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IN SELECTED COUNTRIES

ARBEITSBEZIEHUNGEN UND SOZIALER WANDEL
IN AUSGEWÄHLTEN LÄNDERN

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Sustainability

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For other uses of the term "Sustain", see [Sustain \(disambiguation\)](#).

Sustainability is the capacity to endure. In [ecology](#) the word describes how biological systems remain [diverse](#) and productive over time. For humans it is the potential for long-term maintenance of wellbeing, which in turn depends on the wellbeing of the natural world and the responsible use of [natural resources](#).

Sustainability has become a wide-ranging term that can be applied to almost every facet of life on [Earth](#), from local to a global scale and over various time periods. Long-lived and healthy [wetlands](#) and [forests](#) are examples of sustainable biological systems. Invisible [chemical cycles](#) redistribute water, oxygen, nitrogen and carbon through the world's living and non-living systems, and have sustained life for millions of years. As the earth's human population has increased, natural [ecosystems](#) have declined and changes in the balance of natural cycles has had a negative impact on both humans and other living systems.^[1]

There is abundant scientific evidence that humanity is living unsustainably, and returning human use of natural resources to within sustainable limits will require a major collective effort.^{[1][*citation needed*]} Ways of living more sustainably can take many forms from reorganising living conditions (e.g., [ecovillages](#), [eco-municipalities](#) and [sustainable cities](#)), reappraising economic sectors ([permaculture](#), [green building](#), [sustainable agriculture](#)), or work practices ([sustainable architecture](#)), using science to develop new technologies ([green technologies](#), [renewable energy](#)), to adjustments in individual [lifestyles](#) that conserve natural resources.

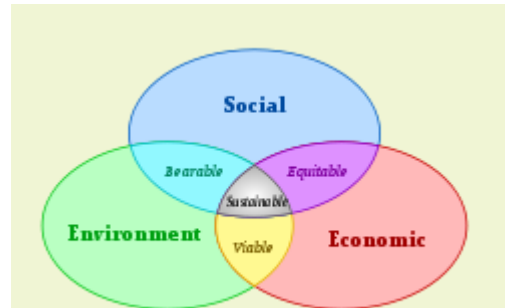
Definition

The word sustainability is derived from the Latin *sustinere* (*tenere*, to hold; *sus*, up). Dictionaries provide more than ten meanings for *sustain*, the main ones being to "maintain", "support", or "endure".^{[4][5]} However, since the 1980s *sustainability* has been used more in the sense of human sustainability on planet Earth and this has resulted in the most widely quoted definition of sustainability and sustainable development, that of the Brundtland Commission of the United Nations on March 20, 1987: "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."^{[6][7]}

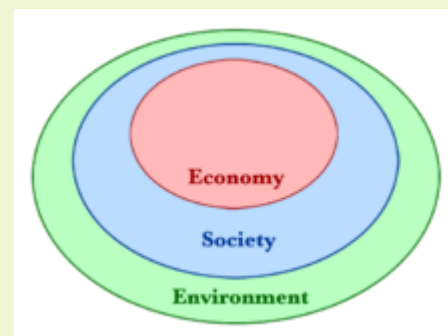
At the 2005 World Summit it was noted that this requires the reconciliation of environmental, social and economic demands - the "three pillars" of sustainability.^[8] This view has been expressed as an illustration using three overlapping ellipses indicating that the three pillars of sustainability are not mutually exclusive and can be mutually reinforcing.^[9]

The UN definition is not universally accepted and has undergone various interpretations.^{[10][11][12]} What sustainability is, what its goals should be, and how these goals are to be achieved is all open to interpretation.^[13] For many environmentalists the idea of sustainable development is an oxymoron as development seems to entail environmental degradation.^[14] Ecological economist Herman Daly has asked, "what use is a sawmill without a forest?"^[15] From this perspective, the economy is a subsystem of human society, which is itself a subsystem of the biosphere, and a gain in one sector is a loss from another.^[16] This can be illustrated as three concentric circles.

A universally-accepted definition of sustainability is elusive because it is expected to achieve many things. On the one hand it needs to be factual and scientific, a clear statement of a specific "destination". The simple definition "sustainability is improving the quality of human life while living within the carrying capacity of supporting eco-systems",^[17] though vague, conveys the idea of sustainability having quantifiable limits. But sustainability is also a call to action, a task in progress or "journey"^[18] and therefore a political process, so some definitions set out common goals and values. The Earth Charter^[19] speaks of "a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace."



