad): "Maybe more people have the facebook, and less people have the twitter, so more and more people will choose facebook."
>
> Interviewer: "Because people follow their friends."
>
> Jasmine: "Exactly."

#### 5.2.3.3 Make it Simple

Almost all participants were united in saying that if offsetting was offered as part of the booking process, with a personalised carbon footprint and offset price quoted for their particular flight, then they would be far more likely to offset when buying flights in real life (this was also a similar finding for Hooper et al. (2008)). They said it was highly unlikely that they would go to a dedicated carbon offsetting company's website in addition to going on the airline's website. This is in line with Sunstein's (2014a) argument that behaviour change initiatives need to be as undemanding and intuitive as possible. Although it should be said that many airlines *have* offered an offsetting service within the booking process, and yet many airlines have since removed such services, presumably because passengers still did not choose to opt-in.

#### 5.2.3.4 Emphasise the low price

Many participants expressed surprise that offsetting was substantially cheaper than they expected it to be, and that they might have purchased offsets had they known that they are cheap compared to a flight ticket (usually around 3% of the ticket price). For example, the offset

company ClimateCare quote a price of around £11 to offset the carbon from a return flight from London to New York.

> Stan (UK Geography Undergrad – Pilot): "That's a lot less than I thought it was gonna be. Especially for the New York one I was expecting about forty or fifty pounds so it's not actually that much, especially for a domestic short haul flight like that. So I think it's a good idea, it's a lot less than I thought."
>
> Bernadette (International Social Science Postgrad – Pilot): "That's a lot less than I thought"
>
> Interviewer: "You think so?"
>
> Bernadette: "I'd pay £11 for an eased conscience, of course. No problem. I thought it'd be a lot more."

It is possible that by informing passengers of the likely price of an offset in advance, they might be more predisposed to take an interest in offsetting, and to even purchase one. Previous research into the effect of price 'anchors' shows that purchase and payment behaviour can be strongly influenced by numerical 'anchors' which people use as a heuristic and guide to action (Stewart 2009; Jacowitz & Kahneman 1995; Ariely et al. 2003). If a low price anchor for offsets – perhaps using the 'average 3% of ticket cost' figure – was communicated to air passengers in advance, then they might be more willing to consider an offset, rather than rejecting the idea on the assumption that it will be costly.

#### 5.2.3.5 Offsetting localised

One or two participants, including Zak, said that they might be more inclined to offset if the benefits could be seen at a 'local' level.

> Zak (International Management Postgrad): "An air company that works, for example in Egypt or anywhere, should show the people in Egypt that they do something in Egypt specifically for them. Someone from Egypt might say 'they don't care about here, they are planting trees in Brazil'. My point of view is that if you plant trees anywhere it's good for all of us, but other people's mentality… people are different from each other, so probably local is good. "

This reflects Hooper et al.'s (2008) findings where over 30% of respondents said they would be more likely to offset if the offset schemes supported 'local' offset projects. Indeed British Airways' One Direction carbon fund directs offset funds to specifically UK-based carbon-reduction projects.

#### 5.2.3.6 Reciprocity and incentives

To allay fears that offsetting is just a way for airlines to devolve environmental responsibility onto their customers, many participants said that they would be more likely to buy offsets if the airlines also contributed something.

> Kevin (International Management Postgrad): "I think we don't need to pay the whole amount, maybe it must be shared by the companies, I mean 50-50 or I dunno. So if they pay some of them so I will be more encouraged to pay the rest of the amount."

> Esther (UK Geography Postgrad): "I think airlines should have some, they should share some of the cost of it which I think would then encourage other people to do it. If I know that the company I was flying with was offsetting, or paying half the cost of offsetting the amount of carbon produced on the flight, then I'd be encouraged to pay the other half."

> Lucas (UK Management Undergrad): "I feel like the airlines have to show that they're trying to make an effort rather than just asking us to…cos we're already paying to use their service, so if they seem like they're working with us rather than just asking us to pay more."

This also echoes findings by (Lu & Shon 2012) where people responded more positively if the responsibility for reducing aviation emissions were shouldered by both the passengers and the airlines. A scheme such as this has been put into practice by the Swedish tour operator Fritidsresegruppen/TUI Nordic, who matched the passengers' offset contributions with their own (Gössling et al. 2009). It also echoes other findings in behaviour change literature and nudge-style experiments where reciprocity can be a powerful motivational factor (see Oullier & Sauneron 2010; Cabinet Office 2010a; Cabinet Office 2010b).

Violet, as with a few other participants, suggested that airlines could offer incentives for offsetting, although, as these incentives usually involved cheaper tickets, they might simply encourage more travel and so could be considered self-defeating from a carbon-reduction perspective.

> Violet (International Geography Postgrad): "It could be like a reward system. If you offset a certain amount of carbon then you could get a discount on your travel ticket or

maybe you could get the rail ticket or bonus points for you or something. That could help".

#### 5.2.3.7 Need to be sensitive to cultural differences

As predicted by previous findings, there were marked differences between the UK and international students in terms of interest in offsetting. Many international students from developing countries said that people there would be less interested in offsetting, mainly due to a perception that poorer people are less concerned about the environment – the so-called 'post-materialist values' explanation of environmental attitudes (Inglehart 1971). Yet whilst this explanation might have some intuitive appeal, affluence has been shown to be a poor predictor of environmental attitudes (see Plombon 2011; Dunlap & York 2008).

Coming from a country in sub-Saharan Africa, Violet (International Geography Postgrad) expressed doubt that her country peers would be interested.

> "It's about background and ideology as well. Because I work with the Ministry of Environment in my country so I have an interest in stuff like this, but generally no-one, in my country no-one cares about carbon things. [In my country] people just burn trees and no-one cares about it. They burn anything. Of course, one person could change something, but in the general area, I might pay for my carbon offsets every year, and I'll just be that one person".

Pablo (International Geography Undergrad), coming from a Latin American country, expressed particular scepticism over the affective message nudge and its depiction of poor and vulnerable people in need of help:

> "It's like a woman who is carrying a baby and with a fire and smoke, that doesn't say anything. Maybe from the European point of view it's like 'Oh they are so poor that we need to give them a more modern fire' but maybe they used to have a fire since many time ago, and it's just exploiting that feeling that 'they are so poor we need to help them!' "

Interestingly, other participants from western countries viewed the same message as far more powerful, showing that nudgers and social marketers need to be mindful of the cultural context in which interventions are deployed. In practice, however, negotiating cultural sensitivities might be difficult in a globalised market such as air travel.

Hal (International Management Postgrad) said that norms-based messages needed to be much more personal if they were to work in a Chinese context, because people in China were highly cynical about messages coming from government or big companies.

> "Many Chinese always only care about their own things, don't care about other companies or anything else. Many people. So something which they can connect to their own life. But if they see a famous company they'll think that's the company's business, not mine".

