



Research Note

Behavioural policy 'nudges' to encourage woodland creation for climate change mitigation

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Evidence indicates that woodland creation is generally a cost-effective method of climate change mitigation, when compared with a range of alternatives. However, engaging landowners and land managers in woodland creation schemes can sometimes prove difficult, and this affects prospects for meeting national woodland planting targets and associated climate change mitigation objectives. Although reluctance to plant woodland is often attributed to the low financial attractiveness of such schemes, wider factors – including long-held cultural views on changing land use and perceptions of the urgency of tackling climate change – can also be important. Insights from behavioural economics indicate 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 ways of influencing people's choices without limiting the options, or appreciably altering their relative costs. There is a range of nudge type approaches that could be used to encourage woodland creation for climate change mitigation. These include addressing perceived barriers to woodland creation, encouraging private woodland creation by highlighting successes and by the public sector leading by example. Implementation of nudge type approaches should be tailored towards different types of landowners and land managers, who may vary in their attitudes, motivations and willingness to plant trees.

Introduction

Evidence indicates that woodland creation is generally a cost-effective method of climate change mitigation compared with a range of alternatives (Valatin and Price, 2014). It can also be cost-effective in reducing downstream flood risk (e.g. see Nisbet *et al.*, 2011) and thereby help society adapt to climate change. However, engagement of landowners and land managers in woodland creation can sometimes prove difficult, affecting prospects for meeting national woodland planting targets and associated climate change mitigation objectives. Although reluctance to plant woodland is often attributed to the low financial attractiveness of such schemes, wider factors – including long-held cultural views on changing land use and perceptions of the urgency of tackling climate change – can also be important.

Insights from behavioural economics have indicated that, among other factors, how information is presented and framed, context and information-processing shortcuts ('heuristics') can all affect how individuals make choices. Empirical evidence demonstrates that certain 'nudges' can help shift choices in a particular direction.

This Research Note explores how 'nudge' type policies could be applied to encourage woodland creation, and how these nudges could be designed for maximum effect, by tailoring approaches to target different types of landowners and land managers. While this study focused upon woodland creation for climate change mitigation, the approach can equally be used for climate change adaptation. The Note is based on a more detailed account of the work (Moseley *et al.*, 2014) which is available from www.forestry.gov.uk/publications.

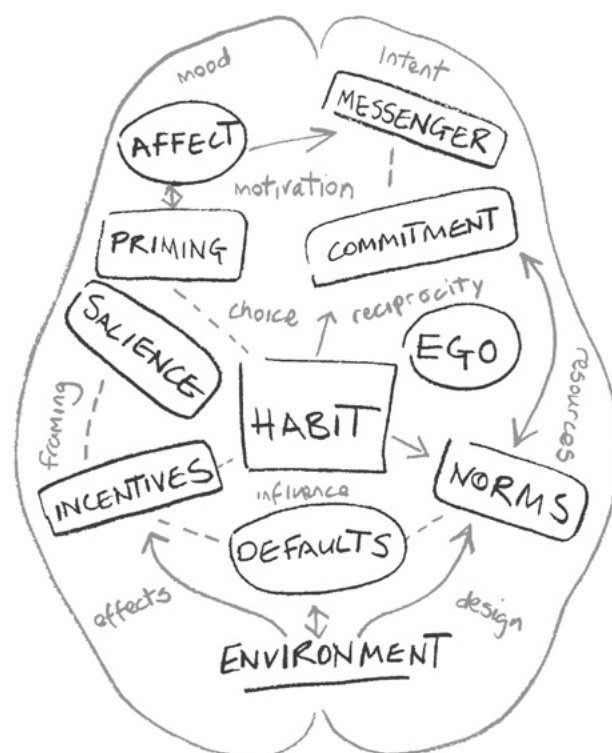
What are policy 'nudges' and do they work?

Policy nudges are ways of influencing people's choices 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 environment in which choices are made, prompting choices, and highlighting successes and choices made by others. An examination of work by the government's Behavioural Insights Team and others was undertaken to investigate how 'nudge type approaches' have been used and evidence of their effectiveness.

