

Main concepts within sustainable development



Paula Bacelar Nicolau

**Department of Sciences and Technology, Universidade Aberta
Centre for Functional Ecology (CFE), University of Coimbra**



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Main concepts within sustainable development

The main aim of this topic is to comprehend and define the main concepts associated with **sustainable development**, **sustainability**, **sustainability science**, and **education for sustainable development**.



These slides is to guide your study and concepts and to link you for further readings



Sustainable development is generally considered a new development model that emerged during the late 20th century, ... when in reality the concept of is much older.

In 1713, Hannss Carl von Carlowitz used the German term for “sustainable use” in his publication on sustainable forestry, and Thomas Malthus (1798 and after) noted the environmental limits to population growth.

Problems, ideas and practices that are currently classified under the sustainability area have roots that can be traced back for many thousands of years.

As we know the search for a balance between the demand for raw materials for food, clothing, shelter, energy, and other goods, and the environmental limits of ecosystems is a constant concern throughout human history.



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The Blue Marble from Apollo 17, NASA, 1972

Currently, the emergence of sustainable development was mainly an intellectual answer to reconcile the conflicting goals of economic growth with environmental protection.



The modern understandings of sustainable development emerged gradually since the 1950s, after World War II.

It was also during the 2nd half of 20th century, a period of unprecedented economic growth and scientific and technological innovations, together with a rapid population growth, that humanity began to exceed the environmental limits of the Earth, hence destabilizing its environmental equilibrium, ... also with damaging consequences for the well-being of current ... and future generations.

The Blue Marble foto, taken in space from Apollo 17, in 1972, illustrated for the 1st time the limits of our planet and stressed the emergency to change.

Hence, currently, the emergence of **sustainable development** was mainly an intellectual answer to reconcile the conflicting goals of economic growth with environmental protection.



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Milestones

- 1968 – UNESCO Conference on Biodiversity
- 1972 – UN Conference on Human Environment, Stockholm
- 1980 – World Conservation Strategy
- 1987 – *Our Common Future*
- 1992 – UN Conference on Environment and Development, Rio Janeiro, (“Earth’s Summit”)
- 2000 – United Nations Millennium Summit
- 2000 – Earth Charter
- 2002 – United Nations World Summit on Sustainable Development, Johannesburg
- 2005 – 2015 Decade for Education on Sustainable Development
- 2009 – World Conference on Education for Sustainable Development, Bonn
- 2012 Rio+20 United Nations Conference on Sustainable Development



In less than fifty years sustainable development grew from an alternative view on development towards a broadly acknowledged and formal politically endorsed development model.

In this slide are outlined the main milestones relating to SD – highlighting the...

1968 – UNESCO Conference on Biodiversity that recognized that the global environment was reaching a threshold,

1972- UN Conference on Human Environment, Stockholm – which is recognized as the beginning of public and political awareness of global environmental problems.

1987 Our Common Future – also known as Brundtland Report – was published by the World Commission on Environment and Development, while chaired by Gro Harlem Brundtland, former Prime Minister of Norway. Among others, Our common future (i) launched a famous definition of sustainable development and (ii) succeeded to integrate development and environment objectives.

It also paved the way for the United Nations Conference on Environment and Development, held in Rio de Janeiro, in 1992.

1992 UN Conference on Environment and Development, also known as the “Earth’s Summit” represents the official worldwide political endorsement of sustainability as a new development model.

From which 2 documents came out, signed by 178 governments: AGENDA 21—the global action plan for sustainable development—and the Rio Declaration with 27 sustainability principles

2002 United Nations World Summit on Sustainable Development – Revision and recommendation of the outcomes of 1992 Earth Summit was made and where it was considered the adoption of the

“Decade for Education on Sustainable Development”

2005 – 2015 Decade for Education on Sustainable Development



Main concepts within sustainable development

What is sustainable development (SD)?

... “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Brundtland Commission Report (1987)



See: Disterheft et al. (2013)
Waas et al. (2011)



What is sustainable development (SD)?

From the Brundtland report it is the
... “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Brundtland Commission Report (1987)

In other words it is ...

The use of the Earth's resources - renewable and nonrenewable - in a manner that satisfies our current needs, but does not compromise the future availability of those resources, and hence the future of humanity.

This definition of sustainable development is intuitively appealing to the common sense of mankind, it is like happiness something that everybody wants, and is hard to be “against”.