#### 5.2.3.8 Make it compulsory

Finally, several participants suggested that nudges would never be enough, and that carbon offsetting should not be voluntary at all. As stated above, most participants recognised that flying had a detrimental environmental impact and also recognised that carbon offsetting could mitigate that impact. Their doubts were about the feasibility of getting enough people to take part voluntarily, implying that a compulsory carbon offset or carbon tax scheme would be more realistic in terms of individual behaviour (even if it is less realistic politically). Surprisingly perhaps, those participants who seemed least enthusiastic about carbon offsetting said that they would pay a mandatory 'carbon tax', albeit begrudgingly.

> Tess (UK Geography Undergrad): "If it was mandatory then it would be good. I'd be annoyed but I'd still pay it."

> Stan (UK Geography Undergrad – Pilot): "I was thinking that maybe if there was a law and the government just enacted it on every flight, because the taxes are so high on every flight anyway, if they just added that extra bit on, whilst people would probably not be happy about it and people would moan, at the end of the day I think it would have a huge impact."

> Lisa (UK Management Undergrad): "I wouldn't care if they included it in the flight price, that wouldn't bother me. But I think it's more of a psychological thing having to tick another box, like you're consciously giving away your money but if it's included in the price you're like 'oh yeah, doesn't matter'."

Linked to the previous point is the fact that, almost without exception, participants stated that when choosing flights, price was the over-riding factor. Whilst many of the assumptions of nudging, behavioural economics, and the social/psychological approach to behaviour change stress the *non-utilitarian* predictors of behaviour, it is helpful to remind oneself of the continued relevance of straightforwardly economic explanations for travel choices. During the focus groups,

many participants said that flights are often extremely cheap, and some participants, particularly geography students, noted that the low prices seemed bear little relation to the environmental impact of flying.

> Em (UK Geography Postgrad): "I think maybe we should have the offset prices automatically put onto flights because it's a joint, it's a global responsibility to slow down climate change and I think in a way like, I have taken a lot of flights in the last year and I shouldn't really be in a position to be able to afford to do that. I do think flights are too cheap and it's just become too much of the norm to get around that way so yeah I think it should be included."

> Sarah (UK Geography Undergrad - Pilot): "When we went to Paris we went on [the] Eurostar and it was like ninety pounds return and a flight was like sixty quid so it is cheaper to fly."

Orla notes that, rather than airlines catering to a customer demand for cheap flights, budget airlines are able to 'create demand' by offering very cheap flights.

> Orla (International Social Science Undergrad - Pilot): "Or another example is Ryanair last year where you could buy any plane ticket for five euros and so a lot of people who wouldn't usually fly were like, it's five euros, let's go. So you're flying because it's cheap, you're not flying because you want to go somewhere. You're like 'it's five euros, I have to go, I'm an idiot if I don't go'."

> Mike (UK Geography Undergrad - Pilot): "You have to take advantage of it while it's cheap because maybe it won't be in ten years' time!"

There was laughter in this last exchange as participants seemed to recognise that the low prices of flights seemed both illogical and unsustainable. The issue of price seems to point back to structural determinants of flying and the systems of provision which enable cheap flights and high levels of aeromobility.

## 5.3 Summary of findings

The focus groups were intended to shed light on three key questions. Here is a summary of how the focus group data offers answers to those questions.

### 5.3.1 Participants' evaluations of the nudges, and their opinions on why the nudges in RCT1 did not work

(1) The social norm nudge was evaluated most positively, the third-party endorsement nudge the least positively; (2) the social norm nudge was too vague and not personal enough; (3) (some of) the third parties used in the third party endorsement nudge were not popular – the 'messenger' was wrong; (4) the affective message felt more like a charity appeal than a pro-environmental one.

### 5.3.2 Participants' offered explanation for the low level offsetting behaviour in RCT1

Problems with the design of the experiment:

(1) Students find the offsets too expensive to purchase them; (2) the 'pain of paying' - participants were not ready to actually buy an offset when they thought they were just taking part in a survey; (3) offsetting the 'last flight' is too far in the past – the intervention is not 'timely'; (4) the offset website was not attractive to the user, and there were too many 'clicks' to buy an offset.

Substantive problems with offsetting:

(1) There is a lack of trust in offsetting and where the money goes; (2) there is concern over the 'ethics' of offsetting (especially among geography students); (3) no personal benefit accrues to the offset buyer (especially among management students); (4) passengers think it's not their responsibility to deal with aviation emissions; (5) people think they can 'offset' by being green in other aspects of their lifestyle instead of buying offsets.

### 5.3.3 Participants' views on how they themselves and other air passengers might be 'nudged' or encouraged to buy offsets.

Potential improvements to the nudges:

(1) There is a need for prior awareness of carbon offsetting; (2) social norms can work as a nudge but they need to be more 'personal' to create 'peer pressure'; (3) offsetting needs to be made as simple and convenient as possible; (4) pictures can help grab users' attention.

Potential improvements to offsetting:

(1) Offset projects should be 'local' rather than distant; (2) there ought to be incentives for passengers to offset, or airlines should 'match' offset purchases to share responsibility; (3) the types of offset projects offered should be appropriate and sensitive to different cultures (e.g. depictions of 'poor people' may work to western audiences but not to those from developing countries); (4) the veracity of carbon offsetting needs to be communicated to potential offsetters to reassure them that it is a worthy use of money; (5) the relatively low cost of offsetting needs to be communicated to potential offsetters.

We can see that the focus groups provided a lot of rich qualitative data, some of which provide findings related to carbon offsetting and nudge in their own right. Some of the data also offers clues on how the nudge interventions might be improved, and on how to attempt a second RCT which integrates the focus group comments as far as practically possible, whilst still using the same sample and basic method as the first RCT to allow some comparisons to be made.

The focus groups suggested that in terms of the 'design' evaluation of the nudges, the participants seemed to find the social norm nudge the most likely to influence their decision to offset. This seemed to corroborate the findings of the first RCT, where the social norm nudge had the greatest effect change in terms of offset interest. Thus, it was a social norm-style nudge which was taken forward for the second RCT. In terms of the more substantive problems concerning offsetting, including a lack of awareness of what offsetting actually involves, and the apparent assumption that offsets will be more expensive than they often are, the nudge-intervention in the second RCT was designed to address these concerns. This was done by including more explanation about what offsetting involves (using a diagram), giving a price 'anchor' highlighting the fact that offsets usually cost around 3% of the cost of a ticket, and including information about how carbon offset schemes are monitored and accredited through the United Nations. The third stage of data collection – a second RCT – was an opportunity to try and use the findings from the first two stages to test a 'new and improved' nudge to encourage offsetting, and to check whether shortcomings in design was the main reason of the failure of the nudges in RCT1.

