



Food and Agriculture Organization  
of the United Nations

# GLOSSARY

## FULL- COST ACCOUNTING



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## About this document

This Full-Cost Accounting Glossary is compiled by Martina La Valle, Volunteer working under the supervision of Nadia el-Hage Scialabba, Climate and Environment Division, FAO. It builds on the Environmental Accounting Glossary prepared in 2013 by Wassim Youssef, Volunteer of the said Division.

The earlier version of the Glossary derives many terms from the FAO Term Portal collections (see <http://www.fao.org/faoterm/en/>). This Glossary further expands to cover full-cost accounting, including both environmental and social terms. Recent literature, such as that of the Natural Capital Protocol and Social Capital Protocol were consulted, with a view to align concepts to current concerns and applications. The Glossary has now a broader and more complete coverage on a topic that, however, remains in development by scholars and the international community.

For more information: [www.fao.org/nr/sustainability/natural-capital](http://www.fao.org/nr/sustainability/natural-capital)

## Preface

Although knowledge in the field of full-cost accounting is evolving rapidly, a new terminology is emerging in modern economics. The concept and definitions of this Glossary are derived from the following publications:

**Food Waste Footprint: Full-Cost Accounting, Final Report (FAO, 2014):** describes a full-cost accounting methodology, including assumptions, caveats and challenges of monetizing externalities of food wastage. By unveiling the hidden environmental and social costs of food wastage, it points to major market distortions in the global food system.

**Natural Capital Impacts in Agriculture: Supporting Better Business Decision-Making (FAO, 2014):** a materiality study of major crop and livestock commodities that evaluates the environmental impacts of industrial agriculture to USD3 trillion a year (or 150% of production value), including case studies demonstrating the benefits to the environment and business of alternative management approaches.

**Draft Natural Capital Protocol and Draft Food and Beverages Sector Guide (Natural Capital Coalition, 2015):** building on existing efforts, it presents a standardized framework for coherent business valuation of operations' impact and dependencies on natural capital. It guides on different qualitative, quantitative and monetization approaches for businesses to choose from, depending on their different contexts and applications. The Sector guide interprets NCP's steps of contextualizing, measuring and embedding natural capital impacts and dependencies to the food and beverage sector, highlighting the sector's specificities.

**TEEB for Agriculture and Food, Interim Report (UNEP, 2015):** a global initiative focused on "making nature's values visible" by developing structured approach to the economic valuation of the wide range of benefits provided by ecosystems and biodiversity. The aim is to capture those values in decision-making.

**Social Capital in Decision-Making: How Social Information Drives Value-Creation (WBCSD, 2015):** stressing that future-proofing of economics requires to manage returns on financial, natural and social capital in a balanced way, it outlines the need for action to measuring social impacts and dependencies for a better business. It introduces the use of the term "social capital" and identifies the Social Capital Protocol components and the significant potential advantages to companies.

All these documents point to a new business model in our world of increasing scarcities: measure to reduce externalities and thus, invest in the sustainability of operations.

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## Acronyms

<b>AKST</b>	Agriculture Knowledge Science and Technology
<b>BOP</b>	Based Of the Pyramid
<b>CBA</b>	Cost Benefit Analysis
<b>CVM</b>	Contingent Valuation Method
<b>DCF</b>	Discounted Cash Flow
<b>DCM</b>	Damage Cost Method
<b>EAT</b>	European Agriculture Transition
<b>EIAs</b>	Environmental Impact Assessments
<b>ESIAs</b>	Environmental and Social Impact Assessments
<b>E P&amp;L</b>	Environmental Profit and Loss
<b>EAU</b>	Ecosystem Accounting Unit
<b>EEIO</b>	Environmentally Extended Input- Output Models
<b>GAAP</b>	Generally Accepted Accounting Principles
<b>GBD</b>	Global Burden of Disease
<b>GDP</b>	Gross Domestic Product
<b>GEMI</b>	Global Environmental Management Initiative
<b>GHG</b>	Greenhouse Gas
<b>GNI</b>	Gross National Income
<b>HRIAs</b>	Human Rights Impact Assessments
<b>IFRS</b>	International Financial Reporting Standards
<b>IGD</b>	Global Development's Impact
<b>IO</b>	Input-Output
<b>IRR</b>	Internal Rate of Return
<b>IRIS</b>	Impact Reporting and Investment Standards
<b>ISO</b>	International Organization for Standardization
<b>LCIA</b>	Life Cycle Impact Assessment
<b>LCA</b>	Life Cycle Assessment
<b>LUC</b>	Land Use Change
<b>KPI</b>	Key Performance Indicator
<b>MEA</b>	Millennium Ecosystem Assessment
<b>MCA</b>	Multi-Criteria Analysis
<b>MDG</b>	Millennium Development Goal
<b>MSA</b>	Mean Species Abundance
<b>NCC</b>	Natural Capital Coalition
<b>PPI</b>	Progress Poverty Index
<b>PPP</b>	Purchasing Power Parity
<b>SWB</b>	Subjective Well-Being
<b>TEEB</b>	The Economics of Ecosystem and Biodiversity
<b>WTA</b>	Willingness-To-Accept
<b>WTP</b>	Willingness-To-Pay
<b>WBCSD</b>	World Business Council for Sustainable Development

## A

**Abiotic:** All non-living organisms.

Remarks: It comprises non-living things such as land, water, air and minerals.

Related term: Biotic.

Reference: FAO. 2009. Glossary on Organic Agriculture.

**Accounting metrics:** Quantitative assessment used for measurement, comparison and to track performance or production, in parallel with recording and reporting transactions.

Related terms: Audit trail, financial accounting.

Reference: Marty Schmidt. 2014. Metrics Categories, Definitions, Meaning and Usage, Business Encyclopedia.

**Agricultural biomass:** Non-fossil biological material, either from plant or animal origin, both living and dead, found above or below ground vegetation, including agricultural products and waste by-products, manure, soil fauna or microbial biomass used as food, feed and fuel or for soil amendment.

Related term: Biomass.

Reference: FAO. 2009. Glossary on Organic Agriculture.

**Agriculture value-added:** Corresponds to the International Standard Industrial Classification (ISIC) divisions that include forestry, hunting, fishing, cultivation of crops and livestock production. Value-added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources.

Related term: Gross value-added.

Reference: World Bank and OECD. 2009. World Development Indicators.

**Agrienvironmental measures:** Provides payments to farmers who subscribe, on a voluntary basis, to environmental commitments related to the preservation of the environment and maintaining the countryside.

Related term: Conservation.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Agroecological knowledge:** Refers to what people know about their natural environment, based primarily on their own experience and observation. It also refers to farmers' knowledge of ecological interactions within the farming system.

Related term: Agroecology.

Reference: FAO. 2009. Natural Resources Management and Environment Department.

**Agroecological restoration:** Restoration of the relationship between farming and nature by following an ecosystem approach, welcoming greater biodiversity and use of free ecological services

Related terms: Conservation. Reference:

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Agroecosystem:** A semi-natural or modified natural system managed by humans for food and agricultural production purposes.

Related terms: Ecosystem, habitat.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Agroecology:** Study of the relation of agricultural crops and environment.

Related terms: Ecology, agroecological knowledge.

Reference: Studies in Methods. 1997. Glossary of Environment Statistics , United Nations, New York.

**Agroforestry:** A collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land management unit as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. In agroforestry systems there are both ecological and economic interactions between the different components.

Remarks: Agroforestry offers opportunities to increase yields of staple food crops and create productive mixed cropping systems.

Reference: Terminology for integrated resource planning and management, 1999 - X2079E; Natural Resources Management and Environment Department, NR, FAO, 2009; KCCM, FAO, 2009.

**Asset:** Any item of economic value owned by an individual or organization, especially that which could be converted to cash.

Remark: Examples are cash, securities, inventory, equipment, real estate and other property.

Related: Capital asset, ecosystem assets, natural asset, financial asset.

Reference: Investorword. 2010. Definition of asset.

**Audit trail:** The ability of surveying and documenting in an organized and transparent manner various positive and negative effects on the environment (e.g. air pollution, increase in vegetation)

Related terms: Accounting metrics, balance items.

Reference: Oxford University Press. 1999. Peter Moles and Nicolas Terry, New York.

**Avoidance costs:** The actual costs of preventing environmental deterioration by alternative production and consumption processes or by reduction of or abstention from economic activities.

Related terms: Damage cost, preventive expenditure.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome

## B

**Balancing item:** An accounting construct obtained by subtracting the total value of the entries on one side of an account (resources or changes in liabilities) from the total value of the entries on the other side (uses or changes in assets)

Related terms: Financial accounting, audit trail.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome .



**Baseline:** The starting point or benchmark against which changes in natural capital can be compared.

Remarks: It may be the situation at a point in time, or a trend through time. It depends on the nature of the assessment.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Basic price:** The amount paid by the consumer to the producer excluding payable taxes and including any subsidy received. It excludes any transport charges invoiced separately by the producer and any wholesale and retail margins that may be applicable.

Related terms: Farm gate price, market price.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome.

**Beneficiaries :** The individuals, groups, or organizations, whether targeted or not, that benefit, directly or indirectly, from the development intervention.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Beneficiary approach:** A systematic inquiry into people's values and behavior in relation to a planned or ongoing intervention for social and economic change. This approach reveals the meaning people give to particular aspects of their lives so that development activities may better enhance people's ability to improve their own living conditions, as they see fit.

Related term: Participatory approach.

Reference: Lawrence F. Salmen. 1995. Beneficiary Assessment An Approach Described. Social Development Family of the World Bank.

**Benefit transfer method:** Used to estimate economic values for ecosystem services by transferring available information from studies already completed in another location and/or context. The main goal of this method is to estimate benefits for one context by adapting an estimate of benefits from some other context. It's often used when it is too expensive and/or there is too little time available to conduct an original valuation study, yet some measure of benefits is needed.

Reference: Dennis M.King and Marisa J. Mazzotta. 2000. Ecosystem Evaluation. US Department of Agriculture Natural Resources Conservation Service and National Oceanographic and Atmospheric Administration. University of Maryland, USA.

**Bequest value:** The value that people place on knowing that future generation will have the option to enjoy something. Thus, it is measured by peoples ‘willingness to pay’ to preserve the natural environment for future generations.

Related terms: Option value.