... But what sustainable development precisely encompasses varies greatly amongst various stakeholders.

Reasons for this variety include:

the normative nature of sustainability;

the different disciplinary and professional background of people dealing with the sustainability issue;

and political issues

Further readings: Disterheft et al. 2013



Main concepts within sustainable development

What is sustainable development (SD)?

Our development as a society – must consider the sustainability of 3 major axis:

- Social sustainability
- Economic sustainability
- Environmental sustainability



This more recent concept of SD appeared thus with environmental issues. However, our sustainable development as a society – must consider other dimensions, usually social, economic and environmental.

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Sustainability Models

Social
Bearable
Equitable
Sustainable
Viable

Environment **Economic**

Environment
Society
Economy

"nested" model

(By [Johann Dréo](https://en.wikipedia.org/wiki/File:Sustainable_development.svg#/media/File:Sustainable_development.svg)
https://en.wikipedia.org/wiki/File:Sustainable_development.svg#/media/File:Sustainable_development.svg)

(adapted from UNESCO 2012)

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These three spheres – society, environment and economy – are intertwined.

... a “prosperous” society relies on a healthy environment to provide food and resources, safe drinking water, and clean air for its members, as well as a “prosperous” economy...

Models are used to simplify complex realities such as SD, to make decisions, and to act upon them.

For SD appropriate models are needed.

Various models have been put forward, relating to the main considered pillars/dimensions/spheres.

Some authors have included a fourth pillar of culture, institutions or governance. Two models are presented here.

The 1st model shows sustainable development at the confluence of three constituent parts.

The latter model: “nested” model –presents a more integrated and holistic view of SD, which (i) places human well-being central and does not separate the economy and (material) welfare from other development objectives, and which (ii) locates society within the environment and its limits.



Main concepts within sustainable development

- **Sustainability**
- **Sustainable development**

...refers to the many processes and pathways to achieve it (e.g. sustainable agriculture and forestry, sustainable production and consumption, good government, research and technology transfer, education and training, etc.)



See: Disterheft et al. (2013)



Sustainable development and Sustainability are two terms often heard, Sometimes used them interchangeably, sometime not.

We might then ask, what is the difference between *sustainable development* and *sustainability*?

Both terms should have an underlying focus on environmental balance.

Sustainability is often thought of as a long-term goal (i.e. a more sustainable world),

Sustainable development refers to the many processes and pathways to achieve it (e.g. sustainable agriculture and forestry, sustainable production and consumption, good government, research and technology transfer, education and training, etc.).

Sustainable development does deal with a wide nature of subjects and areas!

Further readings:
Disterheft et al. (2013)



Main concepts within sustainable development

- **Sustainability Science**

It encompasses a multitude a subjects/ problems, globally interconnected, and hence a multitude of transdisciplinary approaches.

... from science and technology, to politics and economics, to human lifestyles and behavior—this new field of science must necessarily embrace the social and natural sciences.

Sustainability science investigates the complex and dynamic interactions between natural and human systems and how these can be transformed in a sustainable way based on a long-term perspective.

See:
Komiya & Takeuchi (2006)
Disterheft et al. (2013)



This new emerging area of sustainability science, is not a 'science' by any usual definition.

It is usually defined as a discipline that points the way toward a sustainable society.

It encompasses a multitude a subjects/ problems, globally interconnected, and hence a multitude of transdisciplinary approaches.

... from science and technology, to politics and economics, to human lifestyles and behavior—this new field of science must necessarily embrace the social and natural sciences.

Sustainability science investigates the complex and dynamic interactions between natural and human systems and how these can be transformed in a sustainable way based on a long-term perspective.

Further readings:

Komiya & Takeuchi (2006)

Disterheft et al. (2013)



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- **Education for Sustainable Development (ESD)**

1992 - UN Conference on Environment and Development, Rio Janeiro, "Earth's Summit")

2005 – 2015 Decade for Education on Sustainable Development

2009 – World Conference on Education for Sustainable Development, Bonn

DESD Final Report available
<http://www.unesco.org/new/en/unesco-world-conference-on-esd-2014/esd-after-2014/desd-final-report/>



Finally,

Sustainability science must nurture a generation of leaders who are capable of appreciating the significance of changes in global, social, and human systems that occur over the long term, and who choose the path of sustainability in implementing policies on the basis of this understanding.

