

## Incentives Tools Literature Review

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### Introduction

This section introduces incentive-based tools or instruments that can be used to encourage people to change behaviour or actions in a prescribed manner. An incentive can be defined as the offer of a reward before performance of a behavior, which is designed to induce a desired behavior (Cooke et al., 2011). Incentives may take many forms from the financial to the reputational. Similarly, disincentives threaten some form of punishment if a behavior is performed. Incentives are often referred to as “nudges” in policy circles, which they define as “any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives” (Thaler and Sunstein, 2008). This “choice architecture” consists of various non-fiscal and non-regulatory tools that can be used to shift people towards desired behaviours (Barnes et al., in press). In the context of managing the natural environment, approaches based on incentives/nudges and disincentives assume that much pro-environmental behavior is determined by self-enhancing motives as people seek rewards and avoid punishments (van Vugt, 2009), which may be financial or which relate to peer or customer approval or disapproval.

A number of the incentive-based tools or instruments addressed here are composite tools that either include or would typically be used alongside other types of tools e.g. participatory tools. This review is not intended to be fully comprehensive; rather, tools included here have been selected for their current or potential applicability for working with ecosystem services and the ecosystems approach. Detailed reviews are available for the following tools:

- Taxes (green or otherwise) and conditional tax reliefs
- Agri-Environment Scheme
- Biodiversity Offsets
- Visitor Payback
- Tax incremental financing
- Payments for Ecosystem Services

## Incentive tools

Although environmental valuation approaches to incentives are widely used in both academic and policy-making communities (Arrow et al., 1993; HM Treasury, 2003), there remains debate about the validity of these methods (Diamond and Hausman, 1993; Bate, 1994; Gowdy, 2004; Peterson et al., 2010). Concerns include when people have multiple and complex preferences (Spash, 1993; Spash and Hanley, 1995); where there are intergenerational rights involved (Bromley, 1995; Hubacek and Mauerhofer, 2008); and when people have limited capacities to understand complex goods (Limburgh et al., 2002; Christie et al., 2006). There has also been recent debate about the way in which values should be elicited. In neoclassical economics, the focus is usually on the expressed preferences of an individual. However, it has also been suggested that people can express preferences as individuals, as individuals in a group setting, or as a group (Clark et al., 2000).

Moreover, there is now widespread recognition that decisions are not made solely on the basis of profit maximisation; decisions incorporate a range of factors, including rules of thumb and replicating the behaviour of neighbours or others from a social network (Avineri, 2012). Behavioural economics questions the rationality of decision-making processes, instead emphasising the role of emotion, habits, customs and concerns about issues such as social justice (Ashraf et al., 2005). Dawney and Shah (2005) identify seven principles from behavioural economics that summarise some of the key lessons from this field for the development of incentives: (i) other people's behaviour matters; (ii) habits are important; (iii) people are motivated to 'do the right thing'; (iv) people's self-expectations influence how they behave; (v) people are loss-averse and hang on to what they consider 'theirs'; (vi) people are bad at computation when making decisions; and (vii) people need to feel involved and effective to make a change. As such, there is some debate about the economic basis for incentives designed to support the provision of ecosystem services, and a growing recognition that monetary incentives can only influence behaviour to a certain extent. To be successful, monetary incentives must be integrated with other types of incentive and designed with an appreciation of principles from social psychology.

Drawing on social psychology, Fiske et al. (2004) propose a "core motives" approach to understanding how incentives operate, which may explain why particular incentive schemes might be more effective than others or might not work at all. They propose that being accepted by others and belonging to a group is a core motive of all humans that enables us to survive and thrive. For example, belonging to a professional group may provide a sense of professional identity that may be linked to particular values, beliefs and ways of generating and conceptualising knowledge, which in turn may influence how incentives are perceived and taken up (e.g. research into reasons why farmers do not adopt certain incentives that conflict with their sense of professional identity; Gasson, 1973; Burgess et al., 2000). Belonging to such a group then facilitates other core motives such as achieving socially shared understanding, having a sense of control over personal outcomes, self-enhancement and trusting others close to

us. Incentives seek to tap into these core motives, in an attempt to alter behaviour, which in this case may lead to more sustainable provision of societal benefits from the natural environment.

