Forest Research

Appendix 14.6:

Potential for behavioural policy 'nudges' to encourage woodland creation for flood mitigation

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The Research Agency of the Forestry Commission

Forest Research is the Research Agency of the Forestry Commission and is the leading UK organisation engaged in forestry and tree related research. The Agency aims to support and enhance forestry and its role in sustainable development by providing innovative, high quality scientific research, technical support and consultancy services.

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Summary

Engaging landowners in woodland creation can sometimes prove difficult, affecting prospects for meeting national woodland planting targets and associated flood mitigation objectives. Although reticence is often attributed to the low financial attractiveness of such schemes, wider factors – including long held cultural views on changing land use can also be important. This report examines work by the Government's behavioural insight team (BIT) and others to investigate how 'nudge' type policies and other insights that draw upon behavioural economics might be applied to encourage woodland creation for flood mitigation.

The report takes account of recent work investigating why woodland creation is not being undertaken at a rate needed to meet existing national targets and prospects for increasing it. This draws upon a recent evidence review of the motivations, decision-making and behaviour of British landowners and their agents, and an apparent lack of interest in woodland creation (Lawrence & Dandy, 2014), and interviews with stakeholders concerning prospects for creating 'productive woodland' in Scotland (Lawrence and Edwards, currently unpublished). It helps identify different types or primary objectives of landowners and land managers, for whom a different approach may be needed – including consideration of the extent to which traditional 'cultural polarisation' between farmers and foresters could be overcome by reframing woodland creation in terms of flood mitigation.

Key findings of the study include:

- Woodland creation for flood mitigation requires targeting specific land owners and managers; evidence suggests that individuals are heavily influenced by who communicates the information (the Messenger). Further work is required to identify potentially important individuals, networks and organisations through which 'nudge' policies could be applied and championed – including via non-forestry organisations such as nature conservation bodies and the National Farmers Union.

- There is a range of nudge type approaches which could be used to encourage woodland creation for flood mitigation. These include addressing perceived barriers, and encouraging private woodland creation by highlighting successes and the public sector leading by example.
- Intervention points, where nudges could be used were identified in relation to five different stages of 'motivational readiness' of individual landowners, managers, and investors, from pre-contemplation to action, and maintenance.
- Implementation of nudge type approaches should be tailored towards different types of land managers and owners (Table 1), and stages of decision-making.
- A combination of different nudges may need to be applied as a series of steps in conjunction with other policy instruments.
- Nudge policies have limitations – including their relatively weak and short term impact. There is also a need to consider related approaches such as 'Ask' and 'Think' in the context of existing regulatory frameworks and flood mitigation policy.

Table 1. Summary of evidence and potential application to woodland creation for flood risk management.

Behavioural insight	Element	Evidence	Application to woodland creation	Land owner/ manager type
Prompted choices	Individuals are asked to make a choice as part of an application form	Applying behavioural insights to health – requirement to choose or decline organ donation	Adding woodland creation (with an emphasis on flood mitigation) to application forms for grants for land management	F, E
Format	Make it clearer and easier	Applying behavioural insights to reduce fraud, error and debt – simplify forms and highlight key messages	Consider design of information and application forms, highlighting key messages and pre-populating application forms	F, E, I, S
Remove friction	Identifying and removing actual or perceived barriers	Behaviour change and energy use – loft clearance service for insulation installation	Identify any 'sticking points' in the bureaucratic and physical process of woodland creation and offer a service to deal with them	F, E, I, S
Affect	Using strong feelings to prompt	Creating strong feelings to promote healthy behaviours	Highlighting regions or business types with a high carbon footprint and emphasising the negative	F, E, S

	decisions	(Nudge blog, 2008)	environmental effects	
Social norms	Tell people what others are doing so that people are made explicitly aware of other people's good behaviour	Behaviour change and energy use – energy use in relation to neighbours	Communication of woodland planting by peers and within locality. Use of an 'injunctive norm' will reinforce that this is pro-social behaviour and avoid the 'boomerang effect' where individuals with a 'good' rating move to a 'poorer' social norm	F, E, S
Networks	Using social networks to encourage collective behaviour	Behaviour change and energy use – group discounts	Harness social networks to promote woodland creation through restructuring grant payments to pay increasing rates once threshold levels of woodland creation achieved	F, E
Commitment	Public commitments makes following through more likely	Applying behavioural insights to health – smoking 'contracts'	Encouraging public pledges to create woodland for flood mitigation (publishing pledges on a public or landowner / manager website)	S
Priming	People are influenced by subconscious cues	Changing behaviour for stairs & escalators (iNudgeYou, 2012)	Prime target audiences with woodland creation success stories and demonstration sites	F, E, I, S
Mental accounts	People assign decisions to different mental accounts	Labelling winter fuel payments (Beatty, Blow, Crossley, & O'Dea, 2011)	Promoting woodland creation as part of integrated land management – including options for agroforestry and/or as an investment for a retirement fund	F, E
Exemplify	Encourages individual's desire for reciprocity and fairness	Behaviour change and energy use – reducing Government dept. emissions	Encouraging woodland creation through example and by public commitments	F, E, S
Key moments	Timing interventions at critical points	Applying behavioural insights to health – smoking support	Increase engagement with landowners following events linked to flooding and	F, E, S

	publication of high profile reports, and at key life stages when open to change (e.g. inheritance)

Land owner / manager type key: F = Farmer; E = Estate owners/managers; I = Inward investors; S = Socially responsible investors.

Keywords:
Behavioural economics; insights; nudge, think; ask; stages of change; intervention points; flood mitigation

Contents

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1 Introduction

Slowing the Flow at Pickering (STFAP) is a project based at Pickering in North Yorkshire which aims to use a number of land management interventions to increase flood storage within the catchment, slow down runoff and reduce the risk of downstream flooding following high rainfall events. These interventions include the construction of bunds and 'leaky' dams, woodland planting and improved woodland, moorland and farm management. Modelling by Durham University suggested that woodland planting would have best effect if located in the upper and middle parts of the catchment, with the following hierarchy of effectiveness in slowing water flow:

1. Floodplain woodland
2. Riparian woodland
3. Woodland in adjacent landscape

Potential areas for woodland creation to reduce flood flows were identified by 'opportunity mapping' and led to the following woodland planting objectives:

- Plant 50 ha of riparian woodland within the Pickering Beck catchment and 30 ha of floodplain woodland in the neighbouring catchment of the River Seven at appropriate sites to delay and reduce flood flows.

- Plant 5 ha of farm woodland on sensitive soils within the Pickering Beck and/or River Seven catchments to increase soil infiltration and reduce rapid surface runoff, erosion and sediment delivery to watercourses.

