

What is sustainable?

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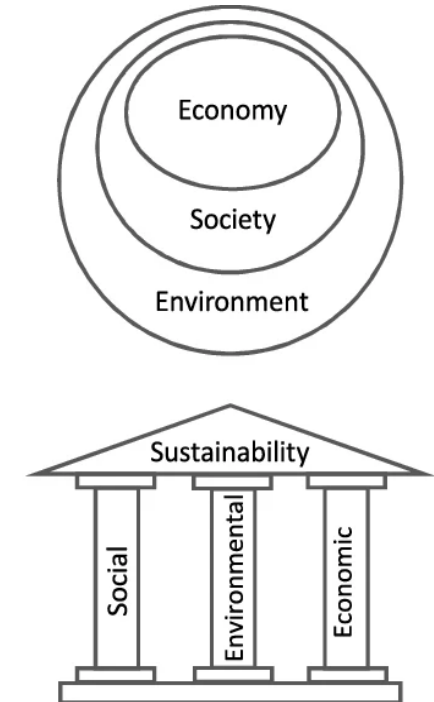
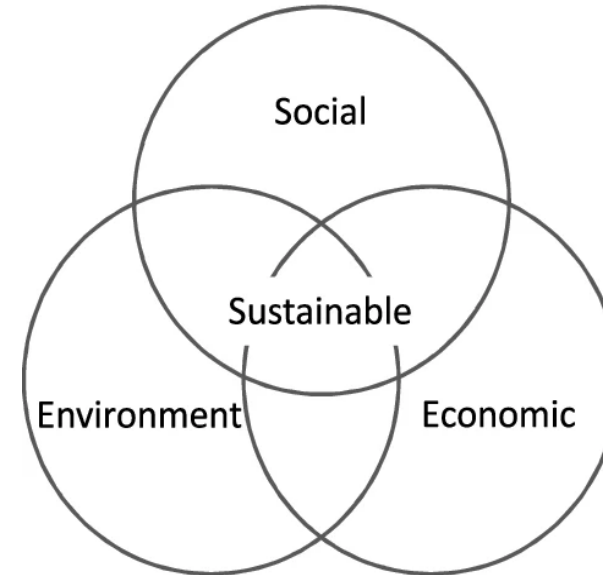
Where does the concept come from?

UN report: *Our Common Future*
(*Brundlandt Report*), published in 1987:

“Sustainable development is development that

meets the needs of the present

without compromising the ability of future generations to meet their own needs.”



Source: „Left, typical representation of sustainability as three intersecting circles. Right, alternative depictions: literal ‘pillars’ and a concentric circles approach” by B. Puris, Y. Mao & D. Robinson, *Sustainability Science* volume 14, pages 681–695 (2019), <https://doi.org/10.1007/s11625-018-0627-5>, licensed as: [Creative Commons Attribution 4.0 International License](#)

First ideas

- As process: *Sustainable development is **development** that meets the needs of the present without compromising the ability of future generations to meet their own needs*
- As some kind of origin:
 - Origin of both portion of matter and energy: *Sustainable is an origin of **portions of matter or energies** made by or produced from life forms and that replenish on a **human time scale**.*
 - *Human time scale brings in some link to the renewable class (Renewable is an origin of energies that replenish on a human time scale.)*
 - Origin of only portion of matter: *Sustainable is an origin of **portion of matter** that indicates that the portion of matter conforms to some **sustainability criteria**.*
 - renewable is only applicable to energy, so this would be the parallel origin for portion of matter classes
 - Shifting the problem to a class sustainability criteria
- There are different sustainability criteria in the domain (e.g. Renewable Energy Directive, Biomassestrom-Nachhaltigkeitsverordnung, Forest Stewardship Council for wood products)

Problem with defining sustainable as subclass of origin

- General idea of an origin, that it stays during conversion steps:
 - Crude oil (fossil origin) => refining process => gasoline (fossil origin)
- Sustainable can be lost, extreme counter-example:
 - Organic cotton (sustainable) => textile fabrication => t-shirt
 - But: textile fabrication is sometimes with forced labour and polluting nearby rivers => this is not sustainable!

Current proposal

- Define sustainable not as origin but as a general quality:
Sustainable is a quality of a material entity or good that indicates that the material entity or good conforms to some sustainability criteria.
- Define a sustainability criterion class:
A sustainability criterion is a XYZ that intends to meet the needs of the present without compromising the ability of future generations to meet their own environmental, economic and social needs.
 - Potential parent class plan specification:
A directive information entity with action specifications and objective specifications as parts that, when concretized, is realized in a process in which the bearer tries to achieve the objectives by taking the actions specified.
- Axioms
 - sustainable 'has bearer' some ('material entity' or good)
 - sustainable 'is defined by' some sustainability criterion

Text slide with bullets in three layers

- *A sustainable flow potential is a type of flow potential that takes into account all aspects of sustainability, which usually requires careful consideration and evaluation of different ecological and socio-economic aspects. The differentiation of the sustainable potential is blurred, since ecological aspects may already have been considered for the technological or economic potential, depending on the author.*
- *A sustainable stock potential is a type of stock potential that takes into account all aspects of sustainability, which usually requires careful consideration and evaluation of different ecological and socio-economic aspects. The differentiation of the sustainable potential is blurred, since ecological aspects may already have been considered for the technological or economic potential, depending on the author.*
- Shorten to: ... *that takes into account some sustainability criteria.*
- Make second sentence an editor note

Thank you for your attention!

Do you have any questions?

