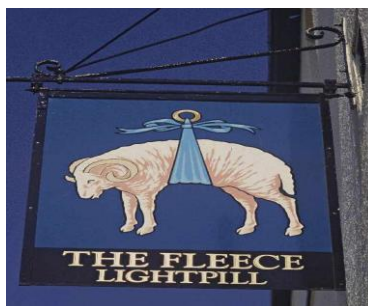


# UNDERSTANDING BEHAVIOURS IN A FARMING CONTEXT:

Bringing theoretical and applied evidence together from across Defra and highlighting policy relevance and implications for future research

November 2008

Defra Agricultural Change and Environment Observatory Discussion Paper



Additional illustrative photographs courtesy of Natural England and David Cawley

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## Defra Agricultural Change and Environment Observatory Discussion Paper

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### Summary

Understanding behaviours is increasingly being seen as a key area of research for policy development across Whitehall. To date, Defra has been a leading proponent of the importance of influencing behaviours and this discussion paper summarises theoretical and applied research undertaken over the last three years. The studies drawn upon were mainly commissioned by Defra and drawing mainly on a farming context but also referring to the public-focussed environmental or sustainable development field.

### This paper:

- Reviews the evidence on behaviours, interprets and critically presents an integrated approach tailored towards farming-focussed analysis and policy development;
- Brings together new work on customer insight and segmentation; and
- Highlights implications for both policy and the development of the work of the Observatory

### Key conclusions from the evidence:

- Influences on individual behaviours are complex but applying a common framework can help our understanding
- Change is uncertain (and takes time) and behaviours need to be measured at all stages – not just actions or attitudes
- Individuals are the drivers of change and there is a real diversity in the farming industry
- It is more than just acting on the individual - social factors including networks, norms, social capital and collective action are all important
- Understanding and influencing behaviours is an inter-disciplinary challenge
- Use a framework or model to visualise the process

### Implications for policy:

- Recognise diversity - no two farmers are identical
- Identify internal factors before policy interventions
- It's not always just about profits
- The why's and the why not's
- No farmer is an island
- Engage
- Monitor and evaluate

### Identified research gaps:

- Economic incentives, attitudes and behaviour change
- The role of farming companies and changing structures in the sector
- Opinion leader, expert views and members organisations as a means of representing individual decision-makers

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## 1. Background

Understanding and influencing behaviours is at the heart of policy-making within Whitehall. Arguably it is nothing new, at its simplest **'behaviours'** represents the actions of individuals, **'understanding'** is based on economic modelling (assuming the rationality of individuals) and **'influencing'** has traditionally been undertaken by using market-based policy tools (e.g. financial incentives and disincentives), tackling informational barriers and through regulation. However, in a policy environment (farming) where there is a long history of substantial government involvement, the traditional tools of intervention need handling with care due to budgetary constraints (either national or EU), the potential impact of the regulatory burden and perceived information overload. A more sophisticated set of policy targets demands smarter policy-making, both to understand the policy impacts on, and to communicate desired changes to, a diverse group.

Policy appraisal and evaluation rely extensively on established economic and statistical techniques and the purpose of this discussion paper is to add a complementary perspective to existing approaches. The paper aims to provide an overview of the evidence collated by Defra over the last three years covering both theoretical approaches and applied policy research. It is grounded in the psychology-based literature and theories of behaviours but is additionally 'positioned' to challenge any unbounded acceptance of rationality (a key cornerstone of neo-classical economics) through linking with recent developments in the area of behavioural economics. As outlined above, in the past the focus for policy has been on **external** drivers – financial and regulatory - but the added value of incorporating a wider understanding of behaviours is a recognition of the power of **internal** drivers and the points of influence. The effectiveness of policy interventions will reflect attitudes, motivations and norms within a community and an understanding of these is critical for informing the parameters for modelling, the appraisal of policy and evaluation of effects. Additionally, and more critically, policy success increasingly depends on behaviours, since working with the grain of existing **attitudes** and **motivations** is likely to be more effective than regulations which may add to compliance costs without necessarily affecting 'hearts and minds'.

Defra has been prominent within Whitehall for recognising the need to understand and influence behaviours. As a result, a robust evidence base has been gathered that covers a range of policy areas including, most prominently, household-based environmental behaviours in relation to energy, waste, water, transport and consumer goods (Defra, 2008a). Some research has also been undertaken which focuses on farmers and land managers. This paper seeks to review the evidence, including the theory, identify common lessons and suggest how the thinking can be applied to agricultural change and the environment. In short, it aims to provide a reference document that identifies what we know and how to apply the knowledge (both theory and practice) and what we do not know and need to investigate...

This paper is not about advocating simple 'behaviour change' – although this is a convenient and widely-used term, the issues are complex i.e. it is not just about change it is also about consolidating and building upon the 'good' as well as addressing the 'bad'. 'Change' implies a single action or event but behaviours are under-pinned by more long-standing considerations which can be viewed as a continuum of small steps towards making the decision or realising the outcome. This implies a desired direction of activities that should be re-enforced and sustained over time making them less likely to be 'shocked' into reversal. Whole books have been written about behaviours and a key reason for this paper is to attempt to 'de-mystify' the concepts in non-academic language. Complex psychological issues can be described in a terminology that creates a barrier to understanding for the non-expert and this paper has set out to write from a policy perspective for a predominantly policy audience. To aid consistency and readability, discussion of the existing evidence will be based around a single generic model of behaviours adapted from two widely used theories of change - the Theory of Planned Behaviours (Ajzen and Madden, 1986) and Theory of Reasoned Action (Fishbein and Ajzen, 1975) both reviewed in Jackson, 2005 and Darnton *et al*, 2006.

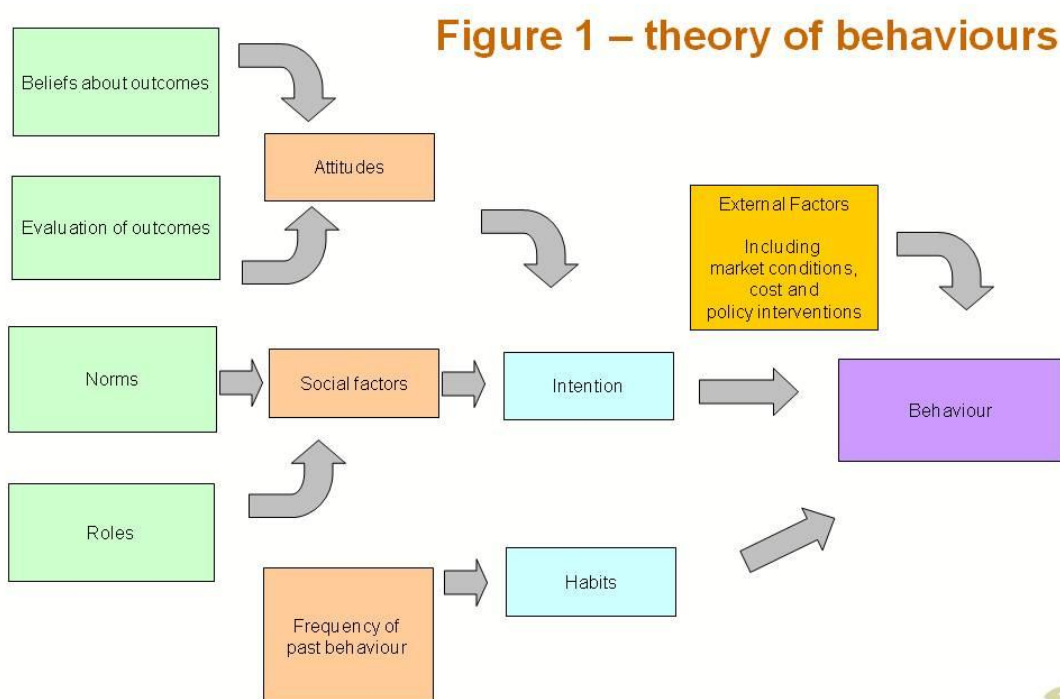
## 2. Overview of Defra's existing evidence

The following six sections review some of Defra's growing evidence base on behaviours. The first section sets out some thinking on models with subsequent sections drawing on research undertaken over the last few years to highlight in more detail certain aspects from theory and practice.

### 2.1. Introducing the model as a framework for discussion

As mentioned in the background section, rather than just reviewing existing evidence, this paper sets out a series of diagrams with common terminology that helps provide a common framework making it easier to see how each study contributes to an enhanced knowledge of behaviours. In this way it should be possible to see how the research is grounded and what particular aspect is being addressed. Text in bold highlights terms that are key components of the models.

Over the last few decades there have been countless 'theories of behaviour' which have been tailored for the academic literature, adapted for policy or used within the discussion of catalysing change. The simple, robust and easily adapted models forming the basis of the Theory of Planned Behaviours (TpB) and Theory of Reasoned Action (TORA) are, perhaps, the most relevant for thinking about policy and the linking of underlying psychological issues. These two models discuss, in relatively simple terms, the main internal or external social influences on behaviours (habit, social norms) etc. In attempting to describe something as detailed and variable as behaviours it is always easy (and tempting) to over-complicate, ending up with complex systems that are too difficult to embed into policy design and delivery. As a starting point, this paper uses TORA and TpB to provide a 'conceptual framework for exploring farmers' attitudes and intentions' (Garforth *et al*, 2006). Within this framework, the intention to adopt a particular behaviour is a function of **attitudes**, the extent to which the views of others matter (**social factors**), **past behaviours** and the degree to which it is actually possible. Intention is facilitated by **external** (government) measures and incentives to undertake the desired action. Figure one describes the basic approach which identifies four basic components of behaviour – **attitudes**, **social norms**, **habits (internal factors)** and **external factors** (including cost and policy interventions).

