

Reflections on Using the Concept of Natural Capital as a Basis for Environmental Support Payments to Farmers
The Nethergill Model for *Natural Capital* Accounting

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1. Farming is the endeavour by which natural resources can be used to deliver food produce to satisfy market demand and provide commercial gain for the entrepreneur
 - Its main obligation is to do so sustainably (i.e. without de-capitalising the land asset to a point of infertility or de-capitalising the biodiversity to the point of red listing)

2. Farming is faced with overcoming natural disadvantages including
 - Latitude (which affects sunlight hours)
 - Elevation (which affects temperatures)
 - Precipitation (which affects the maximum water holding capacity)
 - Geology (which effects vegetation cover and growth)

3. The growth and conversion of crops/grass into food is currently the only drive for farming
 - The natural limits imposed by the availability of fertility/grass throughout the year results in there being a maximum sustainable output (MSO) on each farm
 - Production volumes beyond the MSO level will draw in new and additional corrective variable costs (CVCs), such as fertilisers, sprays, purchased concentrates and these invariably ensure that farming, with its tight margins) at best (before support is accrued, suffers a reversal in profitability)

4. Nature is taken to be a stakeholder in a farming business

5. As a stakeholder, Natures' interest must take the form of a liability on the business balance-sheet

6. As *Nature* behaves in an opposite sense to a shareholder, in that it delivers benefits to its owners through its *bounty* as opposed to the expectation of dividends to service investment funds by conventional business shareholders, it must take the form of a negative liability

7. To give this concept practical value, *Natural Capital* needs to be quantified
 - This is a real problem
 - Most attempts to date by others have attempted to define a physical system based on a cover-type model; this is/will be extremely time consuming

8. The Nethergill model has adopted a distinctive and different thesis:
 - The basis is business-oriented not physical
 - The capital valuations have come from converting revenue streams into capital-sum-equivalents by using a *reverse-annuity* calculation based on a net present value of discounted cash flows
 - The revenue streams can be notional or real, for example:
 - The replacement costs of grass consumed, when no grass is available (which is notional)
 - The payments earned by a woodland for carbon sequestration through a carbon-offsets programme (which would be real)

9. The capital values that result may not represent the whole natural capital in a physical sense- but the values are real in a business accounting sense. As the scope of quantification is expanded (to embrace changes in the real business environment) so the valuations can change too. For example, take the case of an ancient woodland:

It will have been taking carbon out of the atmosphere for centuries

- Its value may have been recognised qualitatively but unless it has attracted revenues for doing its job its value will not have been recognised quantitatively
- Even if carbon-offset payments were to become mandatory tomorrow, there would be a compelling argument to say that only newly-planted woodland (planted expressly to offer carbon-offsets) should qualify for payments

- However, in due course, such a woodland may qualify for payments and at that point (using a business-oriented approach) its *Natural Capital* would be quantified for the first time
10. Bad farming practices result in the de-capitalisation of Natures’ resources. For example, variable costs in livestock farming are non-linear (being made up of productive costs, up to the point when the natural grass runs out, and corrective costs which include the costs of purchased substitutes for grass). As a consequence, if a farm over-grazes it eats into its Natural Capital benefit (derived from the bounty of its free-issue grass) until the benefit is wiped out or reversed – this is de-capitalisation.

The Nethergill Model as a Basis for New Environmental Support Payments

11. Support payments add to the revenue streams in a farming business. To justify payments of this kind it is natural to seek to procure some value (for Society) or to prevent some abuse which would have the effect of de-capitalising the Natural Asset or compromise some other business (such as water-capture).
12. The Nethergill approach takes the form of quantifying the *costs-of-avoidance* whenever *Nature* delivers a *bounty* (such as natural grass) to a farm business for the price of simple ownership or tenancy. One of the *costs-of-avoidance* in the case of a livestock farm would be the purchase costs of grass replacements. This cost at the activity level of the MSO (the maximum sustainable output) equates to the revenue equivalent of *Natures’ bounty*
13. Whilst environmental support payments must seek to achieve some physical outcome (more biodiversity, etc) its mechanisms will be rooted in business realities. Paying for something “good”, like carbon sequestration, is fairly simple - it would be a matter of budgets and the market for carbon offsets (however, this happy situation is sometime off and time pressures call for an interim solution); paying to prevent something “bad”, like over-grazing or the grubbing-out of hedgerows, could be just as simple - it can be related quantifiably to the de-capitalisation wreaked when bad practices prevail. The *costs-of-avoidance* approach makes this possible.