Economics – Not such a dismal science?

Bruce Horton says environmentalists must learn the language of economics, if they are to protect the planet's natural assets

When the Victorian historian Thomas Carlyle described economics as a 'dismal science', he was responding to the earlier writings of economist Thomas Malthus, who predicted grimly that projected population growth would outstrip food supply and result in mass starvation. Over 150 years since Carlyle coined the phrase, the status of the discipline has improved barely. It is still much maligned, both by 'proper scientists', who decry its lack of certainty, and by casual observers, who point to examples ranging from the recent global financial crisis, continued worldwide poverty and domestic energy prices, as proof that economics has failed to deliver.

Many of the criticisms of economics are well founded. Markets will never be perfect, individuals do not (surprise, surprise) always act rationally (in the eyes of economists at least) or seek to maximise their utility from every interaction and transaction. Even George Osborne, a committed neo-liberal monetarist seems confused, with the Chancellor supporting a very Keynesian monetary policy – low interest rates and pumping money into the economy (or 'quantitative easing' as it is now called) – to try and get the country out of recession.

But there is one area where there is cause for hope. Where there is reason amongst the madness and where the appearance of green shoots means more than spiralling property prices. One area where, quite literally, economics could save the world.

Environmental, or green, economics is still a young discipline. Although resource scarcity has always been a fundamental component of economics, mainstream economists have tended to (and many still do) believe that economic growth is sustainable indefinitely – all that's needed is an effective price system so that resources are allocated efficiently, becoming more expensive as scarcity increases. Resources will never run out and thresholds will never be crossed. In other words, the first law of thermodynamics will never be broken, as long as we keep our faith in markets.

The problem of course is that markets simply do not exist for many of the natural systems that we rely on and which sustain life on the planet. In the second half of the20th Century, this led an increasing number of economists to question the orthodoxy that had existed for centuries. As environmentalism in general grew, a new generation of economists wrote about the limits to

growth, identified the systemic market failures that threatened our own survival, and offered a new way of thinking and real solutions.

Environmental economists recognise that humans depend on and derive welfare from the environment. The economy and the environment are interdependent – changes in one affect the other. Yet the imperfect nature of economic systems and markets all too often means that the benefits we derive from the environment and the impacts of our actions upon it are not reflected properly or fully in decisions.

The job of environmental economists is to assess the importance of the environment to human well-being, understand the many links between the economy and the environment and design measures to bring these links into the decision making process.

Given that environmental economics is barely a toddler in the generational dynasty that began with Adam Smith, David Ricardo and others, the progress that has been made is remarkable. Achievements include:

- Evidence of the full damage costs associated with pollutants, including lead in petrol and CFCs, leading to national and international policies to limit or ban many dangerous substances
- Faster progress on carbon management by estimating the full social and environmental impacts of activities that result in greenhouse gas emissions. It was environmental economists who designed all the (admittedly much maligned) tools in this area, including the EU Emissions Trading Scheme, the Climate Change Levy, the CRC Energy Efficiency Schemes and Feed-in-Tariffs
- Fishing quotas that maximise sustainable yields
- Waste management taxes (the Landfill Tax has been credited with a revolution in recycling and the fastest growth in recycling rates of any EU country between 2001 and 2010
- Clear rationale behind EU Directives, including the Water Framework Directive, where economics is central to decisions around designing cost-effective programmes of measures, disproportionate costs and implementation of the polluter pays principle
- Inclusion of full social and environmental impacts (externalities) in investment planning decisions in many sectors and industries, including water, transport and energy
- Acceptance at the highest levels, through fora such as the Natural Capital Committee, that natural resources should be incorporated into national and corporate accounting

The reason for this success is simple. Whilst most economics is subjective and value driven, ensuring that the natural world is an integral part of decisions is patently sensible, the right thing to do and absolutely essential; something that even the most blinkered policy makers (HM Treasury excluded) have picked up.

However, not everything in the sustainable garden is rosy, and the need to embed green economics across the mainstream political and economic landscape is as important and urgent as ever.

