

## Terminology Services - Vocabulary Catalog List Detail Report

Term
<p><b>Beneficiary</b></p> <p>Definition: In common usage, a beneficiary is "a person who receives benefits." However, because a single person with multiple interests can benefit from ecosystems in multiple and distinct ways, NESCS Plus uses the term beneficiary to refer to the person's awareness and interests, relative to FES, rather than to the persons themselves. Therefore, NESCS Plus defines a beneficiary as "The interests of interests of individuals, groups of people, or organizations that drive their direct use or appreciation of EEP, resulting in an impact (positive or negative) on their welfare." Example: A farmer relies on their land (space and soil) for producing crops and uses water from a nearby stream to irrigate in the summer. The farmer is the beneficiary.</p>
<p><b>Beneficiary Classification</b></p> <p>Definition: Classification of the different types of interests individuals, groups of people, or organizations that drive direct use and/or appreciation of one or more ecological end-products, resulting in an impact (positive or negative) on their welfare. Context: This NESCS Plus classification component addresses jointly the questions about how EEPs are used, enjoyed or appreciated and who uses, enjoys, or appreciates them. Example: Agricultural, recreational, subsistence, and non-use beneficiaries are all examples of Beneficiary classes.</p>
<p><b>Benefit transfers</b></p> <p>Definition: "[T]he use of research results from pre-existing primary studies at one or more sites or policy contexts (often called study sites) to predict [human] welfare estimates or related information for other, typically unstudied sites or policy contexts (often called policy sites)." (Rolfe, Johnston, et al. 2015)</p>
<p><b>Bequest Value</b></p>

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<p>Definition: A type of non-use value for a good or service. It is derived from the benefits an individual receives solely from the knowledge that the good or service will continue to be present for the benefit and/or enjoyment of future generations.</p>
<p>Biophysical</p>
<p>Definition: Pertaining to the biological, chemical and physical attributes of an ecosystem or environment.</p>
<p>Causal chain diagram</p>
<p>Definition: A logical model that specifies how a management action or policy is expected to propagate through the ecosystem to effect changes in the provision of ecosystem services and benefits to various segments of society (also known as a path model or means-end diagram) (Olander et al., 2015). Each causal chain is made up of series of connected input-output relationships, which form the links in the chain. Context: Causal chain diagrams are used to help understand and communicate the various ways in which management actions or policies can affect the ecosystem services provided by nature to humans.</p>
<p>Class</p>
<p>Definition: A main subdivision of a classification component, located within the top level of the component's hierarchical structure.</p>
<p>Classification Component</p>
<p>Definition: The NESCS Plus uses five dimensions to classify final ecosystem services -- Environment, Ecological End-product, Direct Use, Direct user, and Beneficiary-- each of which is referred to as a classification component.</p>
<p>Classification system</p>
<p>Definition 1: Provides an organized (and often hierarchical) structure, through well-defined categories that allow one to group similar</p>

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<p>elements together and to separate others. Pre-determined criteria define what should be considered similar or different, and these criteria are driven by the specific purpose for developing the classification system. Definition 2: A method to group individual elements or features into collections similar in type, function, affiliation, behavior, response, or ontogeny. Definition 3: An organized structure for identifying and organizing ecosystem services into a coherent scheme.</p>
<p>Cultural Services</p> <p>Definition: The nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, and aesthetic experience, including, for example, knowledge systems, social relations, and aesthetic values.</p>
<p>Demand</p> <p>Definition: As an economic concept, demand is the amount of a particular good or service that potential buyers would be willing and able to purchase at any given price. The level of demand for a good or service is also determined by many other factors, such as the availability and price of substitute and complementary goods and services and the income of the potential buyers. Demand is not the same as economic value, but it is a key determinant of the economic value of a good or service. Although most ecosystem services are not bought and sold in markets -- so, there is no market price -- the economic demand for an ecosystem service can nonetheless be thought of as the amount that people would be willing and able to buy of the service if they could only acquire it through a market transaction. Context: As an economic concept, demand can be influenced by, but is not the same thing as, a need, requirement, or desire. Like economic values, the demand for economic or ecosystem goods or services is a reflection of individuals' preferences for them.</p>
<p>Direct Use</p> <p>Definition: Direct use of an ecological end-product (EEP) means that the user or beneficiary directly extracts the EEP or interacts with or physically senses the EEP in its environment. This is the value people hold for a service that they use in any tangible way. These</p>

