

# What is sustainability?



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The most popular definition of sustainability can be traced to the 1987 United Nation Conference, where it was defined sustainable developments as those that “meet present needs without compromising the ability of future generations to meet their needs”.

*The first broadly accepted definition of sustainability dates back to 1987, were the United Nations (UN) World Commission on Environment and Development (WCED) defined sustainable development the “**development that meets the needs of present generations without compromising the ability of future generations to meet their own needs**”. Many more definitions of sustainable development appeared, differing in some aspects, however the general consensus is that sustainable development has to include improvements at the social, environmental and economic level.*

*Under the two main concerns of severe ecological damage and the natural biophysical limits of an economy, two main lines of thought developed: weak vs. strong sustainability.*

*The **weak sustainability concept** was developed by Robert Solow and John Hartwick, two neoclassical economists. According to this view, what matters for future generations is the total aggregate stock of capital (human-made and natural). It does not matter how much of non-renewable resources current generations use or how much they pollute, has long as there are enough built infrastructures to compensate.*

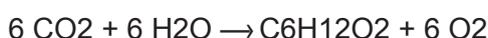
*By contrast, the **strong sustainability concept** basically says that natural capital is non-substitutable; it recognizes the unaccounted ecological services and life-support functions performed by many forms of natural capital and the considerable risk associated with their irreversible loss.*



## What is sustainability?

The way societies evolved set humanity aside from Nature. People easily forgot that, in fact, we are Nature as well. Everything that we need comes from Nature. While for modern societies this link is growing weaker, for primitive men it was easily acknowledged. The food and water that keep our bodies alive, all the materials that we consume, climate stability and ultraviolet radiation protection, are some of the services that Nature provides us.

The energy that powers the planet Earth, and thus the supplier of its services, is sunlight. Photosynthesis is the reaction that converts this energy into a usable one. It occurs in organisms with chlorophyll; it converts sunlight, carbon dioxide (CO<sub>2</sub>) and water into chemical energy (carbohydrates) with release of oxygen:



The importance of this reaction is incredible, since the majority of the resources Humanity depends on were, in time, a simple sugar molecule.

By this, the link between economies and the environment is obvious. However the neoclassical economic theory sees Nature as an infinite resource provider, not regarding its growing and renewal rates. In the early 70's the book "Limits to Growth", brought up these concerns and discussed whether or not continued economic growth would inevitably lead to severe environmental degradation and a consequent social collapse at a global scale. The issue of sustainability was raised, and further discussions continued.

The first broadly accepted definition of sustainability dates back to 1987, were the United Nations (UN) World Commission on Environment and Development (WCED) defined sustainable development the "development that meets the needs of present generations without compromising the ability of future generations to meet their own needs". Another important message of the same document, known as the Brundtland Report, is the inequity in the use of resources: "Some consume the Earth's resources at a rate that would leave little to future generations. Others, many more in number, consume far too little and live with the prospects of hunger, squalor, disease and early death." Many more definitions of sustainable development appeared, differing in some aspects, however the general consensus is that sustainable development has to include improvements at the social, environmental and economic level.



Figure 1 – Sustainable Development Triangle.



To support sustainable development, political decisions have to be taken. However, the political path to sustainability is hard. Acknowledging the current over usage of natural resources might imply material constraints on the economy. Economic growth is defined as rising aggregate consumption or output; any material constraints on an economy will lead, at a given period, to the cessation of growth. Many believe that with the current economic paradigm, the cessation of growth will lead to catastrophic consequences.

Under the two main concerns of severe ecological damage and the natural biophysical limits of an economy, two main lines of thought developed: weak vs. strong sustainability.

The weak sustainability concept was developed by Robert Solow and John Hartwick, two neoclassical economists. According to this view, what matters for future generations is the total aggregate stock of capital (human-made and natural). It does not matter how much of non-renewable resources current generations use or how much they pollute, as long as there are enough built infrastructures to compensate. In other words weak sustainability allows the substitution of equivalent human-made capital for depleted natural capital.

By contrast, the strong sustainability concept basically says that natural capital is non-substitutable; it recognizes the unaccounted ecological services and life-support functions performed by many forms of natural capital and the considerable risk associated with their irreversible loss. Strong sustainability requires that natural capital stocks should be held constant independently of human-made capital.

## References

Meadows et al., 1972. D.H. Meadows, D.L. Meadows, J. Randers and W.W. Behrens *The Limits to Growth*, Universe, New York.

Brundtland, 1987. *Our Common Future*, Oxford University Press, Oxford (1987).

## + info

**For more on the topic of sustainability, see:**

United Nations Division for Sustainable Development (<http://www.un.org/esa/sustdev/>)

Neumayer, E., 2003. *Weak versus strong sustainability: exploring the limits of two opposing paradigms*, Edward Elgar, Cheltenham.

**To understand in depth the relation of the Ecological Footprint and sustainability, see:**

Wackernagel, M. and Rees, W., 1995. *Our Ecological Footprint: Reducing Human Impact on the Earth*, New Society Publishers, Philadelphia, PA.

## How to cite?

Project ECOSALT, 2009. "How do we define sustainability?" in <http://www.ecosalt.org>, accessed in [date].

Project ECOSALT developed



in a R&D consortium Instituto Superior Técnico of Universidade Técnica de Lisboa and Sativa S.A

Project ECOSALT supported by



Programa de Incentivos à Modernização da Economia