Reference: Dennis M.King and Marisa J. Mazzotta. 2000. Ecosystem Evaluation. US Department of Agriculture Natural Resources Conservation Service and National Oceanographic and Atmospheric Administration. University of Maryland, USA.

**Biodiversity:** The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Related terms: Diversity, functional biodiversity.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Biogeochemical cycle:** The manner in which the atoms of an element critical to life (such as carbon, nitrogen, or phosphorus) move from the bodies of living organisms to the physical environment and back again.

Related terms: Nutrient cycle, energy flow, carbon cycle.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Biomass:** The total weight of all the biological material or the combined mass of all the animals and plants inhabiting a defined area; usually expressed as dry weight per area.

Related term: Agricultural biomass.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Biotic:** Relating to life or living matter.

Related term: Abiotic.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Buffer zone:** A clearly defined and identifiable boundary area bordering an organic production site that is established to limit the application of, or contact with, prohibited substances from an adjacent area.

Related term: Ecosystem boundary.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Business value:** The value to the business for which an assessment is carried out, also referred to as interval, private, financial or shareholder value.

Related terms: Value perspectives.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Business value-drivers:** mechanism through which social capital drives business performance improvement and value-creation.

Remarks: The main business value- drivers for social capital measurement and management are: (i) obtain or maintain licence to operate; (ii) improve the business enabling environment; (iii) optimize human resource management; (iv) strengthen value chains; (v) fuel product and service growth and innovation.

Reference: WBCSD, KPMG. 2015. Social Capital in Decision-Making.

## C

**Capital:** A stock that possesses the capacity of giving rise to flows of goods or services. Capital stock is disaggregated into different types of capital: financial, manufactured, intellectual, human, social/organizational and natural capital. Each of these stocks produces a flow of 'services', which serve as inputs into the productive process.

Related terms: Capital assets, net worth.

Reference: Glossary of Aquaculture. 2008. FAO Fisheries and Aquaculture Department.

**Capital assets:** All types of property that are held by an individual or organization for investment and useful business purposes. Capital assets are those assets used by the business to make a profit.

Related terms: Economic unit, financial asset, net worth.

Reference: Jean Murray. 2104. About Money. New York.

**Capital budgeting:** The process of planning and programming capital expenditure with a view to ensuring the availability of funding for this purpose.

Related term: Capital expenditure.

Reference: Sullivan Arthur; Steven M. Sheffrin (2005). Economics: Principles in Action. Upper Saddle River, New Jersey 07458: Pearson Prentice Hall. p. 375.

**Capital expenditure:** Funds used by an organization to acquire or upgrade physical assets such as property, industrial buildings or equipment. This type of outlay is made by organization to maintain or increase the scope of their operations.

Related term: Capital budgeting.

Reference: Investopedia. 2012. Definition of Capital Expenditure CAPEX. Division of IAC.

**Capital formation:** Refers to net additions of capital stock such as equipment, buildings and other intermediate goods. A nation uses capital stock in combination with labour to provide services and produce goods; An increase in this capital stock is known as capital formation.

Related term: Manufactured capital.

Reference: Investopedia. 2012. Definition of capital formation. Division of IAC.

**Capital gains:** An increase in the value of a capital asset that gives it a higher worth than the purchase price. The gain is not realized until the asset is sold. A capital loss is incurred when there is a decrease in the capital asset value compared to an asset's purchase price.

Reference: Investopedia. 2012. Definition of capital gains. Division of IAC.

**Capital value:** The present value of the stream of future benefits that an ecosystem will generate under a particular management regime. Present values are typically obtained by discounting future benefits and costs; the appropriate rates of discount are often a contested issue, particularly in the context of natural resources.

Related term: Net present value.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Carbon cycle:** The flow of carbon (in various forms such as carbon dioxide) through the atmosphere, ocean, terrestrial biosphere, and lithosphere.

Related term: Biogeochemical cycle.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Carbon sequestration:** The process of increasing the carbon content of a reservoir other than the atmosphere.

Remarks: Storage of CO<sub>2</sub> is mostly discussed in terms of geological storage, though oceanic storage has also been noted as a possibility. Geological storage can take place in oil and gas reserves, deep saline aquifers and un-minable coal beds. The injection of CO<sub>2</sub> at pressure into these formations, generally at depths greater than 800m, means that the CO<sub>2</sub> remains a liquid and displaces liquids, such as oil or water, that are present in the pores of the rock. There are two separate parts to CCS - the “capturing” process whereby carbon emissions are prevented from being released into the air, and the “sequestration” or “storage” of the captured carbon. “Capturing” carbon means separating out the carbon dioxide from all of the other gases and particulates often found in fossil fuel exhaust. Once you’ve gotten a relatively pure carbon stream you’ve got to find somewhere to store it, “permanently.”

Reference: The Economics of Ecosystem & Biodiversity, 2015. TEEB for Agriculture & Food Interim Report.

**Choice modelling methods:** Focus on a good’s attributes and their values. Choice modelling questionnaires present respondents with a series of alternative descriptions of a good. The alternative descriptions are constructed by varying the levels of the good’s attributes. Depending on the specific choice modelling method adopted, respondents are either then asked to rank (contingent ranking), chose (choice experiments), rate (contingent rating), or choose then rate (paired comparisons) the descriptions presented. Usually, it includes the status quo or do nothing’ option alongside one or more alternative descriptions of the good. The do nothing option is to pay nothing annually and to bear the expected annual negative side effects.

Source: Daniel Fujiwara and Ross Campbell. 2011. Valuation Techniques for Social Cost-Benefit Analysis. Department of Work and Pension UK.

**Common pool resource:** A valued natural or human-made resource or facility in which one person’s use subtracts from another’s use and where it is often necessary but difficult to exclude potential users from the resource.

Related term: Common property resource.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Common property resource:** A good or service shared by a well-defined community.

Related term: Common pool resource.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Compensating variation:** The adjustment in income that returns the consumer to the original utility after an economic change has occurred. In the case of a positive economic change (such as a fall in price of a good), CV is often referred to as the maximum a consumer is willing to pay in order to have the economic change happen. When there is a negative economic change, CV is the minimum the consumer needs in order to accept the economic change.

Related term: equivalent variation.

Reference: Kevin Wainwright. 2005. Measuring Welfare Effects of an Economic Change, ECON 260 Environmental Economics. Sweden.

**Compensation for environmental services:** Payments or other forms of restitution made to economic service beneficiaries or ecosystem stewards to offset foregone entitlements to environmental services or ecosystem stewardship benefits.

Related terms: Rewards of environmental services, payments for ecosystem services

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Compliance cost:** All the costs associated with meeting the obligations of legislation in force, with the exception of direct financial costs and their long-term structural effects.

Reference: Laurier. 2007. Glossary of environmental terms. Waterloo, Canada.

**Conservation:** Includes protection, maintenance, rehabilitation, restoration and enhancement of populations and ecosystems. This implies sound biosphere management within given social and economic constraints, producing goods and services without depleting the natural ecosystem diversity.

Related terms: Agroecological restoration, ecosystem enhancement.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Consumer surplus:** The gain obtained by consumers because they are able to purchase a product at a market price that is less than the highest price they would be willing to pay.

Related term: Producer surplus.

Reference: Definition of consumer surplus, Investopedia.com

**Contingent valuation:** Seeks to elicit information on environmental preferences directly from individuals using surveys, questionnaires or experimental techniques which collect information either on the "willingness to pay" (WTP) for an increase in the provision or quality of an environmental good or service, or the minimum "willingness-to-accept" (WTA) compensation to forego such beneficial change. The approach depends on the respondents having a good understanding of why environmental preferences are solicited and interpreting the contingent valuation method question and scenario in the same way as the writer of the question.

Remarks: The strengths of this technique are that it can be applied in most contexts and it is the only technique that can measure existence values. An underlying weakness is that it does not use the observation of the actual market behavior and does not test consumers' effective demand by requiring them to back up their opinions with cash.

Related terms: Willingness to pay, willingness to accept.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome p231.

**Corporate:** Assessment of a corporation or group, including all subsidiaries, business units, division, different geographies or markets.

Related terms: Organizational focus.

References: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Corporate social responsibility:** A set of management practices in businesses that aim at minimizing the negative impacts of their operations on society and at maximizing the positive impacts. It covers social and environmental issues.

Remarks: An important aspect is how enterprises interact with their internal and external stakeholders: employees, customers, neighbors, non-governmental organizations, public authorities.

Related terms: Environmental social responsibility.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Cost:** Denotes the amount of money that an organization spent on the creation or production of goods or services. It does not include the mark-up for profit. From a seller's point of view; cost is the amount of money that is spent to produce a good or a product. From a buyer's point of view the cost of a product can be called the price.

Related term: Value, price.

Reference: E-conomic. 2014. Definition of cost.

**Cost benefits analysis:** A systematic approach that estimates the strengths and weaknesses of alternatives that satisfy transactions, activities or functional requirements for a business. It is a technique that is used to determine options that provide the best approach for the adoption and practice in terms of benefits in labor, time and cost savings.

Related term: Social cost benefit analysis.

Reference: Brown, Richard. 2003. Benefit-Cost Analysis: Financial and Economic Appraisal Using Spreadsheets. Cambridge University Press.

**Counterfactual:** A form of scenario that describes a plausible alternative situation, and the environmental conditions that would the result if the activity or the operation did not proceed.

Related terms: Scenario.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Cultural services:** Relate to the intellectual and symbolic benefits that people obtain from ecosystems through recreation, knowledge development, relaxation, and spiritual reflection.

Related term: Ecosystem services.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System Of Environmental-Economic Accounting, White cover publication.

## D

**Damage costs:** The cost incurred by repercussions of direct environmental impacts such as the emission of pollutants, degradation of land or human made structures and health effects.

Related terms: Damage cost method, marginal damage cost, avoidance cost.

Reference: Glossary of Environment Statistics. 1997. Studies in Methods, Series F, No. 67, United Nations, New York.



**Damage Cost Method:** Estimates the value of a service based on the cost of damage that may result from its loss.

Related term: Damage cost.

Reference: Dennis M.King and Marisa J. Mazzotta. 2000. Ecosystem Evaluation. US Department of Agriculture Natural Resources Conservation Service and National Oceanographic and Atmospheric Administration. University of Maryland, USA.

**Decommissioning costs:** Relate to expenditures incurred at the end of the operating life of an asset to restore the environment to its original state. They comprise terminal cost and remedial costs.

