

ENVIRONMENTAL ECONOMICS

Pricing the planet

Nick Hanley weighs up a study that probes the economic value of nature.

Can economics help to save us from environmental catastrophe? In *Natural Capital*, economist Dieter Helm offers a timely reminder of the contribution that his discipline can make to understanding and solving environmental problems. The book hinges on the economic value of gifts of nature, from oil fields to wetlands, which in combination with inputs such as labour and produced capital provide humanity with valuable benefits from ecosystem services. Helm's main message is that the apparent conflict between economic growth and environmental quality can be managed by preventing declines in this natural capital.

The concept of natural capital has quite a backstory, although Helm does not delve into it too deeply. The environment was of central concern to the classical economists of the nineteenth century. The scarcity of productive agricultural land and coal reserves, for instance, was seen as a brake on economic growth by pioneers such as David Ricardo and John Stuart Mill. Slightly earlier, Thomas Robert Malthus had famously predicted a gloomy future as a result of the conflict between an exponentially growing human

population and the fixed amount of farmland, which meant that food supplies could not keep up. However, disaster failed to materialize, population and average living standards continued to rise, and the environment largely disappeared from the thinking and writing of economists, give or take the contributions of Arthur Pigou on the economics of pollution in 1920 and Harold Hotelling on the management of non-renewable natural resources in 1931. By 1970, environmental problems were no longer the professional concern of economists.

Then everything changed. In 1972, environmental scientist Donella Meadows and co-authors published *The Limits to Growth* (Universe), commissioned by the Club of

Rome think tank. This influential book used systems dynamics modelling to predict probable future paths for global population, food production and pollution. Some of these predictions recalled Malthus. This, along with the two oil-price peaks of the 1970s and growing public interest in the damaging implications of economic growth, returned the environment to centre stage in economics. *The Journal of Environmental Economics and Management* was founded in 1974.

The late, great David Pearce was perhaps the first academic economist to convince people outside the field of its relevance for understanding the relationships between people, money and the environment — and for developing tools to help to manage the apparent conflict between economic growth and environmental quality. The influence of his 1989 *Blueprint for a Green Economy* (Routledge), co-written with Anil Markandya and Edward Barbier, reached beyond academia and government to the informed public. Pearce had three main messages. First, economic benefits from the environment need to be measured and recognized. Second, economics could improve environmental policy by developing market-like mechanisms through which a price could be put on pollution. Third, national accounting conventions needed to show up the gains and losses in a country's natural capital over time.

These ideas are all taken up and expanded in *Natural Capital*. This is important, because the empirical evidence is that most countries do not account for the economic value of depreciating natural capital; nor have they put in place measures to hold the line. Helm's arguments bring the main problem raised by Malthus into a sharp new focus. Given current rates of world economic growth, incredible numbers of people, demands for resources and levels of pollution now loom, increasing pressures on ecosystems and biodiversity. Evidence is growing of the importance of ecosystem services such as clean water and pollination, and of the erosion of human well-being that results when those services are disturbed. That does not mean that economic growth should be stopped (even if that were possible), but it does demand a fundamental

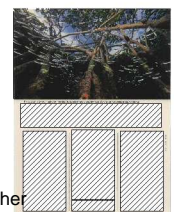
change in government policies globally.

As Helm drives home, these changes relate most fundamentally to a new goal of economic policy: keeping natural capital from declining. Many of the assets that make up natural capital deliver benefits that the market does not value, but which are important for well-being. So adopting such a policy would mean that as a country depletes its oil reserves, for example, it would reinvest a proportion of the returns from this activity in promoting renewable alternatives.

That demands a number of moves. A country must change the way it undertakes its national accounting to reflect the year-on-year changes in the value of all of its assets, including natural capital; it must tax pollution while removing perverse subsidies for activities that deplete natural capital; it must enforce strict limits on the use of renewable resources to maintain them above critical thresholds; it must require general offsetting of the negative effects of infrastructure projects. Moreover, it must increase the provision of public goods such as national parks and green spaces.

