



Enabling Conditions for Ecosystem Markets

This EnviroAtlas Marketplace map displays polygons representing policies, regulations, and regulatory guidance that support ecosystem services markets as of 2014. It includes enabling policies that specifically establish ecosystem market mechanisms, non-binding guidance for designing and implementing ecosystem markets or projects, and regulatory drivers that create demand in ecosystem markets. Data cover imperiled species and habitats, wetlands and streams, forest carbon, and watershed asset types. Scales represented include 8-digit [HUC](#) and state and federal lands policies.

Why are enabling conditions for ecosystem services important?

Enabling policies, regulation, and guidance facilitate the development and operation of ecosystem markets by creating the drivers, legal frameworks, or direct funding sources for ecosystem services conservation. Healthy ecosystems provide us with a wide range of services—including reliable clean water, climate regulation, and productive soils—and they underpin many of our basic needs, economic processes, and cultural or spiritual values. However, except for primary goods like food, fuel, and fiber, most ecosystem services do not have widely-accepted, tangible market values.¹ As a result, ecosystems continue to decline because protection of ecosystem services is rarely considered in economic decisions. The Millennium Ecosystem Assessment, for instance, found that more than 60% of ecosystem services are being degraded faster than they can regenerate.²

One approach to safeguarding ecosystem services is through policy and regulation that create incentive mechanisms for conservation, including markets. With ecosystem services markets, companies, communities, and other beneficiaries pay landowners and managers to protect, restore, or mitigate for impacts to ecosystems.³ Ecosystem market mechanisms range from simple contracts between a buyer and seller to sophisticated markets for environmental credits representing delivery of an ecosystem service. All of these mechanisms share the common practice that parties will restore or maintain the delivery of an ecosystem service or group of services in exchange for financial compensation. Typically, markets focus on a single ecosystem service or asset. The most well-established markets in the United States represent carbon sequestration, biodiversity conservation, and watershed services.



Photo: Siphon tube irrigation, D. Ogle, NRCS

Enabling conditions are found at multiple scales, ranging from the watershed scale to state- and national-scale policies. Enabling conditions for ecosystem markets can take several forms. *Regulatory drivers* such as Section 404 of the Clean Water Act create demand by setting a standard or cap that can be met through markets. Ecosystem markets are one option for regulated parties to meet compliance, but participation is generally not required. *Enabling policies* directly promote or establish markets or incentive programs or create a legal framework for transactions, such as the California cap-and-trade system for greenhouse gas emissions. Policy-makers can also provide non-binding guidance that makes recommendations for program design and implementation, such as the State of Idaho's Water Quality Pollutant Trading Guidance.⁴

How can I use this information?

This map is one of a group of Marketplace maps displaying information on ecosystem market size, scope, and activity in the United States. Users can examine this map layer to understand the geographic distribution of ecosystem markets, identify potential market opportunities, and explore markets and projects by asset type, goals, reason for implementation, exchange mechanism, and intervention. This map layer can be combined with other EnviroAtlas map layers to provide a context for market activity and analyze its contribution to conservation objectives. The Enabling Conditions for Ecosystem Markets map may be compared with other Marketplace map layers for additional detail on market scope and the role of policy and regulation.

How were the data for this map created?

This layer is based on Ecosystem Marketplace research on imperiled species and habitats, wetlands and streams, forest carbon, and watershed markets conducted during 2008–2014. Polygons reflect market coverage areas, project footprints, and project primary impact areas in which markets and projects operate to protect the supply of ecosystem services. During 2015, additional imperiled species and habitats and wetlands and streams data, including In-Lieu Fee ([ILF](#)) market coverage areas and credit bank and ILF site footprints, were obtained from the Regulatory In-lieu Fee and Bank Information Tracking System ([RIBITS](#)) database as KML files. Corresponding tabular attributes were also downloaded from RIBITS. RIBITS KML files were converted into ArcGIS polygonal shapefiles. Imperiled species and habitats, wetlands and streams, forest carbon, and watershed markets and projects identified by Ecosystem Marketplace as being operational at the watershed scale were mapped in ArcGIS based on the 2014 NRCS HUC8 Watershed Boundary Dataset ([WBD](#)). Markets and projects operational at the national, state, county, or federal lands scale were drawn utilizing 2010 U.S. Census or 2010 Public Land Survey System boundary layers. Tabular data from Ecosystem Marketplace and RIBITS were combined, imported into ArcGIS, and joined with corresponding spatial records.

What are the limitations of these data?

EnviroAtlas uses the best data available, but there are still limitations associated with these data. These data originate from the RIBITS database and on responses to Ecosystem Marketplace's annual 'State of the Market' survey of project developers, market program administrators, brokers, retailers, and other market actors. Wherever possible, responses are checked against credit registries and other third-party sources. However, EnviroAtlas and Ecosystem Marketplace provide geographic data "as is" and make no guarantee or warranty concerning the accuracy of information contained in the geographic data. Users of these data are strongly advised not

to use the content of Marketplace data in isolation but to take that information together with other market information and formulate one's own views, interpretations, and opinions. The user is strongly advised to seek appropriate legal and professional advice before entering into commercial transactions. We recommend that the user become familiarized with the terminology and concepts used in these data.

How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded.

Where can I get more information?

Further information is available in Ecosystem Marketplace's primer on ecosystem markets and finance.³ Additional data and analysis of ecosystem markets activity is available at Forest Trends' [Ecosystem Marketplace](#). The Regulatory In-lieu Fee and Bank Information Tracking System ([RIBITS](#)) database, maintained by the United States Army Corps of Engineers, provides detailed data and documentation on mitigation banking and in-lieu fee program activity in the United States. A selection of resources related to ecosystem valuation and markets is listed below. For additional information on how the data were created, access the metadata for the data layer from the drop down menu on the interactive map table of contents and click again on metadata at the bottom of the metadata summary page for more details. To ask specific questions about this data layer, please contact the [EnviroAtlas Team](#).

Acknowledgments

EnviroAtlas is a collaborative effort led by EPA. The Marketplace layers were created through a collaborative effort between Ecosystem Marketplace, USDA, and EPA. Data was obtained from Forest Trends' Ecosystem Marketplace and the RIBITS database. The Marketplace geospatial dataset was compiled by Katherine Sever, Colorado State University. The fact sheet was written by Genevieve Bennett, Ecosystem Marketplace, and Katherine Sever, Colorado State University.

Selected Publications

1. King, D.M., and M. Mazzotta. 2000. [Ecosystem valuation](#). Accessed March 2016.
 2. Millennium Ecosystem Assessment. 2005. [Ecosystems and human well-being: Synthesis](#). Island Press, Washington, DC.
 3. Forest Trends' Ecosystem Marketplace. [Atlas of ecosystem markets in the United States](#). Accessed October 2016.
 4. Idaho Department of Environmental Quality. 2010. [Water quality pollutant trading guidance](#). Accessed October 2016.
- Forest Trends' Ecosystem Marketplace. 2015. [Ecosystem markets and finance: A global primer](#). Accessed March 2016.
- Shupe, S.J., G.D. Weatherford, and E. Checchio. 1989. [Western water rights: The era of reallocation](#). *Natural Resources Journal* 29:413–434.
- U.S. Army Corps of Engineers. [Compensatory mitigation rule](#). Accessed March 2016.