

Harris, S. R. (2009) 'We must rely on science rather than wishful thinking if we are to build a sustainable Welsh economy', in N. Ingham (ed.), *Defining a Sustainable Economic Future for Wales* (pp. 24-5). Cardiff: Cynnal Cymru.

## **We must rely on science rather than wishful thinking if we are to build a sustainable Welsh economy**

By Dr. Steven Robert Harris, Science Shops Wales

The findings of a cluster of major scientific studies published over the past few years by the IPCC, IGBP, FAO and UNEP<sup>1</sup> all point to a set of common conclusions. Our whole Earth System is in crisis. The climate is rapidly and inexorably changing. The oceans are dying, the icecaps melting. One to two-thirds of all species of plants, animals, and other organisms may die out over the coming decades. Billions of people around the world lead lives marred by thirst, hunger, poverty and conflict.

The global situation is very serious, almost more serious than we can imagine. But there *is* hope of finding solutions to this crisis. Why? Because these studies also clearly identify its primary cause. It is us, or to be more precise, it is the impact of our current industrialised and globalised economy, which is insatiable in its demands for energy inputs to fuel continual growth in production and consumption. As a recent special issue of *New Scientist* bluntly put it: "Our economy is killing the Earth".<sup>2</sup> The problems we are facing are not simply accidental, unintended by-products of our current economic arrangements, but rather a direct and inevitable consequence of a commitment to growth at all costs, without regard for either human needs or environmental limits.

However, abandoning the commitment to growth is a topic conspicuously absent from current mainstream political thinking. It remains the ultimate taboo. As Tim Jackson, economics commissioner on the UK's Sustainable Development Commission put it in the same issue of *New Scientist*, in an article entitled *Why politicians dare not limit economic growth*: "This is the logic of free-market capitalism: the economy must grow continuously or face an unpalatable collapse. With the environmental situation reaching crisis point, however, it is time to stop pretending that mindlessly chasing economic growth is compatible with sustainability."<sup>3</sup>

We clearly can see the terrible, and (as we now know) ultimately self-defeating "logic of free-market capitalism" embodied in current Welsh Assembly Government policy. Our Department of Economy and Transport lists "to stimulate enterprise and growth" among its three principal objectives, and "Stimulating economic growth across the whole of Wales" as one of its seven major priorities.<sup>4</sup> These aims cannot possibly be reconciled with our national commitment to "integrating our social, economic and environmental objectives to improve well being now and in the future."<sup>5</sup>

This is not just a clash of values or ideas. It is essential to recognize that we simply do not have (and cannot readily manufacture in the short term) sufficient resources to sustain, let alone increase, our current level of economic activity, let alone deal with its impact on the local and global environment. In the context of climate change and resource depletion, it is simply wishful thinking to believe in the possibility of continued economic growth. If we are to survive, and even thrive in Wales, we must recognise and accept what the science tells us: that we are part of, not apart from nature. We must find ways of living and working in Wales that preserve and steward the ecosystem services essential to our survival.

How are we to set out about doing this? First, we must repudiate and abandon the topsy-turvy "logic" of growth economics once and for all. Then we must, as a matter of urgency, begin to establish a scientifically-informed system of economic governance. We must orient our economic activities around concepts of the common good, finding ways to prioritise the

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preservation of the biosphere, and to recognise, and work with, the basic energetic constraints and environmental limits on the Welsh economy.

Wales is rich in potential for sustainability: we have fresh water; excellent opportunities to generate renewable energy, both on land and at sea; the technology to reduce, reuse and recycle on a nationwide scale; and, given a complete reorganisation of Welsh agriculture and horticulture, even the capacity to supply a substantial proportion of our own fuel and foodstuffs. However, in order to turn this potential into reality, we must first learn how to distinguish the real wealth of Wales – our food, shelter, fuels, minerals, forests, fisheries, land, buildings, art, music and information – from the artificial wealth – money, debt, credit, bonds, etc. – which has served us, and the planet, so poorly.