# Chapter 6: Stage Three – Randomised Controlled Trial 2

## 6.1 Detailed method

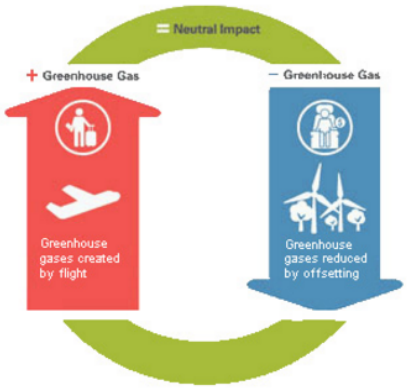
The second RCT was delivered in a very similar way to the first. As with all stages in this project, the same population (students at the University of Southampton) was sampled. In November 2015, an email was sent to all 24,040 students at the University of Southampton registered during the 2015/16 academic year. 2356 students responded to the email and completed the survey, meaning a response rate of 9.8%. As in the first RCT, respondents were automatically and randomly assigned to either a control or intervention group, and were unaware of this. Unlike the first RCT, there was only one intervention group, not three. This was done because, as can be seen from the findings from the first RCT, the effect sizes were very small. Therefore, the number of treatment groups was minimised (from 3 in RCT1 to 1 in RCT2) in order to increase the sample size (from a mean of 406.5 per group in RCT1 to 1178 in RCT2) and thus to maximise the chances of detecting a significant effect (see Cohen 1992; Freedman et al. 2001 on the importance of statistical power for RCTs).

The intervention group received the nudge as shown in Figure 8. As can be seen, the text at the end of the message is the same as the social norm nudge in RCT1, but the first section (including the picture-diagram) is new material informed from the focus group data. There are three key 'improvements' made in this first section of the nudge: (1) greater explanation is given about what offsetting involves (using a diagram); (2) a price 'anchor' is included to highlight the fact that offsets usually cost around 3% of the cost of a ticket; and (3) information is provided about how carbon offset schemes are monitored and accredited through the United Nations, intended to assuage concerns about the veracity of offsetting projects.

Voluntary carbon offsetting means paying an extra amount of money on top of the price of a flight-ticket.

The cost of an offset is usually about 3% of the flight cost.

As this diagram shows, this extra money is then used to reduce an amount of carbon dioxide from the atmosphere, equal to the carbon emissions caused by the flight, through a carbon-reduction project.




These projects can include tree-planting, building renewable energy sources, or reducing deforestation.

Projects must follow standards recognised by the United Nations to ensure that money is spent delivering the promised carbon-reductions.

Many people already offset their carbon emissions.

In 2012, 101 million tonnes of carbon (MtCO2e) were offset voluntarily by individuals and businesses.

That's the same as taking 50 million cars off the road for one year, OR 100 million people each *not taking* a London->New York flight.

**You can make the last flight you took 'carbon-neutral' by purchasing a carbon offset.**

*Figure 8: Screenshot of RCT2 nudge*

## 6.2 Findings

### 6.2.1 Offsetting attitudes

The data from the iSurvey platform shows that 2867 people opened the survey, and of those 2356 completed it. For those uncompleted surveys, no data was collected and these are excluded from analysis. Table 10 shows that the randomisation of the remaining 2356 responses was equal, with half the sample in each treatment group. Table 11 shows that, of those in the 'control' group

(who received no nudge), 679 people expressed interest in offsetting (57.64%). Of those in the treatment group (who received the nudge), 626 expressed interest in offsetting (53.14%). A Chi-squared test indicates that there is an association between intervention group and offset interest at the 5% significance level ($Chi^2$=4.825, p=0.28, p<0.05). I therefore reject the null hypothesis that there is no relationship between intervention group and offset interest. However, contrary to what was expected based on nudge theory, the nudge appears to have *decreased* interest in offsetting, compared to there being no nudge at all.

*Table 10: Allocation of respondents to treatment groups in RCT2*

| **Treatment Group** | **Frequency** | **Percent** |
|---|---|---|
| Control | 1178 | 50 |
| Nudge | 1178 | 50 |
| **Total** | 2356 | 100 |

*Table 11: Offset Interest by treatment Group in RCT2*

| | | | Offset Interest | |
|---|---|---|---|---|
| | | | No | Yes |
| Treatment Group | Control | Count | 499 | 679 |
| | | % within treatment group | 42.36% | **57.64%** |
| | Nudge | Count | 552 | 626 |
| | | % within treatment group | 46.86% | **53.14%** |
| Total | | Count | 1051 | 1305 |
| | | % within treatment group | 44.61% | 55.39% |

### 6.2.2 Offsetting behaviour

Data received from the collaborating company CarbonFootprint shows that only four participants purchased offsets. By identifying them using their IP addresses, two of them were in the control group and two were in the intervention group. As a proportion of the total number of

respondents in each treatment group (1178 in each – see table 10) this equates to a proportion of 0.17% of participants in each treatment group who purchased offsets. Being identical (and small), this shows that there is no statistically significant difference between the control and intervention groups regarding the first outcome variable, offset behaviour. In that sense, the nudge failed.

### 6.2.3 Other relevant variables

$Chi^2$ tests showed that age, gender, purpose of flight and method of booking are not significantly related to interest in offsetting, but that size of party and climate change concern are. Table 12 indicates that, as suggested in previous studies and in the findings from RCT1, those who travel alone or in smaller groups are more interested in offsetting. The larger the group, the less likely participants were to express interest in offsetting. Table 13 shows this to be highly significant at the 1% significance level.

*Table 12: Cross-tabulation of offset interest by size of party*

| | | OffsetInterest | | Total |
|---|---|---|---|---|
| | | No | Yes | |
| Size of Party | Only You | 37.8% | 62.2% | 100.0% |
| | 2 people (including you) | 42.6% | 57.4% | 100.0% |
| | 3 people (including you) | 43.9% | 56.1% | 100.0% |
| | 4 or more people (including you) | 47.1% | 52.9% | 100.0% |
| | Not applicable - didn't fly in last 12 months | 73.5% | 26.5% | 100.0% |
| Total | | 44.6% | 55.4% | 100.0% |

*Table 13: Chi-squared tests for offset interest by size of party*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 68.563[a] | 4 | .000 |
| Likelihood Ratio | 69.607 | 4 | .000 |
| Linear-by-Linear Association | 43.663 | 1 | .000 |
| N of Valid Cases | 2354 | | |

As expected, concern about climate change was also highly significant at the 5% level. The more concerned participants said they were about climate change, the more likely they were to express interest in offsetting, as can be seen in Table 14. Table 16 shows this to be highly significant at the 1% significance level.

*Table 14: Cross-tabulation for offset interest by concern about climate change*

| | | Offset Interest | | Total |
|---|---|---|---|---|
| | | No | Yes | |
| Concern about Climate Change (scale from 1-5) | 1 | 74.3% | 25.7% | 100.0% |
| | 2 | 64.9% | 35.1% | 100.0% |
| | 3 | 56.3% | 43.7% | 100.0% |
| | 4 | 37.8% | 62.2% | 100.0% |
| | 5 | 25.4% | 74.6% | 100.0% |
| Total | | 44.6% | 55.4% | 100.0% |

*Table 15: Chi-squared tests for Offset Interest by Concern about Climate Change*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 188.098[a] | 4 | .000 |
| Likelihood Ratio | 192.294 | 4 | .000 |
| Linear-by-Linear Association | 183.119 | 1 | .000 |
| N of Valid Cases | 2356 | | |

A logistic regression with offset interest as dependent variable, and treatment group, size of party, and climate change concern as independent variables shows that the intervention no longer remains significant, meaning that the variance in the sample with regards to 'offset interest' is explained by participants' concern over climate change or the size of the party when they last travelled, and *not whether they received the nudge or not* (see table 16).