To date only a small amount of woodland planting has been achieved, with constraints cited as landscape and biodiversity factors for riparian woodland, while financial considerations were reported to be key in the lack of landowner interest in floodplain woodland. These financial issues are attributed to high establishment costs, 'loss' of higher value land and lost agricultural income and subsidy payments. The STFAP report (Nisbet *et al*., 2011) concluded that 'to secure change required a higher incentive/compensation'. However, evidence from federal incentive schemes to encourage timber production in the United States suggests that those woodland owners who are interested in producing timber and engage with incentives would have produced timber anyway (Kluender, Walkingstick, & Pickett, 1999). Additionally, little seems to be known about the effectiveness of offering a premium for planting in particular locations, such as flood risk areas.

This suggests that decision making is affected by a range of factors and people's choices may be constrained by what is termed bounded rationality – that people make decisions based upon incomplete information and partial ignorance to reach an option that is good enough, rather than the optimal solution (John, Smith, & Stoker, 2009). The theory of

bounded rationality tells us that people can start to flounder when things get complicated (RH Thaler & Sunstein, 2008). The (perceived or real) complicated nature of engaging with woodland planting schemes and grant applications may act as a deterrent to many people and work on improving landowner engagement alongside how information is framed is needed.

Engagement of landowners in woodland creation can sometimes prove difficult, affecting prospects for meeting national woodland planting targets and associated flood mitigation objectives. Although reticence is often attributed to the low financial attractiveness of such schemes, wider factors – including long held cultural views on changing land use can also be important. This can have consequences for meeting national woodland planting targets, but particularly for flood mitigation which often requires spatially specific woodland creation. Insights from behavioural economics have indicated that individuals are influenced by a number of cognitive factors in making decisions and that certain 'nudges' may help direct choices in a particular direction.

Nudges are described as ways of influencing choice without limiting the options, or appreciably altering their relative costs. They cover a range of interventions, including changing the way choices are presented or framed, the default option, the environment in which choices are made, and highlighting successes and choices made by others.

The term 'nudge type approaches' is used to describe the practical examples considered in this report, which also cover 'Steer', 'Ask' and 'Think' approaches (see Section 3.1 for definitions).

Why nudge?

There is a recognition that "all government policies include, to a greater or lesser extent, some element of intended behaviour change" (The House of Lords, 2011) and the magnitude of this influence can be considered on a continuum of intervention, ranging from unobtrusive monitoring to the elimination of choice (Table 2). Represented by examples in the four columns in the bottom right of Table 2, 'nudges' are relatively unobtrusive influences on individual decision making and choices. A benefit of using a nudge is that it is not dictatorial (unlike regulation) and does not require additional financial incentives or disincentives, instead guiding decision making and choices.

Table 2. Table of interventions, indicating a continuum that ranges from strong influence through regulation on the left of the table to more subtle influences towards the right of the table.

	Regulation of the individual		Fiscal measures directed at the individual		Non-regulatory and non-fiscal measures with relation to the individual					
							Choice Architecture ("Nudges")			
Interventions category			Guide and enable choice							
	Eliminate choice	Restrict choice	Fiscal disincentives	Fiscal incentives	Non-fiscal incentives and disincentives	Persuasion	Provision of information	Changes to physical environment	Changes to the default policy	Use of social norms and salience
Examples of policy interventions	Prohibiting goods or services e.g. banning certain drugs	Restricting the options available to individuals e.g. outlawing smoking in public places	Fiscal policies to make behaviours more costly e.g. taxation on cigarettes or congestion charging in towns and cities	Fiscal policies to make behaviours financially beneficial e.g. tax breaks on the purchase of bicycles or paying individuals to recycle	Policies which reward or penalise certain behaviours e.g. time off work to volunteer	Persuading individuals using argument e.g. GPs persuading people to drink less, counselling services or marketing campaigns	Providing information in e.g. leaflets showing the carbon usage of household appliances **Regulation to require businesses to use front of pack nutritional labelling, or restaurants to provide calorific information on menus*	Altering the environment e.g. traffic calming measures or designing buildings with fewer lifts **Regulation to require businesses to remove confectionery from checkouts, or the restriction of advertising of unhealthy products*	Changing the default option e.g. requiring people to opt out of rather than opt in to organ donation or providing salad as the default side dish	Providing information about what others are doing e.g. information about an individual's energy usage compared to the rest of the street **Regulation to require energy companies to provide information about average usage*

*Note: * Demonstrates how regulation of businesses might be used to guide the choice of individuals, thus distinguishing it from regulation which restricts or eliminates the choice of individual.*

Source: Science and Technology Select Committee report. Behaviour Change (The House of Lords, 2011).

Although it is recognised that woodland creation in the UK is underpinned by regulations and supported by financial incentives, and thus operates across a range of areas covered by Table 2, this report focuses on how changes could be made within the areas represented by the four columns in the bottom right of Table 2 (termed 'choice architecture') - including issues relating to background information, framing and setting.

The view that background information, framing and setting in which choices are made plays a role in shaping preferences differs from the standard conception of decision-making conventionally adopted in economics. Nudge type policies draw upon insights from behavioural economics that show people's ability to make decisions is constrained by their ability to obtain and process information. From this perspective, understanding the influence of cognitive factors – including mental short-cuts (e.g. rules of thumb) and habits, and the role for learning, is needed to increase the likelihood of policies succeeding (John et al., 2011).

This report investigates whether insights from behavioural economics and nudge type approaches can be employed or adapted to encourage landowners to engage in woodland creation. We explore when these approaches should be employed (as intervention points) and types of land owners / managers in relation to their willingness to plant trees.

2 Methodology

A preliminary review examined evidence on landowner engagement with natural flood management initiatives within the catchments around Pickering, with a focus on woodland planting. Next, effort was spent identifying evidence of nudge type approaches being applied more broadly. Building on the findings from a research report on insights from behavioural economics for ecosystem services valuation and sustainability (Moseley & Valatin, 2013) a web-based search was then undertaken. First, the search engine Google was used to examine if lessons learnt from the application of 'nudge' type approaches could be transferred to encouraging woodland creation for flood mitigation. Second, an exploration of academic search engines explored journal articles that focused on theory, rather than application of nudge type approaches. The following search terms for nudge and related approaches were used (see Section 3.1 and Table 3 for a description of differences between the four approaches):

- Nudge
- Steer
- Ask
- Think

Each result providing evidence of the application of a nudge type approach was assessed to determine which elements had applicability to woodland planting. Where a particular approach such as 'Think' or 'Ask' was used or could be identified (e.g. by the use of a process, such as asking citizens to 'Think') the specific approach is named. Where this couldn't be done, the generic term 'nudge type approaches' is used in this report.

3 Results

The following sections examine evidence on landowner engagement with natural flood management initiatives within the Pickering Beck catchment and the neighbouring River Seven catchment. We define nudge type approaches and their applicability, then report conditions under which previous nudge type policies have proved successful. Further consideration is then given to appropriate intervention points, how these may vary between different land owners and managers, and how the approaches could be delivered.

