



**A Glossary of Common Sustainability Terms**  
**NPIRI Environmental Impact Task Force**  
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**Biobased/bioderived material(s)**

Organic material(s) in which carbon comes from contemporary (new carbon versus old fossil carbon) biological sources. One must define organic materials since the term is used, and for this we use the IUPAC (International Union of Pure and Applied Chemistry) nomenclature as material(s) containing carbon based on compound(s) in which carbon is the attached to other carbon atom(s), hydrogen, oxygen, or other elements in a chain, ring, or other three dimensional structures. Thus to be classified biobased, the material must be organic and contain recently fixed (new) carbon present in biological sources. *Source: ASTM. Also in US Federal Government procurement definitions*

**Biodegradable**

- 1) A product is deemed biodegradable if it is capable of undergoing biological anaerobic or aerobic decomposition into carbon dioxide, methane, water, and inorganic compounds, or biomass in which the predominant mechanism is the enzymatic reaction of microorganisms and is completed in a relatively short period of time. *Source: Packaging and Technology Integrated Solutions (PTIS)*
- 2) Material that can be broken down into simpler substances (elements and compounds) by bacteria or other decomposers. Paper and most organic wastes such as animal manure are biodegradable. *Source: US EPA*

**Biodegradation, primary**

The transformation of the test substance to an extent sufficient to remove some characteristic property of the molecule, resulting in the loss of detection by the chemical specific analytical technique, is referred to as primary biodegradation (ASTM Test Method 6400-04).  
*Source: ASTM*

**Biomass**

Total dry weight of all living organisms that can be supported at each tropic level in a food chain. Also, materials that are biological in origin, including organic material (both living and dead) from above and below ground, for example, trees, crops, grasses, tree litter, roots, and animals and animal waste. *Source: US EPA*

**BRC (Bioderived Renewable Content)**

A NAPIM program that establishes a BRC index value based on the amount of both bioderived and renewable materials in the ink formulation. It includes water as it is a renewable resource. For further information got to [www.napim.org](http://www.napim.org)  
*Source: NAPIM*

**Carbon Footprint**

The total amount of greenhouse gases emitted directly or indirectly through an activity, or from a product, company or person, typically expressed in equivalent tons of either carbon or carbon dioxide. Methods of calculation have yet to be standardized. *Source: Interface Global*



### **Carbon Neutral**

A product or process that over its life cycle does not add more carbon dioxide to the atmosphere. *Source: DuPont*

### **Compostable**

- 1) A material capable of decomposing anaerobically into components that can be readily mixed with soil without any negative effect on the environment. *Source: DuPont*
  
- 2) A managed process that controls the biological decomposition and transformation of biodegradable materials into a humus-like substance called compost: aerobic mesophilic and thermophilic degradation of organic matter to make compost; the transformation of biologically decomposable material through a controlled process of bio-oxidation that proceeds through mesophilic and thermophilic phases and results in the production of carbon dioxide, water, minerals, and stabilized organic matter (compost or humus). *Source: ASTM D6002 Standard guide for Assessing the Compostability of Environmentally Degradable Plastics*

### **Cradle-to-Cradle**

A cycle from the time a material is removed from its natural state to the point at which it is recycled/reclaimed. The elimination of waste by recycling/reclaiming a material or product into a new or similar product at the end of its intended life, rather than disposing of it.

### **Cradle to Grave**

A method of describing the environmental burdens of a product, process or activity on the basis of an inventory of environmental factors from the extraction of raw materials until their final disposal. Environmental factors include the consumption of raw materials and energy and emissions to air and water and solid waste generation. *Source: PE International*

### **Degradability:**

Ability of materials to break down, by bacterial (biodegradable), thermal (oxidative), or ultraviolet (photodegradable) action. When degradation is caused by biological activity, especially by enzymatic action, it is called "biodegradation." *Source: PSTI*

### **Eco-Efficiency**

The proportion of environmental impacts relative to costs along the life cycle of a product. Often defined as the amount of environmental impact reduced per unit cost. The more environmental impact can be reduced at a low cost to the environment, the greater the eco-efficiency becomes. Eco-Efficiency simply means 'doing more with less'. Eco-efficiency is not the same as sustainability as it incorporates only the environmental and economic aspects of sustainability, not the social aspect. Cleaner production, however, can be a part of eco-efficiency. The aim is obviously to produce the greatest possible environmental performance per unit cost. *Source: PE International*

### **Eco-Friendly**

A qualitative and vague term that is subject to a wide range of interpretive meanings. It is not an objective assessment of a property or quality but is sometimes used as a marketing or promotional description.



