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Ecological economics

Revaluing the environment

Growth for growth's sake is no longer an option. Ecological economists are calling for a 'green' revision of incentives and investments, as the starting point for achieving societies that are sustainable in environmental, social as well as economic terms.

No one wants to return to the growth trends and bubble-bust cycles of the recent past. Many of the current proposals for a new green economics have their roots in ecological economics (EE). EE treads the interface between ecology and economics (see box, page 8). Its contributors come from a range of disciplines including philosophy, physics, sociology and political science, psychology, biology and systematics, agriculture and forestry, strategic planning, energy and transportation, design and aesthetics. EE is different from environmental economics partly in this transdisciplinary grounding, which, proponents argue, offers more amplitude to shape the human condition than do its various disciplinary parts.

Ecological economists have long criticized the economic mainstream's fervour for growth for growth's sake. Rather,

they have called for a 'green' revision of incentives and investments, as the starting point for a paradigm shift that would provide cogent theoretical and practical bases for achieving sustainable societies, in environmental, social and economic terms. Such societies – in both the North and the South – might be able to reduce their throughput of energy and materials to the point that economic growth, as conventionally measured by per-capita GNP, would no longer be as relevant to gauge improvements in human welfare. ►

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Ecological economics

Since the founding in 1988 of the International Society for Ecological Economics (ISEE), EE is now recognized as a legitimate area of social and environmental science, transcending disciplinary distinctions and creating a new synthesis. The journal *Ecological Economics* has become one of the most cited publications in ecology, and is among the top 20 journals in economics.

The ISEE now has over 1200 members worldwide, with 10 regional societies, as well as a national society in China. In Europe, there are EE nuclei at the Helmholtz Centre for Environmental Research in Leipzig, the Autonomous University of Barcelona, the Centre d'Economie et d'Ethique pour l'Environnement et le Développement (C3ED) at the University of Versailles St Quentin-en-Yvelines, and the Beijer Institute of Ecological Economics in Stockholm. In the United States, there are EE programmes at the Rensselaer Polytechnic Institute in Troy, New York, Tufts University in Boston, the University of Vermont, Stanford University and UC-Berkeley in California, and the University of Arizona. In Brazil, there are EE centres at the State University of São Paulo in Campinas, the Federal University of Rio de Janeiro, and the University of Brasília.

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Rather, indicators of sustainability such as universal water provision, low per-capita carbon emissions, school retention and child nutrition would be the primary concerns, and economic growth a means rather than an end in itself. In fact, growth *per se* may not be the best means to ensure improvements in sustainability indicators. This may best be assured by distributive policies and investments targeted at making the most of nature's so-far unremunerated 'environmental services', such as climate regulation, pollination and soil formation.

At a policy level, EE champions a view that: yes, ecological limits to growth are real, they are upon us and must be acted upon immediately to avoid the collapse of human societies as we know them. In the process, we must transform society to coexist far more harmoniously with nature, with full cost-accounting of environmental services and social justice both within and between generations. This vision cannot be achieved without a revisioning of mainstream economics.

Upside-down magic

Mainstream economics, usually associated with the 'neoclassical' school, derives most of its optimism from Adam Smith's notion of the 'invisible hand' – that the efficient workings of the market will take care of social and environmental problems. Based on this notion, such problems as pollution and natural resource exhaustion are brought on by factors external to the market (and so are termed 'market failures' or 'externalities'). The competitive economy can be kept functioning smoothly if such failures are 'internalized'. This is best done through taxation or

subsidies affecting the supply side, effectively increasing the cost of production. Such costs would then be passed on to the consumer, who would ideally buy such environmentally appropriate goods despite their higher prices.

Much of the work in environmental economics is focused on demonstrating mathematically that market instruments are superior to regulation through 'command and control' (C&C) strategies when it comes to environmental policy.

Most ecological economists, in contrast, argue in favour of a mixture of C&C and market-based approaches, depending on the relative uniqueness and resilience of the ecosystem in question. For instance, for a unique ecosystem threatened with species extinction, the only option is to prevent access and create a sanctuary. But some environmental goods and services whose scarcity and social benefits are widely recognized (e.g. potable water provision) may be more efficiently monetized and regulated in the realm of the market, while recognizing the need for safeguards to promote equitable supply and fair pricing.