3.1 Landowner engagement with natural flood management initiatives

The area of focus for landowner engagement was the lower part of the River Seven catchment, north of Sinnington. The land is fertile for agriculture and much of the area does not flood often, although parts do occasionally become inundated. Landowners and managers responsible for areas where planting floodplain woodland would have the most benefit were contacted to discuss woodland creation. However, no schemes were taken forward due to issues summarised below:

- Refusal to engage with grant schemes - perhaps due to higher quality agricultural land
- View that there is already a good balance of agriculture and woodland on land holding
- Interested in woodland planting to fulfil other purposes, but not within project timeframe
- Appearing amenable, but conversations with other staff revealed an actual lack of interest, which may indicate that in some situations people may feel they should make the right noises
- Difficulty in tracking down landowners who are only occasionally visible.

Previous work at Forest Research exploring issues around landowner engagement with woodland planting schemes was considered alongside discussions with Simon Marrington (STFAP programme manager, FC England). This investigated the particular difficulties and issues faced when attempting to persuade landowners to plant trees in the floodplain areas identified through flood risk mapping and modelling. These issues are considered below, with reference to behavioural economics highlighted in bold text:

<u>Financial</u>

- High value of agricultural land. **Endowment effect** (where people ascribe greater value to things because they already own them)

- The effectiveness of financial incentives (woodland planting grants), which are characterised by upfront costs, with a portion of the grant paid at planting, then remaining payments when the crop has been deemed to be established (usually after five years)
- Perceived difficulties in individual woodland planting schemes – may be too complex to address.

Cultural perceptions

- Landowners have a strong aversion to loss, financially but also linked to their existing stewardship ethic and loss of control or to prevent others affecting their land. **Loss aversion** (people's tendency to strongly prefer avoiding losses to acquiring gains) **and Endowment effect**
- Cultural resistance to land use change. Strong traditional views of land management may support resistance to considering land use change. **Lexicographic preferences** (where there is always a preference for one good over another, regardless of the quantity of another good)
- Decisions may be made to support their own cultural identity. **Cultural polarisation** (where viewpoints are strongly associated with cultural aspects, such as 'being a farmer').

Information presentation

- Woodland planting is not always framed in the context of how it can contribute to landowner objectives, i.e. how it fits into their overall land management. **Framing** (how an option is presented and how this may influence people's choices)
- Landowners may have not engaged because they thought the STFAP project was only interested in the areas of land that met the flood model criteria. **Framing**

Other land owner / manager engagement within the region

David Rees, the Catchment Sensitive Farming (CSF) officer has been instrumental in building relationships with landowners in the region over the years and knows them well. Two farm workshops were held, one with a slowing the flow focus (this was poorly attended, only 8 people from a mailing of 150 and most of these were thought to have attended because David Rees personally asked them). Issues around future landowner engagement suggest that leaseholders may be constrained due to freehold restrictions and National Farming Union representatives may be useful in helping access.

3.2 Behavioural insight approaches and applicability

Although nudge is a commonly recognised term for describing approaches to influence decision-making, criticisms levelled at nudge include that it can have short-term effects and does not actively engage the individual. This section provides brief descriptions of nudge and three related approaches (steer, ask, and think), and then considers how their application to woodland creation would differ.

Thaler & Sunstein (2008) 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."

The **Steer** theory (Grist, 2010) suggests that enabling individuals to understand the way humans make judgements can empower them to feel more confident about their own decision making.

Ask aims to complement cognitive elements focused on by behavioural economics with encouraging active participation of the target audience through introducing questions designed to elicit articulation of objectives and behaviours they can adopt themselves to achieve these (the 'ask' element). For example, are there changes you've wanted to make, what would make a better neighbourhood for you, or what steps can you take? (Ampt & Ashton-Graham, n.d.). The theory suggests that a combination of conversation and /or coaching leads to higher uptake and longer lasting change.

Think asserts that citizens, given the right context and framing can think themselves collectively towards a better understanding of the problems and solutions (John *et al*., 2009). The tool is based upon discussion and deliberation. Where existing choices are characterised by lack of attention to the viewpoints of others, public agencies can create conditions in which these are taken more fully into account. Think can also help address potential concerns with nudge associated with lack of legitimacy and with ethical issues, including paternalism and being viewed as manipulative (John *et al*. 2011).

A briefing paper reviewing nudge and think, along with 'shove' (which restricts, by law, the choices individuals can make, e.g. make something illegal) approaches (DEA, 2010) concluded that:

- 'Nudge' is effective for specific, limited shifts in behaviour such as recycling.
- 'Think' is effective at building support and legitimacy for the big, transformational changes that we need in society, such as decarbonising the economy. 'Think' can be particularly powerful in building people's ability and motivation to participate in and drive those transformational changes.
- 'Shove' often helps to create the conditions under which 'nudge' is most effective.

Table 3. Differences between 'nudge- type' approaches and their potential application to woodland creation.

Approach	Active / passive – input required?	Potential application	Stage / time of application
Nudge	Passive, low-input	Quick / initial decision-making	Pre-contemplation, Action
Steer	Active – questioning own judgements	Challenging pre-conceptions	Pre-contemplation, contemplation
Ask	Active –discussion	Encouraging engagement in changes	Contemplation
Think	Active – collective discussion over a period of time	Collective discussions, evaluation	Contemplation, preparation, maintenance

The term 'nudge type approaches' will be used in conjunction with all methodologies that intend to influence decision-making as the practical examples reviewed either make reference to nudge, or they do not state a particular overarching approach. Where a particular approach is used or can be identified by a process, e.g. of asking citizens to 'Think', then this is stated.

3.3 Evidence of nudge type theories being applied

This section focuses on evidence from the use of nudge type approaches in other contexts, before considering their potential application to woodland creation for flood mitigation. Many studies, particularly those undertaken by the UK Government's behavioural insights team (BIT) (also called the 'Nudge Unit'), draw upon the findings from the MINDSPACE report on behavioural science (see Dolan, Hallsworth, Halpern, King, & Vlaev, 2010). The elements focused upon in the MINDSPACE report are shown in Table 4. These were further developed and grouped into a framework of four categories represented by the acronym EAST (Halpern, 2013), which focuses on the application of nudges that are easy, attractive, social and timely (Table 5). The available evidence is presented, where applicable, within these heading and sub-headings.

Table 4. MINDSPACE elements from Dolan et al. (2010)

MINDSPACE	
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

Table 5. Categorisation of behavioural economics elements into easy, attractive, social and timely groups. Source: Halpern (2013). All the MINDSPACE categories are included implicitly, with the exception of 'Ego' which is represented by personalisation.