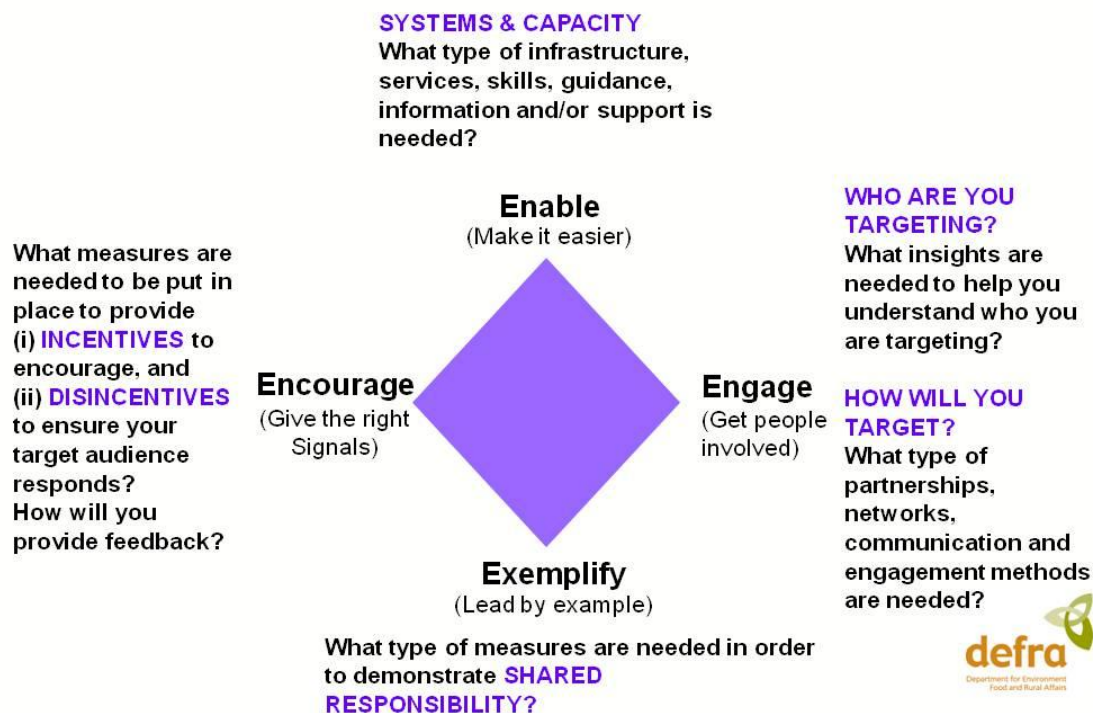


Model adapted from Theory of Reasoned Action and Theory of Planned Behaviour

The authoritative and detailed reviews of other models by Jackson, T (2005) and Darnton A *et al* (2006) illustrate how easy it can be to get diverted by different approaches that focus on slightly different aspects. Additionally, in relation to farmers, Dwyer *et al* (2007) and Garforth *et al* (2006) explore the range of academic literature. There is, however, an important distinction to be made between those academic models that focus on predicting behaviours and those that focus on influencing behaviours. The modelling by Garforth *et al* (2006) on the Single Payment Scheme focuses on predictive behaviour (whilst also linking to the role of social referents i.e. those who are trusted / listened to) but the literature review and qualitative research by Dwyer *et al* (2007) emphasises the role of advice, knowledge transfer and communication.

To explicitly add the policy dimension, this paper makes reference to the policy intervention tools that link directly back to the internal factors. A concise behaviours approach is contained within 'Securing the Future' the UK Sustainable Development Strategy (Defra, 2005). It is argued that for successful (and sustainable) government intervention there needs to be a balanced approach addressing both **internal and external** barriers to change through the '4Es' - **encouraging** (incentives and disincentives), **enabling** (facilitating through addressing infrastructure etc.), **engaging** (influencing underlying attitudes and motivations) and **exemplifying** (government taking wider action either on our performance e.g. buying local produce or influencing others e.g. climate change).

## Figure 2 - Sustainable Development Diamond / 4Es



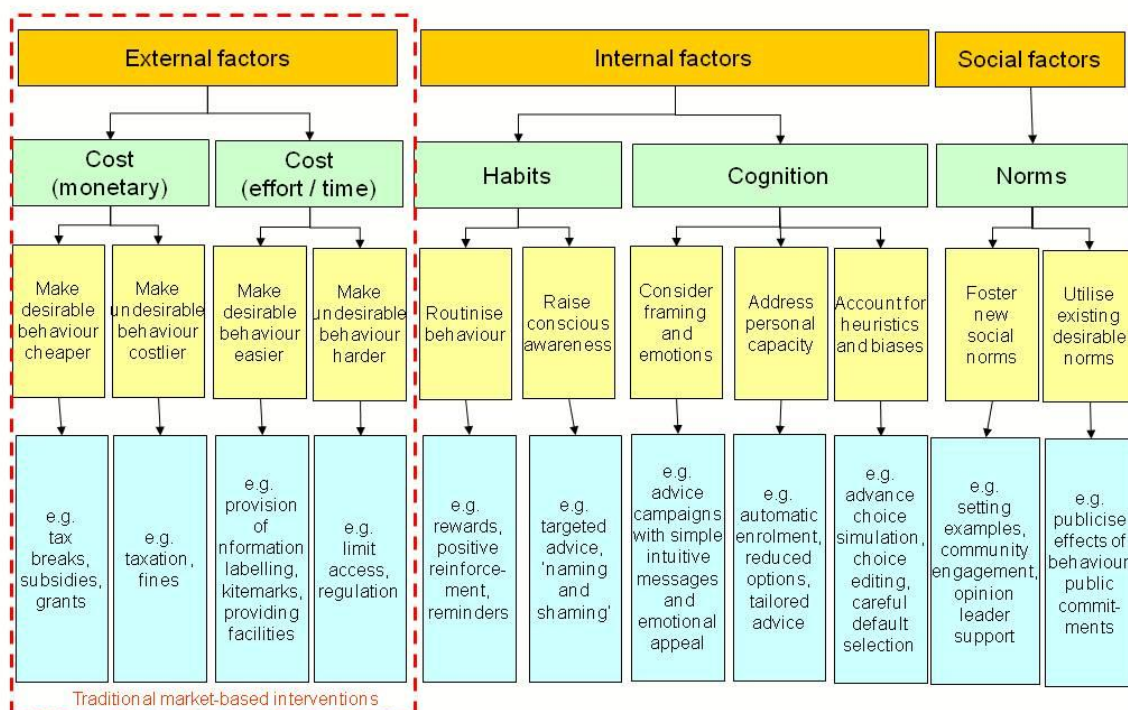
As this paper is targeted at both policy and multi-disciplinary analytical audiences it is also worth referring to the growing field of behavioural economics. Whilst there is a risk in introducing a further label, thinking in terms of behavioural economics very clearly re-enforces the need to join the **internal and external** factors together and seeks to challenge the standard neo-classical assumption of economic rationality. Behavioural economics perhaps provides a common language that bridges economics, sociology and psychology and provides a link to policy-making that looks beyond the traditional approaches of regulations, market-based instruments and addressing information barriers. It seeks to examine individual decision-making and the implications for policy modelling. The theoretical basis fits with social theories and the two previously illustrated models. A good outline of behaviour economics, *Creatures of Habit? The Art of Behavioural Change* (Social Market Foundation, 2008), states: '... people, it turns out, often aren't actually all that "rational" in their behaviours and decisions... they are just as likely to

do what they have always done, what impulse tells them to do or what their neighbours or friends generally do... they're often well aware that their own actions aren't in their best interests". The implication is that when making a decision it is not based solely on a cost-benefit analysis (economically rational) but influenced by a range of other personal factors. This can lead to behaviour that is rational, but consciously not based on economics - e.g. where the goal is to achieve a certain lifestyle. However in some circumstances, economically irrational behaviour may arise where actions may not always be in their best interests but be influenced by habit, cognition or status quo preferencing.

Very rarely is a decision made in full knowledge of all the costs, benefits and risks and with the individual making that decision in isolation from outside influences. As the SMF (2008) state: "Rational choice theory is also criticised because it tends to downplay the impact of social context on individual behaviour." Individual choice is also influenced by observation, social learning, group dynamics (peer pressure / group association) and societal expectation – **social norms**. This is particularly an issue in respect of 'commons' where people are only prepared to act if others do as well. Examples include climate change and use of open access resources e.g. fishing and grazing on common land but can be applied in many other agriculture-specific examples e.g. disease prevention, water abstraction.

Behavioural economics provides another way of conceptualising through a theoretical framework. Figure 3 reproduced almost exactly from the SMF report has similarities to that set out in Figure 1 where there are three main components (**internal, external and social factors**) and these are assessed individually in terms of intervention options. The diagram clearly shows where traditional market-based interventions have operated (primarily on **external factors**) and the clear recognition of the role of **cognition** (framing / emotions, personal capacity and accounting for heuristics / biases) adds an important new dimension.

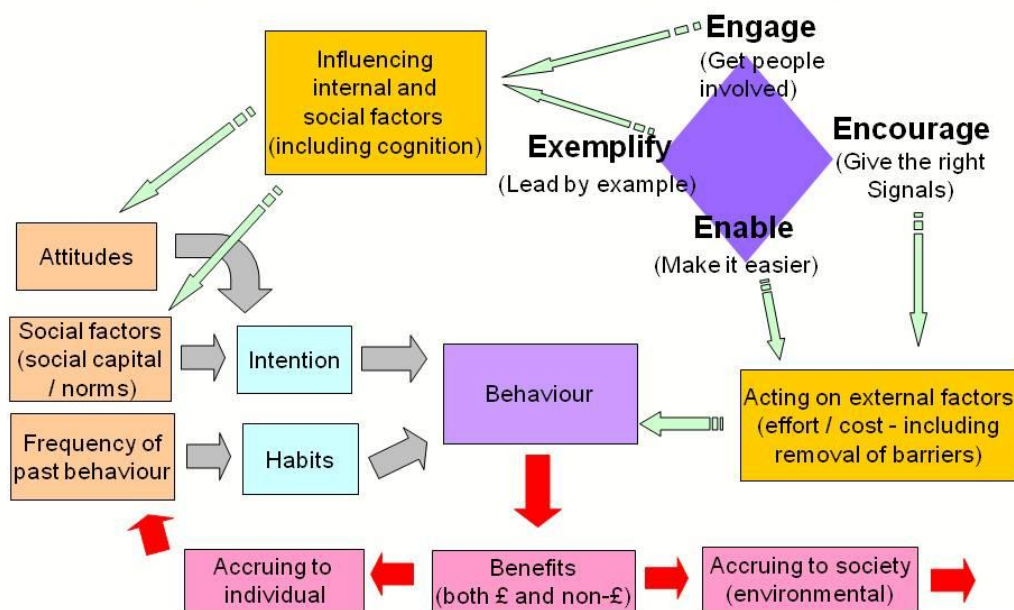
**Figure 3 - Behavioural Economics**



These three approaches can be combined to provide an integrated framework encompassing psychology-based approach to behaviours, the role of government intervention and a consideration of behavioural economics. Figure 4 emphasises the importance of a range of intervention tools and that different approaches are needed to address **internal** and **external** barriers and **social** factors. In very broad terms, regulatory and market-based instruments are focussed on **external** factors making desirable behaviours easier / cheaper and less desirable

behaviours harder / more expensive. **Internal** barriers are addressed through communication, advice and other engagement options to influence **attitudes and social norms**. The diagram also illustrates an important feedback loop. As well as benefits accruing to society (environmental and social as well as economic) it is also important to recognise the part played by **monetary and non-monetary benefits** that return to the individual farmer that help re-enforce **behaviours**, shape **attitudes** and derive **social capital**. Figure 4 provides a simple illustration of how a range of interventions is needed for sustained behaviours to be realised. This paper advocates its use as a framework for visualising behaviours both in following sections and as part of subsequent considerations.