*Table 16: Logistic regression with intervention group, size of party and climate change concern*

| | Sig. | Exp(B) |
|---|---|---|
| Intervention group (nudge/control) | .196 | 0.889 |
| Sizeofparty – 1 | .004 | |
| Sizeofparty – 2 | .000 | 1.500 |
| Sizeofparty – 3 | .098 | 1.217 |
| Sizeofparty – 4+ | .567 | 1.100 |
| CCConcern – 1 (not concerned) | .000 | |
| CCConcern – 2 | .000 | 0.103 |
| CCConcern – 3 | .000 | 0.166 |
| CCConcern – 4 | .000 | 0.230 |
| CCConcern – 5 (Very concerned) | .000 | 0.516 |
| Constant | .000 | 3.101 |

## 6.3 Summary of findings

The second RCT shows that the nudge failed to encourage offset interest or behaviour. In fact, the nudge seems to have had a counterproductive effect, with participants more likely to express interest in offsetting if they were in the control group, and hence received no nudge at all. However, this counterproductive effect becomes insignificant when we control for the variables climate change concern and size of party, suggesting that the effect of the nudge was less

influential than these pre-existing characteristics of the participants. When it comes to offset behaviour, that is, the actual purchasing of offsets, both RCTs appear to have failed dramatically. The following section will try to offer some explanations for why this might be so, and what conclusions we might be able to draw from the cumulative findings from all three data collection stages.

# Chapter 7: Discussion

## 7.1 Limitations

Before moving on to discuss the findings from the data collection in this project and the more general conclusions which can be taken from it, it is first useful to acknowledge the limitations of this study. The main limitations of this project relate to the sample and potential problems with the way the RCTs were constructed.

The sample of students used in both the RCT and focus groups may have been justified by the fact that students fall into a demographic profile of people 'likely to offset' as indicated by the existing literature on carbon offsetting, but it may that results cannot be generalised to the general population and hence are not externally valid. It is possible that the extremely low number of people who bought an offset in the RCT is due to the fact that students might not be affluent and are thus unwilling to pay for 'extras' (despite the low price of carbon offsets), and non-students may have behaved differently.

As noted in the findings and discussion, there were technical issues which may have limited the study, particularly in regard to the RCT. First of all, the choice of Carbon Footprint as a collaborative partner for the project might not have been an ideal choice, because their website required people to sign up with an email address before they could purchase an offset, which may have discouraged people from following through on their impulse to buy. The other company which was approached to act as a collaborator, Climatecare, have a much simpler transaction process which does not require customers to sign up. Also, some participants said that the Carbon Footprint website did not look very attractive or professional compared to the Climatecare website (which was shown in the focus groups, to explain the concept of offsetting). These presentational and procedural issues might have made a difference, but in the event, Climatecare were unable to collaborate due to concerns they held about data sharing.

Perhaps a more fundamental limitation is the fact that the RCT created a 'lab-based' situation which was not entirely 'realistic' and was not happening in 'real-time'. Asking respondents to buy an offset for a flight they took in the past, is quite different from being asked to offset a flight *at the same time* as buying that flight, which is perhaps the more realistic situation which the RCT was trying to emulate. A related issue also concerns the RCT. Combining the RCT with an online survey was a useful way to get respondents to take part, but possibly they were dissuaded from buying an offset because they were not in the 'frame of mind' to make a purchase when they thought they were just answering a short set of survey questions.

As outlined in the discussion (section 5.1) there are several ways that the trial could be re-formulated to take account of the feedback given in the focus groups. Future research on this topic might look at re-formulating an RCT using (a) an easier, quicker online process for purchasing offsets; (b) building a social norm nudge which creates more peer pressure; (c) harnessing the 'guilt' factor in flying as a nudge, and (d) 'divorcing' the RCT from the survey. It would also be interesting to see if participants, having been exposed to information about carbon offsetting, were more likely to offset their flights booked after the intervention, to test the hypothesis that prior awareness of offsetting might be an influential factor. None of these changes would be easy, and each would carry its own practical challenges. Yet in spite of the limitations I have outlined here, this project has generated some useful and novel findings, which the next chapter will describe.

In spite of the limitations outlined above, I argue here that this project has made three unique contributions: two empirical contributions based on my data collection, and a theoretical contribution derived from my literature review. Firstly, in addressing the research questions outlined at the outset of this thesis, the data collection did provide some answers which illustrate the limitations of nudging for carbon offsetting, and attempt to explain them. I offer two explanations: one in terms of the specific design of the nudges I used, and another regarding more substantive barriers which may make pro-social/pro-environmental behaviours resistant to nudges. A second empirical contribution is made to the rather small existing literature regarding the characteristics of likely carbon offset customers. The third contribution is my theoretical construction of nudging as a duality of macro-libertarianism and micro-paternalism. That is, in contrast to the prevalent critiques of the nudge agenda as either too liberal *or* too paternalistic, when viewed through the prism provided by the literatures of anti-politics, post-politics and de/re-politicisation, it may plausibly be seen an example of both.

## 7.2 On the limitations of nudging in encouraging carbon offsetting

This project has illuminated some of the potential for and limitations of nudging in encouraging carbon offsetting. The RCTs clearly showed the limitations of nudging in two ways. Firstly, the fact that so few people paid for an offset out of large samples shows that in behavioural terms, the nudges failed. Secondly, the fact that the nudges made no statistically significant impact (compared to the control groups) in terms of generating 'interest' in offsetting, shows that in attitudinal terms, the nudges also failed. From a strict reading of these quantitative results, it appears that, referring back to the first research question, the limitations of nudging are far more visible than its potential to encourage carbon offsetting for air travel.

The focus group data also underline the limitations for nudges in this area. Participants' evaluations of the three nudges indicated problems with each one. In the case of the descriptive norm, the message seemed powerful, yet distant, anonymous and impersonal. In the case of the third party endorsement nudge, the message appeared to distract respondents' attention away from their own individual behaviours and onto the 'big' behaviours of large companies and corporations, making individual behaviours seem small and irrelevant by comparison. The influence of green NGOs seemed to make little difference here as well, as most participants considered their backing for offsetting obvious and unremarkable. The affective message received a very mixed reception in the focus groups, as the way it was perceived as akin to a charity appeal seems to have undermined its ability to link the environmental benefits of carbon offsetting with social and humanitarian co-benefits.

Following focus group feedback and addressing other potential design shortcomings of RCT1, a second 'improved' RCT was designed with a 'social norm' nudge, which had been most successful in RCT1. The fact that this RCT2 nudge still failed to create a significant effect on either offset behaviour or interest suggests that there are some substantial barriers to using nudges in the area of carbon offsetting for air travel. However, since design issues cannot be completely ruled out as one of the reasons for this outcome, the following section discusses ways in which these barriers are likely to do with nudge design (i.e. there is the potential for them to be re-designed), as well as more substantive problems with nudging and/or carbon offsetting more generally (which cannot simply be re-designed).

### 7.2.1 Problems of design or substance with nudging and offsetting

It is difficult to disentangle problems with the nudges in terms of the way they were designed, and more substantial problems which may be irresolvable, at least within the confines of the nudge paradigm. However, using data both from the focus groups and other literature on behaviour change and nudging, we can discern some lessons to take from this project in terms of which problems could, conceivably, be resolved, and which ones could not.