Easy	defaults	simplification	remove friction		
Attractive	salience	messenger	personalisation	affect	incentive design
Social	norms	networks	reciprocity	active commitments	eyes & faces
Timely	priming	framing	key moments		

Easy (Making it easier to do things)

Defaults and prompted choices

- A commonly held view is that organ donation is a good thing to do, but often people have not registered as they haven't got around to it. One approach to increase registration is to introduce a 'prompted choice', where individuals have to make a choice when completing a form, e.g. applying for a new driving licence. This has been successfully applied to organ donation registration in several US states, e.g. in Illinois where asking all driving licence applicants actively decide whether to register as a donor or not increased donors from 38 per cent to 60 per cent (Abadie & Gay, 2006).

Simplification

- Many people dislike form filling. Approaches to make the completion of forms easier for individuals include pre-populating forms to both save time and reduce errors. For example, college enrolment rates for high school seniors rose by eight percentage points (from 34% to 42%) as a consequence of pre-populating application forms and providing help to complete the form (Bettinger & Long, 2011).
- A trial at Jobcentre plus in Loughton, Essex, to get people back into work first reduced the paperwork involved at initial meetings. They then used proactive commitment devices which involved asking a jobseeker what they're planning to do in the next two weeks, and at what specific time. This introduced an anchoring effect which makes it more likely the jobseeker will follow through. Jobseekers in the treatment group were 15-20% more likely to be off benefits within 13 weeks than the control group (Behavioural Insights Team, 2012b).

Remove friction

- Despite huge subsidies and information demonstrating that insulation pays for itself within months there has been very low uptake of loft insulation schemes. The problem (or barrier) was identified as the hassle of clearing an attic before it can be insulated. A pilot trial in 2011, where insulation firms offered to clear the lofts and dispose of unwanted junk at cost increased uptake fivefold, even though there was an increased cost to the customer.

Attractive (If you make things attractive to people, they are more likely to act)

Salience

- Adjusting the format of forms is important to make them clearer, e.g. highlighting key messages by drawing people's attention to important information or actions required of them. This approach has been applied (along with social norms) to increase tax compliance for doctors and dentists, resulting in a 14% increase in

responses. The voluntary disclosures were worth over £1 million and a reduction in resources required for follow up letters (Behavioural Insights Team, 2012a).

Messenger

- Individuals can be heavily influenced by who communicates information. Prior to the launch of the Green Deal, DECC set up a network of local energy efficiency 'champions', who would commit to promoting the benefits of energy efficiency improvements within their community (Behavioural Insights Team, 2011).

Personalisation

- Using personal language and messages, for example adding hand written instructions on post-it notes with author's initials, has been demonstrated to double response rates to questionnaires (Behavioural Insights Team, 2012a). The Ministry of Justice trialled personalised text reminders to pay fines. Messages that began with the recipient's name led to a 10% increase in people making a payment compared to the control.

Affect

- Strong emotional feelings can have a big effect on decision making and feelings of disgust are particularly strong. To address high levels of diarrhoea in Ghana, an advertisement showed mothers and their children walking out of bathrooms with a glowing purple pigment that contaminated everything they touched. This created a sense of disgust and led to a tripling in the percentage of people washing their hands after using the toilet (Nudge blog, 2008).

Incentive design

- Installing energy efficiency measures are characterised by immediate upfront costs and long-term benefits, often resulting in inertia as humans tend to discount future energy saving and focus on the short term (Behavioural Insights Team, 2011). The behavioural insights team and the department of energy & climate change (DECC) explored how to increase the uptake of the Government's Green Deal, which is designed to increase the appeal of making improvements to people's property where the financial benefits accrue in the longer term. Two approaches were used, the first offered a one-month council tax holiday, the other offered vouchers redeemable at Homebase and Argos (Behavioural Insights Team, 2011). The results of the initiative will be published on the BIT website.

Social (Tell people what others are doing)

Social norms

- Descriptive norms describe what most people are doing, so that people are made explicitly aware of other people's good behaviour. This has been demonstrated to be effective in encouraging recycling, energy and water efficiency, and reducing littering (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007).
- There is evidence that referring to the social norm of a particular area has an even greater effect, for example telling people that 9 out of 10 people in their local area pay their taxes on time led to a 15% increase in payment of taxes (Behavioural Insights Team, 2012a).
- Similar trials have been undertaken to determine how people refer to social norms through the comparison of their energy use and CO_2 emissions in relation to their neighbours (Behavioural Insights Team, 2011). An analysis of random controlled trials of 600,000 households in the United States, where residents were supplied with a report comparing their energy use with their neighbours, suggested an average reduction in energy consumption of 2.0% (Allcott, 2011).
- The introduction of free to use bicycles in London increased the social norm of cycling and led to a reported increase in bicycle sales (Behavioural Insights Team, 2010).

Networks

- A trial to test the effect of varying levels of discount for energy efficiency products, depending on how many people opt into the offer was undertaken in Kingston and Merton Local Authorities. Apart from introducing a financial incentive, the aim was to create a signal that others are taking up the offer and form a social norm. Discounts ranged from 10% for two households, 15% for three households and 25% for five household, thus incentivising people to encourage others in their local community to take up the offer with them.

Commitment

- The Behavioural Insights Team worked with the NHS and Boots UK to develop a smoking cessation programme. The programme encouraged positive behaviour (stopping smoking) through combining incentives with a commitment in the form of a signed 'contract' where participants keep or lose rewards depending on whether they pass regular smoking tests. The study cites evidence suggesting that people entering into a commitment with another individual or group are more likely to respond in a positive way (Behavioural Insights Team, 2010).
- To demonstrate the Government's commitment to reducing its own carbon emissions, the Prime Minister committed central government to cutting emissions from its office estate by 10% between 14 May 2010 and 13 May 2011. The 10%

target was 'significantly exceeded' (Behavioural Insights Team, 2011) and the Government is now seeking to reduce emissions by 25% by 2015.
- DECC invited organisations to make a public commitment to reducing their impact on the environment, as part of a new green Responsibility Deal (Behavioural Insights Team, 2011). Many individuals, businesses and other organisations (e.g. Royal Mail, O2, Adidas) signed up to the 10:10 project (www.1010uk.org) to pledge to reduce their carbon emissions by 10% in a year.

Timely (Make things timely and relevant, and key decision making points)

Priming
- Individuals are influenced by subconscious cues and priming people just before they decide between taking the stairs or the escalator has been used to save power and help healthy habits at a transit station in Singapore. As the escalator is switched off when not in use, this has two effects. The first is that the usual sound and movement is absent and the habitual attraction towards the stairs is numbed. The second is that anyone unfamiliar with the power saving facility may think the escalator is not working. These aspects prime the individual into choosing the stairs over the escalator and this has led to an increase in stair use at the station (iNudgeYou, 2012).