**Figure 4 – Proposed integrated approach**



## 2.2 Influencing behaviours – visualising change

The farming industry is characterised by individual farmers making decisions as either tenants or owner-occupiers. Reflecting the extensive literature in individual behaviour, this paper primarily takes this as a focus. However, it is recognised that increasingly the industry is being structured to be like the wider business community with an increase in family partnerships, a significant presence of farming companies and other corporate or investment bodies. Whilst some element of individual behaviour may be apparent in day-to-day actions, e.g. role of farm manager, to fully understand the decision-making process the scope of this paper would have to extend to organizational behaviour. Additionally, contracting arrangements where short-term day-to-day operations are separated from the longer-term view of the landowner add a further layer of complexity. However in the majority of instances, decisions are taken by individuals and this section explores how to influence resultant behaviours.

Individual farmers and landowners (and to some extent family farming partnerships) are primarily individuals and, whilst sharing some common characteristics that will distinguish them from others, in many respects they will tend to behave very much like other individual decision-makers. Given this, behaviour theory is as applicable to them, as a community as a whole and on an individual basis, as to other groups or individuals in society. In this respect, both the standard theory of behaviours is very much applicable along with other more tailored applications e.g. environmental behaviours (which considers issues that impact on decisions e.g. intra-generational and equity trade-offs).

Analysing behaviours for policy can be viewed in two separate ways as illustrated by the diagrams below. The diagrams were brought together in a report commissioned in 2005 entitled 'Nudging the 'S' Curve' (Brook Lyndhurst, 2006) that sought to consider issues surrounding behaviours from a policy perspective.

**Figure 5 – 'Nudging' the 'S' curve**

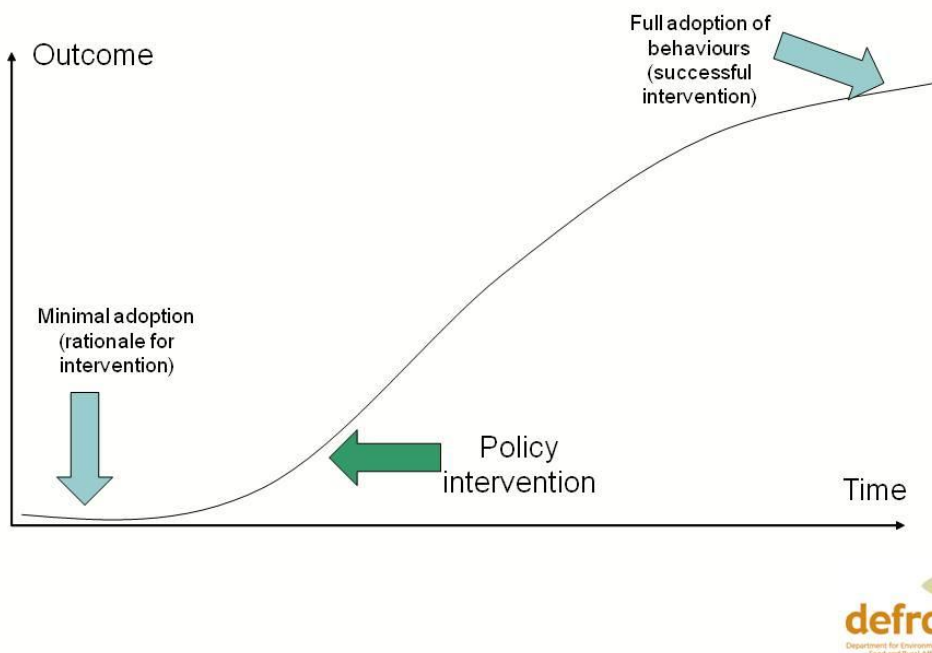


Figure 5 illustrates a 'traditional' S curve adoption diagram which can be seen in the context of groups e.g. % of farmers adopting a certain measure. This shows that, as time progresses, the change from the few early adopters or innovators through increasing pace of take-up as mainstreaming occurs and then the pace slows with the later adopters who may be more cautious or who have other external or internal barriers. However Figure 5, as with the subsequent ones, can also show a slightly more complex picture at the individual decision-making level i.e. the curve represents a transition from thinking about adopting to seeing it through to realisation. For example, there could be a single action but this does not result from a single decision but is based on influences and decisions over a period of time, at a number of levels and possibly a catalytic trigger. This could be illustrated by an example of, say, installing an anaerobic digester – a large capital item. The model presented in figure 5 could be used to show how the curve could show a path to uptake where the limited early progress to achieving the behaviour could be around a change in attitudes – "Although initially sceptical I can see this is as important for long-term sustainability of my business". This may move into an increased pace through reading the press, listening to peers, getting advice (building up knowledge and confidence) which accelerates the change i.e. "If others can see the sense, so can I". Only eventually does it lead to switching on and the resultant environmental (and economic) benefits.

**Figure 6 – Multiple interventions at multiple levels**

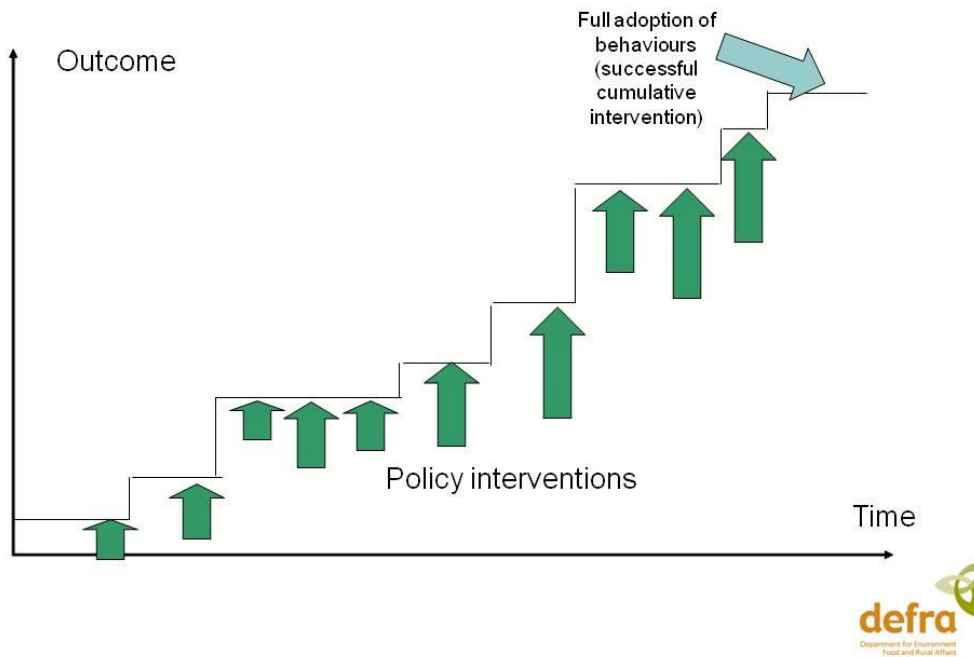
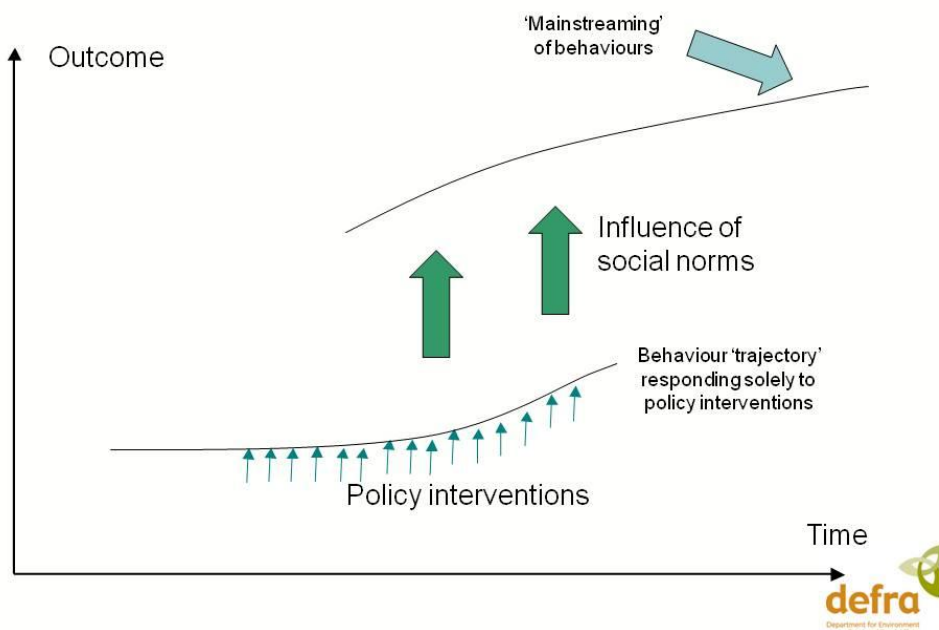


Figure 6 depicts this inherent complexity from a different perspective. The behaviour ‘goal’ could be something high level like a strategic outcome target such as farming improving its net environmental impact. In this way, the curve is stepped which could represent different actions required. Very rarely can a single intervention (arrow) realistically achieve the desired outcome, rather a series of intervention will usually be required. Critically, because farming is diverse, there will be a number of different responses for any intervention and uptake will not be uniform (or universal) across all individuals (no step increase). As the outcomes of interventions can be difficult to predict there may be a need to take risks, pilot and evaluate. It is recognised that change can be a long term process rather than a single event and there can be catalysts to change as well as the cumulative effects that build momentum over time. The key point is that multiple interventions are needed and at multiple levels and these interventions should seek to influence both **intentions** (through **attitudes**) and behaviour through **enabling** and **encouraging**.

