

Greening the global economy

The global crises have prompted calls for new ways of thinking about what can be done to steer economic development in a greener direction. Since, in politics, one should 'never let a serious crisis go to waste', this is the time to take bold steps.

Some countries have shifted resources to stimulate 'green economy' opportunities, looking to capitalize on societal concerns about the spillovers of profligate consumption during the recent speculative bubble. Cleaner technologies offer opportunities for new growth and employment in productive sectors, as well as among consumers and homeowners. Under the banner of a 'Global Green New Deal', the UN has called for refocusing the economy so that the next growth cycle is less damaging to humans and to nature. Other initiatives are looking for new ways of measuring welfare that include the value of biodiversity and social equity.

Could these initiatives mark a paradigm shift in global economics, or are they merely happening in the margins of mainstream economics? After all, as signs emerged that their models were fatally flawed, many economists abandoned their free-market views in favour of Keynesian counter-cyclical prescriptions. But soon they started to hope that things would get back to 'normal' so the business-as-usual model could be revived. They asked how soon we can get back to a bull market, and what the recovery growth curve would look like, rather than whether the economy is on the right path to satisfy human needs.

The Broker invited Jeffrey Sachs, director of the Earth Institute at Columbia University, and Peter May, past president of the International Society for Ecological Economics, to offer their views on the possibility and necessity to develop a new, green economics. *The Broker* will follow up on this special report by exploring cutting-edge research in areas such as new indicators and measures of welfare, green accounting in developing countries, and the controversies surrounding de-growth.



ANP / Philip Koschel

Knitting together global society

Rethinking macroeconomics

Sustained and widespread future prosperity will require basic reforms in global governance and in macroeconomic science. Such reforms will not be easy, as they will require entirely new ways of thinking.

The crash of 2008 exposed deep failures at the core of macroeconomic policy making and thinking in the United States. The rapid spread of the crisis from its epicentre on Wall Street to nearly the entire world underscored the interconnectedness of the global economy. The American purveyors of the *ancien régime* hope that a few superficial fixes will get us back on track. This is not to be.

Sustained and widespread future prosperity will require basic reforms in global macroeconomic governance and in macroeconomic science. Such reforms are never easy, as they require new ways of thinking. Two key aspects of this new thinking are a focus on human ecology – humanity in the context of the physical environment – rather than a single-minded focus on markets, and on finding global solutions for global structural problems. A return to prosperity will also require the reassertion of core values in economic life: integrity, fairness, justice for the weak, and sustainability for the future.

Watershed

We find ourselves at a watershed in history, with multiple dramas unfolding simultaneously. Four global changes in particular pose major challenges.

First, dramatic shifts in global power and wealth are under way. With the rise of Asia, Western economic dominance is coming to an end. We are heading towards a multi-polar world, both politically and economically. Such tumultuous changes in power could give rise to new tensions, destabilizing political competition and even to misguided war.

Second, we are witnessing the unprecedented global-scale impact of human society on the physical environment, and

the economic disasters that follow. The scale of the world economy has risen roughly 100- to 1000-fold during the past two centuries. The ecological consequences are staggering. Around 30 billion tonnes of carbon dioxide each year are now emitted into the atmosphere by burning fossil fuels. Around 60,000 major dams, rapidly depleting groundwater and human-induced climate change are dramatically altering the world's hydrological cycle, leading to severe water crises in many regions.

Third, we are still adding 75–80 million people to the world's population every year. But we have not yet learned to live sustainably. We support 6.8 billion people in part by degrading the natural environment. The case for stabilizing the human population through a rapid and voluntary reduction in fertility to 'replacement' levels (roughly two children per woman) is very strong, but far from being achieved.

Fourth, we are all intricately interconnected, by trade, finance, ideas, technology and production systems, as well as disease, pollution, climate change, violence, mass migration and war. But our politics remain mostly local, as do our social networks. Our institutions and ethics come from a different era and have not yet been 'updated' to knit together a globally stable society.

Market failings

A lot will have to change in terms of how we think about the world and the global economy. The economic textbooks will have to be completely rewritten, as they offer only deeply flawed solutions to the problems we face. This is in large part because of the single-minded focus on markets as the 'solution' to local and global problems. Yet markets have failed to solve many crucial problems. Markets alone are relatively ineffective at rescuing the poorest of the poor from extreme poverty. Markets alone are very bad at addressing environmental crises. Markets are deeply flawed in addressing the needs of future generations. Market forces



Reuters / Johannes Eisele

ATTAC activists demand climate justice, Frankfurt, Germany, December 2009.

therefore need to be complemented by politics, social ethics and a strong and vibrant civil society.

This requires a new kind of economic governance.