All the studies listed were undertaken in the UK, unless mentioned otherwise. Many studies, particularly those undertaken by the UK government's Behavioural Insights Team (also called the 'Nudge Unit'), draw upon the findings from the

MINDSPACE report (Figure 1) on behavioural science (see Dolan *et al.*, 2010). The MINDSPACE elements were further developed and grouped into a framework of four categories of nudges represented by the acronym EAST (Easy, Attractive, Social and Timely; Halpern, 2013). The available evidence noted on the following pages is presented in an order based on this framework and also includes 'exemplify', a form of commitment where influential organisations lead by example.

Figure 1 The elements of MINDSPACE, which explore the most robust influences on our behaviour and their application within public policy.



Easy (making it easier to do things)

Defaults and prompted choices

Many people tend to 'go with the flow' of pre-set options (Dolan *et al.*, 2010), so providing a set of options that benefits both the individual and society seems sensible. For example, a commonly held view is that organ donation is a good thing to do, but often people have not registered as they have not 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; for instance in Illinois donor numbers increased from 38% to 60% when all driving licence applicants were asked to decide whether or not to register as a donor (Abadie and Gay, 2006).

Simplification

Many people dislike form filling. One approach to make the completion of forms easier for individuals is to pre-populate forms (Figure 2). This both saves time and reduces errors. For example, college enrolment rates for high school seniors in two US states 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 *et al.*, 2012).

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 in the UK. 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 (Behavioural Insights Team, 2011).

Figure 2 People often dislike filling in forms; pre-populating forms, and ensuring that the layout and structure of the information is clear, can save time and reduce errors.

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

Salience

Adjusting the format of forms can help make them clearer and action more likely (e.g. by highlighting key messages you can draw people's attention to important information or actions required of them). This approach has been applied to increase tax compliance by doctors and dentists in the UK, resulting in a 14% increase in responses. The voluntary disclosures were worth over £1 million and also reduced resources required for follow-up letters (Behavioural Insights Team, 2012).

Messenger

Individuals can be heavily influenced by who communicates information. Prior to the launch of the 'Green Deal', designed to help people make energy-saving improvements to their homes (Figure 3), the Department of Energy & Climate Change (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).

Figure 3 Local energy efficiency champions are able to make use of home energy ratings and advice from the Energy Savings Trust to promote the benefits of energy efficiency within their community.



Personalisation

Using personal language and messages (e.g. adding hand-written instructions on sticky notes with the author's initials), has been demonstrated to double response rates to questionnaires (Behavioural Insights Team, 2012). 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 a standard text reminder.

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

Installation of energy efficiency measures is characterised by immediate up-front costs and long-term financial benefits, and this often results in inaction as humans tend to place less emphasis on future energy saving and focus on the short term. The Behavioural Insights Team and DECC explored how to increase the uptake of the government's Green Deal by offering short-term incentives. Two approaches were used: the first offered a one-month council tax holiday, while the other

offered vouchers redeemable at Homebase and Argos (Behavioural Insights Team, 2011). The results of the initiative will be published on the Behavioural Insights Team website.

Social (tell people what others are doing)

Social norms

We are strongly influenced by what others do (Dolan *et al.*, 2010). Descriptive norms indicate what most people are doing, so that people are made explicitly aware of other people's good behaviour (Figure 4). Trials have been undertaken to determine how people refer to social norms through the comparison of their energy use and CO₂ emissions in relation to their neighbours (Behavioural Insights Team, 2011). An analysis of random controlled trials of 600 000 households in the USA, 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).

Networks

A trial to test the effect of varying levels of discount for energy efficiency products, depending on how many people opt in to the offer, was undertaken in two Greater London local authorities. Apart from introducing a small financial incentive, the aim was to create a signal that others are taking up the offer (a social norm). Discounts ranged from 10% for two households, to 15% for three households and 25% for five households, thus giving people incentives to encourage others in their local community to create a network to take up the offer.

