24th October 2008

Environmental economics

Last week, we considered the prioritisation of environmental issues in the current financial crisis. Much has been made by others of the importance of environmental goals relative to financial ones, and economic analyses have been produced to justify this stance. But how much credence can we give to these?

Assessing the worth of ecosystems is in itself a worthwhile goal; how else is expenditure on environmental projects to be prioritised against alternative uses of the money? The problem is always to establish a fair value. Assumptions are everything. In the case of forests, a large part of this notional value relates to carbon sequestration: the capture of atmospheric carbon dioxide in the wood of the trees and the organic matter in the soil. Estimates of the carbon content of established forests, together with a projection for the value of carbon set by emissions trading systems gives a value per hectare. Multiply this by the number of hectares lost each year, and we have a value for this service provided by forests.

This economic analysis tells us that it is cost effective to pay up to the calculated value of the forest to prevent its destruction. But how valid is this? The implicit assumption in such calculations is that the cleared land then has no value, while the forest itself has a steady, ongoing value. However, taking the example of carbon sequestration alone, it is clear that such capture is not permanent, but part of a continuing cycle. As forests mature, they reach a state of equilibrium, with old trees dying and releasing their carbon into the atmosphere as they rot on the forest floor, and new trees taking their place, growing rapidly and themselves tying up atmospheric carbon.

However, if areas of forest are cleared, the timber continues to act a reservoir of carbon if it is used for construction: all the carbon is released only if the wood is burned. Most likely the cleared area is itself then used to grow crops, which will also sequester carbon. If the poor tropical soil is soon exhausted and the forest allowed to regenerate, rapidly growing trees are a greater annual carbon sink than mature trees.

But we also need to look at the broader picture: as tropical forests are to some extent shrinking, the area of temperate forests is increasing. Looking at the broader picture may give a different perspective. Although we are (rightly) concerned about the recent and current loss of tropical forest, in earlier times the area of temperate woodland declined dramatically as mankind increasingly turned to farming and the population grew.

The environmental effects of this can only be guessed at, but wildlife populations will undoubtedly have been altered dramatically. Much of western and northern Europe will have been transformed from woodland to open farmland broken by hedges and copses. Woodland species will have been eliminated in many areas, while new habitats were created, for example, for ground-nesting birds such as the skylark. This is the current situation which most people regards as "natural". There are concerns at the drop in numbers of some farmland species, which are only present because our own species provided habitats for them in the first place.

The point is that it is relatively easy to place a value on the loss of something such as woodland, but more difficult to value what might replace it. Certainly there is no indication that the loss of European forests, regrettable though that may be on one level, has had any detrimental effect on the lives of humans, and many plant and animal species have thrived, while others have declined.

Environmental economics has a role in trying to show the value of resources and compare them to things which have a more conventional monetary worth. But it is an inexact science, and we should not base decisions blindly on the apparent values it throws up. Context is everything, and it is a brave politician who sacrifices current prosperity and security for hypothetical benefits in the long term.

The value of soil

A report commissioned by the Royal Agricultural Society of England has concluded that the lack of attention to the condition of the country's soil compromises future agricultural production. Professor Dick Goodwin of Harper Adams university spoke on the Radio 4 Today programme about the steady decline in yield growth at a time of rising global demand, compounded by the reliance of the UK on a relatively small number of growers in the eastern England for the major proportion of a number of important crops.

In the same way that farming itself becomes a smaller part of the economy as societies develop, so soil science is now one of the Cinderellas of the academic world. But a failure of farmers to grow enough food would undermine the whole fabric of society, and healthy soil is a vital component of agriculture. The plea is made for more applied soil scientists to be trained. Latest figures suggest that the slow decline of interest in science and maths from young people in schools and universities has finally been reversed, and a similar trend is needed in the currently unfashionable but vital agricultural sciences. Healthy, productive soil really does have a value.

Costs and benefits of crop protection

The latest revision to EU legislation on pesticides continues to grind its way through the European Parliament before final adoption by the Council. Without going into the details, the argument is currently over the stringency of the regulations and the

number of crop protection products which would have to be withdrawn. On one side, the industry is predicting large price increases as farmers have to pay more to protect their crops but still have smaller harvests. On the other side, the environmentalist view supported by many MEPs is that hazard reduction trumps everything and that newer, safer active ingredients will be available for the benefit of all.

According to a recent study by the European Centre for Agricultural, Regional and Environmental Policy Research, the original Commission proposal would raise the price of staples such as wheat and potatoes by about 20%. However, the more extreme proposals being debated in the Parliament could more that double these increases. The result would be a further avoidable reduction in the competitiveness of European farming and an increase in imported produce.

Of course, the anti-pesticide lobby would argue that the changed regulations would merely give added momentum to a move towards organic farming. But, despite the hopes of the organic movement, this trend appears to have peaked. Real people make real choices, and this does not always include buying more expensive produce with no demonstrable health or safety benefit.

It seems that European farmers will have to bear some pain, but hopefully the more extreme positions being debated in Strasbourg will be voted out, and the damage will be at the lower end of the scale.