### **Ecological/Environmental Footprint**

The impact on the environment of any individual, company or other entity as it performs an activity or process that impacts air, water, or soil. The carbon footprint represents the air element of the ecological/environmental footprint. *Source: DuPont*

### **Eco-Smart**

A qualitative and vague term that is subject to a wide range of interpretive meanings. It is not an objective assessment of a property or quality but is sometimes used as a marketing or promotional description.

### **Emission**

The release of any gas, particle, or vapor into the air from a commercial, industrial, or residential source including smokestacks, chimneys, and motor vehicles. *Source: DuPont*

### **Energy Recovery**

Obtaining energy from waste accomplished through a variety of processes, and is also known as "waste-to-energy". Traditionally, this meant burning waste products, but now gasification and anaerobic digestion are also playing a role. *Also see waste-to-energy. Source: DuPont*

### **Environment**

Complex of air, water, land and living organisms.

### **Environmentally Friendly**

A qualitative and vague term that is subject to a wide range of interpretive meanings. It is not an objective assessment of a property or quality but is sometimes used as a marketing or promotional description.

### **Environmental Impact**

Any change to the environment, good or bad, that wholly or partially results from industrial/manufacturing activities, products, services, land usage, or natural events. Energy consumption, greenhouse gas (CO<sub>2</sub>-eq) production, toxicity and natural resources depletion are some of the key environmental impact areas.

### **Environmental Product Declaration (EPD)**

- 1) Quantified environmental data for a product with pre-set categories of parameters based on ISO 14040 series of standards, but not excluding additional environmental information. Essentially a verified document containing LCA results and additional product and environmental performance information. Key components of an EPD are:
  - A product life cycle analysis that has been produced in conformance with ISO 14010 and in conformance with the appropriate product claim criteria rules.
  - A set of Product Criteria Rules (PCRs) for a given product category that determines the scope, boundaries, functional unit, assessment criteria, product and environmental performance information, etc., that all manufacturers must use for their product LCA, thereby ensuring consistency with regards to data, calculations, and methodology.  
*Source: The Green Standard*
- 2) Standardized (ISO 14025/TR) and LCA based tool to communicate the environmental performance of a product or system, and is applicable worldwide for all interested companies

and organizations. A declaration is based on a LCA and includes information about the environmental impacts associated with a product or service, such as raw material acquisition, energy use and efficiency, content of materials and chemical substances, emissions to air, soil and water and waste generation.

There are two documents, which control how the calculations and data collection behind an EPD should be done and what information the EPD must contain; requirements for the EPD system (MSR) and Product Specific Requirements (PSR). The MSR contains general requirements for all EPDs and a PSR contains more detailed requirements for each product group. *Source: The International EPD Cooperation (IEC)*

### **Gate-to-Gate**

A partial LCA focusing only one value-added process in the entire production chain. *Source: DuPont*

### **Green**

A qualitative and vague term that is subject to a wide range of interpretive meanings. It is not an objective assessment of a property or quality but is sometimes used as a marketing or promotional description.

### **Green by Design**

A qualitative and vague term that is subject to a wide range of interpretive meanings. It is not an objective assessment of a property or quality but is sometimes used as a marketing or promotional description.

### **Greenwashing**

Misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service. *Source: TerraChoice - Seven Sins of Greenwashing*

### **Greenhouse Gases**

1) Gases that trap heat in the atmosphere. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are:

- **Carbon Dioxide (CO<sub>2</sub>):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH<sub>4</sub>):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N<sub>2</sub>O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller



quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (“High GWP gases”). *Source: US EPA*

- 2) Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), halogenated fluorocarbons (HCFCs), ozone (O<sub>3</sub>), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs). *Source: US EPA*

### **Greenhouse Effect**

The warming of the earth’s atmosphere attributed to a build-up of carbon dioxide or other gases; some scientists think that this build-up allows the sun’s rays to heat the earth while making the infra-red radiation atmosphere opaque to infra-red radiation, thereby preventing a counter balancing loss of heat. *Source: PSTI*

### **Hazardous Air Pollutant (HAP)**

Any air pollutant listed or pursuant to section 112(b) of the Clean Air Act. *Source: US EPA*

### **ISO 14000 Series**

A standardized environmental management system that requires that Management create an environmental policy of compliance and environmental responsibilities and communicate it to the employees, and the community. The company must also verify that the organization complies with this policy and document that it is continuously reviewing and improving this system.

- General requirements: The organization shall establish, document, implement, maintain and continually improve an environmental management system in accordance with the requirements of this Standard and determine how it will fulfill these requirements. The organization shall define and document the scope of its environmental management system.