Figure 4 Seeing other people plant woodlands creates a social norm, influencing others to engage with woodland creation schemes.



Commitment (and exemplify)

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.

Timely (make things timely and relevant at key decision-making points)

Priming

Individuals are influenced by subconscious cues. At a transit station in Singapore people are primed just before they decide between taking the stairs or the escalator. This has saved power and helped people develop healthy habits. The escalator is switched off when not in use, and this has two effects. The first is that the usual sound and movement is absent and the habitual attraction towards the escalator is numbed. The second is that anyone unfamiliar with the power-saving facility may think the escalator is not working. The individual is primed 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 financially disadvantage them (e.g. a savings jar for a holiday while there is an outstanding credit card debt). This behaviour can be used to influence how government payments to individuals are spent. For example, if the label 'Winter Fuel Payment' is used, 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

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). Furthermore, evidence suggests that retirement and inheritance are a key moment in the lives of farmers, at which point significant change can occur and they may be more open to new opportunities (Lawrence and Edwards, 2013). Dramatic events covered in the media, such as large-scale flooding, may provide a critical point for highlighting the benefits of woodland creation (Figure 5).

Figure 5 Promoting woodland creation to reduce downstream flooding may be best targeted following media coverage of large-scale flood events.



Potential application to encourage woodland creation

This section considers the potential for applying policy nudges to encourage woodland creation by focusing upon how these nudges could be designed for maximum effect.

Who to nudge

Landowners and land managers vary in their attitudes, motivations for and willingness to plant trees, and nudge type approaches should be tailored towards the different types. Existing typologies tend to place landowners or 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 and Edwards, 2013). Adapting this approach, four stylised landowner/land manager types are considered:

- **Farmers** – a diverse group, including hill farmers, 'hobby' farmers and community groups. They are relatively cash poor and hence responsive to woodland creation grants and prospects of short-term income (woodfuel, amenity) rather than long-term investment.
- **Estate owners/managers** – these typically differ from farmers in the larger size of landholding and access to capital which can subsidise forestry operations. They have a greater willingness and ability to plan and manage land for longer-term objectives (e.g. increasing the capital value of the estate, tax relief and future timber revenues).

- **Inward investors** – these are 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 are not essential to the overall decision to plant.
- **Socially responsible investors** – these are investors who develop planting schemes that have tangible public benefits

(e.g. carbon sequestration, landscape, biodiversity) and publicise it (e.g. in corporate social responsibility statements in annual reports).

How to nudge

There are a range of nudge type approaches which could be used to encourage woodland creation for climate change mitigation. Table 1 suggests applications and indicates which of the four landowner or land manager types listed above are likely to be influenced.

Table 1 Potential application of nudges to woodland creation for climate change mitigation.

Nudge		Application to woodland creation	Landowner or land manager type
EASY	Defaults and prompted choices	Individuals are asked to make a choice about woodland creation (for climate change mitigation) in application forms for land management grants	Farmers, estate owners/managers
	Simplification	Make information clearer and easier; pre-populate application forms	Farmers, estate owners/managers, inward investors, socially responsible investors
	Remove friction	Identify any 'sticking points' in the bureaucratic and operational procedures of woodland creation and offer a service to deal with them	Farmers, estate owners/managers, inward investors, socially responsible investors
ATTRACTIVE	Salience	Draw attention to key points – including the role of woodland creation in meeting climate change mitigation goals	Farmers, estate owners/managers, inward investors, socially responsible investors
	Messenger	Encourage landowners or land managers to become a 'woodland champion' to reinforce woodland planting as a social norm	Farmers, estate owners/managers, socially responsible investors
	Personalisation	Add hand-written instructions and contact details to information packs and application forms	Farmers, estate owners/managers, socially responsible investors
	Affect	Use strong feelings to prompt decisions, for example by highlighting regions or businesses with a high carbon footprint and emphasising the negative environmental effects	Farmers, estate owners/managers, socially responsible investors
	Incentive design	Provide short-term incentives for woodland planting such as helping to meet other management objectives (e.g. improving adjacent habitat)	Farmers, estate owners/managers
SOCIAL	Social norms	Tell landowners or land managers about the 'pro-social' behaviour of their neighbours and peers who are planting woodland	Farmers, estate owners/managers, socially responsible investors
	Networks	Use social networks to encourage collective behaviour (e.g. by increasing grant rates once a threshold level of woodland creation has been achieved in a locality)	Farmers, estate owners/managers
	Commitment	Encourage public commitments to create woodland for climate change mitigation (and then publish pledges on websites)	Socially responsible investors
	Exemplify	Respond to individuals' desires for reciprocity and fairness by encouraging woodland creation through example and by public commitments	Farmers, estate owners/managers, socially responsible investors
TIMELY	Priming	Prime target audiences with woodland creation success stories and demonstration sites	Farmers, estate owners/managers, inward investors, socially responsible investors
	Framing and mental accounts	Promote options as part of an integrated approach to land management that allows people to assign woodland creation to different mental accounts (e.g. as a retirement fund, or source of non-market benefits)	Farmers, estate owners/managers
	Key moments	Consider timing interventions around critical points (e.g. following media coverage of climate change or flood events), or at key life stages when landowners or land managers are open to change (e.g. inheritance)	Farmers, estate owners/managers, socially responsible investors