#### 7.2.1.1 Design Problems

##### 7.2.1.1.1 Offset behaviour

We need to address the reasons why so very few people actually bought an offset, compared to the rather large numbers of people who expressed interest in offsetting by using the carbon calculator. It is likely that this is due to the RCT being embedded in a survey, so participants were unprepared for actually paying money when they only expected to answer a few questions. A

future trial could attempt to 'divorce' the RCT from a survey in order to avoid this and link the nudge directly to the process of purchasing a flight. Secondly, as the focus group data suggested, the offset website was not attractive enough, and involved too many 'clicks', including a requirement to register as a user of the site before payment could be made. This was likely to deter all but the most enthusiastic potential offsetters. Indeed, a study by the BIT found that simply reducing the number of clicks required in the online process for tax returns increased the response rate to tax compliance letters from 19% to 23.4% (Service et al. 2014), suggesting that more clicks are likely to lead to higher attrition rates with people becoming bored and/or frustrated before completing a particular online process. These problems were recognised after the focus group data was collected, but in the interests of comparability between the first and second RCTs, the format was kept the same. However, future research could potentially address these issues with a different methodological design (a point discussed in the limitations section above). On actual offset behaviour, the extremely low number of offset purchases points to a technical weakness of the RCT design, rather than a more generalizable finding.

#### 7.2.1.1.2 Offset Interest

Asking participants to make a real monetary payment is rather a demanding measure of success for any intervention. Asking participants to consider using a carbon calculator for their last flight – expressing 'interest' in offsetting – is far less demanding, and yet providing nudges did not seem to make any difference to this measure either, even after the process of 'Test, Learn, Adapt' which this project employed. This may be for the following design reasons: "too much information" being provided in the second RCT, an ineffective social norm message, and a lack of attention to 'intrinsic values' at the expense of more technical language in the second RCT.

It is possible that by including more information in the second RCT, the nudge became overwhelming or uninteresting to participants – even though the focus group data had suggested participants would value more information. Previous research into the effect of energy efficiency labelling for domestic appliances such as dishwashers or washing machines, conducted for the European Commission, found that there was a 'sweet spot' in terms of how much information had a significant effect on purchasing behaviour. Too little or too much information were counterproductive (IPSOS & London Economics 2014), and the same may be true of this intervention. It is also possible that, by including a lot of information, the nudge requires more cognitive processing and is a 'system 2' nudge, requiring customers to reflect and deliberate on carbon offsetting, rather than make a quick, unconsidered 'system 1' response. It is possible that, following reflection on carbon offsetting, participants simply didn't like what they saw, and rejected the nudge. A nudge which hit the 'sweet spot' for information provision might

conceivably be more effective. However, as carbon offsetting is such a little-understood concept, as the focus group data showed, it is difficult to see how to balance the need to introduce the concept with the need for brevity and engagement with users.

The social norm message may have been ineffective because it was too 'distant' from the participants. The message that 'many other people already offset', accompanied with some statistics, may have been too vague and abstract, as the focus groups suggested. Participants may also have thought that because they didn't know of many people who had bought offsets in their own lives – i.e. by using their 'availability heuristic' (Tversky & Kahneman 1974) – it was probable that almost no-one buys offsets. This may have given them licence to ignore the call to offset, because they 'knew' from their own experience that it was not an activity most people (at least, not people that 'matter' to them) engage in. As carbon offsetting is a marginal activity, it may be reasonable that using a social norm nudge is unlikely to be effective in encouraging it.

Another possible issue with the nudge was that it was framed in terms of what Crompton (2016) labels 'extrinsic values', that is, referring to issues of social status or wealth, as opposed to 'intrinsic values' such as care for the environment, benevolence and universalism. Previous research has found that for campaigns which are aimed at 'intrinsic goals', such as social justice or care for the environment, using intrinsic value frames fosters a far more positive response than using extrinsic ones (Crompton et al. 2014). As the nudge in the second RCT focussed on issues of cost, transparency, and a technical explanation of offsetting, rather than on the broader cause of environmental protection, there may have been a 'values mis-match', as participants were primed to consider the 'wrong kind' of values. Given that the participants most likely to be interested in offsetting were those who held higher concern about climate change, addressing their pro-social, pro-environmental 'intrinsic' attitudes might be a way to improve the effectiveness of this intervention.

During the course of this research project, the BIT published its successor to the MINDSPACE toolkit for nudge-style interventions called 'EAST', which advocates for the creation of nudges which are 'Easy, Attractive, Social, and Timely' (Service et al. 2014). Viewed with these four factors in mind, the design weaknesses of the nudges and the RCTs as a whole may appear quite clear. The cognitive demands of learning about carbon offsetting in the short timescale of the nudge intervention may have been too 'difficult'. The offset website was deemed unattractive by some focus group participants, and the fact that users needed to provide a sign-up email address may have also added to the 'difficulty' load. The social norm nudge may have been fatally weakened by the participants' being unaware of members of their social group buying offsets. Lastly, the fact that the RCT was conducted *after* participants had taken a flight, and not at the

time of booking, may have also significantly weakened its potential. One potential avenue for future research might be to trial different nudge interventions which addressed these EAST factors, although this would be challenging without collaboration with airlines in a field setting, or realistic lab-based simulations of flight purchase situations.

#### 7.2.1.2 Substantive Problems

Even if the nudges could be amended in the ways indicated in the previous section, there are additional, more substantive problems with nudges for carbon offsetting which are likely to persist even if such amendments were carried out. Four are identified here. These are: ignorance over offsetting and a lack of social support for it; the fact that offsetting is an 'invisible' behaviour and so is less subject to social monitoring or peer pressure; an association of nudges with negatively-constructed 'cousins'; and a lack of incentives to offset.

In the previous section it was argued that nudges could potentially be used if they avoided harnessing social norm messages which might inadvertently highlight the fact that offsetting is a fringe activity, by activating participants' 'availability heuristic'. But even if nudging were to take a different form, the fact that carbon offsetting is something which most people have not heard of and do not understand will not change. Looking at other examples of nudges, the desired behavioural outcome is usually one which is already known and understood by the users. Saving for pensions, organ donation, recycling, reducing energy use, eating less junk food – these are behaviours which most people understand and are familiar with, and so nudging people to adopt these behaviours is 'pushing on an open door'. Yet carbon offsetting was shown in the focus groups to be an unfamiliar concept, and so expecting people to start offsetting flights on the basis of one short-lived nudge might be asking too much. Therefore building up awareness and filling in 'information deficits' might be a plausible strategy for engendering carbon offsetting as a familiar behavioural choice. The role of promoting carbon offsets might fall to offset companies, the government, or, most effective of all, airlines and airports, who have the most direct contact with passengers at the time of booking and at the time of flying (Burns & Cowlishaw 2014), when these issues are most salient. However, most airlines do not have an interest in making the carbon emissions of flying a salient topic with their customers, so it seems unlikely that they would accept this role of promoting offsetting. The fact that many airlines have closed their offset schemes since starting them (often with great fanfare) in or around 2007, also points to a lack of enthusiasm on the part of the aviation industry. Perhaps more problematic is the assumption here that simply relying on better flows of information might not, on its own, engender any significant behaviour change. The literature on behavioural economics and the social-psychological approach to behaviour change highlighted in the literature review highlight the inadequacies of this

utilitarian model of behaviour. Simply *informing* people that carbon offsetting exists as an option might not, on its own, lead to people actually buying offsets. We know that there is a disjuncture between people's environmental awareness and behaviours (Lorenzoni et al. 2007; Whitmarsh 2009). Providing information on carbon offsetting might be a start, but much more is needed to make it a common activity which people feel they instinctively 'ought' to do.

