

humanity's health and survival within the biosphere into the indefinite future. It is not so much the individual core scientific questions that set ecological economics apart – since these questions are covered independently in other disciplines as well – but rather the treatment of these questions in an integrated, transdisciplinary way, which is essential to their understanding and effective use in policy. The solutions being considered in ecological economics are deserving of increasing attention.

See also: Adaptive Management and Integrative assessments; Ecological Footprint; Ecosystem Services; Limits to Growth; Sustainable Development.

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Ecological Economics 2

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Introduction

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Stories about the economy typically focus on gross domestic product (GDP), jobs, stock prices, interest rates, retail sales, consumer confidence, housing starts, taxes, and assorted other indicators. We hear things like “GDP grew at a 3% rate in the fourth quarter, indicating a recovering, healthy economy, but with room for further improvement.” Or, “The Fed raised short-term interest rates again to head off inflation”.

But do these reports, and the indicators they cite, really tell us how the economy is doing? What is the economy anyway? And what is this economy for?

Conventional reports on these questions are rather narrow. The ‘economy’ we usually hear about refers

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only to the market economy – the value of those goods and services that are exchanged for money. Its purpose is usually taken to be to maximize the value of these goods and services – with the assumption that the more the activity, the better off we are. Thus, the more the GDP (which measures aggregate activity in the market economy), the better. Likewise the more contributors to GDP (such as retail sales and salaries paid to employees), the better. Predictors of more GDP in the future (such as housing starts and consumer confidence) are also important pieces of information from this perspective. Declining or even stable GDP is seen as a disaster. Growth in GDP is assumed to be a government's primary policy goal and also something that is sustainable indefinitely.

But is this what the economy is all about? Or more accurately, is this ‘all’ that the economy is about? Or, is this what the economy ‘should be’ about? The answer to all of these is an emphatic ‘no’. Here’s why.

Let’s start with purpose. The purpose of the economy ‘should be’ to provide for the sustainable well-being of people. That goal encompasses material well-being certainly – but also anything else that affects well-being and its sustainability. This seems obvious and noncontroversial. The problem comes in determining what things actually affect well-being and in what ways.

There is substantial new research on this ‘science of happiness’ that shows the limits of conventional economic income and consumption in contributing to well-being. Psychologist Tim Kasser in his 2003 book *The High Price of Materialism* points out, for instance, that people who focus on material consumption as a path to happiness are actually less happy and even suffer higher rates of both physical and mental illnesses than those who do not. Material consumption beyond real need is a form of psychological ‘junk food’ that only satisfies for the moment and ultimately leads to depression, Kasser says.

Economist Richard Easterlin, a noted researcher on the determinants of happiness, has shown that well-being tends to correlate well with health, level of education, and marital status, and with income only up to a fairly low threshold (Figure 1). He concludes in a recent paper in the *Proceedings of the National Academy of Sciences* that,

People make decisions assuming that more income, comfort, and positional goods will make them happier, failing to recognize that hedonic adaptation and social comparison will come into play, raise their aspirations to about

the same extent as their actual gains, and leave them feeling no happier than before. As a result, most individuals spend a disproportionate amount of their lives working to make money, and sacrifice family life and health, domains in which aspirations remain fairly constant as actual circumstances change, and where the attainment of one’s goals has a more lasting impact on happiness. Hence, a reallocation of time in favor of family life and health would, on average, increase individual happiness.

British economist Richard Layard’s 2005 book *Happiness: Lessons from a New Science* echoes many of these ideas and concludes that current economic policies are not improving happiness and that “happiness should become the goal of policy, and the progress of national happiness should be measured and analyzed as closely as the growth of GNP.” Several countries are now interested in alternative measures of progress. For example, the country of Bhutan has recently announced that it will make ‘gross national happiness’ its explicit policy goal.