Related term: Terminal cost.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome.

**Defensive expenditure approach:** Assumes that a rational individual will take defensive measures as long as the damage avoided exceeds the costs of the defensive action. It depicts the least amount of money a person would be willing to pay to avoid the bad outcome.

Related terms: Precautionary principle, risk mitigation, preventive expenditure.

Source: FAO. 2014. Food Wastage Footprint. Full-Cost Accounting Final Report.

**Dependency pathways:** Describes how particular business activities depend upon specific features of natural capital or associated natural processes. It identifies how observed or predicted changes in natural capital affected economic activity, by altering the costs and/ or benefits of doing business.

Remarks: Generic steps in dependency pathways are: (i) business activities; (ii) dependencies; (iii) changes to natural capital; (iv) costs and/or benefits of the dependency.

Related terms: Impact drivers, impact pathways.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Depletion:** In physical terms, is the decrease in the quantity of the stock of a natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration.

Remarks: It is defined distinctly from ecosystem degradation in that it refers to the decrease in a specific individual environmental asset rather than the decline in the functioning of an ecosystem asset as a whole.

Related term: Ecosystem degradation.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System Of Environmental-Economic Accounting, White cover publication.

**Determinants of well-being:** Inputs into the production of well-being, such as food, clothing, potable water, and access to knowledge and information.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Direct cost:** Costs that can directly be assigned to activities with a high degree of accuracy.

Examples: salaries and wages.

Related terms: Indirect cost, basic price, farm gate price.

Reference: David L. Scott. 2003. Wall Street Words: An A to Z Guide to Investment Terms for Today's, Houghton Mifflin Company.

**Direct operations (gate-to-gate):** covers activities over which the business has direct operational control, including majority owned subsidiaries.

Related terms: Value-chain boundary, upstream, downstream.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Direct use value:** Benefits derived from the goods and services provided by an ecosystem that are used directly by an economic agent. These include consumptive uses (e.g. harvesting goods) and non-consumptive uses (e.g. enjoyment of scenic beauty)

Related terms: Indirect use value.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Discounted cash flow method** (Synonym: DCF method): An approach to evaluate alternative projects based upon a procedure for reducing a stream of returns to a single value at a particular point in time. This is achieved by using rate of interests as weighting device through time. Two most frequently use DCF criteria are net present value and internal rate of return.

Related terms: Net present value, discount rate.

Reference: Oxford University Press, 1999. Peter Moles and Nicolas Terry. New York.

**Discount rate:** The rate at which to discount future income in the net present value method of valuing natural resource assets. It expresses the degree to which an economic agent prefers income today rather than in the future. Time preference and discount rates can also reflect the risks associated with the future returns expected from an investment.

Related terms: Discounted cash flow method, internal rate of return, net present value.

Reference: United Nations Department of Economic and Social Affairs Statistics Division. 2000. United Nations publication.

**Diversity:** Species richness of a community or area, measured in terms of the number of different plant and animal species (often called species richness) it contains. However, the community characteristics are better assessed by the relative abundance of the species present.

Remarks: Diversity in ecosystems is usually equated with stability due to climax community.

Related terms: Biodiversity, functional biodiversity.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Downstream ( gate-to-grave):** covers activities linked to the purchase, use, re-use, recovery, recycling and final disposal of the business products and services.

Related terms: Value-chain boundary, upstream, direct operations.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Driver** (direct or indirect): Any natural or human-induced fact that directly and indirectly causes a change in an ecosystem.

Related terms: Impact driver.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

## E

**Eco-agri-food system complex:** A collective term encompassing the vast and interacting complex of ecosystems, agricultural lands ,pastures ,fisheries, labour, infrastructure, technology, policies, culture, traditions, and institutions ( including markets) that are variously involved in growing, processing, distributing and consuming food.

Related terms: Agroecosystem.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Ecological balance:** A state of dynamic equilibrium within a community of organisms in which genetic, species and ecosystem diversity remain relatively stable, subject to gradual changes through natural succession.

Related terms: Sustainability, ecosystem stability.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Ecological infrastructure:** A concept referring to both the services provided by natural ecosystems, and to nature within man-made ecosystems.

Related terms: Ecosystem.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Ecological security:** A condition of ecological safety that ensures access to a sustainable flow of provisioning, regulating, and cultural services needed by local communities to meet their basic capabilities.

Related term: Ecosystem services.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Ecosystem service:** The direct and indirect contributions of ecosystem to human well-being.

Related terms: Environmental services.

TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Ecology:** The scientific study of the inter-relationships among and between organisms and between organisms and all living and non-living aspects of their environment. The

environment of an organism includes physical properties, which can be described as the sum of local abiotic factors such as insolation (sunlight), climate, and geology, and biotic ecosystem, which includes other organisms that share its habitat.

Remarks: The word "ecology" is often used more loosely in such terms as social ecology and in common parlance as a synonym for the natural environment.

Related terms: Ecosophy, agroecology.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Ecometrics:** The quantitative analysis of economic, environmental, and societal systems. It is a system of statistical extrapolation and interpolation that uses principles of resource management in economic and environmental studies to analyze trends in consumption. With a comprehensive understanding of ecometrics and the impacts of specific activities (environmental, societal or economical); Agents within economic systems can cause measurable change of sustainability.

Related terms: Econometrics.

Reference: Raudenbush, Stephen W, Christopher Johnson, and Robert J Sampson. 2003. A Multivariate, Multilevel Rasch Model with Application to Self-Reported Criminal Behavior. Boston, Harvard Publication.

**Econometrics:** Expresses economic theories in mathematical terms in order to verify them by statistical methods. It is concerned with the empirical measurement of economic relations that are expressible in mathematical form. It seeks to measure the impact of one economic variable on another in order to be able to predict future events or advise the choice for economic policy to produce desired results.

Related term: Ecometrics.

Reference: Henry Kyambalesa and Mathurin Houngnikpo. 1983. The McGraw-Hill dictionary of modern economics 3<sup>rd</sup> edition. The McGraw-hill Book Company

**Economic efficiency:** The extent to which supplies of goods are matched to demands for goods or services in a particular market. The notion of economic efficiency implies the possibility of an ideal market in which no value is lost due to waste, unneeded surpluses, unmet demand or other misallocations of resources.

Reference: Investorword.2013. Definition of economic efficiency. WebFinance, Inc .

**Economic policy instrument:** A policy instrument that creates the economic incentives for individuals to choose freely to modify or reduce their activities. An economic policy instrument functions as incentives or disincentives for producing environmental improvements in the food sector.

Related term: Subsidy.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Economic equilibrium analysis:** The system investigated is organized around production volumes and their prices, but it also computes the quantities and prices of inputs needed for this production and the quantities and costs of external effects it may cause.

Remarks: Volumes and prices are linked via 'elasticities' that describe how demand and supply for product change with its price.

Reference: FAO, 2014. Food Wastage Footprint-Full-Cost Accounting. Final Report.

**Economic units:** Referred to as an institutional unit in national accounting. It is an economic entity that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities and in transactions with other entities,

Related terms: Capital asset, financial assets.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Economic value:** The importance, worth, or usefulness of something to people - including all relevant market and non-market values. The sum of individual preferences for a given level of provision of that good or service.

Remarks: Economic values are usually expressed in terms of marginal/increment changes in the supply of a good or service, using money as the metric.

Related terms: Value, cost, price, market value.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Ecosophy:** A philosophy of ecological harmony or equilibrium.

Remarks: A philosophy as a kind of wisdom is openly normative; it contains norms, rules, postulates, value priority announcements and hypotheses concerning the state of affairs in the universe. It is a struggle for equality in the biosphere; all living organisms, animals, human beings and plants should be given opportunities for self-realization.

Related terms: Ecological balance, ecology.

Reference: Alan Drengson. 1999. Ecophilosophy, Ecosophy and the Deep Ecology Movement.

**Ecosystem accounting units (EAU):** Large, mutually exclusive, spatial areas delineated on the basis of the purpose of accounting.

Remarks: Generally, they will reflect a landscape perspective. Factors considered in their delineation include administrative boundaries, environmental management areas, socio-ecological systems and large scale natural features (e.g. river basins). A hierarchy of EAU may be established building from a landscape scale to larger sub-national and national boundaries. EAU at the landscape level may be considered to reflect ecosystem assets. EAU are the highest level of the spatial model used to define areas for the purposes of ecosystem accounting.

Related terms: Environmental accounting.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations ,World Bank. 2013. System Of Environmental-Economic Accounting, White cover publication.

**Ecosystem approach:** A strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems.

Related term: Systems approach.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Ecosystem assessment:** A social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being and management and policy options are brought to bear on the needs of decision-makers.

Related terms: Environment impact assessment.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Ecosystem assets:** Spatial areas containing a combination of biotic and abiotic components and other characteristics that function together. They contain a specific combination of ecosystem characteristics (e.g., a tropical rain forest) or areas that contain a variety of combinations of ecosystem characteristics (e.g., a river basin containing wetlands, agriculture and settlements). However, these assets are distinguished from the various individual components that are contained within a spatial area; and from other ecosystem characteristics (e.g., biodiversity, resilience).

Related terms: Natural capital, asset.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations ,World Bank.2013. System Of Environmental-Economic Accounting, White cover publication.

**Ecosystem boundary :** The spatial delimitation of an ecosystem, typically based on discontinuities in the distribution of organisms, the biophysical environment (soil types, drainage basins, depth in a water body) and the spatial interactions.

Related term: Buffer zone.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Ecosystem capacity:** Refers to the ability of a given ecosystem asset to generate a set of ecosystem services in a sustainable way into the future. While this general concept is very relevant to ecosystem assessment, definitive measurement of ecosystem capacity requires the selection of a particular basket of ecosystem services and in this regard measures of ecosystem capacity are more likely to relate to consideration of a range of alternative ecosystem use scenarios than to a single basket of ecosystem services.

Related term: Ecosystem services.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.



**Ecosystem degradation:** The decline in an ecosystem asset over an accounting period due to economic and other human activities. It is generally reflected in declines in ecosystem condition or declines in expected ecosystem service flows.

Related term: Depletion, erosion.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Ecosystem enhancement:** Are the increase and/or improvement in an ecosystem asset that is due to economic and other human activity.

Related term: Conservation.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White Cover publication.

**Ecosystem health:** A measure of the stability and sustainability of an ecosystem functioning or ecosystem services that depend on an ecosystem being active and maintaining its organization, autonomy, and resilience over time.