Framing
- Many people assign financial decisions into different 'mental accounts' even though this may financial disadvantage them, e.g. a savings jar for a holiday whilst there is an outstanding credit card debt. This behaviour can be used to direct Government payments to individuals, for example by adding the label 'Winter Fuel Payment' individuals are almost 14 times as likely to spend the money on fuel than would have been the case had their incomes been increased in other ways (Beatty et al., 2011).

Key moments
- It was suggested that the salience of smoking cessation interventions could be enhanced by "increasing the profile of support and rewards in the critical period two or three days into the programme, when the negative effects of withdrawal are especially pronounced" (Behavioural Insights Team, 2010).
- Behaviour change is considered most likely at key 'moments' in people's lives such as leaving home, having children, moving home and retiring (Thompson et al., 2011). Further to this evidence suggests that inheritance is a key moment in the lives of farmers, at which point significant change can occur.

3.4 Intervention points for woodland planting

Woodland creation by a land owner or manager involves a process of awareness, consideration and decision making. Within this process a number of intervention points can be identified, where 'nudges' may be applied to influence landowner and land managers attitudes to woodland creation. We draw upon an adapted version of the Stages of Change model (Prochaska, Diclemente, & Norcross, 1992), a widely applied cognitive model which identifies five stages of 'motivational readiness' categories that characterise individuals making decisions. These stages are (i) precontemplation, (ii) contemplation, (iii) preparation, (iv) action, and (v) maintenance. The rationale behind a staged model is that individuals at the same stage should face similar problems and barriers, and thus can be helped by the same type of intervention. Table 6 further adapts the Stages of Change model to indicate (i) points of intervention, (ii) behaviours or actions associated with these stages, (iii) insights from behavioural economics, and (iv) suggested 'interventions' using findings from behavioural economics / nudge approaches. It is recognised that the Forestry Commission already employs a range of interventions when encouraging woodland creation; the interventions detailed here focus on how nudge can build on existing approaches.

Table 6. Points of intervention for encouraging woodland creation

Stage i	Stage Definition - PLANTING	Process Definition - PLANTING	Behaviours / Actions	Insights from behavioural economics	Potential FC interventions
Pre-contemplation	**Land owner or manager (LO/M) is not considering, or unaware of, woodland planting as an option** **LO/M has no intention to change behaviour in foreseeable future**	Increasing information about woodland planting (includes benefits of planting)	Reading / seeing information about planting (e.g. TV & radio; press; specific communications / leaflets) Conversations with peers, family and others.	**Priming** - People behave differently if they have been 'primed' by certain cues beforehand, e.g. words, sights. **Anchoring** – relying heavily on an initial value **Framing & simplification** – can facilitate information processing **Context & learning** – collective discussions aid familiarisation of issues and process	Associate positive images and words with woodland creation, e.g. protects us from flooding, and helps to cool our planet / environment. At the same time avoid negative associations which may 'anchor' future views on woodland creation. Produce simple materials and use tables rather than text Encouragement and facilitation of opportunities of group discussions about woodland planting at land-management events (e.g. Game Fairs). Ideally led by peers, rather than the FC.
		Experiencing (and expressing feelings about) planting	Seeing planting in practice (e.g. on neighbouring land) Encountering planting / planting messages at events (e.g. Country Fair) Cultural / inter-generational predisposition against planting	**Social norms** – people make choices based upon the perceived or informed view of others. **Exemplify** – leading by example **Cultural polarisation**, **Mental accounting** – land may be mentally assigned as for farming and not for woodland	Increase awareness and acceptance of woodland planting (seeing woodland creation go on peers' land has potential to affect social norms) Highlight FC planting for flood risk management, particularly within region. Promotion of woodland planting as part of integrated land management / whole farm plans. Collaborate with non-forestry colleagues, e.g. NFU, CSF
		Assessing how planting affects physical environment and flood events	Consideration of flood mitigation and wider impacts / benefits (e.g. landscape; biodiversity) of planting	**Priming**, **salience**, **framing**. **Information presentation**	Tailor presentation material to landowners, e.g. small farm concerns, estate owners, investors. Also consider the context (setting), and tailoring discussions to the individual or group

Stage ii	Stage Definition - PLANTING	Process Definition - PLANTING	Behaviours / Actions	Insights from behavioural economics	Potential FC interventions
Contemplation	**LO/M is aware of planting** **Serious consideration of change in land-use (from non-forestry to forestry)**	Re-assessing how one feels and thinks about planting, especially with respect to own objectives	Seeking clarification of benefits of planting relative to own goals Considering visual aspects of planting Revisiting / reconsidering previous generational attitudes towards planting	**Loss aversion (incentives)** **Networks** - Using social networks to encourage collective behaviour **Hyperbolic discounting** - a requirement for more compensation in the near future than for longer time periods **Reciprocation** – people reciprocate help **Information presentation** and **Salience** including visualisations (GIS map) of new woodland, contribution to flood mitigation, etc.	Emphasis on top-up grant availability as a time-limited may encourage take up to avoid missing out. Provide a higher level of grant if a threshold of applicants is reached For some landowners lump sums are preferred but for others, smaller, regular payments mirror the pattern from agriculture. There is a need to match the psychological preferences of landowners, as undertaken through the annual payments of the Farm Woodlands Scheme and Farm Woodland Premium Scheme. Approach situation from landowner perspective & ask what their land management objectives are and how forestry can help, e.g. biomass for fuel; shelter for livestock / crops giving greater yield; increasing biodiversity. By offering help the landowner may then be more likely to agree to engage as a reciprocal act Tailored material, framed to emphasise flood mitigation and other benefits Use novel techniques (e.g. visualisation and metrics of the effects of woodland creation) within forestry and woodland advocacy events (aimed at those considering planting)

Stage iii	Stage Definition - PLANTING	Process Definition - PLANTING	Behaviours / Actions	Insights from behavioural economics	Potential FC interventions
Preparation	**LO/M intending to plant**	Making a commitment to plant	Identifying available / appropriate land for planting	**Commitment –** through public 'promises', e.g. 'we should have more woodland'	Encouraging public pledges to create woodland for flood mitigation (publishing pledges on a public or LO/M website).
			Register land (if applying for grant)	**Mental accounts** for different areas of land	Allocation of land for woodland investment / labelling of grant support
			Plan (including species selection)		
			Seeking reassurance from peers and family	**Learning effects –** people's values and attitudes can change when information is exchanged in a constructive way	Facilitate learning and knowledge exchange, rather than just providing materials
			Applying for (and securing) planting grant	**Defaults and prompted choices –** people will go for the default option	Make woodland creation default grant option to steer LO/M towards a particular purpose, e.g. flood mitigation
			Identifying contractor *or* planting stock supplier		

