

Briefing Paper

The Environment: Willingness to accept and willingness to pay - Can we put a price on the environment?

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In recent years people have become more aware of climate change and the effects it is predicted to have upon the environment in which we live. As climate change becomes a greater threat to society, scientists face a larger challenge in protecting habitats. It has been stated that it is anthropological damage which is threatening the environment the most. This is not just done directly but also indirectly. However trying to locate where the responsibility lies to try to mitigate this environmental damage is often unclear. This is especially the case when dealing with common land or publically used land. In these situations willingness to pay and willingness to accept is often used to generate funds needed to mitigate environmental damage. However in a world where everything ultimately boils down to money, is it moral to put a price on the environment?



Patterdale in Cumbria. Is it moral to put a price on the environment?

There is no activity that is explicitly called 'valuing the environment'. However what environmental economists seek to do is to measure people's opinion of environmental improvement or conservation (Pearce, 1994). In Environmental economics the environment is valued as a physical entity and is valued for its aesthetic attributes (Hanley, 2008). The environment is seen as something which is publically owned. Due to this the market fails to put a value on the environment (Hanley, 2008). As a result non-market valuation techniques must be used. Contingent valuation is the most widely used method to estimate this value (Hanley, 2008). This looks at how an individual is affected by the loss of resource due to environmental degradation (Pearce, 1994). From these measurements environmental economists are able to calculate the value the participant is 'willing to pay' (WTP) or 'willing to accept' (WTA). Both these terms make assumptions about our ability to aggregate these individual valuations (Pearce, 1994).

WTA can be defined as the minimum price at which a person is willing to sell a possession (Zellweger, 2008). Willingness to Accept involves a person receiving compensation due to loss of land. This can be applied with both privately or publically owned land. WTA is used if there a decrease in environmental quantity and the respondents have property right to the pre-change situation (Pearce, 2002; Zhai, 2009). As environmental damage occurs it may become necessary to buffer ecosystems from human interference or to try to relocate habitats. If this is done it may be unavoidable to do this without disturbing humans. This disturbance may have a series of knock on effects to their lives for example loss of income. In this scenario compensation may be offered in the form of Willingness to Accept.

In 2014 the Department for Energy and Climate Change announced an increased rate of WTA for fracking, increasing the level of compensation to an average of £800,000 in additional payments to communities affected by fracking. Communities will also receive 1% of revenues at production in compensation (Watt, 2014; DEFRA, 2014). Ministers claim the process of fracking could benefit the United Kingdom by bringing down energy bills, creating thousands of jobs and improving the infrastructure of the communities which have fracking plants (DEFRA, 2014). However Lawrence Carter of Greenpeace has stated that WTA compensation for fracking 'is a naked attempt by the government to bribe hard-pressed councils into accepting fracking in their area' (BBC, 2014). Within the United Kingdom fracking is a contentious issue in public policy and it has been found that support for fracking within the United Kingdom is roughly 50/50 (49.8% out of 3,657 people in favour of fracking) (O'Hara). Many groups have stated that the compensation communities will receive will not be good enough to cover the damage to the environment which may occur due to fracking. Environmental activists are opposed to fracking due to the effect fracking may have upon the environment. For example it has been stated that fracking may cause small earthquakes, pollute water supplies and accelerate climate change (Guardian, 2014). People also have concerns over the effect having a Fracking plant in their community will have upon house prices within their area (Insley, 2012).

Many scholars have a negative opinion of WTA, stating it is immoral. There is often a view that WTA is just 'getting money for nothing'. For example if the land is used by a community but owned by a council, the community have right to compensation even though they do not own the land. Also a large amount of the literature has criticised WTA as it is seen to be implausible. It is often the case that participants abuse the system and claim a larger amount of money that the land is worth. This is done so they can receive the most money for selfish reasons. This is due to the fact that respondents lack the experience of calculating the level of compensation claims for environmental goods (Ward, 1992). This may lead to protesting or strategic bidding (Lienhoop, 2007). However in Leinhoop's study it was argued that if CV participants are given the time and information they are capable of coming to a logical price. Leinhoop concluded that 'people need time to think about all the relevant attributes associated with a complex good and decide how much they care about each' (Lienhoop, 2007).