Related terms: Ecological balance, ecosystem stability.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Ecosystem interactions:** Exchanges of materials and energy among ecosystems

Related terms: Energy flow, nutrient cycle.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Ecosystem stability:** A description of the dynamic properties of an ecosystem. An ecosystem is considered stable if it returns to its original state shortly after a perturbation (resilience), exhibits low temporal variability (constancy), or does not change dramatically in the face of a perturbation (resistance)

Related terms: Resilience, ecological, ecosystem balance, ecosystem health.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Ecosystem:** A natural entity with distinct structures and relationships that interlink biotic communities (of plants and animals) to each other and link them to their abiotic environment. The study of an ecosystem provides a methodological basis for complex synthesis between organisms and their environment.

Remarks: A complex of ecosystems is constituted of many ecosystems and is characterized by a common origin or common dynamic processes. Examples include deserts, coral reefs, wetlands and rainforests (UN MEA, 2005a).

Related terms: Niche, habitat.

Reference: FAO, 2010. Organic Agriculture Glossary; Natural Capital Coalition, 2015. Natural Capital Protocol: Food and Beverage Sector Guide. Draft November 2015.

**Ecosystem services:** The benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational and cultural benefits and supporting services, such as the nutrient cycling that maintains the conditions for life on Earth.

Related terms: Ecosystem capacity, regulating services, provisioning services, support service, cultural service.

Reference: FAO, 2010. Organic Agriculture Glossary.**Emergent property:** A phenomenon that is not evident in the constituent parts of a system but that appears when they interact in the system as a whole.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Emission factor:** Average emission rate of a given greenhouse gas for a given source, relative to units of activity.

Related terms: Greenhouse emissions.

Reference: United Nations.2014. United Nations Framework Convention on Climate Change.

**Energy flow:** Involves the quantity of food energy entering the community through various trophic levels and the amount leaving it. It involves both the grazing food chain and the detritus food chain. The introduction into the ecosystem of energy above the level that has evolved in nature results in pollution and disruption of nutrient cycles.

Remarks: Nutrients are constantly being removed or added; adding more natural substances or synthetic materials than the ecosystem is able to handle upsets biogeochemical cycles.

Related terms: Nutrient cycle, ecosystem interactions, food chain, biogeochemical cycle.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Environment impact assessment:** A sequential set of activities designed to identify and predict the impacts of a proposed action on the bio-geophysical environment and on human health and well-being. Also, to interpret and communicate information about the impacts, including mitigation measures that are likely to eliminate risks.

Related terms: Life cycle assessment, environmental footprint, ecosystem assessment.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Environmental accounting:** Provides the conceptual framework for integrated statistics on the environment and its relationship with the economy, including the impacts of the economy on the environment and the contribution of the environment to the economy. A coherent set of indicators and descriptive statistics can be derived from the accounts that inform a wide range of policies, including, but not limited to, green economy/green growth, natural resource management and sustainable development.

Related terms: Environmental accounting, natural capital, mass flow model.

Reference: Glossary of Environment Statistics. 1997. Studies in Methods, Series F, No. 67, United Nations, New York.

**Environmental and social responsibility:** a concept whereby individuals or organizations consider the interests of society by taking responsibility for the impact of their activities on communities and the environment in all aspects of their operations.

Related terms: Corporate social responsibility.

Reference: FAO. 2009. Glossary on Organic Agriculture.

**Environmental asset accounts:** Accounts that describe in physical or monetary units the stocks and changes in stocks of environmental asset.

Related terms: environmental assets, environmental profit and loss account.

Reference: United Nations. 2003. Handbook of National Accounting: Integrated Environmental and Economic Accounting Studies in Methods Glossary. New York.

**Environmental assets:** Naturally occurring living and non-living components of the earth, together constituting the bio-physical environment, which may provide benefits to humanity.

Related terms: Ecosystem assets, natural resources.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations , World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Environmental cost:** Costs connected with the actual or potential deterioration of natural assets due to economic activities. Such costs can be viewed from two different perspectives, namely as: costs associated with economic units actually or potentially causing environmental deterioration by their own activities; or as costs incurred by economic units independently of whether they have actually caused the environmental impacts.

Related terms: Damage cost, externalities.

Reference: United Nations. 1997. Glossary of Environment Statistics, Studies in Methods. New York.

**Environmental economics:** An area of economics that studies the economic impact of environmental policies. It helps users design appropriate environmental policies and analyze the effects and merits of existing or proposed policies.

Related terms: Econometrics, econometrics, environmental statistics.

Reference: Jolly, C.M. & Clonts, H.A. 1993. Economics of aquaculture. Food Products Press. New York.

**Environmental foot print:** A measure of human demand on the Earth's ecosystems; it compares human demand with planet Earth's ecological capacity to regenerate it. It represents the amount of biologically productive land and sea area needed to regenerate the resources a human population consumes and to absorb and render harmless the corresponding waste, given prevailing technology and resource management practices. Using this assessment, it is possible to estimate how many planet Earths it would take to support humanity if everybody lived a given lifestyle.

Remarks: While the ecological footprint term is widely used, methods of measurement vary. But calculation standards are now emerging to make results more comparable and consistent.

Related terms: Life cycle assessment, environment impact assessment.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Environmental profit and loss account:** An organization's monetary valuation and analysis of its environmental impacts including its operations and its supply chain. It internalizes externalities and monetizes the cost of business to nature by accounting for the ecosystem services a business depends on to operate in addition to the cost of direct and indirect negative impacts on the environment. The primary purpose of an E P&L is to allow managers and stakeholders to see the magnitude of these impacts and where in the supply chain they occur.

Related term: Environmental asset account.

Reference: PUMA, 2010, PUMA's Environmental Profit and Loss Account.

**Environmental statistics:** Statistics that describe the state and trends of the environment, covering the media of the natural environment (air/climate, water, land/soil), the biota within the media, and human settlements.

Related terms: Econometrics, ecometrics.

Reference: United Nations. 1997. Glossary of Environment Statistics, Studies in Methods, Series F, No. 67. New York.

**Environmental value:** The value to people from environmental goods and services. Where no market price exists, it can be estimated in monetary terms by using environmental valuation methods.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Environmentally Extended Input-Output Models:** Traditional input-output (IO) tables summarize the exchanges between major sectors of an economy.

Remarks: For example, output from the footwear manufacturing sector results in economic activity in associated sector, from cattle ranching to accounting services. EEIO's integrate information on the environmental impacts of each sector within IO tables.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Equilibrium model:** Equates supply and demand in one or more markets so that the markets meet at their equilibrium price levels. The model does not include all production and consumption accounts in an economy nor does it attempt to capture all of the economy's markets and prices. It allows the analyst to trace the impact of changes in one market on other markets, but it only captures such changes in the markets as are included in the model.

Related term: Mass flow model.

Reference: Poverty and Social Impact Analysis. 2006. World Bank.

**Equity:** Fairness in the distribution of rights and of access to resources, services or power.

Remarks: Equity includes both intra-generational and intergenerational equity. Intra-generational equity is the principle by which all sections of the community share equitably in the costs and benefits of achieving sustainable development. Intergenerational equity is the principle by which each generation utilizes and conserves the stock of natural resources (in terms of diversity and carrying capacity) in a manner that does not compromise their use by future generations.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Equivalent Variation:** A measure of how much more money a consumer would pay before a price increase to avoid the price increase.

Related term: Compensating variation.

Reference: Mas-Colell, A., Whinston, M and Green, J. 1995 .Microeconomic Theory. Oxford University Press. New York.

**Erosion:** The process of removal and transport of soil and rock by weathering, mass wasting, and the action of streams, glaciers, waves, winds, and underground water.

Related term: Ecosystem degradation.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Exchange value:** Reflects the actual revenue for all quantities of a product that are transacted. It assumes that all purchasers pay (and producers receive) the same price on average, and hence excludes consumer surplus.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Expected ecosystem service flow:** An aggregate measure of future ecosystem service flows from an ecosystem asset for a given basket of ecosystem services. In general terms the measure of expected ecosystem service flows is an assessment of the capacity of an ecosystem asset to generate ecosystem services in the future. Thus the measure is not necessarily reflective of sustainable or optimal scenarios of future ecosystem asset use.

Related terms: Ecosystem services, sustainability.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations ,World Bank. 2013. System Of Environmental-Economic Accounting, White cover publication.

**Externalities:** An uncompensated provision of an ecosystem service (positive externality) or an un-penalized negative effect on the delivery of an ecosystem service (negative externality). An outside force, such as an environmental benefit or cost, not included in the market price of the goods and services being produced; i.e. costs not borne by those who occasion them, and benefits not paid for by the recipients. Some economists suggest that externalities should be internalized, if they are known to have a significant effect on the demand or cost structure of a product, that is, corrections should be made, to allow for externalities when calculating marginal cost. Marginal cost thus becomes a social opportunity cost, or true cost.

Related terms: Environmental cost, social cost, positive externalities, negative externalities.

Reference: FAO. 2009. Glossary on Organic Agriculture.

**Externalization:** A socio-economical term describing how a business maximizes its profits by off-loading indirect costs and forcing negative effects to a third party.

Related term: Internalization.

Reference: Budny, R; Winfree, R. ". 1999. Some Simple Arguments about Cost Externalization and its Relevance to the Price of Fusion Energy. Office of Scientific and Technical Information.

## F

**Farm gate price:** A basic price with the farm gate as the pricing point, that is, the price of the product available at the farm, excluding any separately billed transport or delivery charge.

Related terms: Basic price, direct cost.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Fair price:** In anti-dumping cases, the price to which the export price is compared, which is either the price charged in the exporter's own domestic market or some measure of their cost, both adjusted to include any transportation cost and tariff needed to enter the importing country's market. A fair price should not only cover cost of production but also make socially just and environmentally sound production possible.

Related term: Fair trade.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Fair trade:** A trading partnership, based on dialogue, transparency and respect, which seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers

Related term: Fair price.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Financial accounting:** A field of accounting that treats money as a means of measuring economic performance instead of as a factor of production. It encompasses the entire system of monitoring and control of money as it flows in and out of an organization as assets and liabilities, and revenues and expenses. Financial accounting gathers and summarizes financial data to prepare financial reports such as balance sheet and income statement for the organization's management, investors, lenders suppliers, tax authorities and other stakeholders.