Economist Robert Frank, in his 2000 book *Luxury Fever*, also concludes that the nation would be better off – overall national well-being would be higher, that is – if we actually consumed less and spent more time with family and friends, working for our communities, maintaining our physical and mental health, and enjoying nature.

On this last point, there is substantial and growing evidence that natural systems contribute heavily to human well-being (Figure 2). In a paper published in 1997 in the journal *Nature*, the author with his co-workers estimated that the annual, nonmarket value of the Earth’s ecosystem services is \$33 trillion globally, substantially larger than global GDP. The just released UN

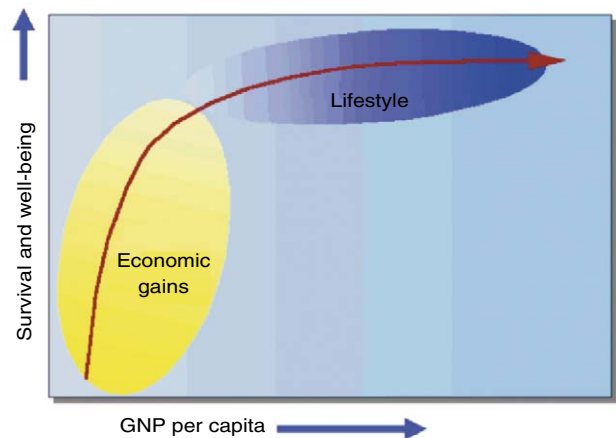
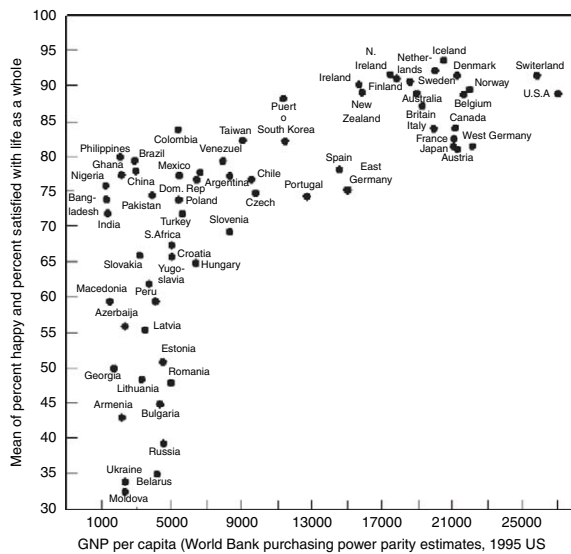


Figure 1 Relationship between GNP per capita and life satisfaction. Sources: World Development Report.

