



Relating ecosystem services to domains of human well-being: Foundation for a U.S. index

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ABSTRACT

Humans are dependent upon the services provided by nature, and unless we effectively account for the range of values from ecosystems in our efforts to protect the environment, we cannot sustain human well-being. In light of this dependence, a national measure of well-being is needed which is responsive to changes in the provisioning of ecosystem services as well as service flows from economic and social sectors. To conceptualize the eco-human linkages we must identify the measurable components of well-being that can be related to ecosystem service provisioning. The indicators and metrics used in existing well-being indices provide a basis for developing a core set of domains to develop such a composite measure of well-being; however these indices lack the ability to link well-being endpoints specifically to service flows from different types of capital. This paper suggests a core set of well-being domains that can be linked to ecosystem services via their relationship to economic, environmental and societal well-being. The well-being domains identified will serve as the foundation for developing an index of well-being for the U.S. which will be used to evaluate the provisioning of ecosystem, economic and social services in a predictive modeling framework. We present an overview of selected well-being measures and discuss the potential relationships between ecosystem services and the domains selected to develop the index structure.

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1. Introduction

Over the past 30 years, quality of life research has garnered increasing attention as important value-added “good life” measures for national policy (Cummins, 1996; Hamilton, 1999; Diener, 2000; Hagerty et al., 2001; Cummins et al., 2003; Costanza et al., 2004; Gundelach and Kreiner, 2004; Layard, 2006; DiTella and MacCulloch, 2006; Welsch, 2006, 2007; Pannozzo et al., 2009). However, people’s determination of what constitutes the good life has been largely ignored by governments and decision makers (Diener et al., 2008). Measures of human welfare that respond to specific policy aspects are needed to track trends over time for government accountability. Well-being measures are most often linked to economic and social policy objectives and the notion of progress. Quite often, environmental drivers are excluded from human well-being accounts despite the fact that the environment plays a vital role in quality of life (Deutsch et al., 2003; Hirschberg et al., 1998; Smyth et al., 2008; Cox et al., 2006; Wainger and Price, 2004; Levinson, 2009; MEA, 2005; Rahaman et al., 2005; Folke

et al., 1996). Because there is no agreed upon definition of human well-being evaluating policy effectiveness and the implications of alternative decisions in context of the economy, the environment and social conditions can become a daunting task.

A fuller accounting is necessary to measure the influence of environmental policies on aspects of societal welfare and overall human well-being, relative to economic, social and political factors. Alternative, integrated concepts of progress are needed to better understand the human condition and its collective relationship to service flows from the economic, social and environmental sectors. More specifically, local, regional and national policy makers lack the information to better understand how decisions may impact the delivery of ecosystem goods and services that are important to overall human well-being. Viewed through a lens of sustainability, the contributions of ecosystem services to elements of environmental, economic and societal well-being in terms of basic needs and subjective well-being (SWB) become clearer (Summers et al., 2012). Human well-being, as an endpoint measure for evaluating changes in ecosystem services, captures what people need and want to maintain or improve quality of life. A composite index of well-being is a much needed metric for environmental accountability towards a sustainable society. An index for the U.S. that is responsive to changes in ecosystem services, if conceptualized in

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