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<p>or physically senses the EEP in its environment. This is the value people hold for a service that they use in any tangible way. These include consumptive uses (e.g., harvesting goods) and nonconsumptive uses (e.g., enjoyment of scenic beauty). Nonuse values are theoretically distinct from use values, although the boundary between use and nonuse values is often fuzzy.</p>
<p>Direct Use Classification</p> <p>Definition: Classification of the different ways in which EEPs are directly used or appreciated by humans. Direct uses may be either extractive or in-situ. Note that direct users may derive an increase in well-being from using ecological end-products as well as from non-use (i.e., direct users such as households may appreciate end-products even if they do not see or use them). Context: This NESCS Plus classification component addresses the question about how EEPs are used or appreciated. Example: Direct uses include extraction of natural resources for transformation into economic products, or non-extractive use associated with outdoor recreation.</p>
<p>Direct User</p> <p>Definition: A direct user of an EEP is a person or establishment that directly extracts the EEP or interacts with or physically senses the EEP in its environment, or it is a person who holds a non-use value for the EEP</p>
<p>Direct User Classification</p> <p>Definition: Classification of the separate economic sectors through which people directly use or appreciate ecological end-products. Context: This NESCS Plus classification component addresses the question about who uses, enjoys, or appreciates the EEPs. Following established classification structures adopted by the U.S. Census Bureau and United Nations, the first level includes broad sectors of the economy—Industry, Households, and Government. To further subdivide the industry class, the existing North American Industrial Classification System (NAICS) and coding system was adopted, which is the standard used by U.S. federal statistical agencies in classifying business establishments. Example: An example is the Manufacturing Industry sector which would have a 3-</p>

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<p>agencies in classifying business establishments. Example: An example is the Manufacturing Industry sector which would have a 3-digit code, one digit for industry and two digits for the sector. Unlike commercial establishments, which tend to specialize in certain productive activities and can therefore be assigned to individual NAICS categories, households and governments do not specialize in the same way as industries and are therefore not divided into sub-classes by NAICS categories. They currently are presented as 1st-level hierarchical classes with further designation to subclasses remaining open to be filled out. One way to differentiate the many ways households and governments interact with nature is through the combination of the household or government user class with different uses.</p>
<p>Ecological End-Product</p> <p>Definition: The relevant biophysical components of nature that are directly used or appreciated by humans to produce a flow of Final Ecosystem Services. Natural scientists generally use "ecosystem services" as a term to cover both goods and services. Final ecosystem goods are the biophysical components of nature that are the source of these FES. The NESCS Plus is useful for classifying both goods and FES. For brevity, the term FES is used to encompass both final ecosystem goods and FES concepts.</p> <p>Context: Final ecosystem service flows occur at the "point of handoff" from natural systems to human systems. They are an essential concept for the economic valuation of ecosystem services because the value of a final ecosystem service embodies and includes the values of all intermediate ecosystem services that contribute to its existence. Example: The fauna present in forests, such as deer, are an example of an ecological end-product that provides final ecosystem service flows to commercial and recreational hunters who harvest them, as well as to recreational wildlife viewers who enjoy them in a non-consumptive way. The forest ecosystem's production of the forage that supports the deer populations is an example of an intermediate ecosystem service that contributes (as an input) to the final ecosystem service.</p>
<p>Ecological End-Product Classification</p> <p>Definition: Classification of the biophysical components of nature that are either directly used by humans to produce goods and</p>