Education for sustainable development has been a field for international educational policy-making since the beginning of the SD debate, starting in 1992 at the UN Earth Summit in Rio de Janeiro.

Its importance being confirmed by 2005 – 2015 Decade for Education on Sustainable Development (that has stimulated numerous projects on all educational levels)

Further readings:

UNESCO (2014) DESD Final Report



Main concepts within sustainable development

• Education for Sustainable Development (ESD)

Reflecting the difficulty in defining sustainable development, ESD also has no single definition, and often terms such as Education for Sustainability or Sustainability Education are used interchangeably.

The educational concept of ESD refers to all educational levels, from kindergarten to primary, secondary, and tertiary education until life long learning, and consists of different learning objectives, content foci, and pedagogical approaches.

- (a) education *about* sustainable development and
- (b) education *for* sustainable development.

DESD Final Report available (2014)
Disterheft et al. (2013)

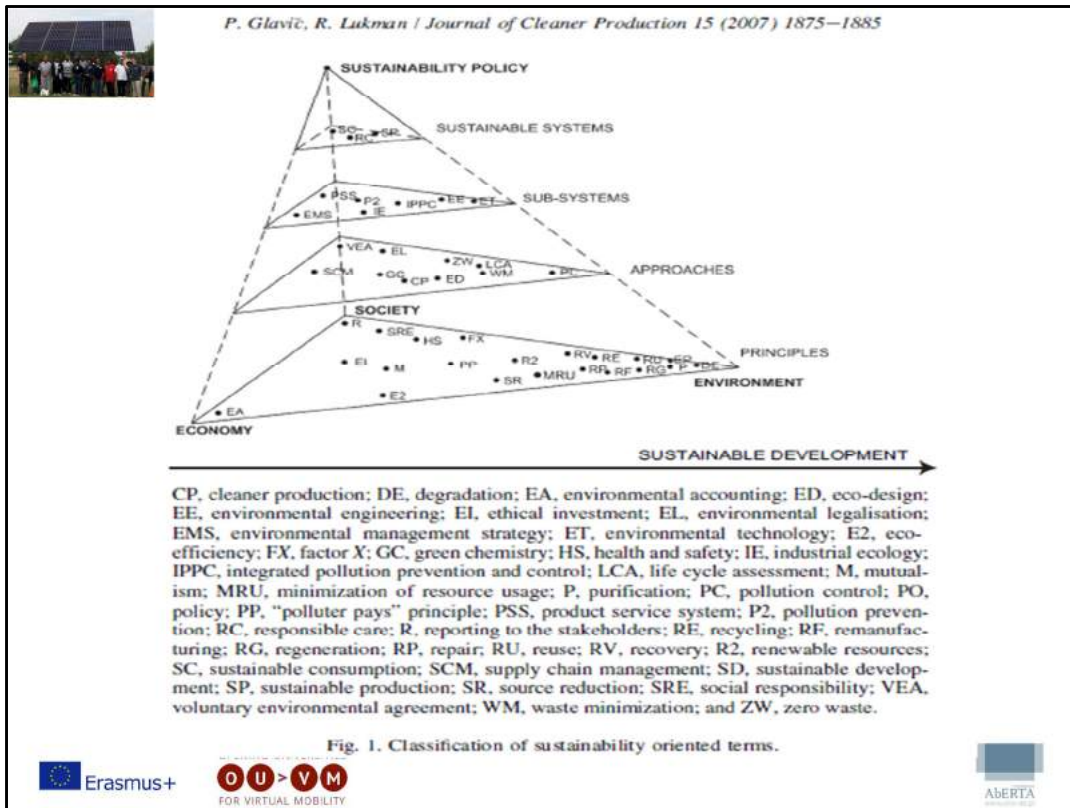


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For ex. We may distinguish between
(a) education *about* sustainable development and
(b) education *for* sustainable development.

The first referring mainly to knowledge transfer about SD,
While the second focuses more on a *transformative and active* approach to education



Lastly it is important to stress the importance of terminology. Terminology serves as a basis for communication within a particular scientific field. Many new terms have been introduced in the field of sustainable development. In addition, in sustainable development, various terms are used to describe different strategies, actions, effects, phenomena, etc. Movement from usage of inappropriate terms and unambiguous definitions can help us to make more rapid progress in sustainable development science and engineering.

Further reading: Glavi & Lukman (2007)



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