**Figure 7 - Social norm shift**



The other drivers of intentions are the **social factors** which include **norms** and **roles**. There is no magic answer to shaping norms nor to creating new norms but they do emerge over time. For example over the last 2-3 decades there has been a gradual shift in norms from a productionist culture to one where environmental considerations are not just shaped by regulations (Slee *et al*, 2006). Figure 7 illustrates how a real shift can occur when norms are re-enforced or role models act as advocates. In an ideal world, a social norm shift is very advantageous, for example, a supportive editorial in the Farmer's Weekly may have greater impact than Defra-branded information leaflets through the post. This diagram represents the power of influence and indicates that exploring ways in which farming community leaders can help stimulate change can be an innovative (and successful) policy avenue.

## 2.3 Influencing behaviours – generic lessons from theory and practice

Recognising the importance of understanding and influencing behaviours is now a key factor in policy-making and an authoritative review of principles and practice has been published (Darnton *et al*, 2006) along with some companion thinkpieces (some referenced separately below). The key conclusions from this work were synthesised for an internal audience and this provided some important and consistent messages that were common throughout the research (Defra, 2006). At its simplest and most concise, the key message is that behaviours are complex, change takes time, outcomes of interventions are difficult to predict and behaviour responses to policy interventions will vary by target group. This basic conclusion is outlined in more detail below and fully explained in subsequent sections. Although it sounds particularly problematic for informing policy, it is more of a case of recognising the complexities to guide policy development.

Behaviours are complex but it is important not to over-complicate nor to perceive as too difficult to address. People have different motivations and barriers for different behaviours and, where they share a common motivation for a particular behaviour, it does not follow that they will share the same motivation for other behaviours. Therefore, using a combination of interventions will be more effective than a single intervention. Focussing solely on market-based tools to directly influence behaviours or just communications-based interventions to influence **attitudes** and **intentions** is unlikely to deliver sustained changes in behaviour. By implication, the concepts of 'economic rationality' and information deficit models would seem insufficient:

- Behaviours are informed by individual concepts of rationality and may not be fully determined by the assumption of profit maximisation (recognised by behavioural economics). This explicitly challenges equilibrium models and mathematical modelling which may discount psychological influences and collective responses in favour of optimising profits (Garforth *et al*, 2006).
- Information does not necessarily lead to awareness, nor awareness necessarily lead to changes in behaviour. The gap between some individuals' attitudes (**beliefs about outcomes**) and their actual behaviours (the 'value action' gap) is well documented. A change in attitudes will not automatically lead to behaviour change as actions are informed by **outcome evaluation** or agency – the internal belief that an individual can see an action through and, critically, that it will make a difference.

This highlights the importance of understanding the **internal** and **external** factors that contribute to an individual's behaviour. There is no single solution but a requirement for multiple (and integrated) interventions at multiple levels. This equates to targeting at all three main levels identified in Fig 3: individual – to address **internal barriers, capacity** and **cognition**; **societal** – to address norms, and organisational to target **external** factors – putting a balanced set of policies to influence cost and effort). Securing lasting change, in an effective way, requires shifts in attitudes, norms and habits as well as addressing external factors through policy interventions.

The relevant literature is extensive, Garforth *et al*, 2006 considered over 70 academic papers in a review of literature on farmers' motivations and behaviours to inform the modelling research. A useful, succinct conclusion is: *"It is widely recognised that farmers' business and land management decisions are influenced by factors other than profit, including perceptions of risk,*

*attitudes (including attitudes towards new technology, government and the future of the agricultural sector), issues of family life cycles and succession, and the opinions of other farmers and the professionals with whom they interact. As rural economic and land use policy itself becomes less focussed on production and productivity, it is essential that policy analysis and appraisal is informed by models that reflect this wider range of factors which influence farmers' decisions."*

The observation noted above clearly corresponds with Figure 4 in that behaviours are undertaken by individuals in the context of groups and wider social networks (**social factors**) and these behaviours are determined by inter-related and inter-dependent factors. This is further elaborated in sections 2.5 and 2.6.

Whilst there is a significant amount of evidence on theory this does not extend fully to a systematic analysis of the role of individual policies in influencing behaviours i.e. applying behaviour theories to policy evaluation. Defra is rich in evaluatory evidence e.g. economic policy evaluations (<https://statistics.defra.gov.uk/esg/evaluation/agri.asp>) but there are inherent difficulties in measuring all the factors and quantifying impact and causation. The Darnton *et al* study attempted to review practice but this was the least convincing aspect of their otherwise very comprehensive review. Despite, the limitation in terms of applied evaluatory evidence, a key output from the research to look at influencing individual behaviours was a series of best practice principles (Defra 2006 and Defra 2008a). These are outlined below and in subsequent sections but there remains the potential of some further development of evaluation evidence.

## 2.4 Behaviours and a diverse industry – farming style and segmentation

This section explores the theoretical discourse (farming style) and practical approach (segmentation) to recognising diversity in the farming community, how this affects decision-making and what it means for policy development and delivery. It is important to build a deep understanding of the motivations and barriers for different population groups, where these are shared, and how we can work with them. Again, in a similar approach to section 2.2, the majority of the discussion relates to individual decision-makers. Although the role of farming companies is neither explicitly recognised nor ignored, corporate management objectives, even if represented through the farm manager, may not influence the frameworks to the degree their increasing importance would suggest.

### 2.4.1 Farming style

The farming community, like any other section of society - whether households or businesses, includes a range of individual decision-makers who approach drivers (whether threats, opportunities or barriers) in different ways. Obviously farming can be categorised fairly easily by certain attributes which help explain differences in decision-making. For example, as well as other general enterprise type there can be other descriptors that can help explain differences in behaviour e.g. large / small, tenant / owner-occupier, mixed / specialised, upland / lowland. These can all be relatively easily measured and assigned, but to some extent, they really only represent external factors and the wider environment in which decisions are made. It is only by understanding underlying attitudes, motivations and objectives that it may become possible to explain divergences in actual practice e.g. propensity to engage in activities that enhance environmental sustainability.

Work by CCRU at the University of Gloucestershire for Defra (2006) explored the concepts of *farming style* (social, economic, ecological and technological practices that underpin decision-making); *habitus* (not habits but an academic term describing attitudes and values) and the *Agricultural Knowledge and Information System* (AKIS – the information network that links individual farmer with peers and others who can influence behaviour). Broadly this fits with thinking about individual behaviours (and the model outlined in section 2) where *farming style* could be loosely categorised as past behaviours, *habitus* as attitudes and the AKIS as social networks, norms and the role of influencers (social referents including opinion leaders).

*Farming style* is basically a segmented approach to describing farm businesses e.g. those that are more business-focussed; those who value succession; importance of good husbandry etc. Whilst farm decisions are constrained by physical conditions (soil, climate etc.) and structure of the business (fixed capital etc) the accommodation of change (whether forced or voluntary) depends also on behaviour and attitudes. The critical concept that habitus brings is in terms of recognising that behaviours are influenced by the **accrual of non-financial benefits** back to the decision-maker in what is classed as 'symbolic capital'. It is the variation of values placed on this symbolic capital which influences likely responses i.e. if value is placed on being a good farmer in comparison with peers with a production-orientation, then capital could be accumulated through having a weed-free crop rather than one that is more bio-diverse. Whilst continuity in values does persist, these can change over time but there will always be differences in predisposition to adoption.

The concepts of farming style and habitus suggest a strong likelihood of continuity of attitude and behaviour (action). This can be viewed as a potential barrier to innovation (e.g. action towards climate change) but from a positive perspective environmental uptake can also be a brake on rapid change to market conditions (e.g. not responding instantly to high cereal prices through ploughing up grassland). A key issue is the extent to which farmers (as decision-makers) respond to signals from government, society and the market and this depends, to some extent, where the message is coming from (trust), how it is delivered (language and tailoring) and the opinions and behaviours of others (networks and influencers). Whilst policy can never be 'individualised' there needs to be recognition of diversity in farming styles, of underlying attitudes and motivations and critically, of varying capacity for adaptation. To be most effective, policy should be designed with a clear specification of target groups (not a one size fits all) and an understanding of value systems that contribute to the farmer's own 'symbolic' capital.

The variations in style and habitus (and response to different stimuli) whilst highlighting difficulties in developing strategies, helps re-enforce the idea of multiple interventions at multiple levels. For example, change will occur readily amongst those where it is easiest to accomplish (farming style) or where it fits with attitudes and objectives (habitus) and this may imply a relatively light touch of intervention. However, a different mechanism could be used where changing practices is more problematic e.g. for environmental sustainability where farming style is most closely aligned to technical aspects of farming and profit maximisation. Whilst the comparisons between productivity and environmental sustainability may be easiest to make, in their study of behaviours and animal disease risk Bennett *et al* (2007) also reviewed the work of the Dutch academic (Commandeur) who applied farming styles to a 1997/8 swine fever outbreak. Although taking a different perspective to Slee *et al* (2006), the conclusion was interesting in that farming styles present different types and degrees of risk towards exotic diseases. Consideration of these issues will not only help explain different levels of uptake or compliance in relation to environmental schemes but also a range of policy issues e.g. different attitudes towards, and implementation of, bio-security to guard against animal disease risk.

This variation can sometimes have unforeseen benefits. Firstly, diversity can help with establishing a resilient industry in terms of ability to cope with market or weather related shocks. Additionally, from a policy perspective, those farmers not responding to policy and market signals during the post war focus on production led to a residual pool of environmental assets.