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<p>services or directly enjoyed or used to yield human well-being. They can also be described as final ecosystem goods. Components of any EEP can have a positive or negative impact on people, but a component of an EEP can only have a positive impact when that EEP is used to produce a flow of ecosystem service. Context: This NESCS Plus classification component addresses the question about what in nature is directly used or appreciated by humans. All flows of final ecosystems services originate from an EEP. One might use biophysical metrics or indicators to quantify an EEP. Example: Different types of flora and fauna, such as maple trees and chinook salmon, are examples of EEPs that are directly used and appreciated by individuals.</p>
<p>Ecological production functions</p> <p>Definition: Usable expressions (i.e., models) of the processes by which ecosystems produce intermediate or final ecosystem services, often including external influences on those processes. Context: The definition and specification of ecological production functions are used as part of modeling approaches to quantify how changes in one part of a natural system result in changes in another. Example: The relationship between a plant's uptake of soil nutrients (as an input) and its rate of biomass growth (as an output) can be represented by an ecological production function.</p>
<p>Economic production functions</p> <p>Definition: A representation (often mathematical) of the input-output relationship involved in the production of an economic good or service by commercial/industrial establishments (i.e., firms) or non-commercial entities (e.g., households or individuals). Inputs typically include labor, physical capital (e.g., machinery), land, other natural resources (e.g., water) and raw materials, and other material supplies. Outputs are the goods or services produced by the process. The function also represents the technology, skill level, and methods that are embedded within the production process.</p>
<p>Economic valuation</p>

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<p>Definition: Quantification of the benefits and increase in well-being experienced by individuals and society as a result of a change, typically measured and expressed in monetary terms. In the context of ecosystem services, it is the quantification of benefits derived from an increase in ecosystem services. From an economic analysis perspective, it is often the practice of measuring individuals', households', or firms' maximum willingness and ability to pay for the change.</p>
<p>Ecosystem Attributes</p> <p>Definition: A biological, physical, or chemical characteristic or feature inherent to an ecosystem/environment. Context: In economic valuation studies, ecosystem attributes refer to the set of ecological features that individually and as a group contribute to the enjoyment of a valued experience, such as a recreational or aesthetic experience (for example, a day of fishing). Example: Surface water clarity (e.g., as measured by Secchi disk depth) is an attribute of water in its natural environment, which can affect recreational users' enjoyment of the environment. In particular, it is an example of a water quality attribute.</p>
<p>Environment Classification</p> <p>Definition: Classification of spatial units, with similar biophysical characteristics, that are located on or near the Earth's surface and that contain the "ecological end-products (EEPs)". They spatially divide the Earth into qualitative non-overlapping areas with similar biophysical characteristics that, when taken together, can completely cover the surface of the Earth. The environment is where the EEP is located when it is used, enjoyed, or appreciated. Note, an "environment class" is not synonymous with an "ecosystem". Context: This NESCS Plus classification component addresses the question of where EEPs are located when they are used, enjoyed, or appreciated. Example: In its most rolled up form, the Earth can be separated into two mutually exclusive environment classes corresponding to terrestrial and aquatic areas.</p>
<p>Existence Value</p>