Related terms: Balancing items, monetize, accounting metrics.

Reference: Paul H. Walgenbach, Norman E. Dittrich and Ernest I. Hanson. 1973. Financial Accounting, Harcourt Brace Javonovich, Inc. New York.

**Financial assets:** Entities over which ownership rights are enforced by institutional units, individually or collectively and from which economic benefits may be derived by their owners by holding them, or using them over a period of time.

Related terms: Capital asset, economic unit.

Reference: Reimund Mink. 2006. Classification and terminology of financial assets and liabilities in the updated SNA. European Central Bank.

**Food chain:** The sequence of transfers of matter and energy in the form of food from organism to organism.

Related term: Food system.

Reference: Encyclopaedia Britannica. 2014.

**Food security:** A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Reference: FAO, 1996. World Food Summit Declaration.



**Food system:** Encompass activities related to the production, processing, distribution, preparation and consumption of food. The outcomes of these activities contributing to food security (food availability, with elements related to production, distribution and exchange; food access, with elements related to affordability, allocation and preference; and food use, with elements related to nutritional value, social value and food safety). The outcomes also contribute to environmental and other securities.

Related term: Food chain.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Foregone earnings:** The difference in earnings or performance between what is actually achieved and what could have been achieved with the absence of specific fees, expenses or lost time. They represent the investment capital that the investor spent on investment fees. The assumption is that if the investor had been exposed to lower fees, he would have generated a better return.

Related term: Opportunity cost.

Reference: Investopedia. 2012. Definition of Foregone earnings. A Division of IAC.

**Functional biodiversity:** Functions found in ecosystems, resulting from interactions between living organisms, their diversity and the ecosystem functions provided by the biological community. While the physical and chemical processes contributing to ecosystem functioning can be measured relatively easily such measures do not tell much about the complex biological and physical interactions that drive the ecosystem processes. The two main areas where the effects of biodiversity on ecosystem function have been studied are the relationship between diversity and productivity and the relationship between diversity and community stability. More biologically diverse communities appear to be more productive than are less diverse communities, and they appear to be more stable in the face of perturbations.

Related terms: Ecosystem interaction, niche, biodiversity.

Reference: FAO, 2010. Organic Agriculture Glossary.

## G

**Generally accepted accounting principles** (GAAP): The common set of accounting principles, standards and procedures that companies use to compile their financial statements. GAAP are a combination of authoritative standards (set by policy boards) and accepted ways of recording and reporting accounting information.

Reference: Canadian Institute of Chartered Accountants. 2008. AcSB Confirms Changeover Date to IFRSs.

**Greenhouse emissions:** Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds. This property causes the greenhouse effect.

Related terms: Emission factor.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Greenhouse effect:** The trapping of the sun's warmth in a planet's lower atmosphere, due to the greater transparency of the atmosphere to visible radiation from the sun than to infrared radiation emitted from the planet's surface.

Related terms: Greenhouse emissions.

Reference: Oxford University Press, 1999, Peter Moles and Nicolas Terry, New York.

**Gross fixed capital:** Measured by the total value of a producer's acquisitions less disposals of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets.

Related terms: Net worth.

Reference: OECD. 2013. Glossary of Statistical Terms

**Gross national income:** Comprises the total value of goods and services produced within a country (gross domestic product), together with the income received from other countries (notably interest and dividends), and less similar payments made to other countries.

Related terms: Gross domestic product.

Reference: Australian Bureau of Statistics. 2009. Concepts, Sources and Methods, Chap. 4, "Economic concepts and the national accounts", "Production", "The production boundary".

**Gross domestic product:** An aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). The sum of the final uses of goods and services (all uses except intermediate consumption) measured in purchasers' prices, less the value of imports of goods and services, or the sum of primary incomes distributed by resident producer units.

Related terms: Gross national income.

Reference: OECD. 2013. Glossary of Statistical Terms.

**Gross value-added:** The difference between the output value and raw material input costs for a sector or product.

Reference: FAO, 2010. Organic Agriculture Glossary.

## H

**Habitat:** The particular environment or place where an organism or a specie tends to live; A more locally circumscribed portion of the total environment.

Related terms: Agroecosystem, niche.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Habitat fragmentation:** Set of mechanisms leading to the discontinuity in the spatial distribution of resources and conditions present in an area at a given scale that affects occupancy, reproduction, and survival in a particular species.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Health cost:** Adverse health conditions impact directly on the quality of life of the individual and indirectly on the quality of life family members. Health will have economic costs in the form of loss in human capital, gross domestic product and increases in health care expenditures.

Related terms: Social cost, secondary cost.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome.

**Hedonic pricing:** Economic valuation methods that use statistical techniques to break down the price paid for goods and services into the implicit prices for each of their attributes, including environmental attributes such as access to recreation or clean air. Thus the price of a home may be broken down to see how much the buyers were willing to pay for a home in a neighborhood with cleaner air.

Related terms: Surrogate pricing.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Human capital:** The skills, knowledge, ability to labor and good health important for the successful pursuit of different livelihood strategies.

Related terms: Intellectual capital, social capital.

Reference: FAO. 2008. FAO Fisheries and Aquaculture Department.

**Human well-being:** A context- and situation-dependent state, comprising basic material for good life, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience.

Related terms: Welfare

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

## I

**Impact:** Possible adverse caused by a development, industrial or infrastructural project or by the release of a substance in the environment.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Impact driver:** A measurable quantity of a resource used as an input to production or a measurable non-product output of a business activity.

Remarks: Examples of natural capital impact driver are: (i) GHG emissions; (ii) water pollutants; (iii) terrestrial ecosystem use.

References: Natural Capital Coalition, 2015. Natural Capital Protocol Food and Beverage Sector Guide. Draft November 2015.

**Impact pathways:** An impact pathways describes how a natural capital impact arises as a result of business activities. It trace how a particular impact driver results in changes in natural capital and how these changes affect different stakeholders (including your own business).

Remarks: Generic steps in impact pathways are: (i) business activities; (ii) impact drivers; (iii) changes to natural capital; (iv) cost-benefits of the impact.

Related terms: Impact, impact driver, dependency pathways.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Indirect cost:** Set of expenses that is not directly traceable to an activity.

Related term: Direct cost.

Reference: Kinney&Raiborn. 2011. Cost Accounting, foundation and evolutions.

**Indirect use value:** The benefits derived from the goods and services provided by an ecosystem that are used indirectly by an economic agent. For example, an agent at some distance from an ecosystem may derive benefits from drinking water that has been purified as it passed through the ecosystem .

Related terms: Direct use value.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Integrated reporting:** Provides a framework for a strategic evaluation and reporting of material sustainability risks and opportunities and their pertinence to a company's business planning and financial results.

Reference: Peter DeSimone. 2013. Integrated Financial and Sustainability Reporting in the United States, Investor Responsibility Research Center Institute, Washington, DC.

**Intellectual capital:** Collective knowledge of the individuals in a society. This knowledge can be used to produce wealth, multiply output of physical assets, gain competitive advantage, and to enhance value of other types of capital.

Related terms: Human capital, social capital.

Reference: Web Finance. 2014. Business dictionary.

**Internal Rate of Return (IRR):** The discount rate used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. The higher a project's internal rate of return, the more desirable it is to undertake the project

Related term: Discount rate.

Reference: Moten, J. and Thron C. 2013. Improvements on Secant Method for Estimating Internal Rate of Return, International Journal of Applied Mathematics and Statistics.

**Internalization:** The incorporation of negative external effects, notably environmental depletion and degradation, into the budgets of households and enterprises by means of economic instruments, including fiscal measures and other incentives.

Related term: Externalization.

Reference: United Nations. 1997. Glossary of Environment Statistics, Studies in Methods, Series F, No. 67. New York.

**Intrinsic value:** The value of someone or something in and for itself, irrespective of its utility for someone else.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Irreversibility:** The quality of being impossible or difficult to return to, or to restore to, a former condition.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

## L

**Land conversion:** Converting an area to another use such as converting forest area or wetlands into agricultural land or urban area.

Related term: Land-use change.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Land use:** The total of arrangements, activities, and inputs undertaken in a certain land cover type (a set of human actions). The social and economic purposes for which land is managed (e.g., grazing, timber extraction, and conservation).

Related term: Land conversion.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Landscape:** An area of land that contains a mosaic of ecosystems, including human-dominated ecosystems.

Remarks: The term cultural landscape is often used when referring to landscapes containing significant human populations.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Land-use change:** A change in the use or management of land by humans, which may lead to a change in land cover.

Related terms: Land conversion.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Life cycle assessment:** Compilation and evaluation of inputs, outputs and potential environmental impacts of a product system throughout the consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to end-of-life.

Related terms: Environmental footprint, environmental impact assessment.

Remarks: ISO has standardized the LCA approach under ISO 14040 (UNEP 2015). LCIA databases provide a useful library of published estimates for different products and processes

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Life cycle costing:** A method of economic analysis for all costs related to product and services throughout the entire life cycle. Traditionally it takes into account mainly investment, operation, maintenance and end of life disposal costs. Including the environmental impacts expressed in monetary terms that may come from the life cycle assessment.

Related terms: Life cycle assessment.

Reference: Sieglinde Fuller. 2010. Life-Cycle Cost Analysis .National Institute of Standards and Technology .

## M

**Manufactured capital:** What is traditionally considered as capital: produced assets that are used to produce other goods and services.

Remarks: Some examples are machines, tools, buildings and infrastructure.

Related terms: Capital formation, social capital.

Reference: SRDTOOLS.2005. Methods and tools for e valuating the impact of cohesion policies on sustainable regional development.

**Marginal damage cost:** Incremental (derivative) change in damage incurred by increasing levels of risk or decreasing levels of prevention with respect to some kind of harmful activity.

Related terms: Damage cost.

Reference: Vijaya Sharma Ph.D. 2001. Environmental Economics. University of Colorado

**Market opportunities:** A potentially favorable condition in which a business can capitalize on a changing trend or an increasing demand for a product by a demographic group that has yet to be recognized by its competitors. For a market opportunity to exist, an organization must be able to identify who its potential customers are, the specific needs that need to be met, the size of the market, and its capacity to capture market share.

Reference: Web Finance.2010. Definition of market opportunities. Investor words.

**Market price:** The amounts of money that willing buyers pay to acquire goods, services or assets from willing sellers.

