



Sustainable Development (Definitions and History)

Copyright © Özgür ZEYDAN (PhD)

<http://www.ozgurzeydan.com/>

Sustainability

- Sustainability could be defined as an ability or capacity of something to be maintained or to sustain itself.
- It's about taking what we need to live now, without jeopardizing the potential for people in the future to meet their needs.
- If an activity is said to be sustainable, it should be able to continue forever.

Sustainable Development

- “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
- the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs.”
- Ref: Brundtland Report

Sustainable Development

- Earth Summit (1992) declared that:
- "the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations."

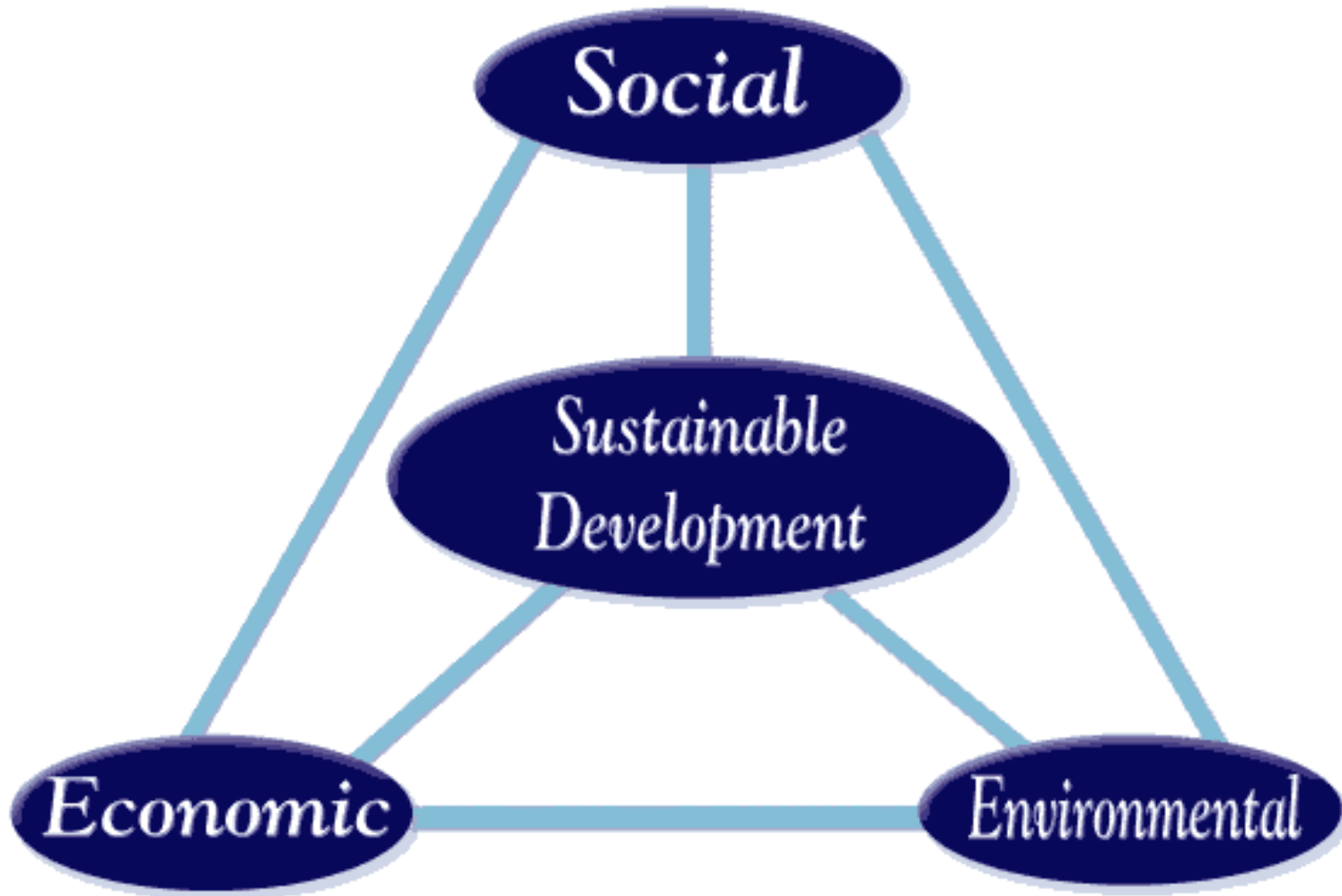
Sustainable Development

- Sustainable Development is not just about the environment, but about the economy and our society as well.
- Sustainable Development encourages the conservation and preservation of natural resources and of the environment, and the management of energy, waste and transportation.
- It involves the equitable sharing of the benefits of economic activity across all sections of society, to enhance the well-being of humans, protect health and alleviate poverty.