Stage iv	Stage Definition - PLANTING	Process Definition - PLANTING	Behaviours / Actions	Insights from behavioural economics	Potential FC interventions
Action	**LO/M plants (i.e. modifies their land-use to include planting)**		Engage contractor (or agent?) *or* Obtain trees and plant Undertake forestry or woodland management training	**Networks. Information presentation and framing** **learning & cognitive capacity constraints** **Remove friction** and any 'sticking points' that may deter individual from acting	Support landowner and land manager organisations pooling/sharing information and expertise on woodland planting and maintenance. Offer a tree planting extension service at cost to landowners and managers
			Dealing with sceptical or otherwise negative 'others' likely to question planting Communicate benefits of planting to 'others' likely to question planting	**Framing, simplification, making it easier** **Social norms**	Where criticism is related to 'an onerous application process', reduce bureaucracy burden for applicant through simplifying and pre-populating forms and supporting the role of agents Communicate woodland creation as the preferred social norm
			Join forestry or woodland organisation Engage in local forestry or woodland initiatives	**Networks** to support and facilitate individuals in woodland creation	Facilitate joining of or creation of groups that can share woodland creation experiences
			Engage in / view planted ground to see benefits Collect grant payment	**Social norms**	Encourage view of having woodland as the preferred social norm

Stage v	Stage Definition - PLANTING	Process Definition - PLANTING	Behaviours / Actions	Insights from behavioural economics	Potential FC interventions
Maintenance	**LO/M works to maintain planted area and realise benefits**		Review plans Conduct inspections Conduct vegetation management & thinning operations *or* Contract vegetation management & thinning operations Consider further planting (to increase / maximise benefits)	Maintenance of woodland planting as a **social norm** – maintenance of woodland created, desire to plant new woodland and promotion of woodland creation to other landowners	Encourage LO/M to become a 'woodland champion' to reinforce woodland planting as a social norm
			Leading local planting discussions or initiatives Demonstrating planting to peers Harvest wood products Allow use / provide access (to enable further / wider benefits to be realised)	Reinforce woodlands and woodland planting as a **social norm** **Networks –** Using social networks to encourage collective behaviour **Reciprocation** of support	Promote LO/M as 'woodland champion' to non-wooded landowners

3.5 Landowner/manager types

A number of studies have attempted to segment land managers in relation to their apparent attitudes and motivations for woodland management and/or willingness to plant trees. Dandy, Ambrose-Oji, Handley, & Watts (2013) highlight the need to profile likely groups according to the features most connected with the reason for conducting the segmentation, and with this in mind we have developed our own typology for the purposes of this study.

Existing typologies tend to place land managers along a continuum, from small-scale farmers for whom short-term grant surpluses can provide sufficient incentives to create woodland for multiple objectives, to inward investors who buy and plant entire farms in order to maximise long-term timber revenues (Lawrence & Edwards, 2013; Stubbs, 2011; Eves et al., 2013). Adapting this approach, the following indicative typology was chosen. These descriptions need to be seen as generalisations: there are many intermediate types and exceptions within each group.

1. Farmers (F)

- Land likely to be managed for multiple objectives including non-market benefits; trees, if planted, would be integrated into farming and other land uses; relatively cash-poor and hence responsive to woodland creation grants and prospects of short-term income (woodfuel, amenity); future timber revenues from planting likely to be of little interest. A diverse group, including hill farms, profitable farms on prime agricultural land, tenants and crofters, and 'hobby' farmers and community groups who are relatively new to land management.

2. Estate managers/owners (E)

- Traditional estates are similar to farms in that any woodland creation would need to be integrated into land managed for multiple benefits. Estate owners typically differ from farmers in the larger size of landholding. There may be greater access to capital from other parts of the enterprise (e.g. farming) which can subsidise forestry operations; a greater willingness and ability to plan and manage land for longer-term objectives, to benefit from increasing the capital value of the estate, and from tax relief. Timber revenues are likely to be an important factor in decisions, as are the uncertainties associated with future timber prices and climate change. As well as privately-owned estates, NGOs and public agencies (not least the Forestry Commission) plant new woodland, typically for environmental or social benefits.

3. Inward investors (I)

- Cash rich institutional investors (including pension funds and multinational companies) who allocate perhaps 5-10 % of their portfolio to forestry. They

typically buy and plant whole farms or estates with the sole objective to maximise internal rate of return primarily from conifer timber sales. Woodland creation grants help, and will influence precise forest design, but aren't essential to the overall decision to plant. They may benefit from publicising the incidental public benefits of woodland creation, e.g. flood mitigation, in reports and websites but are unlikely to accept significant financial losses through delivering these benefits.

4. Socially responsible investors (or impact investors) (S)

- A small but growing category of investors with a similar profile to the 'inward investors', who fund planting schemes (typically owned and managed by others) that have tangible public benefits (again, particularly flood mitigation or carbon sequestration, but possibly also landscape and biodiversity); so that they can publicise it, e.g. in corporate social responsibility statements in annual reports.

It would be possible to divide these categories further, in particular 'farmers', which includes a diversity of people and enterprises: marginal hill farmers, 'hobby' farmers, tenants, community groups, NGOs, and large-scale farmers on prime agricultural land. In principle, sub-groups could be defined according to key factors that influence decisions to plant trees, such as access to capital, overriding management objectives, scale of operation, existing woodland cover, tenure arrangements, etc. However, as it stands, the lists of interventions given in Tables 6 and 7 (demonstration sites, events, guidance, etc.) apply equally to most or all of the examples within each of the four groups, and there is little to be gained by introducing further subdivisions in the typology. Once we begin to refine the descriptions of interventions and think about delivery, it will become easier to be more explicit about the precise target groups and how best to define them to meet particular objectives.

Having said that, one further distinction – the history/experience of woodland creation – is helpful to understand the links between land managers/owners and types of intervention listed in Tables 6 and 7. Arguably, this factor cuts across all four groups. It also maps closely onto the Stages of Change model. Thus, managers/owners with no history of planting are more likely to be at the pre-contemplation and contemplation stages; those with previous experience of woodland creation are more likely to be at the preparation, action and maintenance stages.

The category of mangers/owners with no previous planting experience could be extended to cover potential land managers who are considering, or could be encouraged to consider, buying a farm or estate to plant trees.

In principle, these eight categories could be mapped against each of the interventions for each stage of change in Table 6. However, for simplicity, the four main groups (F, E, I, S) have been mapped onto the broad types of intervention summarised in Table 7.

Other characteristics of landowners and managers may also be important to account for in designing successful policies to stimulate woodland creation by, for example, targeting different interventions to groups most likely to change their behaviour (e.g. due to a longer-term outlook), from those thought least likely to. Although understanding local conditions is key, a synthesis of recent evidence suggests some factors (e.g. education and farm size) may be more frequently associated with adoption of farming practices that reduce existing negative externalities and increase positive ones, while others (e.g. age) are more frequently associated with lack of adoption. However, this evidence is mainly based upon American and African case studies (from a study by Knowler & Bradshaw (2007) – reported in OECD (2012, Fig 2.1, p.18)).