This is a very challenging and complex undertaking. Fortunately, we already have many of the tools and techniques we require. During the latter part of the 20<sup>th</sup> Century, huge strides were made in understanding the behaviour of complex adaptive systems at all scales. Pioneers in systems ecology and ecological economics laid the foundations for policy-making based on our scientific understanding of the energy basis of man and nature. One of the most highly developed examples of this approach can be found in the work of Howard Thomas Odum (1925-2002), an American ecologist who made major contributions to ecosystems ecology and general systems theory. Odum and his colleagues developed an ecological economics based on the concept of *emergy*. Emergy analysis provides common units for evaluating the different quantities and qualities of energy produced, used and stored in systems with both human and natural components.<sup>6</sup> This approach offers an empirically-based, scientifically rigorous set of tools and techniques to support economic and environmental decision-making at all scales.<sup>7</sup> Emergy analysis has been used to inform planning and policy all around the world at local, regional and national levels, and in locations as diverse as Lake Geneva, Florida, Ecuador, and Sweden.<sup>8</sup>

We can, and should, make use of these powerful techniques here in Wales. I propose that we establish a Welsh Institute for Sustainability Studies, charged with advising our Assembly Government on founding our new, post-carbon economy. This institute, which will bring together the best minds from around the country, could begin its work by undertaking a comprehensive emergy analysis of Wales. This would provide a basis for understanding the ecosystems of our country, the myriad activities of its citizens, and how they intersect and impact on each other. The Institute could also lead the way in identifying and developing the new economic planning and policy instruments we will need, such as the Genuine Progress Indicator.<sup>9</sup>

At the same time as establishing new knowledge-generating bodies, we must radically transform those that already exist. We must overhaul Welsh Higher Education, giving it a new focus on generating and teaching sound sustainability science. Our universities must once again become locally, regionally and nationally focused, providing the intellectual impetus and technical support Welsh communities need in order to develop appropriate local solutions. Our Further Education institutions must aid this effort, providing training in the new practical and vocational skills we need to build a Sustainable Wales.

## Notes and Further Reading

IPCC: Intergovernmental Panel on Climate Change; IGBP: The International Geosphere-Biosphere Programme; FAO: Food and Agriculture Organisation of the United Nations; UNEP: United Nations Environment Programme. Relevant publications include the *Synthesis Report of the IPCC Fourth Assessment Report*, (2007); The IGBP Report *Global Change and the Earth System: A Planet Under Pressure*, (2004); the series of FAO reports on food and sustainability, (2004-8); and the UNEP GEO4,

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2006 and *Living Beyond our Means and Ecosystems and Human Well-Being* (2005), reports of the UNEP Millennium Ecosystems Assessment.

<sup>2</sup> *New Scientist*, 16 October 2008 "Special report: How our economy is killing the Earth"

<sup>3</sup> *New Scientist*, 16 October 2008 "Why politicians dare not limit economic growth" by Tim Jackson.

<sup>4</sup> <http://new.wales.gov.uk/about/departments/dein/?lang=en>

<sup>5</sup> <http://new.wales.gov.uk/topics/sustainabledevelopment/?lang=en>

<sup>6</sup> Odum's work also provides the scientific underpinnings of Permaculture, one of the most innovative and effective responses to the challenge of designing for sustainability. See Holmgren 2002: David Holmgren (2002) *Permaculture: Principles and Pathways Beyond Sustainability*. Victoria: Holmgren Design Services.

<sup>7</sup> For summaries of this work see Odum 1995: Howard T. Odum (1995) *Environmental Accounting: EMERGY and Environmental Decision Making*. New York: John Wiley & Sons; Odum 2001: Howard T. Odum and Elisabeth C. Odum (2001) *A Prosperous Way Down: Principles and Policies*. Boulder, Colorado: University Press of Colorado.

<sup>8</sup> See papers in Charles A. S. Hall (Ed., 1995) *Maximum Power: The Ideas and Applications of H. T. Odum*. Boulder, Colorado: University Press of Colorado.

<sup>9</sup> See [http://www.rprogress.org/sustainability\\_indicators/genuine\\_progress\\_indicator.htm](http://www.rprogress.org/sustainability_indicators/genuine_progress_indicator.htm)