Almost all countries (the exception being Bhutan!) continue to measure societal progress principally against the narrow and often perverse indicator of 'wealth' – gross domestic product. This takes minimal or no account of goods or services that are not consumed or produced through markets, including those provided by the natural environment, such as biodiversity, mental and physical health, and the stock of natural capital that the entire economy depends upon. It also ignores the well-established fact that, in developed societies, there is no correlation between increased material affluence and human happiness, actively promoting activities that have a negative impact on well-being, such as air pollution and waste generation.

There are alternatives to GDP, and many ongoing initiatives to give these more prominence, but we must wean ourselves off the teat of false prosperity. We also need to start taxing 'bads' (like pollution and over consumption), rather than 'goods' (like income) and provide subsidies for activities that improve the environment, rather than those that degrade it.

Inevitably, many sensible schemes and policies get amended, watered down or simply corrupted by political machinations and shenanigans. So whilst the logic of trading greenhouse gas is economically sound (reductions to meet a specified target are made wherever it is most efficient to do so), over-allocation of free allowances has led to a low carbon price and a slower transition away from a fossil fuel-based economy than would otherwise have been the case.

Finally, and particularly in the current political and economic climate, turning green is still seen as an unaffordable luxury by much of the ruling elite. The main underlying reason for this is that, whilst costs are understood, the benefits provided to us from the natural world (environmental goods and services) are not valued by policymakers.

There are those who say that we should not seek to put a value on nature, that some things should stay beyond the realm and dirty reality of economics;

that nature is, in effect, priceless. In economic terms, priceless means infinite, so if this were true, there would be no need to worry, as nature would always win out over 'economic gains'. The reality is that there is already a price on the things that most of us regard as important, and that price is zero. Unless we can articulate the benefits that we derive from engaging with the natural world in all the ways that we certainly do, and communicate these benefits effectively, they will continue to be ignored. Short of creating a political revolution that leads to a benevolent environmental dictatorship, working with the market system is our best and only hope.

In the UK, the water sector is at the forefront of incorporating green economics into asset management and investment planning. Water companies assess the likely environmental and social impacts of their actions as a matter of course. Those involved in the sector increasingly understand how goods and services provided by ecosystems can be assessed, protected and enhanced using innovative valuation techniques and funding arrangements, and terms such as the 'traded price of carbon' have entered the common vocabulary.

Yet, even here, there is a lot more work to do. All too often, we propose, design, build and operate assets and manage infrastructure without a proper understanding of the full set of short- and long-term consequences on the local or wider environment. This inevitably leads to solutions that are not in the best interests of present or future generations.

But, whether we are economists, modellers, engineers, scientists or just happen to care about the future that our children will inherit, we are well placed to use our expertise to inform and make the best decisions possible.

In the water world, there are many areas where we can make a real difference over the next few years. We can:

- Identify, assess and include the full range of benefits associated with proposed investments. So, whilst pipes and tanks can be used to store stormwater, reducing flood risk and pollution incidents, sustainable drainage systems can also improve the liveability of streets and areas, offer recreational opportunities and space for biodiversity and habitat creation
- Remember to focus on outcomes, rather than individual assets or problems. Where a nitrate removal plant might enable a company to meet a particular Environmental Quality Standard or Water Framework Directive target, an integrated catchment management solution could

deliver greater benefits, utilise innovative ways of working and create new funding opportunities

- Ensure that the availability of and impacts on natural resources and materials are understood fully. Only by identifying future price projections and all the costs and benefits of resource use, can we be sure that the most optimal and efficient approaches to sludge management, phosphates, electricity and chemical use and renewable energy generation are implemented
- Identify how the value (rather than the market price) of water varies across time and space, utilising latest developments in economic valuation and hydro-economic modelling techniques
- Give the same weight in project assessments to longer term benefits and operational costs as we do to capital costs and short term (five year) benefits

Economics, for all its faults, can provide a means of protecting the environment. Arguably, in our market-based and democratic society, it provides the only means. As professionals and practitioners with an interest in protecting and enhancing the environment in which we all live, we have a unique opportunity, even a duty, to engage with the language of economics and use it to influence others. It is the best and most effective way of delivering a sustainable future.

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