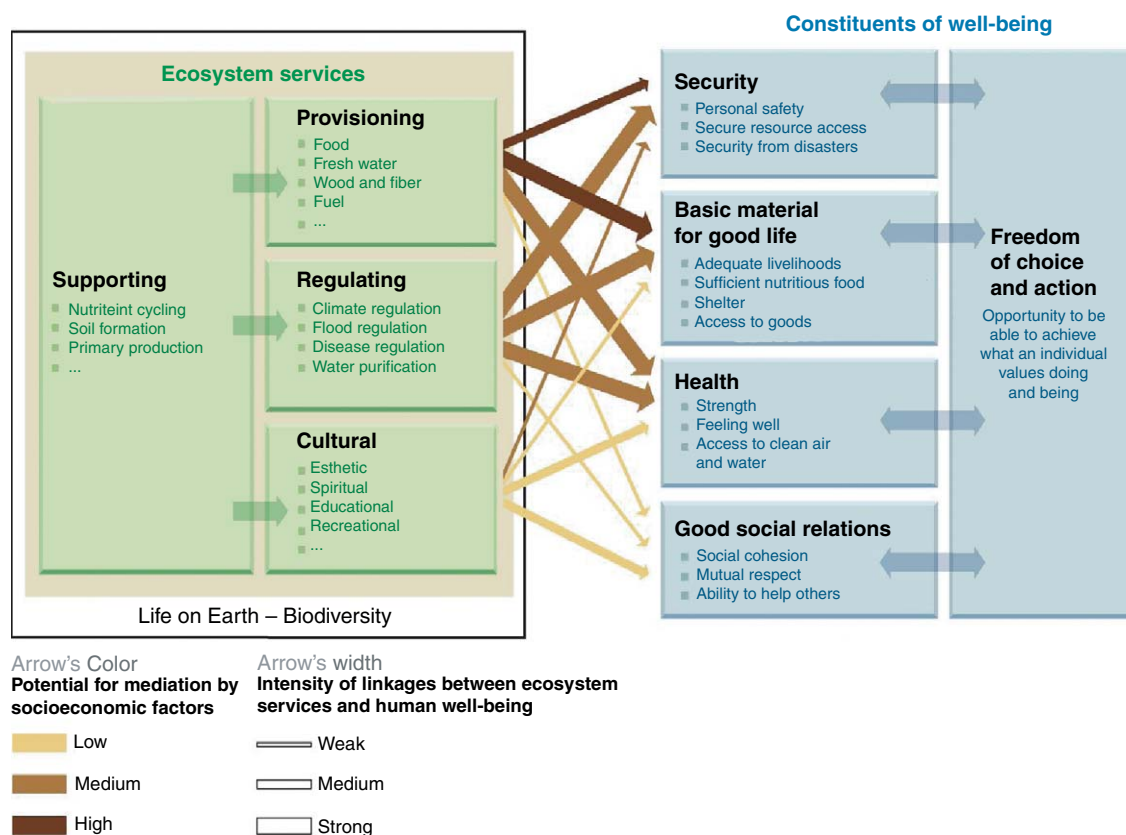


Figure 2 Consequences of ecosystem change for human well-being. Source: Millennium Ecosystem Assessment.

Millennium Ecosystem Assessment is a global update and compendium of ecosystem services and their contributions to human well-being.

So, if we want to assess the 'real' economy – all the things which contribute to real, sustainable, human welfare and quality of life – as opposed to only the 'market' economy, we have to measure the nonmarketed contributions to human well-being from nature, from family, friends, and other social relationships at many scales, and from health and education. One convenient way to summarize these contributions is to group them into four basic types of capital that are necessary to support the real, human-welfare-producing economy: built capital, human capital, social capital, and natural capital (Figure 3).

The market economy covers mainly built capital (factories, offices, and other built infrastructure and their products) and part of human capital (spending on labor), with some limited spillover into the other two types. Human capital includes the health, knowledge, and all the other attributes of individual humans that allow them to function in a complex society. Social capital includes all the formal and informal networks among people: family, friends, and neighbors, as well as social institutions at all levels, like churches, social clubs, local, state, and

national governments, NGOs, international organizations, and the institutions of the market itself. Natural capital includes the world's ecosystems and all the services they provide that support human well-being. Ecosystem services occur at many scales, from climate regulation at the global scale, to flood protection, soil formation, nutrient cycling, recreation, and esthetic services at the local and regional scales.

So, how have the world's real economies been doing recently, compared to their market economies? The short answer is, not so good. How do we know? One way is through surveys of people's life satisfaction, which in the US has been decreasing slightly since about 1975. A second approach is an aggregate measure of the real economy that has been developed as an alternative to GDP called the genuine progress indicator, or GPI.