These are not new ideas (most were discussed in *Blueprint for a Green Economy*), but *Natural Capital* provides a very useful update and pulls together the past 20 years of economic insight in language that non-economists will easily understand. For example, since 1989 economists have made great progress in estimating the values of ecosystem-service benefits. Helm has thought carefully about the practicalities of tracking changes in natural capital, of funding reinvestment in habitats, and of prioritizing actions through a focus on thresholds. As such, the book is a valuable contribution, written by an author who knows his subject and cares deeply about his message. ■

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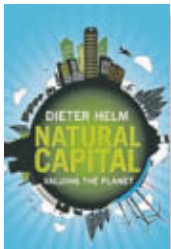




The ecosystem services — and value — provided by mangrove forests range from coastal protection from storms to natural fisheries.

Eco doom? Not if you're a penguin

This green manifesto is full of old thinking and gives into despair, says **Matt Ridley**



Natural Capital:
 Valuing
 the Planet
 by Dieter Helm

Yale, 320pp; £20 * £18

The easiest way to get a round of applause at a conference of ecologists is to make a rude joke about economists. Nature-studiers think money-studiers are heartless vandals who demand the rape of Mother Nature in the quest to build up piles of financial assets at the expense of natural ones. Dieter Helm, an Oxford professor, is a professional economist but he is bravely crossing the floor into ecology and wants to show how to build up “natural capital”.

Extreme greens — those who advocate giving up civilisation and handing the planet back to nature — will not like it. Not a man to pull his punches, Helm thinks economic growth is a good thing for poor people, that the followers of Malthus have “never appreciated the full impact of technology on resource scarcity” and that “a sort of totalitarianism lurks uncomfortably and implicitly in some of the manifestos of more extreme green groups”.

Yet Helm, who is probably Britain's leading energy economist and much listened to by the government, is not anti-green at all, indeed far from it. He just wants us to focus on the right issues. For him the key point is that it is renewable resources that have been and are being depleted and need to be nurtured and restored, more than non-renewable ones. Fish, forests, farmland birds — rather than fossil fuels — are the ones we need to worry about. In this he

is right. No non-renewable resource has come close to running out; this is not true of mammoths, dodos or Steller's sea cows.

He argues that policies should be aimed at building up “aggregate natural capital”. In search of how to do this, he works his way through all the various environmental policies on offer, telling the reader what he thinks of each: taxing pollutants can be better than banning them; compensating for damage can be better than insisting on no damage; protecting common goods through clubs and voluntary associations often works better than doing so through government control.

To take one of Helm's favourite examples: imagine a river flowing through a pretty valley that is full of trout and salmon. The fish, and the clean water they live in, have — or should have — a value attached to them and it should be possible to reward people for improving that value. If a farmer's nitrate fertiliser is polluting the river he should be asked or forced to pay the cost, or undo the damage. The best advocate for the fish, and the best monitor of pollution threats, is probably a club of anglers rather than a distant bureaucrat.

All of this is sensible but it is not markedly different from what happens today. Helm's recommendations for improving environmental policy are about marginal adjustments, rather than bringing in some revolutionary approach. His many examples are drawn mainly from the management of the British countryside.

But I could not help thinking that the

Humpback whale numbers have rebounded, as have polar bears

natural capital approach brings a much more uncomfortable series of questions that are not tackled here. For example, take that farmer who uses nitrate on his crops. Nitrates, Helm says, “have had devastating impact on the flora and, in leaching into rivers, they have significantly impaired water quality and biodiversity”. In some places, this is true.

But there is another side to the story. Nitrates have increased the yields of farms. They are the biggest single reason why the world now needs about one-third as much land to grow the same quantity of food as it did in 1960. Now imagine a world in which we did not use gas to make synthetic nitrates: to feed seven billion people we would need an extra Australia, and we would have to get it from what's left of the

rainforests, the wetlands and the uplands.