Willingness to Pay can be defined as the act of assessing how much people are will pay to avoid any environmental damage. Pearce stated that WTP should be applied to increase quantity in areas where there is no property right to the post-change situation, but have a property right to the pre-change situation (Zhai, 2009; Pearce, 2002). To calculate the WTP the Environmental Kuznets Curve is often used. The Environmental Kuznets Curve uses the average incomes in the area and the GDP per capita (Jacobsen, 2008). WTP can be estimated using the average household income and the GDP per capita for the country from which the sample is drawn (Jacobsen, 2008). The rate of WTP may also vary if there are rare species present and can differ along with the size of prospective change in the habitat or species (Jacobsen, 2008).

The Cockermouth Flood tax is an example of the council enforcing WTP. In 2009 Cockermouth experienced severe flooding with waters which reached 2.5m (BBC News, 2009). Over 1,300 homes were flooded and many were left without power or mains water (2009). As is ever the case many were left temporarily homeless for a long time after the floods. In the aftermath of the flood the council's main aim was to invest in flood defences. Town councillors conducted a survey to assess whether residents would be willing to pay extra council tax to contribute towards the £5.2million flood defence scheme. The level of payment needed was between £8.97 and £26.90 extra a year depending on what band of house was participating. The scheme was agreed by the local community and will run for three years (News and Star, 2011). The flood defences are planned to consist of a series of walls, embankments and flood gates along the River Cocker and River Derwent. Flood defences will reduce the risk of flooding in Cockermouth to a 1% chance in any one year (Environment Agency, 2011).

However some communities are not as willing to take part in WTP as Cockermouth. It is often the case that members of the community do not wish to take part in WTP and may protest against the measure of economic value (Jorgensen, 2000). As WTP is usually done to prevent environmental damage it can be said that those who refuse to pay face prejudice from the local community (Jorgensen, 2000). It may also be the attitude of participants to think 'Why should I have to pay to stop environmental damage?' For example if the town's water source is being polluted it may be seen as unfair for the poor to pay as they are not the ones who have caused the damage (Jorgensen, 2000). It is often the case in some countries that CV practitioners have gone to those who will not pay to scrutinise their reasons for rejection for WTP (Jorgensen, 2000). However, on the other hand it could be argued that wealthy residents may also be against paying if they believe they are unfairly targeted to bear the cost of intervention (Jorgensen, 2000). The use of WTP for environmental losses has been criticised as it may well underestimate the environmental costs of a project. This is especially an issue when the good to be valued is unique and not substitutable (Lienhoop, 2007). WTP often has a negative effect on annual household income and the vector of prices (Jorgensen, 2000). People may be deterred from buying a house in a area with WTP, as it ties them into a long term contract that newcomers to the community may not understand and therefore see it as unnecessary (Jorgensen, 2000).

However there are times where both WTA and WTP can both be used. This was demonstrated in the forestry commissions Community Woodland scheme. In 1991 the Forestry Commission announced plans to implement a Community Woodland scheme. The scheme was financed by WTP from the local communities. Community woodland scheme is controlled by the local community and is leased to the group (Community Woodland Association, 2012). The aim of the scheme was to provide new recreational woodland facilities in to towns and cities, which did not have any woodland present (Bateman, 1996). To achieve this goal they bought land from local farmers and got local communities to contribute to the cost of running the site. Therefore in this instance WTA and WTP were used (Bateman, 1996). At first only 37% of the farmers in the local area were willing to allocate land to the scheme in the return for compensation. This was due to worries of public access intruding onto their land (Bateman, 1996). The Bateman study found that Farmers were unhappy with the level of WTA they received due to the current levels of subsidy payment being too low. However the WTP acted like a feedback system as the benefit values generated by such wood lands increase the amount of money available for WTA payments to farmers (Bateman, 1996) .