Let's first take a quick look at the problems with GDP as a measure of true human well-being. GDP is not only limited – measuring only marketed economic activity or gross income – it also counts all of this activity as positive. It does not separate desirable, well-being-enhancing activity from undesirable well-being-reducing activity. For example, an oil spill increases GDP because someone has to clean it up, but it obviously detracts from society's well-being. From the perspective of GDP, more crime,

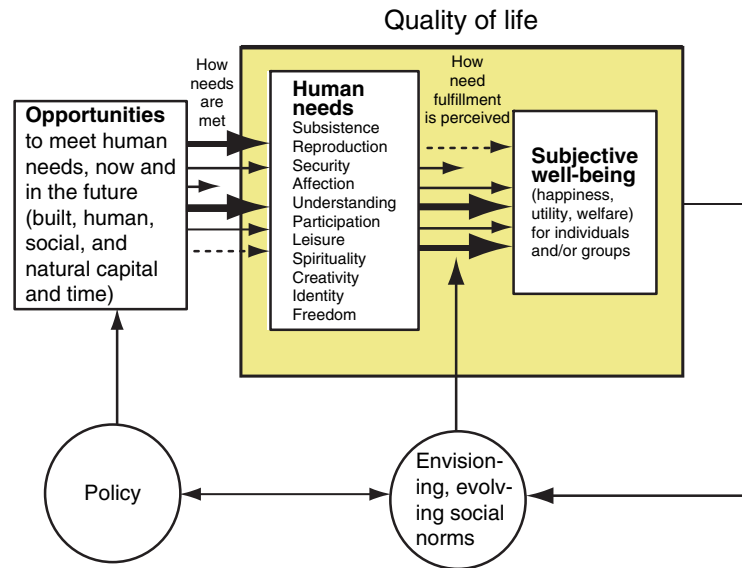


Figure 3 Quality of life as the interaction of human needs and the subjective perception of their fulfillment, as mediated by the opportunities available to meet the needs. From Costanza RJ, Fisher S, Ali C, *et al.* (2006) Quality of life: An approach integrating opportunities, human needs, and subjective well-being. *Ecological Economics* 61: 267–276.

more sickness, more war, more pollution, more fires, storms, and pestilence are all potentially good things, because they can increase marketed activity in the economy.

GDP also leaves out many things that do enhance well-being but are outside the market. For example, the unpaid work of parents caring for their own children at home does not show up, but if these same parents decide to work outside the home to pay for child care, GDP suddenly increases. The nonmarketed work of natural capital in providing clean air and water, food, natural resources, and other ecosystem services does not adequately show up in GDP, either, but if those services are damaged and we have to pay to fix or replace them, then GDP suddenly increases. Finally, GDP takes no account of the distribution of income among individuals. But it is well-known that an additional \$1 worth of income produces more well-being if one is poor rather than rich. It is also clear that a highly skewed income distribution has negative effects on a society's social capital.

The GPI addresses these problems by separating the positive from the negative components of marketed economic activity, adding in estimates of the value of nonmarketed goods and services provided by natural, human, and social capital, and adjusting for income-distribution effects (Figure 4 lists the components of the GPI). While it is by no means a perfect representation of the real well-being of a nation, GPI is a much better approximation than GDP. As Amartya Sen and others have noted, it is much better to be approximately right in these measures than precisely wrong.

Comparing GDP and GPI for several countries shows that in many 'developed' countries the benefits of growth in the market economy are now being outweighed by the uncounted costs of that growth. For example, Figure 5 shows that in the US while GDP has steadily increased since 1950, with the occasional dip or recession, GPI peaked in about 1975 and has been gradually decreasing ever since. From the perspective of the real economy, as opposed to just the market economy, the US has been in recession since 1975. As already mentioned, this picture is also consistent with survey-based research on people's stated life-satisfaction. We are now in a period of what Herman Daly has called 'un-economic growth', where further growth in marketed economic activity (GDP) is actually reducing well-being on balance rather than enhancing it. In terms of the four capitals, while built capital has grown, human, social, and natural capital have declined or remained constant and more than canceled out the gains in built capital.