This approach immediately emphasises the limitations of monetary incentives alone, and requires an understanding of other (primarily social) factors that may influence behaviour in parallel or interaction with monetary incentives. Not everyone equally motivated by economic self-interest, and so may be more or less likely to respond to monetary incentives or disincentives (van Lange et al., 1997). For example, questions have been raised about the capacity for PES schemes to incentivise changes in the management of large upland estates, which although operated to be financially sustainable are not always profit maximising. There is evidence that interventions that fulfill various core motives simultaneously are likely to be most successful e.g. financial incentives coupled with improved understanding (Van Vugt and Samuelson, 1999). Indeed, incentive schemes might be counter-productive if they undermine other core needs e.g. fines or payments turning a behaviour from an ethical issue to an economic issue (van Vugt, 2009). Mather et al. (2006), writing about uptake of agricultural and woodland schemes in the UK, suggested that by focussing on one core motive (financial reward) at the expense of fulfilling other motives, changes in behaviour are likely to be short-term, and not sustained once payments are no longer available.

Indeed, the rich international literature of stewardship of 'commons' (for example Ostrom, 1990) emphasises that as a common range of generically-observable are seen in (often unwritten) social agreements securing the mutually-beneficial and sustainable stewardship of a variety of commonly-held natural resources in a diversity of cultural and geographical contexts across the world. Sense of belonging to a community or of responsibility to a valued natural resource or some concept of a 'creation' or 'creator' may itself constitute a form of affirmation or socially-constructed incentive. For example, *kaitiakitanga*, the Maori ethic of stewardship, demands a balanced approach to safeguarding the legacy of previous generations, the needs of current generations and opportunities for future generations; a fair representation of many definitions of 'sustainability' and germane to balancing and perpetuating the provision of ecosystem services.

This is not to say that monetary incentives are not important. In the context of managing ecosystem services, there is evidence that monetary incentives are crucial in influencing land management decisions (Prager et al., 2012). However, monetary incentives do not operate in isolation from other, primarily social incentives. A good example of this is **agri-environmental schemes**.

Through agri-environment schemes, monetary incentives influence the management and provision of ecosystem services across vast swathes of land. For example, the Common Agriculture Policy represents around 40% of the total EU budget and influences (to differing extents) land management across around 180 million hectares of land across 27 EU Member States. A number of studies have examined factors that influence the uptake of agri-environment schemes,

and hence measures that may protect or enhance the provision of ecosystem services (e.g. Defrancesco et al., 2008; Dobbs and Pretty, 2008). The most important factor determining uptake has been shown to be the level of financial incentive that is offered, whether via payment or broader considerations such as reducing production costs, increasing yield, or saving time and labour. As a result for monetary incentive schemes to alter land management behavior, they must be set at a level that can compete with payments available to land managers from other sources, including the price they can obtain from selling products to the market. Other factors that can influence the uptake of incentive schemes include transaction costs (e.g. learning about new practices, reporting requirements) and the flexibility of management options (Falconer, 2000; Vanslebrouck et al., 2002). The management of many ecosystem services however, requires collaboration across property boundaries for management to operate at the scale of water catchments or habitats. A range of social factors are likely to influence the uptake of incentives designed to manage ecosystem services at this scale (Prager et al., 2011). de Vente et al (under review) suggest that key factors determining the likelihood and success of collaborative management of ecosystem services include: the systematic representation of all relevant stakeholders in any decision to manage ecosystem services at this scale; the use of professional, independent facilitators to bring people together; and the provision of appropriate information and decision-making power to all those involved in the process.

Agri-environmental schemes are effectively a Government funded Payment for Ecosystem Services (PES). Such schemes typically make a number of assumptions, paying for management inputs (which can be easily measured) and assuming that these inputs lead to the output of ecosystem services. The relationship between inputs and outputs is not always robust, depending for example, on how effectively management prescriptions are applied, adverse weather conditions or pest/disease outbreaks. However, output-based schemes that “pay by results” are complex and expensive to administer and typically expose land managers to unacceptable levels of risk (Reed et al., under review). Because agri-environment schemes in the EU (and often elsewhere) are based on the principle of paying land managers for income they forgo to undertake management for ecosystem services (in order to be compliant with World Trade Organisation regulations), the level of payment available has not always been sufficient to attract large numbers of entrants to “higher level” schemes that are most closely linked to the provision of ecosystem service.