Related term: Market value.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations ,World Bank.2013.System Of Environmental-Economic Accounting, White cover publication.

**Market proxy:** An overall market's broad representation. To simplify studies requiring a market variable, statistic, or comparison, one uses a market proxy, a broad representation. It will only represent a small part of the overall market for all risky assets.

Reference: Black's Law Dictionary Free 2nd Ed. 2010. What is market proxy?



**Market value:** The amount for which something can be bought or sold in a given market.

Related terms: Market price.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Market failure:** A state in which markets fail to allocate the resources efficiently and effectively, for instance due to existence of externalities or market power ( monopolies) or public goods.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Mass flow model:** A group of models that capture mass flows and other physical flows (energy, nutrients, etc.) in environmental, industrial or societal systems. Afterwards comes the analysis of physical inputs to and outputs from each part of those systems. These physical flows are determined by physical and technical processes and equations. Mass flow models do not address economic dynamics that relates to supply, demand and prices of goods and services.

Related terms: Environmental accounting, equilibrium model.

Reference: Dennis M.King and Marisa J. Mazzotta, 2000, Ecosystem Evaluation. US Department of Agriculture Natural Resources Conservation Service and National Oceanographic and Atmospheric Administration. University of Maryland, USA.

**Materiality:** Any impact or dependency on natural capital is 'material' if consideration of its value, as part of the set of information used for decision making, either by internal stakeholders or by third parties relying on company disclosure, has the potential to alter that decision.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol Food and Beverage Sector Guide. Draft November 2015.

**Materiality assessment:** The process that involves identifying what is (is potentially) material in relation to the objective(s) and application(s) of natural capital assessment.

Remarks: Criteria for materiality assessment are: (i) financial; (ii) societal; (iii) operational; (iv) legal (v) temporal.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Materiality matrices:** The materiality matrices can be used to identify the most significant natural capital impacts and dependencies of different raw materials and products.

Remarks: The materiality of natural capital impact or dependencies is initially determined through literature review of business academic literature that considers the following criteria: (i) business financial implications; (ii) potential environmental and societal consequences; (iii) business stakeholder interest.

Related terms: Natural capital impacts, natural capital dependencies.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol Food and Beverage Sector Guide. Draft November 2015.

**Monetize:** To give monetary value to an object. From the environmental point of view, externalities, whether positive or negative need to be accounted in monetary value to know their impact on the economic and social aspects.

Related terms: Financial accounting.

Reference: Frederic S. Mishkin. 2004. The Economics of Money, Banking, and the Financial Markets 7ed. Published by Pearson Addison Wesley, Upper Saddle River, NJ.

**Multiplier:** The multiplier effect refers to an increase in final income arising from any new injection of spending.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

## N

**Natural Capital:** The finite stock of natural assets (air, water, land, habitats) from which goods and services flow to benefit society and the economy. It is made up of ecosystems (providing renewable resources and services), and non-renewable deposits of fossil fuels and minerals.

Related terms: Environmental asset, ecosystem asset, natural resources.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Natural capital accounting:** Accounts for resources that are easily recognized and measured such as minerals and energy, forest timber, agricultural land, fisheries and water. It also includes ecosystems producing services that are often 'invisible' to most people such as air and water filtration, flood protection, carbon storage, pollination for crops and habitat for fisheries and wildlife. However, it is not known how much they

contribute to the economy and livelihoods because these values are not readily captured in markets.

Related terms: Natural capital, environmental asset, ecosystem asset.

Reference: Costanza, Robert. 1997. The Value of the World's Ecosystem Services and Natural Capital.

**Natural capital dependency:** a business reliance on, or use of, natural capital.

Remarks: Natural capital dependencies for the food and beverage sector span all categories of ecosystem service, including provisioning services, regulating services and cultural services. Examples are clean water or natural flood protection.

Related terms: Natural capital impacts.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol Food and Beverage Sector Guide. Draft November 2015.

**Natural capital impact:** The negative or positive effect of business activity on natural capital.

Remarks: The effect can be an increase or decrease, as well as the consumption or restoration, of natural capital.

Related terms: Impact driver

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol Food and Beverage Sector Guide. Draft November 2015.

**Natural resources:** Any portion of the natural environment, such as air, water, soil, botanical and zoological resources and minerals. A renewable resource can potentially last indefinitely without reducing the available supply because it is replaced through natural processes or because it recycles rapidly as water does. Non-renewable resources such as coal and oil may eventually be replaced by natural processes but these processes occur over long periods of geologic time rather than within the time-frame of current generations, and their consumption necessarily involves their depletion.

Related terms: Natural capital, environmental asset, ecosystem asset.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations ,World Bank.2013.System Of Environmental-Economic Accounting, White cover publication.

**Negative externalities:** Occurs when a product or decision costs the society more than its private cost. It is generally viewed as a failure of the market because the level of consumption or production of the product is higher than what the society requires.

Related terms: Externalities, positive externalities, societal cost.

Reference: J.J. Laffont. 2008. Externalities. The New Palgrave Dictionary of Economics, 2nd Ed. Abstract.

**Net present value:** The present value of an investment's expected cash inflows minus the costs of acquiring the investment.

Related terms: Time value, capital value.

Reference: Terry, J.V. 1990. Dictionary for Business and Finance, Second Edition. The University of Arkansas Press. Fayetteville.

**Net worth:** The value of all the assets owned by an institutional unit or sector less the value of all its outstanding liabilities.

Related terms: Capital asset, environmental asset.

Reference: International monetary fund. 2008. System of national accounts. United Nations and World Bank.

**Niche:** All of the interactions of a species with the other members of its community, including competition, predation, parasitism, and mutualism. A variety of abiotic factors, such as soil type and climate, also define a species' niche. Each of the various species that constitute a community occupies its own ecological niche.

Related terms: Ecosystem interactions, functional biodiversity, ecosystem, habitat.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Non-point source of pollution:** Pollution sources that are diffused and without a single point of origin or not introduced into a receiving stream from a specific outlet. The pollutants are generally carried off the land by storm water run-off. The commonly used categories for non-point sources are agriculture, forestry, urban areas, mining, construction, dams and channels, land disposal and saltwater intrusion.

Reference: Glossary of Environment Statistics. 1997. Studies in Methods, Series F, No. 67, United Nations. New York.

**Nutrient cycling:** When inorganic nutrients move through soil, living organisms, air and water. In agriculture, it refers to the return of nutrients absorbed by plants from the soil, back to the soil. Nutrient cycling can take place through leaf fall, root exudation (secretion), residue recycling, and incorporation of green manure.

Related terms: Energy flow, biogeochemical cycle, ecosystem interactions.

Reference: FAO, 2010. Organic Agriculture Glossary.

## O

**Opportunity costs:** The benefits forgone by undertaking one activity instead of another

Related terms: Foregone earnings, trade off.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Option value:** The value of preserving the option use services in the future by oneself or by others or heirs. Quasi-option value represents the value of avoiding irreversible decisions until new information reveals whether certain ecosystem services have values society is not currently aware of.

Related terms: Bequest value.

Reference: FAO. 2007. State of the World's Animal Genetic Resources for Food and Agriculture.

**Organizational focus:** The part or part of a business to be included in a natural capital; assessment.

Remarks: Three general levels of organization are: (i) corporate; (ii) project; (iii) product.

Related terms: Corporate.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

## P

**Participatory approach:** The process through which stakeholders' influence and share control over priority setting, policy-making, resource allocations and access to public goods and services.

Related terms: Beneficiary approach.

Reference: Shashikant Nishant Sharma. 2014. Participatory in Plan Preparation.

**Payback period:** The time required for estimated future net cash receipts to equal the initial cash outlay for a project.

Reference: Baker, Samuel L. 2000. Perils of the Internal Rate of Return.

**Payments for ecosystem services:** Generally defined as voluntary and conditional transactions over well-defined ecosystem services between at least one supplier and one user.

Related terms: rewards of environmental services, compensation for environmental services.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Physical capital:** The stock of value inherent in the quantity and quality of machinery, manufactured goods and finance.

Related terms: Natural capital.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Planetary boundaries:** a series of biophysical thresholds for Earth systems, which can be defined as a safe planetary operating space that will allow humanity to continue to develop and thrive for generations to come.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

**Positive externalities:** Benefits caused by transactions that affect uninvolved parties who did not choose to incur that benefit.

Remarks: A practical example: A person who keeps bees for his own enjoyment benefits gardeners surrounding the area, because their flowers are being pollinated.

Related terms: Externalities, negative externalities.

Reference: Boundless. 2010. Boundless economic textbook: market failure externalities.

**Preventive expenditures:** Method to estimate cost of pollution based on what people are ready to spend to prevent the damage of the environment

Related terms: Risk mitigation, precautionary principle, avoidance cost, defensive expenditure.

Reference: Baltic University. 2003. Glossary of environmental science

**Precautionary principle:** States that if an action or policy has a suspected risk of causing harm to the public or to the environment in the absence of scientific consensus that the action or policy is harmful. The burden of proof that it is not harmful falls on those taking an action. The principle is used by policy makers to justify discretionary decisions in situations where there is the possibility of harm from taking a particular course or making a certain decision when extensive scientific knowledge on the matter is lacking. It implies that there is a social responsibility to protect the public from exposure to harm, when scientific investigation has found a plausible risk. These protections can be relaxed only if further scientific findings emerge that provide sound evidence that no harm will result.

Related terms: Defensive expenditure, risk mitigation, preventive expenditure.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Price:** The amount of money expected, required, or given in payment for something (normally requiring the presence of a market).

Related terms: Value, cost.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft NOVEMBER 2015.

**Price volatility:** Indicates how much and how quickly a value changes over time. It connotes two principal concepts: variability and uncertainty; the former describing overall movement and the latter referring to movement that is unpredictable.

Related term: Uncertainty.

Reference: FAO. 2010. Price Volatility in Agricultural Markets.

**Primary cost:** Felt by the individual in terms of direct impacts on quality of life or well-being.

Related term: Secondary cost.

Reference: Collins English Dictionary 5th Edition. 2000. HarperCollins Publishers.

**Primary data:** Data collected specifically for the assessment being undertaken.

Remarks: The food and beverage sector is characterized by relatively high primary data disclosure when compared to other sectors.

Related terms: Data collection, secondary data.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol: Food and Beverage Sector Guide. Draft November 2015.