#### 2.4.2 Towards a segmentation model

Intuitively *farming style* makes sense and within Defra there have been two commissioned studies that have attempted to quantify and characterise the diversity within the farming industry. Whilst this paper explicitly advocates the adoption of a single agreed 'model', the conclusions from both research projects are robust in their own right and each explores a different angle in more detail.

The first research undertaken by the University of Reading – *Research to Understand and Model the Behaviour and Motivations of Farmers in Responding to Policy Changes* - arose from a

recognition that models for policy analysis, and prediction of farmers' behavioural responses, frequently adopted economic rationality parameters and did not consistently include farmers' motivations and influences on their behaviour. The study was very rigorous in that there was a review of international academic literature (70 studies including looking specifically at references covering categorising farmers and measuring objectives), interviews at various stages with experts involved in modelling and critically a random survey of farm holdings to inform an analysis based on the Theory of Planned Behaviours.

Using evidence from the literature review, including types of questions and methodologies for soliciting opinion, and also from an application within the ADAS Farmers' Voice survey, the research team based their empirical work on the Theory of Planned Behaviours (TpB) and information collected through a postal survey. The policy focus was **attitudes** and **intentions** towards the Single Farm Payment and one component of the study analysed 683 completed questionnaires into a behavioural typology using clustering and a Principal Component Analysis. Factors were extracted from 25 objective and 26 value statements and clustering of responses categorised respondents into 5 farmer types: family orientation; business / entrepreneur; enthusiast / hobbyist; lifestyler and independent / small. Each had certain characteristics which can affect likely responses in respect of the introduction of a new policy – in this case the Single Farm Payment. A particular value of this study is that, using TpB it was possible to see variability in likely behaviours as represented by intent or social referents e.g. those who are most likely to influence decisions e.g. farming press, family or accountants.

The wealth of results from applying a very specific methodology to a policy area is impressive and as well as potentially forming a 'template' for thinking about other policy questions demonstrates the value of thinking about behaviours and their determinants. Additionally it raises very important issues for modelling. However the segmentation was primarily quantitative arising from a self-completion survey (with potential associated biases, as the authors note) and was framed within a specific policy area (which, as a consequence, meant that upland holdings were not represented).

The second study sought to build on the segmentation results and methodology from the initial findings to refine the analysis and eliminate, as far as possible, any potential bias. This study undertaken by Continental Research had the primary aim of providing a robust segmentation model based on the earlier work but further substantiated by in-depth qualitative work and a focus on communication. A telephone survey of 750 farmers (from the Defra database of registered holdings) used a selection of 17 objective and value questions from the University of Reading research that were both significant predictors and correctly assigned respondents to segments. In a similar way to the first study, variables from the statements were input into factors (7) from environmental issues to technology and these were used as a basis for the segments. The names of the five segments, descriptors rather than labels, are custodians; lifestyle choice; pragmatists; modern family business; challenged enterprises.

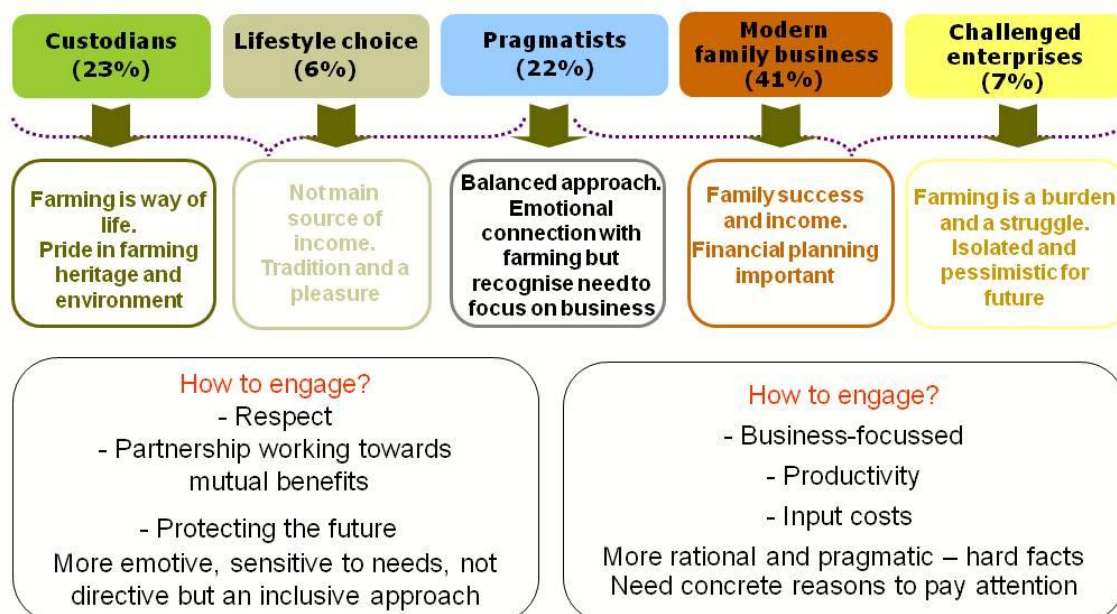
Interestingly, but not unexpectedly, farmers as a group share similar overall characteristics (however this does not facilitate targeting). Segments are similar when profiled by size, region and farm type and it is only when attitudes are included that major differences emerge. There are similarities with the earlier study but an important conclusion is that a small number of statements can correctly assign respondents to segments. Divisions are 'fuzzy' where, rather than hard boundaries, the segments could be described as lying within a rainbow where the transition between characteristics is soft (and in some respects flexible) but it is still possible to distinguish the exact colours where one behavioural type ended and another began. The segment names should be interpreted with care, for example, the quantitative analysis showed that it not just the 'custodians' who cared about the environment but it was more of a dominant theme within this group.

In very broad terms, the five segments, identified through descriptions rather than labels, lie within this rainbow. Groups 1 ('custodians') and 2 ('lifestyle choice') may respond more to emotive issues where inclusion and partnership working / mutual benefits are key. Groups 4 ('modern family business') and 5 ('challenged enterprises') are more economically rational and

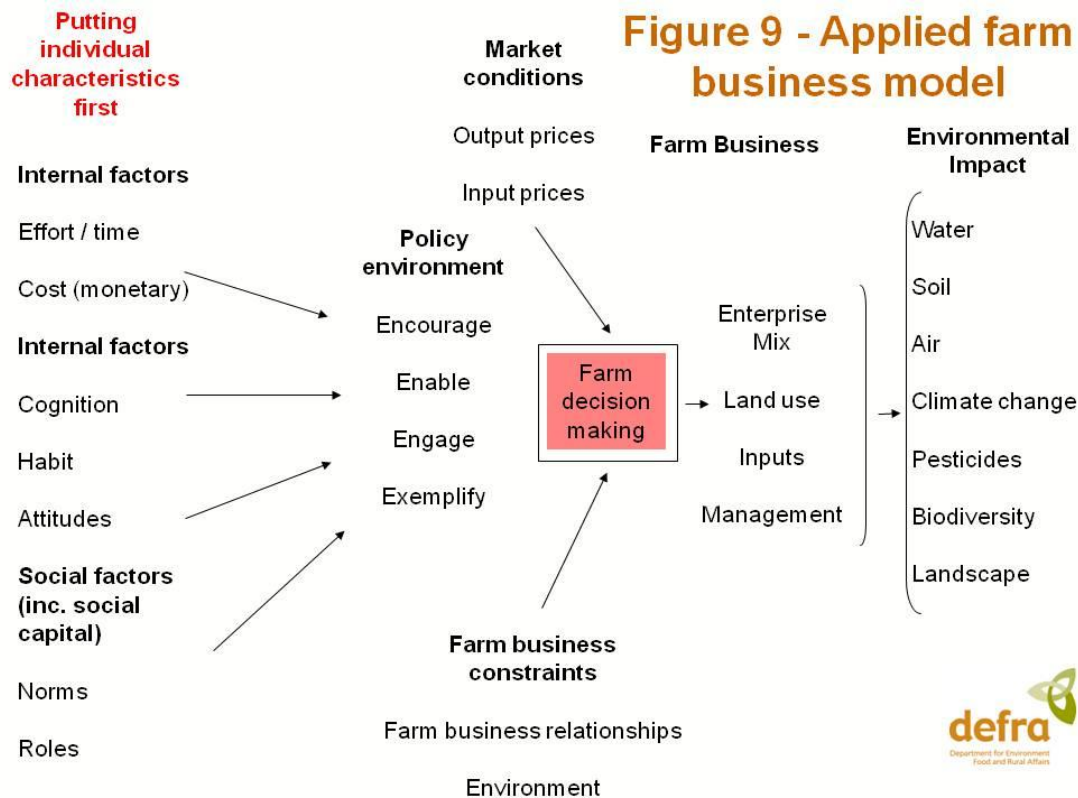
pragmatic – they can be focused on the bottom-line. Group 3 ('pragmatists') which are mainstream, traditional, family types, are a mixture of the two. Figure 8 provides an illustration of how broad categories can be identified for recognising, and responding to, the five segments.

For a fuller description, Annex 1 summarises the characteristics of the segments. As well being important for policy modelling with respect to recognising diversity in terms of attitudes, motivations and likely behaviours, there is also a strong relevance for communication. As expected with values and objectives, there needs to be a different approach and language used to appeal to different groups. Whilst a considerable amount of communication is in the form of regulatory notifications, knowledge transfer and advice, the promotion of environmental sustainability, for example, needs to be nuanced to have a greater chance of uptake. For a couple of segments, a more emotive approach is needed that is sensitive to their needs (e.g. protecting the future) and is inclusive (partnership approach) rather than directive. For other segments, who are more economically rational and pragmatic, there needs to be concrete reasons (productivity, cost management) for taking notice e.g. appealing to the 'bottom-line'.

**Figure 8 –Defra Farmer Segmentation Model**



In conclusion, the importance of a segmentation framework is in terms of thinking about different ways of characterising farm businesses. The conventional way, at present, is to think in terms of external descriptors e.g. farm type (cereals, general cropping, grazing livestock), environmental condition (upland, lowland) and perhaps by business structure (tenancy, owner occupied). Descriptors based on internal or individual characteristics do influence the farm business and interactions with both the market and government and in many respects act as an initial filter or lens through which decisions are taken. An applied farm business model (Figure 9) provides an illustration of how all the factors fit together from this review. The point worth noting is that the internal characteristics or descriptors contained within the segmentation model are placed at the front, with the policy tools and market conditions etc being secondary issues. In this way this alters how we could view policy - from a top down approach to one that responds to internal factors.