To the extent that people tend to discount changes they consider will not make a significant difference, or resist new information that contradicts their ideological beliefs (Repetto, 2008), interventions could be differentiated according to existing attitudes towards flood mitigation, climate change and environmental conservation. To increase the salience of interventions, they might also be differentiated according to the existing proportion of the farm accounted for by woodland, the potential for expansion and to contribute to wider community goals such as downstream flood risk reduction.

As farmers also take account of views of others – whether family, friends or the local community, wider interventions targeting rural attitudes more generally on the importance of woodland creation for flood risk management may also be needed. This may be especially the case where wider issues (e.g. commercial deer stalking on neighbouring land and maintaining public access) are viewed as creating significant barriers to woodland creation.

4 Discussion

This section considers the application of nudge type approaches to woodland creation for flood mitigation and suggestions for evaluating the success of the approaches.

4.1 Potential application of nudge type approaches to woodland creation for flood mitigation

The evidence presented in this report considers possibilities for applying nudge type approaches to encouraging woodland creation for flood mitigation. Table 7 summarises the evidence, suggests applications and indicates which LO/M types are likely to be influenced.

Table 7. Summary of evidence and potential application to woodland creation for flood mitigation.

Behavioural insight	Element	Evidence	Application to woodland creation	Land owner/ manager type
Prompted choices	Individuals are asked to make a choice as part of an application form	Applying behavioural insights to health – requirement to choose or decline organ donation	Adding woodland creation (with an emphasis on flood mitigation) to application forms for grants for land management	F, E
Format	Make it clearer and easier	Applying behavioural insights to reduce fraud, error and debt – simplify forms and highlight key messages	Consider design of information and application forms, highlighting key messages and pre-populating application forms	F, E, I, S
Remove friction	Identifying and removing actual or perceived barriers	Behaviour change and energy use – loft clearance service for insulation installation	Identify any 'sticking points' in the bureaucratic and physical process of woodland creation and offer a service to deal with them	F, E, I, S
Affect	Using strong feelings to prompt decisions	Creating strong feelings to promote healthy behaviours (Nudge blog, 2008)	Highlighting regions with a high incidence of flooding due to lack of woodland and emphasising the negative environmental effects	F, E, S

Social norms	Tell people what others are doing so that people are made explicitly aware of other people's good behaviour	Behaviour change and energy use – energy use in relation to neighbours	Communication of woodland planting by peers and within locality. Use of an 'injunctive norm' will reinforce that this is pro-social behaviour and avoid the 'boomerang effect' where individuals with a 'good' rating move to a 'poorer' social norm	F, E, S
Networks	Using social networks to encourage collective behaviour	Behaviour change and energy use – group discounts	Increased grant payments once threshold woodland creation achieved	F, E
Commitment	Public commitments makes following through more likely	Applying behavioural insights to health – smoking 'contracts'	Encouraging public pledges to create woodland for flood mitigation (publishing pledges on a public or LO/M website)	S
Priming	People are influenced by subconscious cues	Changing behaviour for stairs & escalators (iNudgeYou, 2012)	Prime target audiences with woodland creation success stories and demonstration sites	F, E, I, S
Mental accounts	People assign decisions to different mental accounts	Labelling winter fuel payments (Beatty et al., 2011)	Promoting woodland creation as part of integrated land management – including options for agroforestry and/or as an investment for a retirement fund	F, E
Exemplify	Encourages individual's desire for reciprocity and fairness	Behaviour change and energy use – reducing Government dept. emissions	Encouraging woodland creation through example and by public commitments	F, E, S
Key moments	Timing interventions at critical points	Applying behavioural insights to health – smoking support	Increase engagement with landowners immediately following events linked to flooding or publication of high profile reports, and at key life stages when open to change	F, E, S

	(e.g. inheritance)

Key: F = Farmer; E = Estate owners/managers; I = Inward investors; S = Socially responsible investors

Barriers to woodland creation by private land owners/managers are well-researched and arguably well understood (e.g. Lawrence and Dandy, 2014). They include issues around:

a) grants and other financial incentives, including the bureaucracy associated with grant applications;
b) the advisory system, dominated by agricultural advisors and agents often with a limited understanding of forestry or interest in promoting it;
c) opposition to woodland creation encountered during the consultation process, especially for larger productive schemes, and
d) the related problem of a perceived lack of political support for forestry compared to farming (Lawrence and Edwards, 2013).

Nudge policies potentially help overcome all of these barriers. Current interventions to encourage woodland creation already incorporate many approaches that could be described as 'nudge', albeit through the use of different terminology. An example is the idea of 'removing friction'. It is very well understood that the bureaucracy around grant applications hinders woodland creation, with bodies such as Confor lobbying to streamline the process and reduce the uncertainty associated with the regulatory process. Arguably, behavioural economics has less to contribute to this area of intervention. However, important insights do appear to emerge from the analysis, highlighting aspects that are neglected or downplayed in current efforts to encourage tree planting. Five are outlined here:

1. The idea of 'prompted choices' highlights how forestry and farming grants are administered through separate systems within the Common Agricultural Policy: the Single Farm Payment (SFP), the main source of grants for farmers, is under Pillar One, while the funding for woodland creation grants are administered as part of the Rural Development Programmes under Pillar Two. Many farmers are reported to operate solely with grants from SFP, and ignore the forestry measures, which would require them to engage with an additional level of unwelcome bureaucracy. Possibly, woodland creation would be encouraged if both farming and forestry options were included in the same administrative procedure.

2. The importance of 'the messenger', 'social norms', 'networks', and 'priming' highlights the need for a more in-depth, interactive kind of outreach work with landowners, especially farmers and estate owners. Demonstrations and advice provided through trusted intermediaries, such as leaders of agricultural machinery rings and cooperatives, could enhance sharing of knowledge and social learning, rather than reliance on a

unidirectional knowledge transfer approach through traditional forestry agents. This may help break down the barriers between farming and forestry.

3. The notions of 'commitment', and 'exemplify' apply particularly to the category of socially-responsible investors. The terms highlight the considerable potential impact policymakers could have on woodland expansion by supporting this expanding group of investors to sell a positive green message to their stakeholders, shareholders and customers.

4. The idea of 'mental accounts' helps us to rethink our engagement with farmers and estate owners, by highlighting the fact that land use across any given landholding is rarely homogeneous – farmers apply different objectives and decision-making criteria to different parts of their estate, with small pockets of woodland creation integrated into the farm seen to deliver desirable non-market benefits. One key to effective engagement is to understand how different parts of the farm contribute to the overall enterprise, both economically and culturally, and hence to 'think like a farmer' rather than a forester or policymaker.