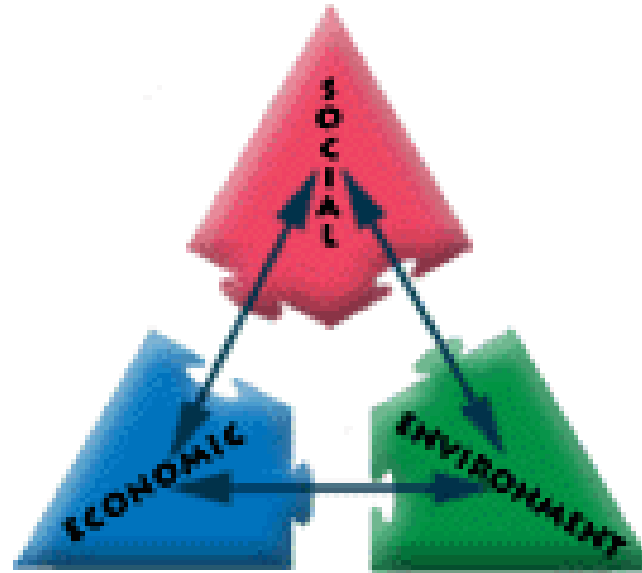
Venn Diagram of Sustainable Development



Interrelationship of the Social, Economic and Environmental Needs



Social, Economic and Environmental Needs



Services
Household Needs
Industrial Growth
Agricultural Growth
Efficient Use of Labor

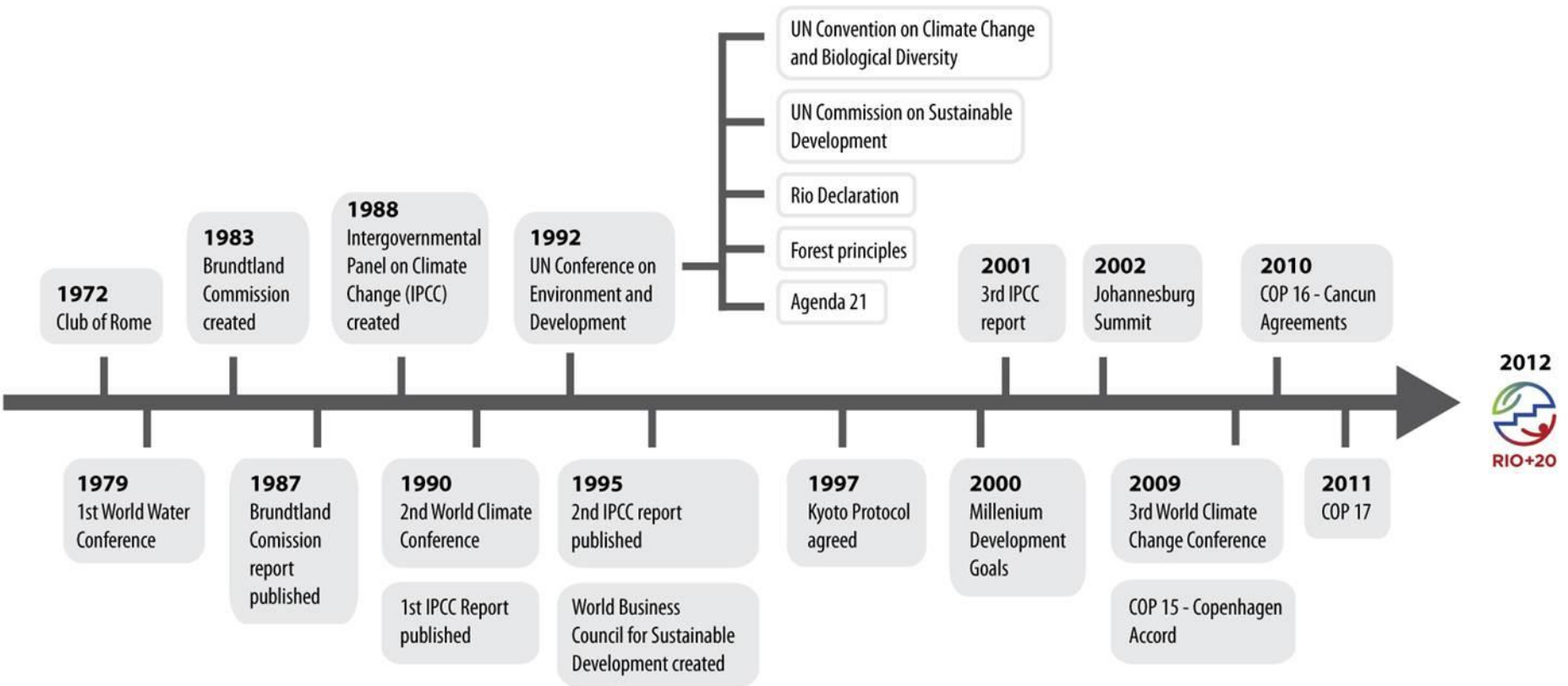
Equity
Participation
Empowerment
Social Mobility
Cultural Preservation