**Procurement:** The overarching function that describes the activities and processes to acquire goods and services. Importantly, and distinct from “purchasing”, procurement involves the activities involved in establishing fundamental requirements, sourcing activities such as market research and vendor evaluation and negotiation of contracts. It can also include the purchasing activities required to order and receive goods

Related term: Sourcing.

Reference: Shaw, Felecia N. 2010. The Power to Procure: A Look inside the City of Austin Procurement Program. Texas State University-San Marcos.

**Producer surplus:** The amount that producers benefit by selling at a market price that is higher than the least that they would be willing to sell for, which is a function of their production costs.

Related term: Consumer surplus.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System Of Environmental-Economic Accounting, White cover publication.

**Product:** Assessment of particular goods and/or service, including the materials and services used to produce these products.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Productivity method:** Used to estimate the economic value of ecosystem products or services that contribute to the production of commercially marketed goods. It is applied in cases where the products or services of an ecosystem are used, along with other inputs, to produce a marketed good.

Remark: Water quality affects the productivity of irrigated agricultural crops, or the costs of purifying municipal drinking water. Thus, the economic benefits of improved water quality can be measured by the increased revenues from greater agricultural productivity, or the decreased costs of providing clean drinking water.



Reference: Dennis M.King and Marisa J. Mazzotta. 2000. Ecosystem Evaluation. US Department of Agriculture Natural Resources Conservation Service and National Oceanographic and Atmospheric Administration. University of Maryland, USA.

**Project:** Assessment of a planned undertaking or initiative for a specific purpose, and including all related sites, activities, processes, and incidents.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Provisioning services:** Reflect contributions to the benefits produced by or in the ecosystem.

Remarks: For example a fish, or a plant with pharmaceutical properties.

Related term: Ecosystem services.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting, White cover publication.

**Public good:** A good or service in which the benefit received by any one party does not diminish the availability of the benefits to others, and where access to the good cannot be restricted.

Reference: TEEB, 2015. TEEB for Agriculture & Food Interim Report. The Economics of Ecosystem & Biodiversity.

## R

**Regulating services:** Result from the capacity of ecosystems to regulate climate, hydrological and bio-chemical cycles, earth surface processes, and a variety of biological processes.

Related term: Ecosystem services.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System Of Environmental-Economic Accounting, White cover publication.

**Remedial costs:** Cost incurred to remove pollution or contaminants from the environment such as soil, groundwater and sediment.

Related terms: Replacement cost, terminal costs.

Reference: The McGraw-hill Book Company, The McGraw-Hill dictionary of modern economics 3<sup>rd</sup> edition.

**Replacement cost:** The cost of replacing an asset, in case it is damaged or destroyed.

Remarks: The replacement changes according to the market value of the asset.

Related term: Remedial cost.

Reference: Farlex Financial Dictionary. 2012.definition of replacement cost. Farlex, Inc.

**Resilience:** The ability of an ecosystem to withstand change or, when changed, to develop forces leading back to the original condition. Assessed by examining factors such as population fluctuations, resistance to disturbance, speed of recovery after disturbance and persistence of community composition.

Remarks: While resilience refers to the ability of the system to recover from a change, ecological stability expresses the resistance of an ecosystem against change.

Related terms: Ecosystem stability.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Result chain:** The causal sequence for a development intervention that stipulates the necessary sequence to achieve desired objectives. The results chain begins with inputs, moves through activities, products or services, organizational output, regional results, organizational results, and culminates in strategic or functional objectives and eventually global goals of members.

Remarks: this pathway has also been called a 'logical framework " or "log frame" and "route to impact.

Related terms: Business value chain.

Reference: Terminology (RBM)/CSCM, FAO, 2010; Work Planning Toolkit 2012-13, OSP/CSH, FAO, September 2011 (MB950/Rev1-Annex 4 Glossary).

**Rewards of environmental services (RES):** Inducements provided to ecosystem stewards to enhance or continue to maintain environmental services.

Related terms: Payments for ecosystem services, compensation for environmental services.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Risk:** The probability or probability distribution of an event or the product of the magnitude of an event and the probability of its occurrence.

Related terms: Risk mitigation, uncertainty.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Risk mitigation:** The process by which an organization introduces specific measures to minimize or eliminate unacceptable risks associated with its operations.

Remarks: Risk mitigation measures can be directed towards reducing the severity of risk consequences, reducing the probability of the risk materializing, or reducing the organization's exposure to the risk.

Related terms: Preventive expenditure, precautionary principle, defensive expenditure approach, risk.

Reference: Investorword. 2010. Definition of risk mitigation.

## S

**Scenario:** Scenario are storylines that describes possible futures. They explore aspects of, and choices about, the future that are uncertain, such as alternative project option, business as usual, and alternative vision.

Remarks: types of scenario are: (i) intervention or alternatives; (ii) exploratory; (iii) vision; (iv) counterfactual.

Related terms: Counterfactual.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Secondary cost:** Felt more widely by society as a whole, such as increased health expenditures (medical services, medication, etc.) due to adverse health effects.

Related terms: Societal cost, primary cost.

Reference: Collins English Dictionary 5th Edition. 2000. HarperCollins Publishers.

**Secondary data:** Data that were originally collected and published for another purpose or different assessment.

Remarks: Secondary data is often used in the end-of-use stages for similar reasons.

Related terms: Primary data

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol: Food and Beverage Sector Guide. Draft November 2015.

**Sensitivity analysis:** It may involve simulation modeling to identify critical thresholds, where small changes in the value of assumptions yield large changes in assessment results. Alternatively, it may involve reporting a range of potential values for a particular impact or dependency.

Remarks: It is essential to conduct a sensitivity analysis if value transfer has been used in the assessment, in order to determine the influence of contextual variables on results. Example of assumptions to test in a sensitivity analysis are: (i) number of people affected; (ii) magnitude of change natural capital; (iii) changes in key prices; (iv) changes to discount rates; (v) time horizon.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Social capital:** Resources and relationships provided by people and society.

Remarks: This encompasses human capital (people's skills, knowledge and wellbeing), social capital (societies' shared values, norms and institutions) and relationship capital (connections and network). Together, these resources need to be maintained and enhanced to make society more cohesive and resilient, and to make business more successful.

Related terms: Human capital, intellectual capital.

Reference: WBCSD. 2015. Measuring Socio-Economic Impact: a Guide for Business.

**Social capital dependencies:** Human and social resources and relationship that are needed by business in order to deliver value.

Remarks: These can directly impact a company's ability to operate and grow, and are primary interest to business leaders and managers, as well as investors.

Related terms: Human capital.

Reference: WBCSD, KPMG. 2015. Social Capital in Decision-Making: How Social Information Drives Value Creation.

**Social capital impacts:** positive and negative effects that businesses have on people and society through their operations and supply chains, and through the products and services they provide.

Remarks: Examples of relevant social capital impacts are on impact are product consumption/service use, service provision throughout the value chain, human rights, wellbeing, livelihoods and job creation, local spend, tax.

Reference: WBCSD, KPMG. 2015. Social Capital in Decision-Making: How Social Information Drives Value Creation.

**Social capital information:** is being used by key internal and external decision-makers in order to: (i) understand and demonstrate a company's social impacts and/or dependencies; (ii) manage a company's social capital impacts and/or dependencies.

Reference: WBCSD, KPMG. 2015. Social Capital in Decision-Making: How Social Information Drives Value Creation.

**Social costs:** The costs that occur to society as a result of the production and consumption of goods and services. The social costs of interest to environmental economics are pollutants and other forms of environmental degradation that are the by-products of production and consumption activities of society.

Related term: Externalities.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Social costs benefit analysis:** A systematic and cohesive economic tool to survey all the impacts caused by an urban development project. It comprises not just the financial effects (investment costs, direct benefits like tax and fees, et cetera), but all the social effects, like: pollution, safety, indirect market and legal aspects. The main aim of a social cost-benefit analysis is to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these prices reflect the value a society attaches to the caused effects, enabling the decision maker to form a statement about the net social welfare effects of a project.

Related term: Societal cost.

Reference: Ashenfelter, O. 2006. Measuring the Value of a Statistical Life: Problems and Prospects. NBER Working Paper Series.

**Social welfare:** A collection of measures to improve or protect human capital, ranging from labor market interventions, publicly mandated unemployment or old-age insurance to targeted income support. Social protection interventions assist individuals, households, and communities to better manage the income risks that leave people vulnerable.

Related term: Welfare economic value.

Reference: Ruslan Yemstov. 2013. The World Bank and social protection overview. World Bank.

**Societal cost:** They refer to the costs which affect individuals, society and the environment for which the entity causing/generating this adverse impact is not accountable.

Related term: Externalities.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Societal values:** The values to wider society, also referred to as external, public or stakeholder value (or externalities, which could be environmental and/or social).

Remarks: Societal values may be considered in aggregate, but are best considered separately from different stakeholder groups.

Related terms: Externalities.

Reference: adapted from Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Spatial boundary:** The geographic area cover by the assessment. The special boundary may vary from different impacts and dependencies and will go also depend on the organizational focus, value chain boundary, value perspective and other factors.

Remarks: Examples are a site, watershed, landscape, country or global level.

Related terms: Value chain boundary.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Species abundance:** A measure of the absolute number of a particular species in an area.

Related term: Species richness, biodiversity.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Species richness:** A measure of the number of different species in an area.

Related term: Species abundance, biodiversity.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Strategic sourcing:** A systematic and fact-based approach for optimizing an organization's supply base and improving the overall value proposition.

Related term: Procurement.

Reference: Daniel Beimborn, 2008, Cooperative sourcing: Simulation studies and empirical data on outsourcing coalitions in the banking industry. Gabler, Wiesbaden.

**Subjective well-being (SWB):** Measures of subjective well-being data, such as satisfaction, happiness and purpose in life, offer another complementary platform for estimating economic values.

Remarks: SBW data are used to assess the impacts of different life events and externalities on people's self-reported well-being using large national datasets and econometric methods such as regression analysis, matching and difference-in-difference estimators.

Related terms: Well-being valuation.

Reference: FAO, 2014. Food Wastage Footprint-Full-Cost Accounting. Final Report.

**Subsidy:** A benefit given by the government to groups or individuals usually in the form of a cash payment or tax reduction. The subsidy is usually given to remove some type of burden and is often considered to be in the interest of the public.

Related terms: Economic policy instrument.

Reference: Investopedia. 2012. Definition of Subsidy.