Definitions of sustainability often refer to the "three pillars" of social, environmental and economic sustainability (2006)^[2]



A representation of sustainability showing how both economy and society are constrained by environmental limits (2003)^[3]

To add complication the word *sustainability* is applied not only to human sustainability on Earth, but to many situations and contexts over many scales of space and time, from small local ones to the global balance of production and consumption. It can also refer to a future intention: "sustainable agriculture" is not necessarily a current situation but a goal for the future, a prediction.^[20] For all these reasons sustainability is perceived, at one extreme, as nothing more than a feel-good [buzzword](#) with little meaning or substance^{[21][22]} but, at the other, as an important but unfocused concept like "liberty" or "justice".^[23] It has also been described as a "dialogue of values that defies consensual definition".^[24]

History

Main article: [History of sustainability](#)

In early human history the environmental impacts of small bands of hunter-gatherers would have been relatively small, even though the use of fire and the desire for specific foods may have altered the natural composition of plant and animal communities.^[25] The [Neolithic Revolution](#) 2,500 to 10,000 years ago marked the emergence of [agriculture](#) and settled communities. Societies outgrowing their local food supply or depleting critical resources either moved on or faced collapse. In contrast, stable communities of [shifting cultivators](#) and [horticulturists](#) existed in [New Guinea](#) and [South America](#), and large agrarian communities in [China](#), [India](#), [Polynesia](#) and elsewhere have farmed in the same localities for centuries.^{[26][27]}

Technological advances over several millennia gave humans increasing control over the environment. But it was the Western [industrial revolution](#) of the 17th to 19th centuries that tapped into the vast growth potential of the energy in [fossil fuels](#) to power sophisticated machinery technology.^[28] These conditions led to a human [population explosion](#) and unprecedented industrial, technological and scientific growth that has continued to this day. From 1650 to 1850 the global population doubled from around 500 million to 1 billion people.^[29] By the 20th century, the industrial revolution had resulted in an exponential increase in the human consumption of resources and an increase in health, wealth and population. [Ecology](#) as a new scientific discipline was gaining general acceptance and ideas now part and parcel to sustainability were being explored including the recognition of the interconnectedness of living systems, the importance of global [natural cycles](#), the passage of energy through [trophic levels](#) of living systems.^[30]

After the deprivations of the [Great Depression](#) and World War II the [developed world](#) entered a post-1950s "great acceleration" of growth and population (the "[Golden age of capitalism](#)") while a gathering [environmental movement](#) pointed out that there were environmental costs associated with the many material benefits that were now being enjoyed. Technological innovations included plastics, synthetic chemicals and nuclear energy as fossil fuels also continued to transform society. The negative influences of the new technology were documented by American marine biologist and naturalist [Rachel Carson](#) in her influential book [Silent Spring](#) in 1962. A period of [peak oil](#) production was anticipated in 1956 by American geoscientist [M. King Hubbert's](#) peak oil theory.^[31] In the 1970s environmentalism's concern with pollution, the population explosion, consumerism and the depletion of finite resources found expression in *Is growth obsolete?*, by American economists [William Nordhaus](#) and [James Tobin](#),^[32] [Small Is Beautiful](#), by British economist [Ernst Friedrich Schumacher](#) in



1973, and *The Limits to Growth* published by the global think tank, the [Club of Rome](#), in 1975. By the late twentieth century environmental problems were becoming global in scale.^{[33][34][35][36]} and the 1973 and 1979 energy crises demonstrated the extent to which the global community had become dependent on a nonrenewable resource.

In 1987 the [United Nation's World Commission on Environment and Development](#) (the Brundtland Commission), in its report *Our Common Future* suggested that [sustainable development](#) was needed to meet human needs while not increasing environmental problems. In 1961 almost all countries in the world had the capacity to meet their own demand but by 2005 the situation had changed and many countries were able to meet their needs only by importing resources from other nations.^[34] A move toward more [sustainable living](#) emerged, based on increasing public awareness and adoption of [recycling](#), and [renewable energies](#). The development of renewable sources of energy in the 1970s and 80's, primarily in [wind turbines](#) and [photovoltaics](#) and increased use of [hydroelectricity](#), presented more sustainable alternatives to fossil fuel and [nuclear energy](#) generation.^{[37][38]}

In the 21st century there is heightened awareness of the threat posed by the human-induced [greenhouse effect](#).^{[39][40]} [Ecological economics](#) now seeks to bridge the gap between ecology and traditional [neoclassical economics](#).^{[41][42]} and proposes an inclusive and ethical economic model for society. Many new techniques have arisen to help measure and implement sustainability, including [Life Cycle Assessment](#), [Cradle to Cradle](#), [Ecological Footprint Analysis](#), and [green building](#).^[43] The work of [Bina Agarwal](#) and [Vandana Shiva](#) amongst many others, has brought some of the cultural knowledge of traditional, sustainable agrarian societies into the academic discourse on sustainability, and blended that knowledge with modern scientific principles.^[44]

Notes

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