Implications for forestry

Current approaches to encourage woodland creation consider many of the aspects discussed here, such as highlighting the positive benefits of woodland planting and providing advice and support. However, barriers to woodland creation still exist which cannot be explained simply by financial considerations but are also concerned with issues such as the bureaucracy associated with grant applications (Forestry Regulation Task Force, 2011).

Evidence of successes in other policy areas suggests that more use of nudge type approaches could help overcome remaining barriers to woodland creation. Although some existing interventions incorporate approaches that could be described as 'nudge', albeit adopting different terminology, important insights appear to emerge from the analysis, highlighting aspects that are often overlooked in current efforts to encourage tree planting. These include:

- The use of 'prompted choices' and 'simplification' to reduce the bureaucracy of different grant payments to encourage woodland creation by combining farming and forestry options in the same administrative procedure.
- The importance of the 'messenger', 'social norms', 'networks' and 'priming' nudges 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 (e.g. leaders of agricultural machinery rings and cooperatives), rather than reliance on a unidirectional knowledge transfer approach through traditional forestry agents, could enhance sharing of knowledge and social learning. This may help break down the barriers between farming and forestry.
- The notions of 'commitment' and 'exemplify' apply particularly to the category of socially responsible investors. Policymakers could have a considerable potential impact on woodland expansion by supporting this expanding group of investors to sell a positive green message to their stakeholders, shareholders and customers.
- The idea of 'mental accounts' helps us to rethink our engagement with farmers and estate owners. 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.
- The importance of 'framing', combined with knowledge of the motivations of specific landowners and land managers, suggests that in some cases instead of focusing on benefits for climate change mitigation which are realised at global scale, the best way to promote woodland creation could be to highlight local or personal benefits. In some cases focusing upon their contribution to reducing flood risks to neighbours downstream, or short-term cash surpluses associated with uptake of grants, may be of greater salience to landowners or land managers. In other cases, appealing to ideas held by many farmers and estate owners that they are custodians of the land, with a duty to enhance local biodiversity, amenity and landscape may prove most fruitful.
- A series of steps is likely to be required and these will vary depending on the type of landowner or land manager. For example, encouraging woodland creation for climate change mitigation for estates and small landowners may require a combination (or sequence) of passive nudges to increase general awareness followed by more active behaviour.
- As with public health strategies to reduce smoking and lung cancer, tackling problems such as global climate change and biodiversity loss to ensure ecosystem sustainability may require directly influencing values and behaviour, rather than simply relying upon more traditional regulatory approaches and institution building.

Future research

This research has shown that Influencing landowners or land managers, particularly those who have not planted woodland before, is a dynamic process within which a number of intervention points can be identified. While suggestions are made for how to apply these interventions, further thought needs to be given to how they can be implemented, monitored and evaluated.

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