## 2.5 From individuality to collective action

Although section 2.4. highlights the heterogeneity of the farmers and landowners, there is actually a significant similarity within the farming community in terms of shared interests, concerns and goals. Co-operation between farmers is nothing new, working together has been a feature of agrarian life for centuries, and whilst (voluntary) farmer co-operatives may be less prevalent in the UK compared to other EU member states, a set of economic and environmental circumstances may provide a catalyst for farmers and landowners to begin to work together again. This sections relates to the **social norms** and **social capital** influence within the models.

### 2.5.1. Collective choice / collective action – transforming 'tragedy' into harmony?

Although farmers can be intensely competitive, as evidence from price competition to ploughing matches or county shows suggests, collective choice or collective action theory can become an increasingly valuable framework to address longer-term environmental and economic sustainability issues.

The challenge is how to stimulate interdependent people to come together, in response to environmental pressures, to form well-defined groups. Stakeholder engagement, harnessing individual motivation and promoting a bottom-up culture of cooperation can address inertia and respond positively to pressures. As part of a series of 'understanding behaviours' projects, Trawick *et al* (2006) at Cranfield University drew on ideas, based in theory but founded within ethnographic research, to clearly advocate a role for collective responses to shared concerns. A good example of a 'market failure' is the accepted convention of a 'tragedy of the commons'. This can be apparent as a competition for inputs e.g. open fisheries, commonland grazing, water abstraction or problems with outputs to a common resource e.g. discharges and emissions to the environment. Traditionally, market-based instruments (e.g. quotas) or statutory regulation are the interventions used (with varying degrees of success). However theory (and to some extent practical examples) does not recognise 'commons' as intractable problems. Adopting collective-action (and collective-choice) theory to promote collaborative environmental planning, through 'community-of-interest based' approaches, can motivate to produce and consume

(through cooperation and mutual self-restraint) in a more sustainable manner in local situations particularly where scarce environmental resources and characterised by 'commons' issues. Trawick *et al* (2006) provides two examples: the East Suffolk Water Abstraction Group responding to abstraction restrictions and Pont Bren, an informal cooperative in Wales whose members through 'mutual-aid' share resources in response to economic and environmental pressures in upland farming.

The critical perspective is that self-interest and the common good are not mutually exclusive and can become compatible with each other and even congruent in the eyes of the users of a scarce resource. Common-pool resource-users who apply common principles (e.g. autonomy, contiguity, transparency etc.) through a mutually-imposed, self-financed and binding contract that limits individual consumption can create strong senses of equity and security and a clearly perceived compatibility between individual 'rational' self-interest and the common good. Moving towards sustainability in people's behaviour requires clearly defining common interests in terms of a particular resource (or public good). Individual choices and responsibility are important but producers and consumers can be viewed, not as individuals making separate choices in the "market", but as members of communities and resource-user groups who have a tangible interest in common.

Additionally, participatory planning and stakeholder engagement are essential. Demonstrated at the local level, a process of common-value identification and deliberative group choice can establish a consensus and rules that should govern resource use. In this way, people in situations of collective-choice get involved to minimise some elements of risk through mutual self-restraint (and monitoring) to produce a stable equilibrium. Fostering a 'culture of cooperation' is achievable - where willing parties have been proven to come together to tackle environmental problems.

#### 2.5.2. Social capital

**Social capital** is a concept that bridges disciplines within the social sciences and can be viewed as one of the main underpinning elements of economies – natural capital (environment); human capital (labour), financial capital (money) and social capital. The Strategy Unit (2002) defined social capital to be 'networks, norms, relationships, values and informal sanctions that shape the quantity and cooperative quality of a society's social interactions'. But importantly, as Robert Putnam explains in *Bowling Alone* (see reference above), **social capital** is accumulated over time, and influenced by long-standing historical and cultural factors – but it is both a public and private good, in that it benefits both creator and user. Unlike financial or human capital, social capital is difficult to measure and hard to assign monetary values. However there are very good reasons for its inclusion in this paper about individual behaviours.

Social capital can be illustrated by contributing to lower levels of community transgression (can be seen in the context of crime but also environmental issues such as pollution) by promoting **norms** or values that discourage behaviours that cause externalities, and by strengthening community ties so that sanctions may be provided against those who transgress. It can help foster 'virtue' by encouraging more community orientation and co-operation. Additionally, participation through discussing issues can help citizens learn about the wider policy context and to lobby Government to act in ways to benefit the community.

Social capital or the connections among individuals and their social networks and the norms of reciprocity that arise from them can broadly take three forms. Both Mark Pelling and Jilly Hall in their presentations to inform a Defra / ESRC public policy seminar - *social capital into collective action for the environment* (ESRC, 2008) - described these three forms:

- **bonding** - from membership of groups of similar people with strong ties, such as networks of friends, family and associates
- **bridging** - from membership of more diverse associations, with weaker links between individuals, such as interest groups or social and leisure clubs
- **linking** – describing connections with people in positions of power, and good for accessing support from formal institutions. This differs from bonding and bridging, being concerned with

relations between people not of equal standing.

Whilst there are examples from across public policy, Pelling and Hall focussed on some case studies and interestingly there was some evidence from farmer groups. Pelling in work funded as part of the Environment and Human Behaviour Programme, examined how social capital within organisations, shaped their capacity to adapt to unexpected external stresses and shocks. One of the three case studies was a co-operative of dairy farmers from Wales - Grasshoppers - who demonstrated strong *bonding* social capital. With a sense of commitment to the group and positive attitude to risk and innovation Pelling noted the real strength was: “In this organisation, it was a case of reinforcing systems of interdependence – each providing legitimacy and value for the other. Core procedural elements of the formal system provide a common structure and aims for the group, while the overlapping of professional and personal trust provide a strong base for reflexivity, social learning and adaptivity”. In essence, the support organisation provided a framework (with rules of conduct) around which close informal and formal ties could bind with greater overall strength and be seen as an asset by members. Interpersonal trust and individual reputation in informal networks created the social context for social learning, supporting experimentation and risk-taking within a shared environment.

Hall, in her work with Jules Pretty at the University of Essex (described in ESRC, 2008), and using evidence from the Natural England Norfolk Arable Land Management Initiative (NALMI) analysed five aspects of social capital, again using the bonding (with other farmers), bridging (local community) and linking (officials and buyers) definitions, within a sustainability context. Research implied a relationship between social capital and sustainability but what emerged as an interesting conclusion was the importance of the linking capital especially in the context of interactions with government: “83 per cent of farmers with high linking social capital had increased the frequency of their engagement with Government in 2004/5, and expected this trend to continue. Conversely, 75 per cent of farmers with the lowest linking social capital had reduced their contact, and also expected this trend to continue”. Both of these conclusions can relate back to the segmentation model described in section 2.4 and the importance of time as a key differentiator in terms of capacity to build social capital and engage with environmental issues: “Only the most sustainable farmers allocated time to invest in their social resources, and this contributed to growing polarisation between them.”

Hall implies that there are significant barriers in the way of developing social capital to ensure collective action e.g. “key policy targets became self-excluded from most sources of information, due to an aversion to policy-driven change (‘Buy-out’), fragmented social networks and low trust”. However, it is recognised that bringing together people with diverse views can encourage group solutions and that linking capital (with government) is critical. This echoes other work within Defra on ‘customer journey mapping’ where planning positive face-to-face interaction between different agencies and farmers could provide a way to build social capital through trust-building and pro-active engagement. In this way, government can strengthen the linking social capital as well as encouraging (through local organisations) bonding and bridging social capital to assist the transition to more sustainable land management.

## 2.6 The influences on the farmer as decision-maker

Throughout the discussion, and clearly emphasised in the previous section, the farm decision-maker does not take decisions in isolation and a significant influence on individual behaviours, **attitudes, social capital** and collective action are **social referents, social norms and opinion leaders / formers**. Whilst the market and price mechanism are key determinants, within the parameters of the regulatory environment, the role of advice and external opinion (alongside other social and cultural drivers) is important in shaping attitudes, translating intentions into action and guiding business decisions.

The formal model describes **social norms** and pressure but researchers using the theory of planned behaviours in a farming context (Garforth *et al*, 2006) could only attempt to substantiate social referents i.e. who are trusted sources of advice. Whilst the research was not necessarily

conclusive, it did indicate a number of important factors. Conclusions (also replicated in Bennett *et al*, 2007) suggested that farmers trusted their own experience more than other social referents but family opinion matters most. Additionally, and critically, in accordance with section 2.4, influences varied by different farming segments. The results suggest that 'conventional' social norms (i.e. peers) do not exhibit strongly and this is illustrated by relatively weak correlations for 'other farmers'. Score for referent subjective norms are (unsurprisingly) most different within the 'hobbyist' category with lower business-focussed referents (consultants, accountants, land agents) and lower scores for family and Defra.

Section 2.2 highlighted the role of networks, peers and local opinion leaders in the farming community. This is backed by wider evidence highlighting how social networks can act as anchors of identity / sense of belonging (Brook Lyndhurst, 2006 and Uzzell and Muckle, 2006). More specifically, key intervention points within these networks are critical and Bennett *et al* (2007) in their study of behaviours and animal disease risk recognise the importance of 'critical behaviour influence points' (e.g. veterinarians). Whilst some proxy values can be obtained e.g. farmers clubs, farming press etc., this aspect warrants greater exploration. Communication is an important role of influence (section 2.4. discussed how different segments respond to different communication methods) and this taken in conjunction with section 2.5, which highlighted the role of government in 'linking' social capital, does emphasise that understanding who influences and why, is critical for understanding determinants of behaviour as well as the role of government as both an advice provider and influencer.

Communication, advice, social referents and behaviours are linked by viewing advice as an intervention through a 'source-message-recipient-situation/context' perspective. The message matters e.g. is it patronising?, does it appeal to emotions or profit motivation? and the context is important e.g. farm visit; press release; article in Farmer's Weekly; group discussions. Additionally, **internal factors** unique to the decision-maker play an important role. The effectiveness of the source will be determined by perceptions of status and credibility as well as trustworthiness e.g. vets may be trusted sources and research does indicate a degree of trust in information from government. Finally, effectiveness of translating advice into actions will be determined by internal characteristics of the recipient e.g. **cognition** (including framing of the issue) individual preferences of communication media; latitude of acceptance and resistance (linked to 'buy-out' as described above).