5. The importance of 'framing', combined with knowledge of the motivations behind woodland creation, suggests ironically that, in some cases, the best way to promote tree-planting could be to downplay benefits which are realised at a global scale, such as climate change mitigation, and highlight the local or personal benefits associated with short-term cash surpluses on grants, short-term benefits from the production of woodfuel, and, of greater relevance to nudge policies, by appealing to the idea held by many farmers and estate owners that they are custodians of the land, with a duty to enhance local biodiversity, amenity and landscape.

4.2 Implementation and evaluation

This section considers issues around the implementation and evaluation of the nudge type approaches. The MINDSPACE report (Dolan et al., 2010) suggests a process of engagement, which fits well with encouraging woodland creation:

Explore – whose behaviour you want to change
Enable - start from where people are
Encourage – through interventions
Engage - deliberation
Exemplify – demonstrate and lead by example
Evaluate – find out what works

This report has explored a typology of woodland owners and managers and has identified the stages where interventions may be the most effective. These interventions need to be tested and supported by deliberative approaches and through the Forestry Commission demonstrating best practice. Finally, evaluation of the interventions will provide evidence and support the application of the most effective interventions. Ideally this would be based upon randomised control trials.

Implementation issues

For the interventions described here to be effectively implemented, there are a number of issues that should be considered:

- Whilst an attempt has been made to identify approaches that can be broadly applied, these are likely to require tailoring to the different landowners and stages, rather than as a 'one size fits all' approach.
- A series of steps is likely to be required and vary depending on the type of land owner.
- Encouraging woodland creation for flood mitigation for estates and small land owners may require a combination (or sequence) of passive nudges, say to increase general awareness, followed by more active behaviour. Nudges include social norms (as this behaviour becomes viewed as the acceptable choice).
- Although this report focuses on encouraging woodland creation for flood mitigation, it is recognised that individuals decide to create woodland for a wide range of reasons. Promotion of the wide range of benefits that woodland creation can offer a landowner, e.g. shelter for livestock, flood and diffuse pollution mitigation, and recreation will help to provide the appropriate nudge to persuade LO/Ms to plant.
- One of the important findings from the MINDSPACE report is that individuals are heavily influenced by who communicates the information (the Messenger) and this has been demonstrated to be important in, for example, encouraging individuals to pay tax (Behavioural Insights Team, 2012a). Further work is required to identify potentially important individuals, networks and organisations through which 'nudge' policies could be applied and championed – including via non-forestry organisations such as nature conservation bodies and the National Farmers Union. This type of approach was used by DECC to set up a network of local energy efficiency 'champions' ahead of the Green Deal launch.
- Criticism of nudge suggests that some effects that are rapid and perhaps subconscious, such as priming, salience and affect have only a fleeting influence (Dolan et al., 2010), but during this short period of time a decision or behaviour may have changed.

Applying positive messages

Although there is currently low uptake of woodland creation grants, the message that certain landowners do not plant trees or that farmers are set against woodland planting should be avoided. This reinforces perceptions (priming) and may create a social norm

'boomerang effect' where it is acceptable not to engage in woodland planting because no one else is. This effect can be countered by the using an injunctive norm (Cialdini, 2003), e.g. applying the statement "many landowners would like to plant more trees" after the descriptive norm.

Evaluation

The BIT trials evaluated the effectiveness of interventions by comparing how people responded to a given set of different choices, including a control (usually the existing situation). The HMRC trials of new letter formats were considered simple and cost-free interventions. In the past financial year alone, it is estimated that the new letters have helped bring forward around £210million of tax revenue. At UK Government's Civil Service Awards 21 Nov 2013, the tax trials won the Innovation Award. The interventions suggested here aim to follow the nudge principles of being low-cost and many focus on the 'how', 'when' and 'who' of engagement. In order to evaluate the woodland creation interventions suggested here, similar trials would be required. The ease of implementation, cost, and potential effectiveness of interventions need to be considered and discussed with the Forestry Commission prior to application.

Parallels with initiatives for climate change mitigation

There are overlaps between encouraging woodland creation and the development of the Governments household Renewable Heat Incentive which, prior to its launch in October 2012 aimed to consider how behavioural insights should influence the design of the policy. The behavioural insights team suggested further investigation of a number of areas, including:

- examining differences in householders intentions and their capacity to engage with schemes;
- how much people consider payments made in the future rather than paying immediately;
- how different householders account for various risks and hassles when weighing up the costs of changing heating;
- what value householders place on 'being green' that mean they might act anyway; and
- whether householders find doing nothing the more attractive or easy option, and whether some additional incentive or support will be needed to trigger uptake.

5 Conclusions

This report has provided evidence of where nudge type approaches have been explored and has considered how they can be applied to woodland creation for flood mitigation for different land owners / managers. The report has emphasised the importance of the 'messenger' – who engages with these individuals when targeting particular areas, rather than encouraging woodland creation more broadly. It has also highlighted that influencing land owners or managers, particularly those who have not planted woodland before, is a dynamic process within which a number of intervention points can be identified. Whilst suggestions are made for the application of these interventions further thought needs to be given to how they can be implemented, monitored and evaluated. It should also be recognised that nudge type approaches are unlikely to be sufficient in themselves and need to be utilised alongside the range of other policy interventions they sit beside.

There is also an importance in considering land owner / manager needs, i.e. focus on the 'enable' (start from where people are) part of the Mindspace report to determine what is required for their land and how woodlands can contribute. Within this, careful use of language is required; reference to ecosystem services is likely to confuse and alienate, whereas referring to 'broader benefits' such as enhancing wildlife, improving the quality of livestock, and reducing inundation of agricultural land will appeal to both social and personal values. The approach may also be used to challenge the perception of the 'financial bottom line', where financial returns are not restricted to the area of land farmed.

Recommendations for further work are outlined below.

5.1 Research gaps and priorities for future research

- The BIT studies tested different approaches to evaluate their effectiveness. There is a similar requirement to undertake experiments/studies to determine whether these approaches will make a difference and provide a sound evidence base;

- BIT recommend a test, learn, adapt approach: behavioural economics insights are *tested* in their context, lessons are *learnt* regarding which aspect is working (or not), and then the approach is *adapted* to yield even better results next time;

- Addressing information overload through advisors / advisory service (someone doing the paperwork), better design of information and forms. The language used should be accessible;

- A large proportion of the available evidence presented here focuses on nudge, rather than ask, think or steer. This may be because of the high profile of nudge and because this has been the focus of the behavioural insights team, who have designed many of the trials undertaken. Another obvious aspect is that the deliberative nature of ask and steer is likely to require more resources. However, it is clear that deliberation (Engage within the MINDSPACE model) is an important aspect of encouraging woodland creation and further work is needed to identify where these approaches can be used together most effectively.

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