Taking the long view

We would do well to start the new macroeconomics by facing up to three interconnected challenges: climate and energy security, food and nutrition security (including land use, water use and biodiversity) and poverty reduction. In each area, we need new institutions that can help the world to take the long view, making assessments of needs, investment priorities, and means (public and private) of financing those investments. These new institutions will help to connect business, policy and science, a three-way relationship that is vital in every major area of concern, but is still largely non-existent. Many people will shudder at the prospect of such planning, but the purpose of public-private-civil society cooperation is not to develop a rigid plan but a flexible, forward-looking framework for action.

Macroeconomists trained in the past 30 years believe that demand increases depend mainly on interest rates and deficit or tax levels. Yet increased spending on new, sustainable technologies will depend on establishing a policy framework that harmonizes regulations, land use, public financing and private investment.

Large-scale stimulus, in other words, requires the nitty-gritty of public-private planning, technology assessments, demonstration projects and complex project financing. The next generation of large-scale investments – in renewable and nuclear energy, electric vehicles, sustainable buildings and urban design – are in fact still hostage to the lack of clear public policies in these areas.

A low-carbon economy

The way we produce energy requires a major systemic overhaul at a global scale. We will need to shift progressively towards renewable energy sources. We will need to capture and sequester the carbon dioxide emitted from continued fossil-fuel use. We will need to decide on the future of nuclear power, and find ways to expand its use while reducing dramatically the threats of proliferation and nuclear terror. Markets alone will not find the way forward.

Currently, it costs nothing to put carbon dioxide into the atmosphere. At a minimum, such emissions should be capped by regulation, or taxed, or both. But more than that, technological changes on a large scale will require major social decisions about public safety, land use, intellectual property and many other considerations.

The transition to a low-carbon economy will require wide-ranging institutional changes at national and



international levels. In the US, the Department of Energy could be reconstituted as a Department of Energy and Climate Change, bringing together the required expertise and financing under one agency roof. At the global level, the governance of climate change and energy security issues could be housed in a new Global Energy and Environment Organization to replace the secretariat of the UN Framework Convention on Climate Change. The new organization could then pull together the various international bodies and treaty secretariats into an effective, unified structure that could help oversee global technical analyses, R&D, compliance with global environmental agreements, and international financial flows for climate-change mitigation and adaptation.

New global institutions will also be needed to help the world cope with another phenomenon very likely to beset us: the large-scale migration as parts of the world become inhospitable as a result of ongoing ecological destruction.

Changing the global food system

The global food system is in similar peril. Already around 1 billion people are chronically hungry, and perhaps another 1–2 billion suffer from chronic deficiencies in micronutrients. As the world's population grows, and as climate change and water stress become more severe, the challenge of feeding the world will multiply.

It is striking to realize that the agricultural sector is the leading cause of human-induced climate change. Roughly one-third of all greenhouse gas emissions are due to agriculture, if we include the carbon dioxide emissions from deforestation (mainly to clear land for farming and pasture), energy use in agriculture (including the production of chemical fertilizers), methane released by ruminant livestock and rice paddies, and nitrous oxide released by the heavy use of nitrogen fertilizers. We will need new technologies (including food crops with new traits, irrigation methods, pest control, water conservation, and so on), and new patterns of food consumption, based on healthier and more sustainable diets. As with energy and transport, considerable technological changes based on new R&D will be vital.

New institutions

One of the catchphrases of recent years has been that we should use 'existing mechanisms' to solve problems rather than create new institutions. This is a recklessly reactionary point of view. Today's global institutions were created after World War II, in a different time facing a very different set of challenges. The G20 is new because the world economy has been recast as a result of the rise of the emerging economies. The world's macroeconomic challenges are new because we have hit generational roadblocks due to persistent extreme poverty, escalating environmental threats and deepening energy insecurity.

The challenge we face is to bridge the divide between macroeconomics and global governance, both in scientific and in policy terms.

Climate change mitigation and the transition to sustainable energy systems require a truly global policy framework.

Given its fragile finances and diminished global stature, the United States cannot lead the world on these issues; it can only partner with others in efforts to find solutions. In short, macroeconomics needs an overhaul not only in concepts and tools, but in global cooperation as well.

We must bolster international economic cooperation on the fly and in the heat of crisis. As a first step, the G20 should be supported as the new forum for macroeconomic decision-making. We have moved from a G7 that was in fact largely a G1 (the US) to a larger grouping that rightly includes Brazil, China, India, Indonesia and other emerging markets. Representation, broadly speaking, has expanded from roughly one billion people in the G7 high-income countries, to around 4.2 billion people at the G20 table. Still, the G20 must now include the voices of the poor, especially those in Africa, which would bring another one billion to the table. A permanent seat for the African Union would be a vital start.