This basic theory was further substantiated by a study undertaken by a team within the Countryside and Community Research Institute, University of Gloucestershire and the Macaulay Research Institute (Dwyer and Blackstock, 2007) which looked at both the literature on behaviours and advice as well as in-depth interviews with five practical groups. Key conclusions from the study emphasised the importance of producing and presenting credible messages in a variety of approaches nuanced for different segments. The 'source-message-recipient-situation/context' approach was further re-enforced by recognising the need to develop solutions with farmers (perhaps engaging as 'actors'), the importance of the role of farming style, networks and collective learning and local understandings of knowledge. The research also makes an important distinction between capacity to change i.e. physical, environmental, farm business structure, financial and time resources (**external factors**) and willingness to change (**internal factors**). It is in influencing willingness to change that understanding attitudes, objectives and motivations are important. Also critical are the triggers for 'change' decisions whether they are the result of market, policy or personal drivers.

### 3. Key conclusions and implications for policy and research

The previous sections summarised themes from a number of research projects undertaken for Defra and this two page section attempts to identify some key conclusions. These could broadly be labelled as ‘what we know’ from the evidence and how these could be applied (in theory and practice). Section four will conclude with ‘what we do not know and may need to investigate’.

#### **Influences on individual behaviours are complex but applying a common framework can help our understanding**

Behaviours are complex, this should not be a barrier but be recognised as a way of matching existing policy interventions to the triggers for actions and for assessing gaps. Viewing policy problems through a behaviours perspective can improve both our understanding of customer insight and the effectiveness of policy development. Decisions and actions (broadly called behaviours) are the result of the interaction of a range of complex factors but it is possible to frame these in relatively simple terms. The framework, outlined from theory in figure 4 and applied to farming in figure 8, implies three basic principles:

- understand the role of all three factors (**internal, external and social**), the synergies between them and the key influencing components (e.g. attitudes, cognition, personal capacity) of each;
- appreciate the role of different interventions (**engage, enable, encourage and exemplify**) and combine multiple interventions at multiple levels to address all three factors (starting with external factors and incentives as well as penalties!);
- recognise the role of feedback in relation to **attitudes** (outcome evaluation) and **habits** – change is not a single event but shaped by feedback loops.

#### **Change is uncertain (and takes time) and behaviours need to be measured at all stages – not just actions or attitudes**

Whilst attitudes are important determinants of actions there is not a causal relationship - positive attitudes need not translate in action and actions need not translate into attitude change.

Measuring actions is important (past behaviour is often reliable indicator of future behaviour) however, for sustained long-term change, **attitudes** (and awareness) needs to be measured along with **habits**, observable actions (**behaviours**) and **social norms**. A shift in underlying attitudes may help deliver change in the future, as might a shift in the attitudes (and practices) of opinion leaders and wider societal norms. As well as taking time, there is inherent uncertainty, so both taking risks and monitoring effects of interventions is important.

#### **Individuals are the drivers of change and there is a real diversity in the farming industry**

This is one of the most critical conclusions of this paper – all decision-making is highly individual and relates to individual contexts. It is recommended that a segmentation approach is undertaken when considering policy options, communicating and modelling for impact. This paper proposes five segment types with some pointers for policy application but critical considerations are:

- not everyone is a profit-maximiser – underlying profitability is a key driver but it is a stronger factor for some farmers / farm businesses than for others;
- decisions are based on a range of longer-term attitudes and objectives and it is better to work with these as determinants of behaviour and re-enforce whenever possible;
- behaviours are rational to the individual but this requires more than a ‘one-size-fits-all’ approach.

#### **It is more than just acting on the individual - social factors including networks, norms, social capital and collective action are all important**

Decision-making is rarely taken in isolation - individuals act in networks and within communities. Networks are important as there are key individuals / intervention points and these should be actively targeted and engaged to both understand present and likely future behaviours as well as to influence. Networks can function around *farming style* with trusted advisors, suppliers and intermediaries. Peers and opinion leaders are likely to be in the same community but trusted intermediaries are also valued in terms of sources of advice. Collective action theory also suggests that self-interest and community (or wider societal) good can come together (particularly in relation to shared opportunities or constraints).

## **Understanding and influencing behaviours is an inter-disciplinary challenge**

Influencing behaviours through policy requires an appreciation of the role of traditional (market-based) instruments that act on **external factors** (cost and effort) and an understanding of the psychological underpinnings of the **internal and social factors**. Behavioural economics provides some shared terminology and the model proposed links the theories of change with policy interventions. Although there is an issue that remains unresolved (how to incorporate internal and external factors into partial equilibrium modelling), it is hoped that analysts and policy-makers can visualise what is needed in a change process and the evidence requirements to plan options and evaluate success.

## **Use a framework or model to visualise the process**

This paper highlights a useable model early (rather than reviewing a range of possible approaches) as it is possible to get distracted by a range of models used by different researchers (see GSRU, 2008). Reviewing models at the start of bespoke research projects is not strictly necessary - the frameworks presented in this discussion paper are recommended as initial building blocks for structuring thinking about behaviours. Models help to visualise the factors influencing behaviours and the role of interventions and whilst there can never be a single model that can definitively be used in all cases, the diagrammatic representations proposed (e.g. Fig 9) could be a basis for any applied work. Additionally, Defra's evidence base, both theoretical and applied to a farming context, forms a robust basis for applied analysis that should mean that any new work commissioned need not review existing knowledge on farmer behaviours and motivations.

However what is important is that:

- key lessons and models are applied to thinking about policy questions; and
- the evidence base for farming is enhanced through primary research that uses the models and tests assumptions.

## **Seven key implications for policy:**

- **Recognise diversity - no two farmers are identical!** Use the segmentation model and a framework for understanding the varied influences on behaviours.
- **Identify internal factors before policy interventions!** Recognise and respond to individual characteristics by putting at the forefront of policy development (illustrated for agriculture and the environment in figure 9).
- **It's not always just about profits!** Profit maximisation, whilst important, is not the single objective, actions (and inaction) are not solely dependent on costs and benefits (both financial and non-financial) but also encompass personal preferences (cognition, habits etc.).
- **The why's and the why not's!** Explaining past occurrences and future trends needs an understanding of the 'why' and 'why not' as well as the financial and physical information. Rationale for decisions help guide future policy development in addition to just seeing impacts.
- **No farmer is an island!** The advice and opinions of others is important and how farmers form networks or work collectively (social norms and social capital) can influence behaviours.
- **Engage!** Engagement and participation can help identify common ground (and values) where self-interest and wider goals of society may not be mutually exclusive.
- **Monitor and evaluate!** Monitoring and evaluation of policies is important and think about trying to apply theory in valuing effectiveness e.g. why has a policy been success? Was it due to a change in attitudes as well as positive incentives etc.

## 4. Implications for future work of the Observatory

This work was commissioned by the Agriculture Change and Environment Observatory and has implications for utilising the research and also taking thinking forward.

### 4.1 Planned follow-up work to this paper

A 'theory into practice / building the evidence' paper could serve as a short internal follow-up to this discussion paper (planned for early 2009). This would evaluate the practicalities of applying the theoretical concepts (including segmentation) to existing Observatory analysis and future evidence procurement. This will involve discussions and working with both the ACEO team, other analysts (including those involved in survey design and procurement), policy and agency colleagues.

The basis for this work on behaviours is about understanding how different people take different factors into consideration when making decisions and a key question is how we can be better at understanding both the 'why' and the variability in decision-making and resultant outcomes. The Farm Business Survey (a long-running longitudinal survey) and the Farm Practices Survey are very good at recording observed values whether it is financial (such as gross margins) or physical (such as area of cropping). However, understanding what lies beneath these actions is a real challenge. Follow-up work to this paper will allow these cornerstones of our understanding of farmer behaviour to be reviewed along with periodic or *ad hoc* surveys to inform the practicalities of gaining *insights of* and *insights about* farmers as decision-makers. In addition to evaluating whether (and how) we can improve the ways of soliciting opinion and the reasons for individual action (or inaction), the scope could also extend to considering different methods or the use of complementary evidence, for example expert opinion, representative views or insights from opinion-leaders. This would have implications for any recommendations for future evidence procurement such as surveys, deliberative methods, panels and other indicators of change (or precursors to change).

### 4.2 Applying within Observatory projects and analysis

The key challenge is to integrate and apply 'behaviours thinking' to all the work of the Observatory. It should not be seen as an add-on but integral to a range of policy-focussed projects and guide the way in which we design specifications, collect evidence and structure results. It is easy to over-complicate and create barriers to uptake and it is critical to join this added perspective seamlessly to existing and widely accepted approaches. The Observatory can play a key role by incorporating this thinking and analysis in work undertaken and actively encouraging others to utilise as appropriate e.g. within Farming for the Future programme. Three exemplar areas could be:

- **Observatory research design** – think about adding value by understanding the behaviours, motivations and different responses by segment as well as the changes 'on the ground' in any sector, for example in an analysis of the uplands.
- **Evidence acquisition and survey design** – behavioural analysis necessitates evidence acquisition that is more than just surveys and the Observatory has a real opportunity to think beyond questionnaires to in-depth customer 'insight'. Both insight of (farmer's view) and insight about (opinion of others) and considering sometimes that less = more i.e. smaller-scale, in-depth qualitative / deliberative research to complement other analysis. This does not mean that additional surveys are needed but it may simply be ensuring that where existing surveys are undertaken that they can be cross-tabulated by the segmentation work. This could be achieved by including attitudinal questions, but we also need to see whether it is possible to predict these groupings from other data although this could be a challenge as the groups cut across traditional categories (farm type etc.). Additionally, inter-disciplinary analysis through either complementary approaches (e.g. deliberative methods) or a common language (e.g. behavioural economics) as well as informing primary data collection could also inform economic modelling and the testing of future options e.g. response to different policy levers.