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<p>Definition: The enjoyment people may experience simply by knowing that a resource exists even if they never expect to use that resource directly themselves. Context: This is a component of "nonuse value" from early literature in environmental economics.</p>
<p>Final ecosystem good</p>
<p>Definition: Components of nature, directly enjoyed, consumed, or used to yield human well-being. The final ecosystem good is a biophysical quality or feature and needs minimal translation for relevance to human well-being. Furthermore, a final ecosystem good is the last step in an ecological production function before the user interacts with the ecosystem, either by enjoying, consuming, or using the good or service, or using it as an input in the human economy.</p>
<p>Final ecosystem service</p>
<p>Definition: Context: Final ecosystem service flows occur at the "point of handoff" from natural systems to human systems. They are an essential concept for the economic valuation of ecosystem services because the value of a final ecosystem service embodies and includes the values of all intermediate ecosystem services that contribute to its existence. Example: The fauna present in forests, such as deer, are an example of an ecological end-product that provides final ecosystem service flows to commercial and recreational hunters who harvest them, as well as to recreational wildlife viewers who enjoy them in a non-consumptive way. The forest ecosystem's production of the forage that supports the deer populations is an example of an intermediate ecosystem service that contributes (as an input) to the final ecosystem service.</p>
<p>Flow</p>
<p>Definition: A flow variable is measured over an interval of time. Therefore, flow measures are typically expressed as a rate per unit of time—e.g., annual income (dollars/year) and daily nutrient load to surface water (pounds per day). Context: The distinction between "stocks" and "flows" is an essential concept for measuring natural capital (which is a stock concept) and the contributions of natural capital to human well-being (which is a flow concept).</p>



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capital to human well-being (which is a flow concept).
<p>Goods</p> <p>Definition: Tangible items that are created through a production process and that may be acquired, used, or consumed by people for use as inputs in another production process or to satisfy other needs or wants. Goods can be represented and measured as "flows," such as the amount sold and transferred to new owners over the course of the year, or as "stocks," such as the amount stored in an inventory at the end of the year. Context: Two important features that distinguish goods from services are (1) their tangible nature and (2) their ability to be treated as stocks in certain contexts.</p>
<p>Hedonic Analysis</p> <p>Definition: An economic valuation method that uses statistical methods to decompose the price of an asset by (1) identifying a set of distinct and measurable attributes of the asset, each of which contributes to its value, and (2) estimating the portion of the total asset value that is attributable to each attribute (i.e., the implicit price of each attribute). Hedonic analysis of housing prices is often used to isolate and infer the economic value of ecosystem services provided by specific local environmental amenities to residents (e.g., from open space or good air quality). These amenities are treated as distinct attributes of the homes and separately priced using this method.</p>
<p>Household production functions</p> <p>Definition: A representation of the various processes through which members of a household produce goods and services for their own consumption, using their own unpaid labor, capital, and other acquired goods or services. It is a type of economic production function, specifically involving households rather than commercial/industrial establishments.</p>
Human well-being

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<p>Definition: A multidimensional description of the state of people's lives, which encompasses personal relationships, strong and inclusive communities, meeting basic human needs, good health, financial and personal security, access to education, adequate free time, connectedness to the natural environment, rewarding employment, and the ability to achieve personal goals.</p>
<p>Indicator</p> <p>Definition 1: An interpretable value or category describing trends in some measurable aspect, often used singularly or in combination to generate an index. Definition 2: A sign or signal that relays a complex message, potentially from numerous sources, in a simplified and useful manner. Definition 3: An interpretable summary value that reflects the state of, or change in, a system or point of interest that is being evaluated. Indicators are derived from measures or metrics that correspond to components of well-being. Example indicators are perceived safety, lifestyle and behavior, and wealth. Definition 4: A summary measure that provides information on the state of, or change in, the system that is being measured. Information based on measured data used to represent a particular attribute, characteristic, or property of a system.</p>
<p>Intermediate ecosystem service</p> <p>Definition: Attributes of ecological structure or process that influence the quantity and/or quality of ecosystem services but do not themselves quantify as final ecosystem goods and services (because they are not directly enjoyed, consumed, or used). Context: A good or service can be an intermediate good and service in one situation and a final good or service in another situation. Example: Open space and soil are final ecosystem goods and services to a farmer growing cotton but are intermediate ecosystem goods and service to a consumer buying a shirt made from cotton at the store.</p>
<p>Macro accounting</p>

