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Sustainability (technical aspects which address societal aspects)

Definition

A broad and not IT specific definition on 'sustainable development' from Wikipedia:

Sustainable development *is a pattern of resource use that aims to meet human needs while preserving the* environment *so that these needs can be met not only in the present, but in the indefinite future. The term was used by the* Brundtland Commission *which coined what has become the most often-quoted definition of sustainable development as* development *that "meets the needs of the present without compromising the ability of future generations to meet their own needs."*[1]

Sustainable development ties together concern for the carrying capacity *of* natural systems *with the social challenges facing humanity. As early as the 1970s "sustainability" was employed to describe an* economy *"in equilibrium with basic ecological support systems" (Stivers, 1976: 187)*[2]*. Ecologists have pointed to the "limits of growth" (Meadows, Meadows, Randers, & Behrens, 1971)*[3] *and presented the alternative of a "steady state economy" (Daly, 1973, 1991)*[4] *in order to address environmental concerns.*

In the IT specific context an CIO article (ABC: An Introduction to Environmentally Sustainable IT) defines sustainable IT as :
"*Sustainable, or "green," IT is a catch-all term used to describe the manufacture, management, use and disposal of information technology in a way that minimizes damage to the environment. As a result, the term has many different meanings, depending on whether you are a manufacturer, manager or user of technology."*

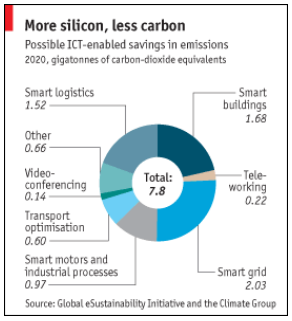
Sustainability in the broader context needs also to consider societal aspects such as the impact of IT on the work environment esp. in developing countries.

Related concepts and technologies

- Green IT
- Cloud Computing
- Grid computing
- Social Responsibility

Status and market potential

the Global eSustainability Initiative (GeSI: http://www.gesi.org/) has joined the Climate Group, a non-profit environmental club, to examine how information and communications technologies (ICT) affect climate change. The following figure, from http://www.economist.com/business/displaystory.cfm?story_id=11585208, summarise their findings.



Legislation/regulation (e.g. in Europe) is prohibiting the use of certain toxic substances in the production of IT equipment, other regulatory measures require a safe disposal of IT equipment at the end of the life cycle. In addition to these regulatory requirements all major IT companies are offering services and products to improve the energy efficiency as this is becoming a growing business opportunity. It is estimated that the power consumption of IT equipment accounts to about 2% of the total carbon dioxide (CO_2) emissions. However, sustainable IT is not only about savings on e.g., power consumption, but to use IT to improve the manufacturing, usage and disposal of non-IT products.

The European Commission has just released (Sept 2008) a new Communication 'Sustainable industry for a competitive Europe' accompanied by a specific action plan (see

http://ec.europa.eu/enterprise/environment/sip/sip_a1_en.htm). Such initiatives will often lead to new standard activities in European Standards Organisations (CEN/CENELEC/ETSI).

Standards

IEEE mentions on their homepage emerging fields like 'green technologies', but unfortunately no additional information could be found. They have published IEEE 1680(TM), "Standard for Environmental Assessment of Personal Computer Products" http://standards.ieee.org/announcements/pr_1680epa.html

CEN is involved in some research projects (e.g., Smart Metering).
CENELEC is dealing with Energy Management Standards. Both groups have recently created a joint working group CEN/CENELEC BT/JWG "Energy Management" anticipating new work from the EU Commission related to the EU sustainability initiatives.

Standards to measure/benchmark energy efficiency of IT equipment are being developed by Ecma International (Ecma TC 38).