

Ecosystem Services and Human Well-being: Do Global Findings Make Any Sense?

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The Millennium Ecosystem Assessment (MA; 2005) defined ecosystem services as the benefits ecosystems provide that contribute to human well-being. Ecosystems supply a bundle of services, including provisioning services such as timber, food, and fiber, that provide material wealth—a key constituent of well-being. The indicators presently used to measure and track well-being are primarily direct measures of current material wealth, including the gross national product (GNP) per capita and, to a large extent, the Human Development Index (HDI). It was therefore no surprise that the MA reported that two-thirds of assessed ecosystem services were declining while global well-being had increased over the last fifty years—although one might expect that decreases in ecosystem services should also decrease human well-being.

The authors of “Untangling the Environmentalist’s Paradox: Why Is Human Well-being Increasing as Ecosystem Services Degrade?” (Raudsepp-Hearne et al. 2010) attempted to explain the apparent paradox by positing the following four hypotheses: (1) there is a flaw invalidating the measures of well-being used in the MA, (2) the benefits of food production outweigh the costs of losses in other ecosystem services, (3) technology decouples the link between ecosystem services and human well-being, and (4) time lags exist between loss of ecosystem services and impacts on well-being.

Raudsepp-Hearne and colleagues rejected the first hypothesis, but the indicators they chose closely resembled those used in the MA. The analysis centers on the estimates of poverty made by Xavier Sala-i-Martin, of Columbia University, and the HDI; however,

both indicators recently have come under intense criticism. Reddy and Pogge (2009) and Sen (1999) showed how GNP per capita and the poverty line ignore other constituents of well-being (such as social relations, security, health, and, particularly, freedoms and choices) by concentrating solely on material wealth. The HDI does better, by including measures of human health and education, but a paper by Sagar and Najam (1998) demonstrated how the perfect substitutability across the three variables in the HDI implies that a reduction in health could be counterbalanced in the index by an increase in material wealth. Thus, the rejection of hypothesis one is understandable, but using a different set of indicators, such as the multidimensional poverty index described by Alkire and Santos (2010), may yield different outcomes.

Moreover, although Raudsepp-Hearne and colleagues (2010) avoided the use of any indicators that include natural capital (to prevent a circular argument), the inclusive wealth indicator developed by Arrow and Dasgupta (2004) clearly shows that inclusive wealth (used as a proxy for well-being) has declined in most countries. This reduction can be traced back to the decline in ecosystem services. The Arrow-Dasgupta study showed significant changes in well-being across countries when compared with the HDI and the GNP per capita, with much of this difference attributable to the decline in natural capital.

Raudsepp-Hearne and colleagues also rejected the role of scale and aggregation in explaining the apparent paradox. The MA focused on global findings; however, are global estimates or averages of human well-being useful for policymaking? Human well-being as defined in the MA is context specific, and it therefore differs across coun-

tries. Attempting to aggregate across a common indicator actually contradicts the nature of the definition of human well-being adopted by the MA. It makes sense to measure well-being at a country level, but it would be even more useful for poverty-reduction policies if we could do so at smaller scales, such as municipality or community levels. For example, a study by the World Resources Institute on poverty mapping demonstrates that in Ecuador, initial national-level data did not show poverty in many parts of the country. However, when the indicator was used at the provincial scale, pockets of poverty began to emerge, and when the resolution was further refined to the municipal scale, large pockets of deprivation appeared.

The second hypothesis revolves around trade-offs among ecosystem services. The “Environmentalism’s Paradox” authors concluded that there is sufficient evidence to demonstrate that trade-offs among ecosystem services (in their case, food production against some regulating services) can be a reason for the direct link between declining ecosystem services and well-being. Incidentally, food production and aquaculture were two of the eight ecosystem services shown by the MA to have increased over the past 50 years. The authors rightly say that the benefits of greater food production outweigh the costs from declines in regulating, supporting, and cultural services at the global level, but I would point out that the converse is true at smaller scales. Events after Hurricane Katrina in New Orleans and the recent floods in Pakistan support the idea that the link between ecosystem services and human well-being should occur at finer spatial scales, suggesting that using global statistics makes little sense.