A second and related substantive problem relates to the virtual 'space' in which offset behaviour occurs. Harnessing the power of social norms for online behaviours such as buying flights or offsets is difficult because much online behaviour is often effectively 'invisible' to others and lies beyond the gaze of one's peers. Under Kinzig et al.'s distinction, personal norms state "I'm not the kind of person who litters" while social norms state "I don't want others to think I'm the kind of person who litters" (2013, 166). If our behaviour is not exposed to others, then the power of social norm nudging is much diminished. On this issue, some of the focus group participants said that if social media outlets such as Facebook could be used to show that one's friends had purchased an offset, then they might be motivated to follow suit. Indeed, research into charitable giving has shown that people are likely to donate, and to donate more, if they can see that their peers have already donated to a specific fundraising campaign online (Smith et al. 2015). Similarly, nudges to reduce energy use or promote recycling have worked by making the behaviour of neighbours more 'visible' (e.g. by the use of comparative information and smileys), thereby mobilising the power of peer pressure (Nomura et al. 2011; Schultz 1999). Future work into harnessing social media to make online behaviours more amenable to social norm-style nudges might thus provide more fruitful results. As it stands, much online behaviour is not 'visible' and so is immune to the influence of social norms and peer pressure.

Thirdly, a more specific problem is that offsetting is associated with negatively-constructed 'cousins'. Focus group data suggested that carbon offsetting is far more likely to be purchased at the point of purchase for a particular flight (and not in retrospect, as it was constructed in the RCTs in this project). However, this points to another potential problem. Focus group participants also commented that there were many annoying 'additional charges' at the point of booking a flight online for extra services such as car hire, travel insurance, hotel bookings and even donations to charities supported by some airlines. Including carbon offsetting as yet another 'additional service' might mean that it is passively overlooked or actively dismissed by customers.

On this point, there are other practical considerations which might explain why offsets are often not offered by airlines in the first place, and how it is becoming increasingly unlikely that they will make a comeback. Jonathan Shopley, Managing Director of the Carbon Neutral Company – a UK-based offset company – notes that airlines are well aware of customers' dislike of optional extras

on their websites, and so will try to minimise the number of them. He also observes that after the PPI insurance scandal of the early 2000s (see Wearden 2011), airlines are highly wary of potentially 'mis-selling' any services (Jonathan Shopley, personal communication, 28th January, 2014). Indeed, a recent European Commission directive has banned pre-ticked boxes for 'extra' services on websites – particularly targeting airlines – which would mean that having a default opt-in for carbon offset purchases would be illegal for airlines operating in EU states (European Commission 2014b). So despite previous research showing the power of using defaults to automatically opt-in customers to offset (Araña & León 2013), this would be illegal for airlines to actually implement if they wanted to, which is in itself unlikely. With airlines being mindful not to overload their customers with 'extra services' online, it is highly likely that offering profitable extras (such as selling travel insurance, car hire, etc.) would be prioritised over offering carbon offsets.

Much as there is little incentive for airlines to offer offsets, there is little or no incentive for customers to purchase them either. This is the fourth and perhaps most important substantive problem with carbon offsetting, and one which takes us back to the difficulty in creating effective pro-social nudges when using a 'softer' system 2 intervention as this project did. Pro-social nudges have been effective in other scenarios such as recycling, reducing unnecessary laundry, and charitable donations (Cotterill et al. 2008; Goldstein et al. 2008; Nomura et al. 2011; Behavioural Insights Team 2013a; Smith et al. 2015). For these behaviours, there is also no material incentive for individuals to comply. The difference may be that the other confounding problems outlined above, which specifically affect carbon offsetting, do not affect these other behaviours. That is, when pro-social behaviours are already '*common'* (and individuals can refer to their prevalence easily through their availability heuristic), *'visible'* (i.e. others can 'see' them being done), and they are *not* associated with negatively-constructed 'cousins' (as carbon offsetting is associated with annoying 'extra' services), then nudges might work. If these other problems are present, then it is likely they will remain ineffective. This is a key finding of this project, and one which contributes to the nudging literature by identifying some important boundaries beyond which certain problematic behaviours are likely to be resistant to nudges.

## 7.3 The characteristics of likely offset customers

In the literature review I gave details about the small amount of previous research which had looked at the profile or characteristics of people who bought voluntary carbon offsets for flying. This literature is composed of face-to-face survey data collected in airports, provided by McLennan et al. (2014) and Hooper et al. (2008). My data contributes and, to an extent, corroborates this data. While the nudge interventions did not create any significant change in

offset interest in either RCT, the survey data collected did show some significant relationships between offset interest and other variables. In RCT1, interest in offsetting was shown to be positively associated with concern about climate change (i.e. the more concerned respondents were, the more interested in offsetting) and the purpose of the last flight being for a holiday, or to visit family and friends. Both of these relationships were significant at the 95% confidence level. Also in RCT1, the number of flights a respondent took was shown to be a significant predictor of offset interest at the 99% confidence level (i.e. the more flights they had taken in the previous year, the more likely they were to be interested in offsetting).

In RCT2, interest in offsetting was again shown to be positively associated with climate change concern about climate change (i.e. the more concerned they were, the more interested in offsetting), and size of party were shown (the smaller the group they had travelled with on their last flight, the more likely they were to be interested in offsetting). Both of these relationships were significant at the 99% confidence level.

The RCT findings also show that other explanatory variables detected by Hooper et al. and McLennan et al. may also be applicable to this sample as well. For those interested in increasing the popularity of carbon offsetting, the strategy of segmentation to target young students, and especially those who are (a) very concerned about climate change, (b) who travel in small groups, (c) who travel to visit family/friends or for holidays, and who (d) fly frequently, may be a fruitful one.

We might consider why these variables are significant predictors of carbon offsetting. Smaller size of group may mean that an individual traveller feels a greater sense of responsibility for their own travel, and therefore more motivated to offset its environmental impact. Travelling in a large group may mean that responsibility dissipates between members, a classic type of collective action problem. Travelling in a group may also indicate that the trip is being conducted out of obligation or duty – group trips might be more likely to be taken for family holidays, for events such as weddings, on university field trips etc. When an individual travels alone (especially when that individual is a university student, as in my sample) it may mean they are travelling out of choice, perhaps the trip was not an essential one, and therefore they may feel more motivated to consider buying an offset. The same may be said of those who travel for holidays: when the reason for flying is a voluntary one, travellers may feel more inclined to consider offsets. Similarly again, visiting friends or family may be seen as a choice, whereas travelling for business or for study may not. Targeting offset schemes at those flying for leisure or to visit friends/family may be an effective segmentation strategy, especially as these now constitute the top two reasons for flying (UNWTO 2014).