**Sourcing:** Refers to a number of procurement practices, aimed at finding, evaluating and engaging suppliers of goods and services.

Related terms: Strategic sourcing, procurement.

Reference: Supply times. 2006. Definition of sourcing. Emedia communications.

**Supply chain:** The network created amongst different companies producing, handling and distributing a specific product. It encompasses the steps it takes to get a good or service from the supplier to the customer.

Remarks: Supply chain management is a crucial process for many companies, and many companies strive to have the most optimized supply chain, because it usually translates to lower costs for the company.

Related term: Value chain.

Reference: Oliver, R. K, Webber, M. D. 1992. Supply chain management: logistics catches up with strategy. Logistics: The Strategic Issues. London.

**Supporting services:** Ecosystem services that are necessary for the production of all other ecosystem services.

Remark: Some examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.

Related term: Ecosystem services.

Reference: Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-Being: Synthesis. Island Press, Washington.

**Surrogate market:** In the absence of a market, information can be drawn from related marketed goods to determine the use value of the non-marketed goods. The consumer behavior toward marketed goods reveals consumer's preferences.

Related term: Hedonic pricing.

Reference: Wallpak Polasub. 2008. The Economic Valuation of the Goods and Services of Coastal Habitats. Economic valuation based on surrogate market. Samut Songkram, Thailand.

**Sustainability:** A characteristic or state whereby the needs of the present and local population can be met without compromising the ability of future generations or populations in other locations to meet their needs.

Related term: Sustainable development.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Sustainable development:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Related term: Sustainability.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Systems approach:** The consideration of different interacting parts of a distinct entity (i.e. system).

Remarks: In a food system, this involves the integration of all bio-physical and socio-political variables involved in the performance of the system.

Related term: Ecosystem approach.

Reference: FAO, 2010 .Organic Agriculture Glossary.

## T

**Temporal boundary:** The time horizon of the assessment.

Remarks: The assessment period related to the objective and corresponding to the organizational focus and material impacts and/or dependencies under consideration.



This could be a current “snapshot”, a 1-year period, a 3-year period, a 25-year period or longer.

Related terms: Value chain boundary.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Terminal costs:** Costs that can and should be anticipated during the production periods prior to closure of an operating asset.

Related term: Decommission cost, remedial cost.

Reference: Farlex Financial Dictionary. 2012. Farlex, Inc.

**Threshold:** A point or level at which new properties emerge in an ecological, economic, or other system, invalidating predictions based on mathematical relationships that apply at lower levels.

Remarks: For example, species diversity of a landscape may decline steadily with increasing habitat degradation to a certain point and then fall sharply after a critical threshold of degradation is reached. Human behavior, especially at group levels, sometimes exhibits threshold effects. Thresholds at which irreversible changes occur are especially of concern to decision-makers.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Time value:** Value added to a good or service by passage of time or by virtue of it being available at the time it was desired or required.

Reference: WebFinance. 2014. Business dictionary.

**Total economic value framework:** A widely used framework to disaggregate the components of utilitarian value, including direct and indirect use value, option value, quasi-option value and existence value.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Trade-off:** The value of something that has to be given up in order to get something else that is desired (e.g. the environmental cost incurred to obtain economic development).

Remarks: Sustainability can be evaluated by the sum of the various social, economic and natural resources where the degrees of use, exchange and trading among resources will vary according to the values given to each. Trade-off patterns are therefore determined by the different properties of a system and their importance to different groups. The understanding of social dynamics and resource-use systems and the evaluation of related trade-offs, in terms of equity, productivity, resilience and environmental stability, are useful to envision alternative development scenarios.

Related term: Opportunity cost.

Reference: Scialabba, Nadia (ed.). 1998. Integrated coastal area management and agriculture, forestry and fisheries. FAO Guidelines. Environment and Natural Resources Service, FAO, Rome

**Travel cost method:** Economic valuation techniques that use observed costs to travel to a destination to derive demand functions for that destination. Developed to value the recreational use of protected areas, they have limited applicability outside this context.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

## U

**Uncertainty:** An expression of the degree to which a future condition is unknown.

Related terms: Risk, price volatility.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Upstream (cradle-to-gate):** Covers the activities of suppliers, including purchased energy and other inputs.

Related terms: Downstream.

Reference: adapted from Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Utilitarian:** An approach that focuses on the satisfaction of human preferences. In some cases, this is taken further and made the basis of a moral viewpoint.

Related term: Utility.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Utility:** The measure of the degree of satisfaction or happiness of a person.

Related term: utilitarian

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

## V

**Validation:** Internal or external process to check the quality of the assessment, including technical credibility, the appropriateness of key assumptions and the strength of your results. This process may be more or less formal and often relies on self- assessment.

Related terms: Sensitivity analysis

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Valuation :** The process of expressing a value for a particular good or service in a certain context (e.g. of decision-making), usually in terms of something that can be counted, often money, but also through methods and measures from other disciplines (sociology, ecology, and so on).

Remarks: Companies use two main types of valuation: (i) scoring and rating system- the practice of attributing scores and scales to social capital performances, e.g. Corporate portfolio level rating system and product life cycle scoring system; (ii) monetization - the practice of attributing scores or scales to social capital performance. This can be used to inform analysis such as Social Return on Investment (SROI) ratios and social profit and loss accounts.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture; WBCSD, KPMG. 2015. Social Capital in Decision- Making- how social information drives value creation.

**Valuation methodology:** Defines the process of expressing a value for a particular good or service in a certain context (decision making). Usually in terms of something that can be counted, often money, but also through methods and measures from other disciplines (sociology, ecology etc.)

Reference: Valuing capital in business towards a harmonized protocol.

**Value:** The worth of a good or service as determined by people's preferences and the tradeoffs they choose to make given their scarce resources, or the value the market places on an item

Related terms: price, cost.

Reference: Investopedia. 2013. Definition of value.

**Value:** The importance, worth, or usefulness of something.

Related terms: Price, cost.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Value-chain:** Activities within an organization that add value to the service and products that the organization produces, and all these activities should be run at optimum level if the organization is to gain any real competitive advantage. If they are run efficiently, the value obtained should exceed the costs of running them.

Related term: Supply chain.

Reference: Porter, Michael E.1985. Competitive Advantage: Creating and Sustaining Superior Performance. New York.

**Value-chain for food and beverage:** Includes:(i) input companies; (ii) farmers; (iii) traders; (iv)food and beverage companies; (v) retailers; (vi) consumers.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol: Food and Beverage Sector Guide. Draft November 2015.

**Value chain approach:** Development interventions which look at whole value chain, from access to means of production, possibly processing, and marketing to the end user or consumer. The actual intervention will target bottlenecks or critical links in the chain, which offer opportunities or remove constraints for a desired outcome.

Remarks: For example, more of the value added along the chain accruing to poor women.

Related terms: Supply chain.

Reference: FAO, 2010. Organic Agriculture Glossary.

**Value-chain boundary:** The part or parts of the business value-chain to be included in a natural capital assessment.

Remarks: Value-chain boundaries include three generic parts: (i) upstream; (ii) direct operation; (iii) downstream. An assessment of the full lifecycle of a product would encompass all three parts.

Related terms: Supply chain.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Value perspectives:** The view from which value is assessed; this largely determines which costs or benefits are included in an assessment.

Remarks: Key points to consider when selecting the value prospective are: (i) business value; (ii) societal values.

Related terms: Societal values.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Value systems:** Norms and precepts that guide human judgment and action.

Reference: FAO. 2013. Glossary of terms on ecosystem services in agriculture.

**Valuation technique:** The specific method used to determine the importance, worth or usefulness of something in a particular context.

Remarks: Examples of valuation technique are: (i) opinion surveys; (ii) deliberative approaches; (iii) relative valuation (iv) structured surveys; (v) indicators; (vi) MCA; market ( and financial) prices; ( vii) production function; (viii) cost-based approaches; (ix) revealed preference( indirect); (x) stated preference; (xi) value (benefits) transfer.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Value transfer:** A technique that takes a value determined in one context and applies it to another context.

Remarks: Where contexts are similar, or appropriate adjustments are made to account for difference, value transfer can provide reasonable estimates of value. Value transfer can be done in various ways: (i) unit value transfer: (ii) adjusted value transfer: (iii) value function transfer.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

**Verification:** Independent evaluation involving expert assessment to check that the documentation of the assessment is complete accurate and gives a true representation of the process and results.

Remarks: It is used interchangeably with terms such as 'audit' or 'assurance'.

Related terms: Evaluation.

Reference: Natural Capital Coalition, 2015. Natural Capital Protocol. Draft November 2015.

## W

**Well-being valuation:** The well-being valuation approach estimates the impact of the good or service and income on people's subjective well-being (SWB) and uses these estimates to calculate the exact amount of money that would produce the equivalent impact on SWB.

Reference: FAO, 2014. Food Wastage Footprint: Full-Cost Accounting. Final Report.

**Welfare:** The prosperity or, more broadly, the well-being of a person or group.

References: Sutinen, J.G., ed. 2000. A framework for monitoring and assessing socioeconomics and governance of large marine ecosystems. NOAA Technical Memorandum NMFS-NE-158, 32 pp.

**Welfare economic values:** Reflect the total economic gain associated with the quantities of a product that are transacted. They include both the consumer and producer surplus and are different from exchange values to the extent of consumer surplus. It may also reflect the net economic gain, which is equivalently derived as either the total economic gain less the costs of production, or as consumer surplus plus producer surplus.

Related term: Social welfare.

Reference: European Commission Organization for Economic Co-operation and Development, United Nations, World Bank. 2013. System of Environmental-Economic Accounting. White cover publication.

**Willingness to accept (WTA):** The price that someone is willing to receive or accept to give up a good or service.

Remarks: Willingness to accept is the source of the supply price of a good. However, unlike supply price, in which sellers are on the spot of actually giving up a good to receive payment, willingness to accept does not require an actual exchange.

Related terms: Contingent valuation, willingness to pay.

Reference: Horowitz, John Keith and McConnell, Kenneth. 2003. Journal of Economic Behavior & Organization.

**Willingness to pay (WTP):** The price that someone is willing to give up or pay to acquire a good or service. It is the source of the demand price of a good. However, willingness to pay does not require an actual payment.

Related terms: Contingent valuation, willingness to accept.

Reference: Horowitz, John Keith and McConnell, Kenneth. 2003. Journal of Economic Behavior & Organization.