Clearly, the mainstream preference for market magic has contributed to the scope and profundity of the current crisis. Ecological economics turns much of this mainstream reasoning upside down.

Principles of ecological economics

EE takes as its starting point the notion that the economy is situated within the biosphere. Resources such as air, water, food, wood, fibre, minerals and energy sources are the foundation of the economy. The economy also draws on the Earth as a sink for its wastes, such as carbon dioxide, toxic chemicals and chloro-fluorocarbons. The neoclassical viewpoint holds that resource and waste problems are external considerations that can be best internalized through the price mechanism.

EE has a fundamentally different viewpoint and introduces the variable of scale. The size of the human economy within the biosphere – that is, the share of the Earth's ecological functions that is appropriated for human use – has become relatively large, inflicting a series of global problems. Recent work by Stanford ecologist Peter Vitousek and colleagues suggests that along many parameters (utilization of arable land, the atmosphere's carbon dioxide absorption capacity, fisheries stocks and migratory bird population viability, etc.), the capacity of the Earth to withstand further human appropriation of its goods and services has already surpassed its limits.

Second, EE contests the view from mainstream economics that value is based solely on the scarcity of resources and the demands of individuals who maximize consumption in the pursuit of personal satisfaction. For ecological economists, anything that contributes to life or life's enjoyment is of value. This certainly includes the benefits of ecosystem services and intact natural capital. Ecological economists are among those at the forefront in developing participatory methods for measuring such values, for instance, through 'payment for environmental services' (PES). Essentially, the EE concept of value implies that the gross national product (GNP), which is the *market value* of the annual aggregate



Reuters / Kai Pfaffenbach

production of goods and services in a country, does not suffice as an indicator of human welfare.

Alternative measures of welfare are clearly needed to give full rein to a green economy. There are many ideas about what and how welfare and sustainability should be measured. In Europe, the 'de-growth' movement arose from the idea of 'decoupling' economic growth from natural resource depletion. The idea has become influential in OECD countries, where there has been progress in reducing energy requirements and material consumption as an indicator of well-being, but less so in the emerging economies, which are not content to slow growth until material standards of living are closer to those in the North.

Third, EE promotes serious reflection on the ecological and distributive conflicts that are rife among us. Witness the stalemate at the recent Copenhagen summit on climate

change, where most of the inoperability of a global agreement is due to discord about who has the right to develop. Such conflicts can not be resolved simply by funding transfers, but imply a fundamental rethinking of the precepts of human rights and equity.

While conventional economics largely limits discussion of *fairness* and *distribution* to the way markets work, ecological economists believe that issues of intra-generational, inter-species and inter-generational equity need to be explicitly addressed through democratic and transparent, ethically guided, societal choice.

EE adopts the Rawlsian principle of justice as fairness, recognizing that those who hold property and assets at the outset largely shape policy and market outcomes. It is also often the case that the poorest members of society are not invited to the bargaining table, much less developing



Asia takes the lead

In 2009, UNEP sponsored a study that found that stimulus measures of various types on the books of the world's economies (tax breaks, subsidies, import duty suspensions, etc.), introduced in response to the crisis, amounted to more than US\$3 trillion per year, or over 4.5% of global GDP. Counter-cyclical 'green' investment and employment measures taken by some countries during the recession since 2008 averaged only about 15% of the resources committed to incentives. This means that 85% of all such stimuli continued to be directed toward polluting, energy-inefficient, labour-saving and otherwise socially and environmentally detrimental economic activities.

But what is interesting is that in absolute terms, China committed US\$260 billion toward clean technology, far more than any other country canvassed by UNEP. Although in relative terms, only 10% of the US economic stimulus package was dedicated to 'green' investment and employment, its sheer scale put it in second place (about US\$90 billion, only one-third of China's commitment). South

Korea was a surprising front runner in relative terms, with a 95% focus on green issues in all incentive spending, and both China and Korea dedicated 3% of their GDP to the task, while the US share was only 0.7%. The EU has committed over 58% of its incentives to low-carbon stimuli alone (but only 0.2% of GDP).