Many studies have indicated that there is usually a difference in the amount people are willing to pay and the amount people will accept (Horowitz, 2002; Plott, 2005; Minkler, 1999). For example if we look at the different levels of money involved it is often the case that WTP is a lot lower than WTA (Minkler, 1999; Bauer, 2008; Thaler, 1980). The difference in price between WTA and WTP can be explained by the 'endowment effect' (Plott, 2005). The endowment theory is based on the psychology of preferences associated with 'prospect theory' (Plott, 2005) . The endowment effect theory explains that people have a preference which leads to the owner resisting to sell goods. This is because they are loss averse or because selling is perceived as 'losing' the endowed good (Plott, 2005). Numerous studies have highlighted that there is a substantially higher price to give up an object that they already own, than one that is not. Therefore people will accept a much higher price to sell something than to pay to keep it (Bauer, 2008). Knetsch believes that 'the endowment effect and loss aversion has been one of the most robust findings of the psychology of decision making-people commonly value losses much more than commensurate gains' (Knetsch, 1989; Plott, 2005). However, it has been suggested that the existence and magnitude of the endowment effect varies on the commodity employed in the experiment (Plott, 2005).

In some respects it could be argued that the use of WTP and WTA is somewhat detached from the environment. Some scholars have indicated that the endowment effect leads to people being selfish as it is often the case that it is done predominately for human gain. For example, Hite's study looked into willingness to pay for Water Quality Improvements in the Mississippi area. The study indicated that 62.4% of people were willing to pay for improve water quality (Hite, 2002). When Hite looked into why people agreed with the WTP, she found most people wanted it to preserve human health. Of the 62.4% who agreed 81.4% of people stated it was needed to 'to protect the environment for human health' while only 2.7% wanted it 'to protect the environment for biodiversity' (Hite, 2002).

In conclusion the price given to land in WTA and WTP is rather the cost of preserving an environment or compensating the loss of land for a individual. This ultimately comes down to the endowment effect and what the land means to the people involved. Hanley states that when working out 'landscape value it is more likely that people will think of why a landscape is important to someone, rather than what they are willing to pay to protect it, or their preference for it relative to others' (Hanley, 2008). It has been found that people can develop a 'sense of place', and 'place attachment' to a an area which they are particularly fond of. This 'sense of place' can influence how they value a particular landscape, and the opinions on changes in this landscape (Hanley, 2008). Thaler found that if area of land has a high emotional value the WTA price which individuals want will be considerably higher (Zellweger, 2008 ; Thaler, 1980). There are various types of emotional costs related to their ownership stake. For example if there has been any personal sacrifice, loss of employment, and the burden of responsibility this loss of income will have for employees (Zellweger, 2008). Dramstad stated that 'people are influenced by a mixture of logic and emotion that incorporates aspects of landscape structure, biodiversity and cultural heritage' (Dramstad, 2001; Hanley, 2008).

The leader of The Economics of Ecosystems and Biodiversity, Pavan Sukhdev states "You can't value nature per se, other than to say it's priceless.....But what you can do is measure the economic value of services that come to you from nature." (Jowit, 2010). Once WTA and WTP is excluded from any financial behaviour by the owner the Emotional value can be seen as the difference between the financial input to the owner and the minimum price at which they are willing to sell (Zellweger, 2008). Therefore it can be concluded that the price of the environment is subjective as it depends on how the person evaluating the environment feels about the place they are in.

Anna Waite
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Anna Waite has an MSc in Sustainable Management of Natural Resources and a BSc in Geography from the University of Leicester. She is an Associate Consultant at AWICS and undertakes voluntary work as a Ranger with the National Trust and with the Forestry Commission, Wildlife Trust and Lowther Castle Trust.

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