My point is that the single best thing we have done to save this planet is to intensify the way we farm the acres we currently use, so that we need fewer acres. It's called “sustainable intensification”, “decoupling” or “land sparing” and it is the big new idea in ecology — the central point in a recently published “eco-modernist manifesto”. It's not just true in food production, it is true in textiles and energy too: shifting to fossil fuels unquestionably saved the forests of Europe, which would have been chopped down to create fuel.

So if the nitrate-spreading farmer is to pay for the damage to the fish, is he not also due a cheque for contributing to the saving of the rainforest? Fertiliser also



prevents soil erosion — the 1930s American “dustbowl” happened because the land was dry and exhausted of nutrients — and it enriches wild ecosystems. One study of the fish and bird life of the north-east coast concluded that there might be many fewer birds and fish without the nutrients coming down the Tweed and the Tyne.

Talking of the Tyne brings me to another beef with Helm’s book. He is relentlessly negative about the state of the environment, reciting the usual litany about the devastation of the atmosphere, the oceans and wildlife. Sure, there is a lot wrong. But when I was a boy the river Tyne had no salmon, few otters, no ospreys, no red kites. Today all are back thanks to the

cleaning up of the estuary, the removal of the insecticide DDT and the protection or reintroduction of birds of prey.

Are these just minor detours on the road to doom? I don’t think so. Many countries, including Britain but also Bangladesh and China, are now seeing a steady increase in forest cover decade after decade. The size of wildlife populations in Europe has shot up in recent years, according to a recent study, *Wildlife Comeback in Europe*, by various conservation groups such as the Zoological Society of London. The humpback whale population has rebounded spectacularly as have polar bears, walrus- es, fur seals and many penguin species. Why? Because we substituted manufactured products for the resources we used to get from these creatures. We decoupled from nature, we sustainably intensified — and we increased natural capital.

And where natural capital is still in ever more trouble, it is because humankind has not yet decoupled from nature and still relies on wild ecosystems for firewood, bushmeat and revenue. All this is well known, and I would have expected Helm to discuss it. But not only is the land-sparing/decoupling argument largely absent from the book, so are the names of the economists and authors who have been making these points so eloquently for many years: people such as Julian Simon, Bjørn Lomborg, Vaclav Smil, Jesse Ausu-

bel, Indur Goklany and Robert Bryce.

To say, as Helm does, that we need to use technology to improve the planet is not wrong; it is spot on. But to add, as he could have done, “and don’t despair — we’ve already made a great start in some areas in the past few decades” would have been much more powerful.

The world now needs a third of the land to grow as much food as in 1960

Comeback creatures

In the 19th century, whalers and sealers went after whales, seals and penguins largely for their oil. All three types of creatures are rich in blubber, which can be rendered into oil, which was used for lighting, and to make soap and margarine. Many species were hunted to the brink of extinction. All are now recovering. For example, the king penguins of Macquarie island were reduced to about 3,400 pairs by 1930. Today they number 500,000. Northern elephant seals were reduced to about 100 individuals by 1890; now they number 130,000.

Humpback whales were very rare by the 1950s. Now they are back almost to pre-exploitation levels of 75,000 individuals. Antarctic fur seals (valued mainly for their pelts) were all but wiped out except for a tiny population on South

Georgia in 1900. Today there are four million all around the sub-Antarctic. Walrus- es were wiped out in many parts of the Arctic. Today they have recolonised many areas and number 130,000 in the Bering Sea and adjacent areas alone. These vast increases in natural capital are the result of “sustainable intensification” — substituting petroleum products for animal products — at least as much as any other cause. The world uses far more energy; but it gets far less of it from blubber. **Matt Ridley**



TIM DAVIS/CORBIS



IN THE SWIM King penguins off Macquarie Island; like humpback whales, below, numbers have recovered