Thus, despite the commitments by the US and Europe, in absolute and in relative terms, the resources committed by countries in the Asia-Pacific sphere represent more than half of all such 'green' spending worldwide. In comparison, the majority of nations put only a pittance of their GDP, averaging 0.7% globally, into these measures, and several emerging nations of the G20, including Brazil and India, reported no new spending along these lines. These differentiated strategies suggest that countries like China and Korea are retooling themselves for the long haul, despite ideological and systemic differences in their economies, while many nations will have to struggle to remain competitive should green growth become the order of the day.



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countries. However, this situation has been changing rapidly as a result of the shifting geopolitics of global wealth and economic growth, exacerbated by the recent financial crisis. Emerging markets are seen to be taking the high road (see box, page 19), when their policy makers are willing to set targets for emission reductions despite the historical responsibility of the North, in return for investment and green technology transfer.

Towards practical engagement

Much practical work in EE reflects a leaning towards political ecology and deliberative engagement of stakeholders in environmental valuation and management, rather than simply presenting trade-offs among alternative courses of action in terms of discounted monetary benefits and costs. As noted by Nobel Prize winner Elinor Ostrom, one of the founders of the International Society for Ecological Economics (ISEE), cooperation and communication are the most important tools to combat the ‘tragedy of the commons’.

Ecological economists are deeply engaged in policy work on ecosystem service valuation and compensation, global change regulation, resource management and measurement (such as the impact of trade on virtual water balance among nations, or global to local ecological footprint measures). Concepts like ‘natural capital’ and ‘ecosystem services’, coined and applied by leading ecological economists, have now been adopted by the mainstream.

The Economics of Ecosystems and Biodiversity (TEEB) project, an intensive effort to identify and promote the values of ecosystem services as part of economic policy and investment, has engaged hundreds of ecological economists worldwide. Its practical manuals for decision makers, corporations, managers and civil society graphically show the importance of biodiversity losses for local and global economies, and suggest practical measures to incorporate such values in decisions and promote measures to reverse such losses, thus contributing to the UN Millennium Development Goals.

Another recent example of practical ecological economics applications is the Civil Society Engagement with Ecological Economics (CEECEC) project, a multi-institutional

endeavour that aims to incorporate EE analysis in the work of environmental NGOs in developing countries and Europe. By mentoring the preparation of detailed case studies of specific socio-environmental problems faced by civil society, academics proposed how to best integrate EE tools and analysis. They then organized virtual knowledge and learning networks to disseminate these approaches more broadly in participating countries. Participating NGOs identified key issues for research in areas such as water management, mining, energy, forestry and agriculture. One of the case study initiatives describes the creation of a policy framework for reducing emissions from deforestation at the Amazon frontier in the Brazilian state of Mato Grosso – one of the principal sources of CO₂ emissions in the tropics due to rampant pasture and soybean expansion. Global payments for avoided deforestation would help to create new protected areas, using a combination of C&C (state-wide protected area zoning) and economic instruments.

Facing reality

What does all this imply for the green economy? From an EE perspective, business as usual is no longer an option. A return to the expectation that a bull market will allow us to ‘grow our way out’ of crisis would mean we have learned nothing.

Rather, it is time to face the reality of biophysical limits and to find institutional and behavioural responses to the underlying contradictions that have brought the global economy to its knees, and that have degraded biodiversity and overheated the planet. We need to innovate among energy options, recycle materials and make better use of environmental services. A few of the policy options that are supported by members of the EE community include:

- Decouple energy and material use from economic growth.
- Replace fossil fuels with renewable solar and wind power and second-generation biofuels, whether or not they are ‘cheaper’.
- Tax ‘bads’ (e.g. resource exhaustion and pollution) rather than ‘goods’ (employment and investment).
- Freely share common-pool knowledge and information to stimulate and spread innovation.
- Reform the national accounts to measure whether people are happier and not whether they are consuming more. ■

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