While US GPI was beginning to trend upward again at the end of the Clinton years, the policies of the Bush administration have led to a significant worsening of income distribution (thereby further decreasing social capital), an increasing depletion of natural capital, and worsening human capital through decreased spending on education and health, and loss of jobs. And the built capital component (GDP) has not been growing fast enough to outweigh these negatives. While the dollar incomes of some wealthy individuals may have improved over this period, the overall well-being of the US has significantly declined. Further, the psychological

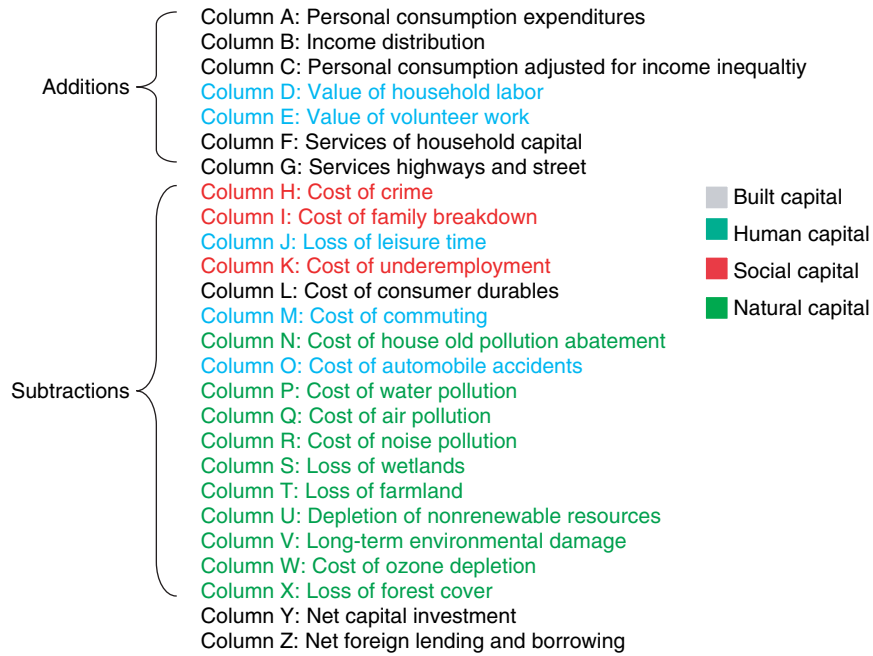


Figure 4 The genuine progress indicator (GPI) by column.