Frequent flyers may be more interested in offsetting because they feel a greater sense of responsibility for their environmental impact – either at the moment when they are prompted to consider it by a nudge, or because they are more aware of the carbon footprint of their frequent flying. A similar relationship between frequent flying and offsetting interest has been found in WTP studies (Lu & Shon 2012; Brouwer et al. 2008; Hooper et al. 2008; Gössling et al. 2009), although Choi & Ritchie (2014) found, interestingly, that frequent flying was only a predictor of high offset WTP for domestic or intracontinental flights, and not long-haul. Because long-haul flights cannot reasonably be substituted with another form of travel, travellers may feel they have little choice but to fly and therefore do not feel a sense of responsibility to offset.

## 7.4 Macro-libertarianism and micro-paternalism

The third contribution of this thesis is the theoretical contribution provided in the literature review (in section 2.2.3). I contribute to existing literature which has portrayed libertarian paternalism as either too liberal or too paternalistic (Loewenstein & Ubel 2010; Hall 2013; House of Lords Science and Technology Select Committee 2011; Mills 2013; Goodwin 2012; Waldron 2014; Gigerenzer 2015; Sugden 2009). By integrating literature from post-politics, anti-politics, de- and re-politicisation, I show how nudge and libertarian paternalism can be seen as emblematic of contemporary neoliberal governance. That is, governance which is *both* liberal regarding macro-level regulation of business, whilst also increasingly paternalistic in regard to micro-level behaviours and the individualisation of responsibility.

Without repeating that argument in its entirety again here, the aviation industry in general may be seen as a particularly apt example of this trend, with particularly damaging environmental results. As shown in the literature review, the industry has enjoyed relatively light-touch regulation for many years, allowing it to charge prices which are lower in real terms than was possible twenty years ago, with the consequence being explosive growth both in passenger numbers and carbon emissions. As earlier illustrated, passengers have shown reluctance to reduce air travel, and yet carbon offsetting – one method of individualising responsibility in this sphere – has remained a marginal behaviour even ten years after many major airlines first started to offer it to customers. The results from my project show that even when targeting a population which is supposedly sympathetic to offsetting, and using nudges to encourage offsetting, there is still reluctance for individuals to take responsibility when it means paying more money. Hence we see an industry where neither the producers nor consumers appear willing to take responsibility for the negative externalities produced by their activity. My construction of nudge as macro-libertarian and micro-paternalistic is not solely a theoretical contribution, but is one which can help us to make sense of empirical cases of nudging too. Using aviation as an example in this

thesis, I have shown that this model of governance can have serious weaknesses, and worrying environmental consequences too. In the next, final chapter, I propose different approaches to both behaviour change policy in general, and sustainable aviation in particular.

# Chapter 8: Conclusions

This thesis has identified limitations of nudging for carbon offsetting, based on the findings of the RCTs, and enriched by focus group data. I have tried to extrapolate lessons from the RCT failings in terms of nudge design, and in terms of more substantive barriers which are likely to make system 2/pro-social nudge interventions ineffective. In policy terms, the failure of nudging can also tell us something. It is likely that most failed nudge experiments go unreported and unpublished, yet when nudges do not work, rather than ignore such findings and assume the problem is always one of design, we can also attempt to learn from failed nudge experiments, and try to ascertain alternatives for public policy, as appropriate. This final section tries to do this, using aviation as a case study of a seemingly intractable, 'wicked' social problem for which individualised, voluntary policy measures appear inadequate.

## 8.1 Alternative approaches to sustainable aviation and behaviour change

One reason for the choice of the aviation industry as a case study for nudging was to attempt to reconcile the 'policy-clash' between aviation policy and environmental policy. Based on the findings in this project, it appears that carbon offsetting and nudge techniques each have their own shortcomings, and placing voluntary action as the basis for a shift towards 'sustainable aviation' is likely to be insufficient. My case study thus highlights, empirically, the weaknesses of the macro-liberal, micro-paternal style of governance which has been described in previous chapters.

In the focus groups, participants indicated, without exception, that low prices were a key factor enabling their aeromobility. Despite all the research into behavioural economics, cognitive heuristics and nudging undertaken in this project, it seems that unsustainable levels of air travel are driven by 'traditional' economics (flying is cheap), and by a range of social factors (flying is embedded in practices; is relevant to identity and social status etc). Against these very powerful socio-economic factors, nudging people to buy carbon offsets on a voluntary individualised basis is highly unlikely be an adequate response. To this end, emerging from the findings in this project is the strong suggestion that systems of provision need to be adapted so that, eventually, flights might become more expensive relative to other, less carbon-intensive forms of travel. This might be achieved through placing a carbon tax on aviation, the revenues from which be used to fund carbon reduction in other sectors or to finance better low-carbon alternatives to aviation such as high-speed rail. A carbon tax could also act to stabilise air passenger numbers within sustainable

limits. As an indicative figure on the price changes required to stabilise passenger numbers by reducing demand, Grote et al (2014) estimate that a 1.6% annual reduction in passenger demand is required to achieve carbon neutral growth from 2020 onwards, meaning that air ticket prices are required to increase, in real terms, by 1.4% each year. Such a policy would certainly be at the more radical end of the spectrum as far as approaches to behaviour change go. This final section will examine how traditional economics *and* behavioural economics can both play a role in fostering the structural and behavioural changes required of sustainable aviation.

As we have seen, there are many sociological reasons why we want and 'need' to fly, but the main enabler of that mobility is the relatively low prices of flights. This leads us to wider issues of governance. Nudge-based interventions along with other 'soft' behaviour instruments including social marketing, and perhaps carbon offsetting, fall into a larger neoliberal governmentality, one which sees a reduced role for the state in directly regulating markets, and a greater role for autonomous, reflexive individuals. This is perhaps one reason why nudge has been criticised for being too liberal or too paternalistic or, as I have argued, both: liberal at a macro/industrial scale *and* paternalistic at a micro/individual scale.

We can observe this trend in a variety of aspects of public policy, but especially in aviation policy, where the airline industry enjoys a low level of regulation in terms of its environmental externalities, and responsibility is placed on individual consumers to make 'greener' choices, should they wish to, by either not flying, or by perhaps buying a carbon offset voluntarily.

### 8.1.1 Nudges alongside shoves to create political "buy-in"

To change this implies a much larger role for the state in reforming the systems of provision for air travel in a profound way, and in a way which runs counter to the direction of travel of contemporary neoliberal governmentality. Yet in many other fields of behaviour we have seen that change on a radical scale has often followed acts of government: "from wearing seat belts to the erosion of discriminatory attitudes towards homosexuality, huge changes in British social behaviour have been wrought in recent decades through the change in values and norms signalled by legislation" (Horton 2009, 297), and in terms of environmental behaviour Ockwell et al. (2010) note how, despite initial resistance, the introduction of the congestion charge in London successfully reduced the city's carbon emissions and soon became a popular policy. For air travel, there may be a requirement for governments to introduce a carbon tax on air travel, and for the air industry globally to enter into a cap-and-trade carbon market, underpinned by legislation. There is no doubt that, given the global nature of the airline industry, this would be complex, and given the popularity of cheap flights, it would also be politically challenging. It is for this reason

that softer social/psychological approaches to behaviour change may need to accompany the hard reform of structures of provision, in order to educate and inform the public and foster political 'buy-in' among aeromobile electorates.