As a practical matter, strong regional cooperation would greatly facilitate stronger global cooperation as well. Despite its many critics, the European Union is the best model here. If the African Union and other regional groupings were to emulate the efficacy of the European Union through similar regional institutions, the myriad tasks of global economic governance – whether at the UN or the G20 – would be greatly simplified. The recent summits between the European Union and its African and East Asian counterparts signal an important way forward.

Mobilizing expertise

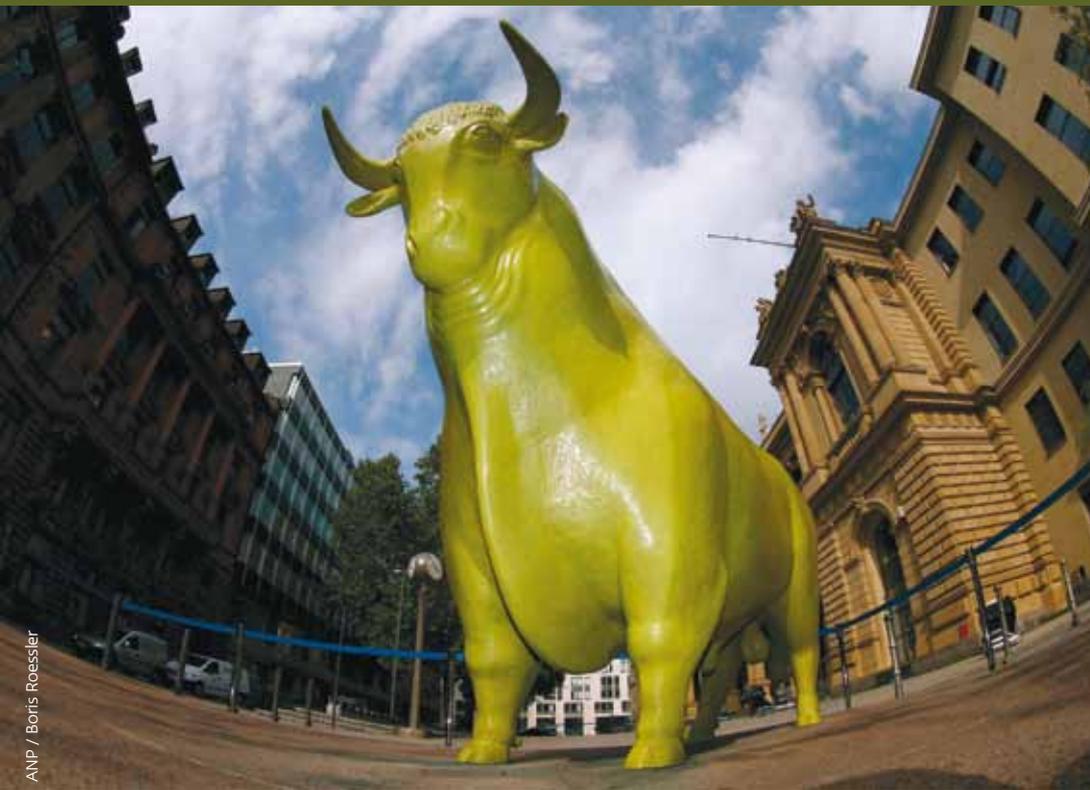
Finally, another fundamental problem of governance is the lack of interface between politicians and 'knowledge communities'. The US Congress is nearly scientifically illiterate. The politicians posture without understanding the technical underpinnings of the structural challenges we face: their magnitude, timing, spatial extent and future dynamics, or the costs of mitigation and adaptation. The real experts are very far from the podiums and negotiating tables.

We cannot feed the planet by going back to traditional farming. We cannot solve the problems of energy, transport and health by relying on outdated technologies. Leaving science to the margins of political decision making or, even worse, overriding the science, is life threatening. The proper mobilization of expert knowledge is a fundamental need and challenge. Without expertise, we are flying blind into a complex and harrowing future. ■

□ Jeffrey Sachs (2008) *Global Cooperation and Sustainable Development*, Lecture at the School of International and Public Affairs, Columbia University, 10 November.

□ Jeffrey Sachs (2009) *Rethinking macroeconomics, Capitalism and Society* 4(3). Berkeley Electronic Press.

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ANP / Boris Roesler

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. >

By **Peter H. May**, professor at the Federal Rural University of Rio de Janeiro, Brazil, associate director of Friends of the Earth – Brazilian Amazon, and past president of the International Society for Ecological Economics (ISEE).

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 Brasilia.

For more information visit www.ecoeco.org, or join the debate on twitter.com/iseeorg.

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.



Reuters / Gustavo Nacarino

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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