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<p>Definition: A compilation of methods for tracking and measuring the level of economic activity, including total flows of goods and services, in a region or country, as well as the level of wealth and assets present. It included national income accounting, which focuses on the level of production and income generation within a country.</p>
<p>Metrics and indicators</p> <p>Definition: Direct or indirect measurements of an ecological end-product or attributes. If a metric can be consistently and reliably related to a end-product and a beneficiary, it can potentially serve as an indicator of FES or final ecosystem goods.</p>
<p>Natural Capital</p> <p>Definition: An extension of the economic concept of physical capital -- produced assets such as buildings, machinery, and equipment that are used in the production of economic goods and services -- to ecosystem goods and services. Natural capital is the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future.</p>
<p>Non-use values</p> <p>Definition: Human preferences for goods or services that are not associated with or derived from direct use or contact with them. For instance, individuals may care about or appreciate EEPs, even if they never directly use or see them – i.e., they may have non-use values for the existence of things like tropical forests or pristine lakes, even if they never visit them. Sometimes referred to as "passive use value," nonuse values are theoretically distinct from "use values," although the boundary between use and nonuse values is not always definitive. Different types of nonuse value include existence value, option value, and bequest value. Context: The recognition that humans enjoy and benefit from ecosystems in ways that do not involve direct use is essential for developing a comprehensive accounting of the total benefits provided by nature. Example: Individuals often value the assurance that threatened and endangered species are being protected, even if they will never see them in the wild, simply because they benefit from knowing that the species exist.</p>

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that the species exist.
<p data-bbox="107 326 289 358">Option value</p> <p data-bbox="107 431 1961 553">Definition: The value for sustaining the existence of a good or service into the future so that one has the option to use it if needed or desired at a later date. Although option value is sometimes characterized as a non-use value, because it does not involve current use, it is more accurately described as a value associated with "uncertain future use."</p>
<p data-bbox="107 586 233 618">Services</p> <p data-bbox="107 691 1982 1008">Definition: Services are distinct from goods. They are typically intangible and non-storable. In contrast to goods, which can be treated as "stocks" and measured at a specific point in time, services are "flows" from the service provider to the service consumer and are measured over a period of time (e.g., hourly access to and use of a gym facility). Unlike a good which can exist (e.g., as part of an inventory) without being transferred to a consumer, the existence of a service requires that it be received by a human. The wants and needs of people are met through items (i.e., goods) and delivery of assistance (i.e., services). Those services are actions or processes performed by people or nature that benefit people. Economic, environmental, and social services reflect the three pillars of sustainability.</p>
<p data-bbox="107 1040 191 1073">Stock</p> <p data-bbox="107 1146 1961 1365">Definition: A stock variable represents a quantity existing at a point in time, which may have accumulated or been produced in the past. Units of measurement are typically expressed in levels – e.g., wealth (dollars), physical assets (number of machines), and nutrient concentration (milligrams per liter) -- that are present at a specific point in time. Economic goods can be represented as a stock when they are accumulated, stored, or stockpiled-- e.g., the stock of produce in a grocery store's inventory at the beginning of the year. Natural capital is also a stock concept, representing the level wealth embodied within natural systems at a point in time.</p> <p data-bbox="107 1382 1982 1414"><u>Context: The distinction between "stocks" and "flows" is an essential concept for measuring natural capital (which is a stock concept)</u></p>

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Context: The distinction between "stocks" and "flows" is an essential concept for measuring natural capital (which is a stock concept) and the contributions of natural capital to human well-being (which is a flow concept).
Subclass I
Definition: A subdivision of a class, located within the second level of the hierarchical structure of a classification component.
Subclass II
Definition: A subdivision of a subclass I, located within the third level of the hierarchical structure of a classification component.
Use values
Definition: The value received by individuals from goods or services, which is derived from direct contact with, use of, or enjoyment from the goods or services (as opposed to nonuse values which do not involve or require direct contact, use, or enjoyment). Use values for ecosystem services can be derived from consumptive uses of the ecosystem, such as catch-and-keep fishing, as well as from non-consumptive uses such as bird-watching. Context: For completeness in defining preferences for ecosystem services, use value must be distinguished from non-use value, the latter of which recognizes that humans can enjoy and benefit from ecosystems in ways that do not involve direct use.