Higham et al. (2015) argue that providing feedback on carbon emissions from travel can help people understand the contribution that their travel habits make to climate change. In the interviews they conducted, participants said that this feedback was often surprising and 'made them think', but also admitted that information alone would not mean that they changed their own travel habits, as long as prices remained low and aeromobility appeared to be a social norm. However, they did indicate that it would make them more *sympathetic* to any government policies aimed at curbing frequent flying. Participants in Higham et al.'s study, as in this project, expressed frustration that the carbon footprint of air travel was not better communicated to them, and participants in their study, as in mine, were genuinely surprised to see how aviation emissions compared to the carbon footprint of other activities. There may be a role for governments to force airlines to tell customers the carbon emissions of any given trip, so as to make this information more salient. We know that feedback and price signals can be significant motivators for change, and Thaler and Sunstein acknowledge that one of the major problems for environmentally impactful behaviours is that "people do not get feedback on the environmental consequences of their actions"' (2008, 195). Politically it is likely that steps to reduce mobility, or to make it more expensive, will be strongly resisted unless they are accompanied by innovative strategies to inform and educate the public, perhaps through social marketing campaigns about the climate impact of flying, or nudges to promote alternative forms of transport. Informed by tenets of behavioural economics, such strategies could mobilise the power of social norms, affective messages, and effective messengers (see Cabinet Office 2010b). Together, this would mean bringing in social/psychological approaches aimed at changing micro-level attitudes and behaviour, *as well* as structural approaches aimed at macro-level industry regulation. In conjunction with shoves aimed at regulating the air industry, social marketing and nudges could be used to promote a positive vision of the future, where the sacrifices of reduced mobility for a few are justified by environmental security for all. The complexity of aeromobility as a practice and as a global industry has so far rendered it resistant to substantive regulation, but as Urry argues, complex, pervasive and global systems, apparently characterised by 'lock-in', can also sometimes tip into different states, often quite rapidly (Urry 2004; 2005). Given the immediacy of climate change, and aviation's exponential growth, such a tipping point cannot come quickly enough.

### 8.1.2 Using behavioural insights to 'budge'

The literature review (in section 2.2.3) presented Shove's critique of the ABC approach to behaviour change, an approach which has led both policy-makers and academics to be overly focussed on individual-level solutions to policy challenges, at the expense of more radical supply-side regulation. This is a criticism we can also see in my critique of libertarian paternalism as liberal in regards to industrial regulation whilst paternalistic in regards to individual behaviour. However, behavioural insights need not necessarily lead to individualised behavioural policies at all. In fact, the results from this project, along with other behavioural research findings, could be used to stimulate more industrial regulation by illustrating the shortcomings of individualised behavioural policies. As Oliver argues, "the most effective way of preventing people or organisations harming others is to regulate their activities. Nudge is anti-regulation, but behavioural economics is not" (2014, 698). Oliver calls this approach 'budging', or "behavioural economic-informed regulation designed to budge the private sector away from socially harmful acts" (698). This suggests an interesting way for governments to assert their authority to intervene on a 'macro' industry/regulatory level, rather than (solely) on a 'micro' citizen/behaviour one.

We have already seen the UK government in 2012 force energy companies to put consumers onto the cheapest possible energy tariff as a 'default'. This was done because the government was mindful of the cognitive heuristics of 'present bias' and 'status quo bias' which mean that many people might maintain an inappropriate and expensive energy tariff (Leggett 2014). Without creating legislation to 'budge' energy companies, this situation was likely to persist, with consumers potentially wasting money (and energy), and with no incentive for energy companies to change. The European Commission ban on pre-ticked boxes on websites was also a budge, in that it regulated private companies' behaviour, based on similar insights which suggested consumers status quo bias could lead to them being mis-sold products (European Commission 2014a). Similarly, findings from this project may suggest that due to the substantive problems identified with carbon offsetting – such as a lack of descriptive norms (because it is a fringe activity), or the 'invisibility' of the behaviour (therefore its resistance to peer pressure) – means that a situation where people do not voluntary mitigate the effect of air travel by offsetting is also very likely to persist. Airlines also have little or no incentive to change this situation. These findings might also illustrate a need for behavioural economics-informed regulation in regard to the air industry. If, as was the case in this project, levels of interest in offsetting cannot be influenced in a sample of people who are most likely to offset (according to the previous literature) across two different experimental settings, then it is highly unlikely that offsetting is a suitable behaviour to be subject to nudge-style interventions, and so shifting attention towards a

budge-style intervention may be justified. This may well be true for many other pro-social behaviours for which – as was the case in this project – the use of system 2 nudges is likely to be ineffective, and the use of system 1 nudges might be perceived as too ethically contentious, or in the case of pre-ticked boxes online, simply not legally possible. Behavioural insights can be used not only to highlight behaviours where the application of nudges might be possible and effective, but also to highlight behaviours for which nudges are *not* possible and *in*effective, and to therefore provide a scientific rationale for greater government intervention at the macro-level of industrial regulation, and not (only) at the micro-level of individual behaviours. It remains to be seen whether governments can find the same enthusiasm to shove and budge where necessary, as they have found to nudge.

# Appendices

## 8.2 Appendix 1 Online consent form for RCTs 1 and 2

# Travel Questionnaire

**Welcome to the survey on students' air travel behaviour which I am conducting as part of my PhD at the University of Southampton. Please complete all the questions and make sure you click save at the end of each page.**

**It should take less than five minutes.**

**All data collected for this project will be anonymised before analysis, and participants will never be identified in any outputs from this research.**

**If you have any questions about the survey you can contact me on R.Tyers@soton.ac.uk**

*Should you have any complaints to make about this survey, you can contact Dr Martina Prude, Head of Research Governance (02380 595058, rgoinfo@soton.ac.uk).*

*Ethics Submission ID:9252*

**Thank you very much for your time.**

**Roger Tyers, University of Southampton.**

---

☐ Please tick (check) this box to indicate that you consent to taking part in this survey

Submit

## 8.3 Appendix 2: Consent form for focus groups

**CONSENT FORM**

**Study title**: Focus Group on Air travel and the Environment

**Researcher name**: Roger Tyers

**Ethics reference**: 12637

*Please initial the box(es) if you agree with the statement(s):*

I have read and understood the information sheet (Dated 05/11/2014 Version:1) and have had the opportunity to ask questions about the study. ☐

I agree to take part in this research project and agree for my data to be recorded and used ☐

I understand that my responses will be anonymised in reports of the research ☐

I understand my participation is voluntary and I may withdraw at any time without my legal ☐

***Data Protection***

*I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study.*

Name of participant (print name)……

Signature of participant……..

Date……

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