- **Policy innovation and challenge** – the Observatory has a role in advocating policy solutions and challenging entrenched views. Incorporating a behaviours dimension may add complexity e.g. multiple interventions at multiple levels; no one-size-fits-all; all respond differently but it can help to provide a framework and some guiding principles for policy design and delivery. One challenge could be the issue, alluded to previously, concerning accounting behavioural attributes in economic modelling.

### 4.3 Possible research gaps

Whilst the priority is to integrate existing evidence, methods and approaches into the work of the Observatory and wider policy-relevant projects there are perhaps three opportunities for further applied research in relation to agriculture change and the environment.

#### **Economic incentives, attitudes and behaviour change**

The first suggestion could be around the thorny issue of economic incentives and behaviour change where financial incentives lead to positive environmental behaviour but critically with a varying degree of attitude change. Where behaviour is changed without a change in attitudes, it is potentially very short-term but where attitude change also occurs then this could lead to longer-term sustainability especially, if over time, financial incentives become less attractive. Anecdotally, there may be some evidence that certain segments, for example, may recognise that their private benefits become more aligned to societal benefits but for others, profitability may be the over-riding factor. The significance is that when market conditions favour profitability, where there has been a positive change in attitudes, there may be less impetus to maximise returns at the expense of the environment (in which they have invested) and longer-term sustainability. Farmers all undertake positive actions to benefit the environment either voluntarily or through incentive or regulation and the issue to explore is whether, over time, there has been an attitudinal shift amongst certain groups that allows for some form of 'producer self-subsidy' to exist where opportunity costs of not maximising yield or minimising costs is carried by the farmer in terms of lost income, time spent (e.g. hedge maintenance) or direct costs e.g. renovation of traditional farm buildings. An example of this in practice could be in terms of uncropped land or agri-environmental schemes where, if attitudinal shifts have occurred (and the benefits apparent to the farmer e.g. more birds etc.), then some may be less likely to plough away their environmental investments in favour of short-term financial returns. Research questions could relate to whether scheme design and implementation can be tailored and how far can attitudes be included in monitoring and evaluating. Consideration could also be given to the relationships between environmental schemes and commodity and input price volatility, for example the importance of guaranteed payment levels and responsiveness of decisions to adopt or withdraw from schemes. Additionally, a study of organic farming may highlight specific examples where management preference is critical in delivering environmental benefits rather than adherence to the rules for maximising profitability.

#### **The role of farming companies and changing structures in the sector**

As acknowledged in several sections, farming companies may be small in number but large in terms of total area of influence when it comes to agriculture change and the environment. The individual model of behaviours that is represented by this paper may not adequately represent a different form of business (e.g. where there is a separation between ownership and management) and the more corporate approach to decision-making where shareholder return is important. With trends towards a widening of business motivations between those who adopt farming as a lifestyle choice and those (primarily companies) where profits are essential, a better understanding of how farming companies operate is needed for both thinking about a competitive, as well as a sustainable, agricultural sector. Organizational change and behaviours of small businesses have long been under-represented in mainstream behaviours research. The majority of farms are small businesses and some characteristics are shared with other small and medium sized enterprises (SMEs) (NCBS, 2006). However it is uncertain to what extent the larger farming companies, either those with their own holdings or producing on a contract basis, fit with the models proposed. In this respect, some experimental research could be specifically

targeted at farming companies understand their influence and to try and ascertain whether any divergence exists in both the characteristics of behaviours and process of decision-making.

### **Opinion leader, expert views and members organisations as a means of representing individual decision-makers**

It is no myth that farmers are perhaps the most highly surveyed section of the population. The burden of information gathering is quite extensive and ranges from annual sample surveys (e.g. the June Survey), voluntary 'panel' constituting the Farm Business Survey and numerous yearly or *ad hoc* enquiries. Whilst understanding the industry is important, Defra's Survey Control Unit recognise the costs to the farm businesses. Although quantitative surveys are still essential and rely on farm holding returns, an interesting research question would be to ascertain to what degree 'insight about' (i.e. the views of representative organisations such as NFU, CLA, TFA and sector-specific bodies) corresponds to 'insight from' (i.e. a representative sample of farmers). If the two are closely aligned then discussions with stakeholder groups may help put 'lobbying' opinion in context with wider representativeness as demonstrated through robust survey techniques.

## 5. References and links

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## Annex 1. Characteristics of the Defra Farmer Segmentation Model

### **Custodians (23%)**

#### **Key characteristics:**

- Segment most content with lifestyle
- Farming provides a quality of life, peace and tranquillity for the family that it would be hard to achieve in any other walk of life
- Would be happy for children to inherit / continue the farm if that is what they choose to do
- Farm and family life are intrinsically linked and farming provides a way of life that enables you to spend a lot of time with your family
- Less of a business focus than other segments with profit reinvested in the farm
- Pride in farming heritage and feel proud to look after and also to enhance the farm.

**Key communication message:** Custodians feel that they are protecting the countryside - guardians of farming heritage, therefore there needs to be an acknowledgement in the role that they play. The carrot rather than stick is likely to be more influential (and not alienate)....

#### **In their own words:**

*Success to me is breaking even. It's all about the lifestyle. I imagine there are some farmers out there that do focus on profit but that's not me*

*Farming is a way of life for me. It's a 24/7 life and I don't mind that it stops me from doing other things. I'm happy to make that sacrifice*

*I'm a big conservationist. I enjoy looking after animals... I'm on stewardship schemes to help develop the wildlife*

### **Lifestyle choice (6%)**

#### **Key characteristics:**

- Perhaps the group most significantly distinct from the average
- Farming unlikely to be main source of income – either hobby or main income is off-farm employment
- Preference for traditional farming methods
- Running the farm is a positive influence on their lives generating enjoyment
- Family continuity and passing farm on to children not a priority and consequently, future, less of a focus
- Not necessarily born into farming but farming often part of their upbringing
- Entry into farming could be marrying into farming family or a personal individual pursuit rather than that of the family. Often forged their own way into farming, some may be late entrants
- More inclined to view farming as a joy, as not a main means of income, and part of a balanced lifestyle. Overall a positive lifestyle choice with, on the whole, more time free

**Key communication message:** Lifestylers are less focused on making money out of farming therefore communication may need to be based on emotional factors rather than profitability / costs. May be less experienced in traditional farming methods, although they aspire to achieve this and messages about good farming practice may appeal.

#### **In their own words:**

*I see success as doing my job properly. It's a passion for me. I do it for the love of it*

*I still have the time to go on a nice holiday with my wife. I just get someone in to look after the farm*

*On a personal level its the lifestyle, certainly at my time of life, it's much better than struggling on in the classroom*

*I think we do more than anyone else to protect the environment*

## **Pragmatists (22%)**

### **Key characteristics**

- Overall, well balanced between love of farming, needing to make money and enjoy life
- Most born into farming and farm run as partnerships with other family members.
- Some attempt to live a more balanced family lifestyle
- Indifferent to continuing the family legacy with their children
- Enjoy farming lifestyle (pleasure to be outside working) but feel under-valued and becoming disillusioned and want recognition of the fact that it is a struggle and love for the farming lifestyle has been replaced with a more business / pragmatic approach
- Focus is more on breaking even / staying afloat not making huge profits - prepared to diversify to keep farm running and make money from wherever *'We'd change the farming rather than give up farming'*
- Emotional connection with farming remains and although stressing the importance of building on the learning of past generations also have forward thinking approach to farming techniques
- In tune with their environment
- Becoming more business-focused means being more customer-focused
- Although disillusioned, are stoical, and remain hopeful things will get better.

**Key communication message:** emotional factors of farming are important but need to emphasise business-focus and potential cost savings.

### **In their own words:**

*Although it's important to make money, you've got different aspects of the farm, and provided the overall package is making money and I can pay my bills at the end of the month, and the wages at the end of the week, I'm quite comfortable with that*

*Legislation and bureaucracy...*

*Yes, it's a pleasure to plant the crop and watch it grow and harvest it but ultimately, I guess, we're all there for the same motive, aren't we (i.e. for profit)*

## **Modern family business (41%)**

### **Key characteristics:**

- Farming has been passed from one generation to the next
- Tends to be an implicit pressure or assumption that the farm will be passed onto the next generation – almost feel duty bound and less successful farmers worry that it won't be taken on by the children
- Enjoy farming lifestyle – freedom to be your own boss and working from home, outdoors and with family - Other positive issues identified include the opportunity to build strong ties with their children and pass on their knowledge of how to run the farm but long hours can be a strain on family life.
- Although prefer working outdoors rather than book-keeping there is a focus on business planning and financial management of the farm and typically they are on top of paper-work
- Believe increased pressure on farmers to operate as a business in order to survive with corners cut and profit margins compromised
- More future focused than other segments – looking at opportunities for growth / making a profit to survive – are more optimistic about future prices

**Key communication message:** view themselves as business people and so want to be respected as such and want to know what's in it for them e.g. work with government if cost-effective.

### **In their own words:**

*If you've got a son coming on... it's family, so you try to keep going and make a good enough business for him to carry on*

*Well when it comes down to something like spraying you spend a lot of money..., so it comes down to economics there as well as the environment. You don't want to be chucking it around everywhere*

*The lifestyle with farming, it's just a nightmare trying to balance family with it. Well, I find it tough in the summer trying to balance family with work time*

### **Challenged enterprises (7%)**

#### **Key characteristics:**

- Farming may be a big burden on the whole family - inherited through family obligation rather than personal desire to do farming and farm taking its toll due to hard labour, long hours, poor financial return
- Tend feel more isolated, be working alone and be self-sufficient (lack of support)
- Struggle / decline - big concerns about how the farm will survive in the future and more likely that the farm will end with the current generation (Likely to discourage family from going into farming)
- Falling out of love with farming due to burden of work
- Resource constrained, cost sensitive and feeling pressure from low profitability, pessimistic about the future
- Farming community and social life has broken down, feeling isolated and unsupported and they have no time for non farming activities.

**Key communication message:** recognise the difficulties and challenges that they face. Offer them savings and financial incentives.

#### **In their own words:**

*It's a lovely environment we're in but you don't have the time to enjoy it*

*It's all, as I say, it's just a way of life and... you don't have a bloody choice do you sometimes!*

*The trouble is now, to be honest you don't even know which side of the bloody law you are. There's that many rules and regulations coming through and half of them you can't take in*

*Had a successful year.. You've got to be joking!*