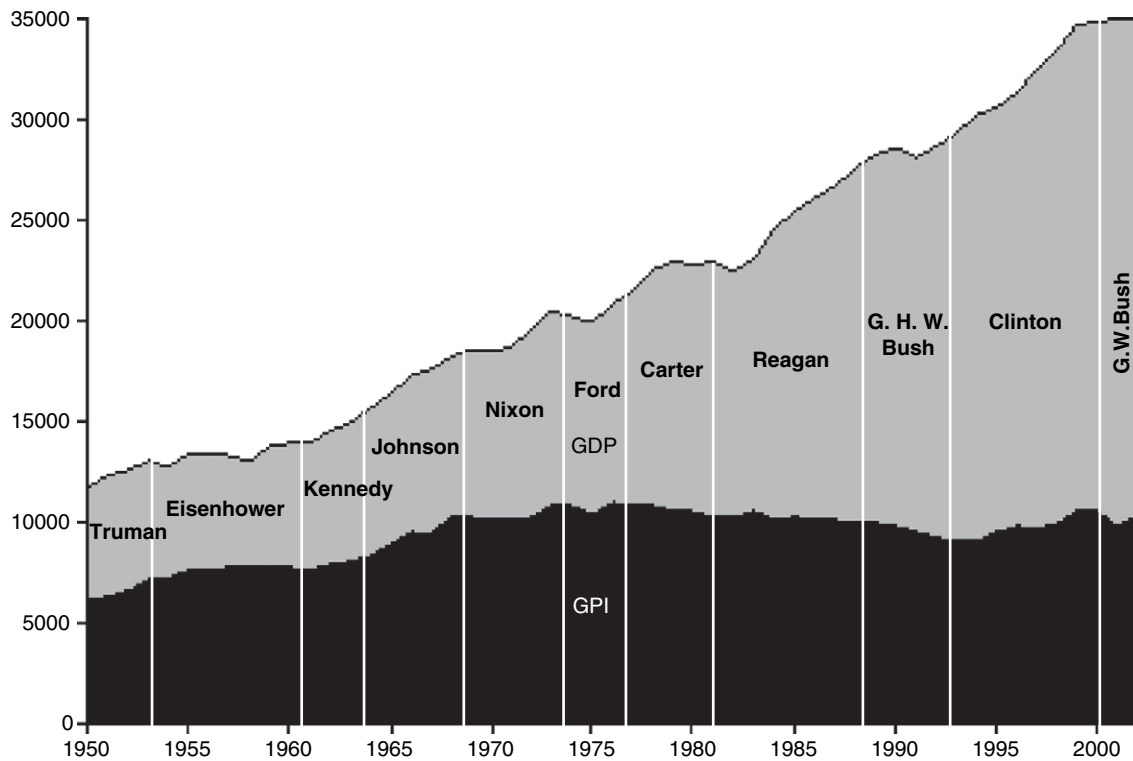


Figure 5 Gross production vs. genuine progress for the US, 1950–2002. Source: Redefining Progress - <http://www.rprogress.org>

evidence is that even the well-being (as opposed to income) of the wealthy individuals has probably not improved very much and may even have declined. From the perspective of the real economy, things are not improving.

Is the news all bad? No. We recently estimated the GPI of the State of Vermont and of Burlington, the state's largest city, and found that Vermont's and Burlington's GPI per capita had increased over the entire 1950–2000 period and is now more than double the national average.

This was due to Vermont's attention to protecting and enhancing natural, human, and social capital in balance with gains in built capital – accomplished through the application of strong, local democratic principles, and processes still actively at work in Vermont.

The lesson from Vermont, and from similar analyses done at the regional level in other locales, is that there is significant variation within and across countries in trends in well-being and quality of life, and plenty of good examples we can learn from to improve overall well-being at multiple scales.

How can we apply these lessons to get out of the real recession in human well-being at the national scale that many countries are now in? Several policies have been suggested that would help to turn things around:

- Shifting our primary national policy goal from increasing marketed economic activity (GDP) to maximizing national well-being (GPI or something similar). This would allow us to see the interconnections between built, human, social, and natural capital and build well-being in a balanced and sustainable way.
- Reforming tax systems to send the right incentives by taxing negatives (pollution, depletion of natural capital, overconsumption) rather than positives (labor, savings, investment).
- Reforming international trade to promote well-being over mere GDP growth. This implies protecting natural capital, labor rights, and democratic self-determination first and then allowing trade, rather than promoting the current trade rules that ignore all nonmarket contributions to well-being.
- Implementing strong democracy, as Tom Prugh, Robert Costanza, and Herman Daly have argued in the book *The Local Politics of Global Sustainability*. Strong democracy implies true participation of all in governance and is an essential prerequisite to building a sustainable and desirable future.
- Increasing the size of the 'common sector' of the economy (as opposed to the private and public sectors) but creating common property asset trusts to 'propertize' natural and social capital assets, as described in Peter Barnes' book *Capitalism 3.0*.

Ultimately, getting out of the recession in well-being we are currently in will require us to look beyond the limited

definition of the 'economy' we read about in the newspapers, and recognize what the real economy is and what it is for. We must not allow deceptive accounting practices – analogous to those that caused the Enron and WorldCom debacles – to paint an inaccurate and ultimately destructive picture of how 'well' we are doing. Alternatives are available, but they need significant further discussion and research.

With nothing less than our current and future well-being at stake, we can certainly afford to devote greater effort to learning how to adequately understand and measure it. If we want things that really matter to our well-being to count, we must learn how to recognize and count them, use that information to inform policy in a real democracy, and create adaptive institutions that can effectively implement the policy.

See also: Ecological Health Indicators.

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