Top management shall define the organization's environmental policy and ensure that it includes a commitment to continual improvement and prevention of pollution, and a commitment to comply with legal requirements. This policy must be documented and communicated to the employees, and the public

- Monitoring and measurement: The organization shall establish, implement and maintain a procedure(s) to monitor and measure, on a regular basis, the key characteristics operations that have impact on the environmental responsibilities. This includes documented measures of significant parameters.

The organization shall ensure that internal audits of the environmental management system are conducted at planned intervals. *Source: ISO*

### **Life Cycle Assessment**

A technique to assess the environmental aspects and potential impacts associated with a product, process, or service, by:

- Compiling an inventory of relevant energy and material inputs and environmental releases
- Evaluating the potential environmental impacts associated with identified inputs and releases
- Interpretation the results to help you make a more informed decision. *Source: United States Environmental Protection Agency*



### **Life Cycle Inventory (LCI)**

A cradle to grave inventory and quantification of the inputs and outputs of most processes that occur during the life cycle of the product and package; forms the basis of any LCA study. Process inputs and outputs are generally categorized as:

- Inputs of raw materials and energy resources (environmental input).
- Inputs of products, semi-finished products or energy, which are outputs from other processes (economic input).
- Outputs of emissions (environmental output)
- Outputs of a product, a semi-finished product or energy (economic output) *Source: PSTI*

### **Non-renewable**

Cannot be replenished in a short period of time relative to a human life span. Non-renewable sources of energy are typically divided into two types: fossil fuels and nuclear fuels. Fossil fuels include oil, natural gas, and coal. Nuclear involves uranium. Non-Renewable resources exist in a fixed amount that cannot be replenished on a human time scale. Non-renewable resources have the potential for renewal only by geological, physical, and chemical processes taking place over millions of years. Examples include: iron ore, coal, and oil.

### **Ozone-Depleting Substance (ODS)**

A family of man-made compounds that includes, but are not limited to, chlorofluorocarbons (CFCs), bromofluorocarbons (halons), methyl chloroform, carbon tetrachloride, methyl bromide, and hydrochlorofluorocarbons (HCFCs). These compounds have been shown to deplete stratospheric ozone, and therefore are typically referred to as ozone-depleting substances.

*Source: US EPA*

### **Recyclable**

Use/reuse and reclamation (see 40CFR 261.2©(4),(5), and (7). Reclamation is further defined to be either regeneration, or the recovery of a usable product. *Source: US EPA*

### **Renewable Energy**

Energy obtained from sources that are essentially inexhaustible, unlike, for example, the fossil fuels, of which there is a finite supply. Renewable sources of energy include wood, waste, geothermal, wind, photovoltaic, and solar thermal energy. *Source: US EPA*

### **Renewable resource**

A resource that can be replenished at a rate equal to or greater than its rate of depletion. Examples of renewable resources include corn, trees, and soy-based products.

*Source Interface Global*

### **Sustainability and/or Sustainable Development**

Meeting the economic, ecological and social needs of today's society without impairing the chances of development of future generations. *Source: UN-Conference, Rio de Janeiro, 1992*

### **Sustainable chemistry (sometimes referred to as green chemistry)**

The design, development and implementation of chemical products and processes to reduce or eliminate the use and generation of substances hazardous to human health and the environment.

*Source: US EPA*



**Sustainable Footprint**

Injuries, illnesses, incidents, waste, emissions, use of water and deplete-able forms of raw materials and energy. Methods of calculation have yet to be standardized. *Source: DuPont*

**Triple Bottom Line (TBL)**

The integration of economic, environmental and social aspects of an organization. The Triple Bottom Line is often used in relation to an integrated reporting system for these aspects. *Source: PSTI*

**Volatile Organic Compound (VOC)**

Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. This definition excludes organic compounds which EPA has found to have negligible photochemical reactivity (40 CFR 51.100(s) - Definition - Volatile organic compounds (VOC)). *Source: US EPA*

**Water footprint**

An indicator of water usage that includes both direct and indirect water use of a consumer or producer. The water footprint of an individual, community or business is defined as the total volume of freshwater that is used to produce the goods and services consumed by the individual or community or produced by the business. Water use is measured in water volume consumed (evaporated) and/or polluted per unit of time. A water footprint can be calculated for any well-defined group of consumers (e.g. an individual, family, village, city, province, state or nation) or producers (e.g. a public organization, private enterprise or economic sector). *Source: Wikipedia*

**Waste-to-Energy**

The practice of processing waste products to generate steam, heat, or electricity. *Also see energy recovery. Source: DuPont*