However **private PES** schemes are not restricted in the same way as agri-environment schemes and can set payment levels accordingly. The number of private PES schemes has proliferated in recent years, with schemes based on the provision of water services (primarily water quality and flood risk attenuation) being particularly popular. A number of water companies have introduced PES schemes in an attempt to alter land management practices on water catchments feeding their reservoirs. In many cases, it is cheaper to pay for changes in land management that can improve water quality at source, than it is to pay for the provision of new water treatment works. Similarly, carbon offsetting is a source of finance for woodland creation under the UK Woodland Carbon Code, that can

be used as part of corporate carbon accounting under Defra and DECC's Greenhouse Gas Accounting Guidelines. Although this sort of activity typically occurs within the domain of Corporate Social Responsibility, there are now some **Visitor Payback** schemes that elicit payments from the public to pay for ecosystem services such as climate regulation via woodland planting (e.g. Nurture Lakeland). Research is ongoing to explore the potential for Visitor Payback to facilitate payments from members of the public for a wider range of ecosystem services. Defra's PES Best Practice Guide (in press) provides examples of a range of private PES schemes from Angling Passports and woodland carbon schemes to schemes based on the provision of biodiversity benefits. Again, this guide emphasizes the need to couple monetary incentives with an understanding of the wider needs and preferences of potential buyers and sellers, and an understanding of organizational, legal and technical issues. Monetary incentives alone are unlikely to facilitate major shifts in the management and provision of ecosystem services; careful consideration must be given to the design of such incentives.

**Biodiversity offsetting** works in a similar way to carbon offsetting, but rather than planting trees to absorb Greenhouse Gas emissions, trees are planted or other habitats are created to offset the loss of a comparable habitat elsewhere due to development. Biodiversity offsetting is being trialled on a voluntary basis in England as one of the commitments in the UK Government's Natural Environment White Paper (2011). It is promoted a last-resort measure if development cannot be relocated to a less sensitive site, or if valued biodiversity cannot be safeguarded on-site. By promoting biodiversity offsetting as part of a more holistic ecosystems approach that follows the ecosystem services framework, it may be possible to design projects to secure a wider suite of ecological and social benefits.

The UK NEA discusses the "market-correcting" potential of **green taxes**, contending that costs incurred to the environment should be reflected in the price of services or products. They give the examples of Aggregates Levy, Landfill Tax and Climate Change Levy in the UK context and suggest that there is evidence of these taxes serving their purpose well. Turning to green taxes as a tool, they state, would mean benefits for the natural environment and the services it offers as well as offering economic advantages by "making employment more attractive through reduced taxes, thereby yielding a double dividend" (ibid).

Similarly, **Tax Increment Finance** (TIF) is a tool for using anticipated future increases in tax revenues to finance current improvements, particularly in infrastructure. Although new and untested in the UK, TIF has played a significant role in financing USA urban regeneration schemes, and it may be possible to extend the approach to pay for green infrastructure. TIF works on the principle that the supply of new or improved infrastructure usually leads both to new development and to an increase in the value of surrounding property, both of which serve to increase the level of property taxation in the area. This anticipated increased taxation is used to finance infrastructure development, usually in the form of a bond to a local authority.

## Conclusion

Incentives offer an important means of influencing decisions pertaining to the management of land and other natural resources, which may protect or enhance the provision of ecosystem services. Incentives take many forms, and different value systems (cultural identity, brand identification, etc.) may be differentially important to different cultures and stakeholder groups. However, evidence suggests that monetary incentives are particularly important where the market economy dominates, disproportionately influencing resource management decisions. Perhaps as a result, the majority of incentive tools that have been or could be applied to the management of ecosystem services in a European and US context are monetary-based.

However, there is also increasing evidence that monetary incentives alone cannot incentivise all forms of management behavior that may be desired for the provision of ecosystem services. Land managers are not all rational profit maximisers, with land management decisions drawing on a range of internal (psychological) and external (monetary and social) incentives. As a result, all of the tools reviewed here have a monetary basis, but each of the tool reviews emphasizes the need to appeal to a wider range of motives in their design and application.

As with each of the other types of tool reviewed in this Work Package, incentive tools are likely to be most effective when applied in tandem with other types of tool. Despite their limitations, valuation tools can provide useful information for establishing appropriate payment levels in incentive schemes. Futures tools may be used to explore the likely effects of proposed incentive schemes. In this way, it may be possible to adapt their design to maximize the likelihood that new incentives deliver the desired outcomes for the natural environment. Public engagement tools are also crucial to effectively design incentives, so that they are attractive to land managers and likely to achieve widespread uptake. For ecosystem services that must be managed at broad spatial scales (e.g. at catchment, habitat or landscape scale), participatory tools may also be needed for the effective implementation of some incentive schemes.

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