Biodiversity
Natural Resources
Carrying Capacity
Ecosystem Integrity
Clean Air and Water

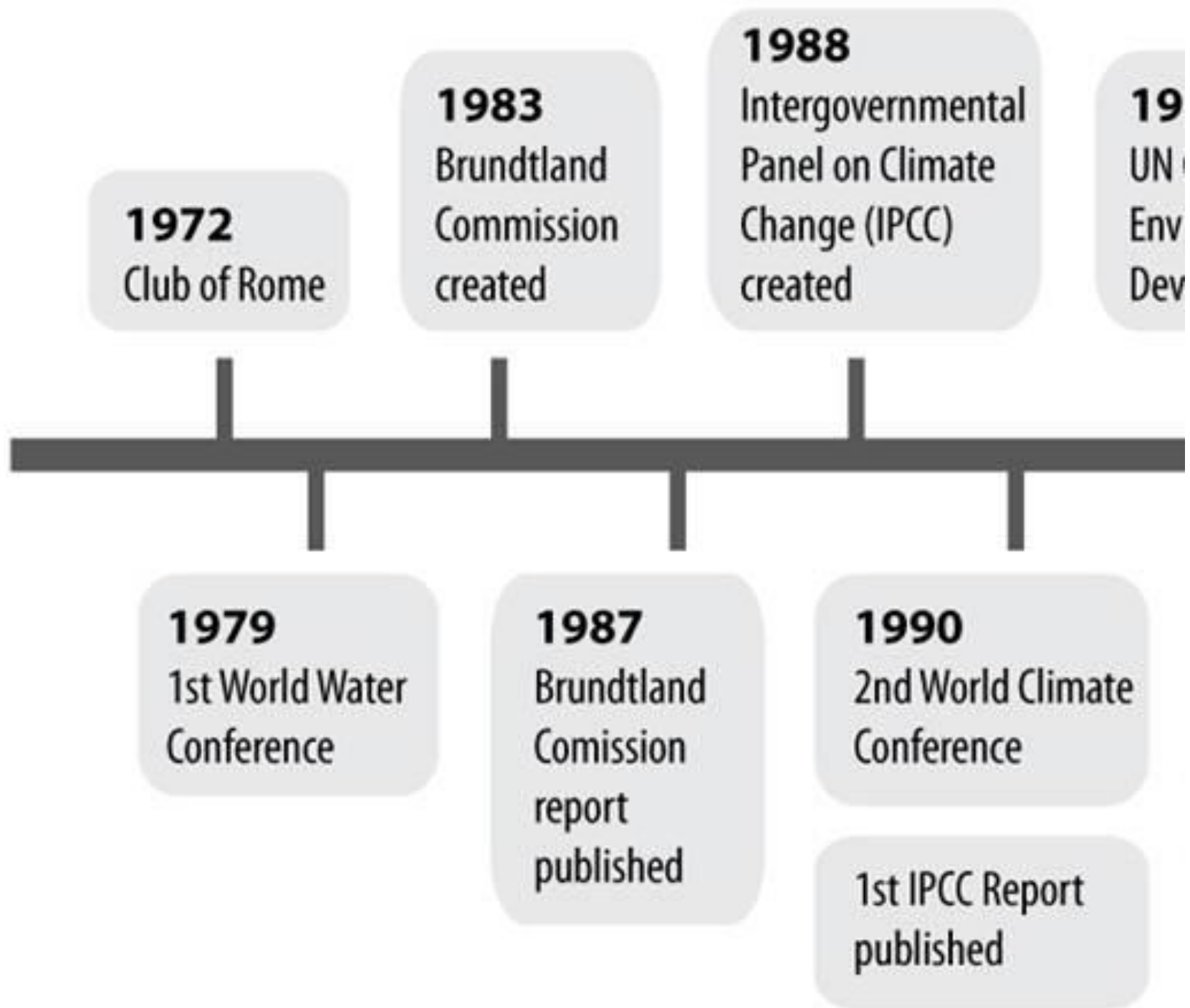
Philosophy of SD

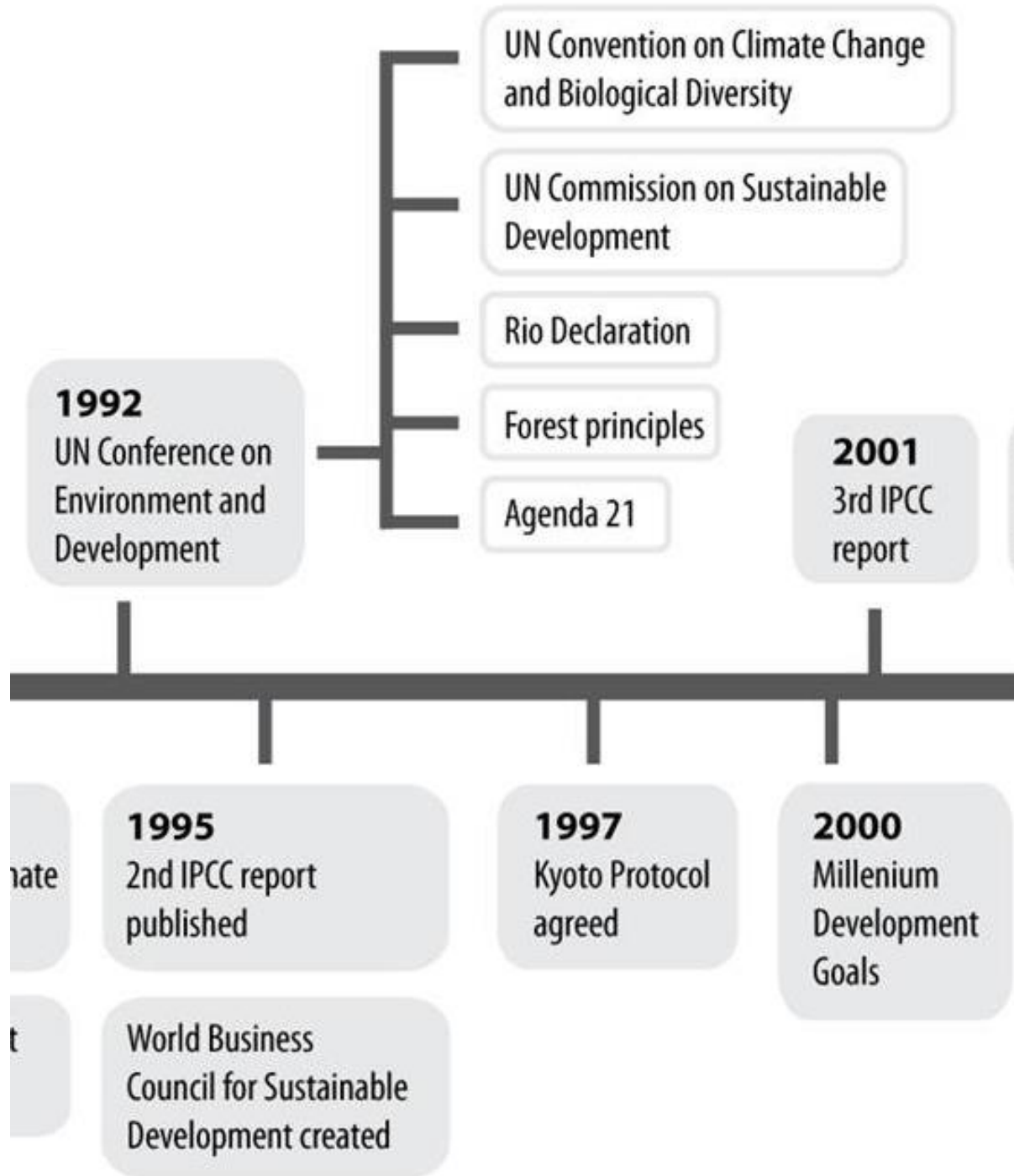
- Sustaining economic development, improving quality of life without depleting resources.
- Sharing resources among other nations.
- Sharing resources among future generations.

Timeline of Events Related to Sustainable Development



Cheney, Libby, and Sullivan, Brian. 2013. Overview of sustainable development trends. SPE Web Events Webinar presented 18 September 2013.
<http://petrowiki.org/images/8/8b/SustainableDevelopmentTimeline.jpg>





2002

Johannesburg
Summit

2010

COP 16 - Cancun
Agreements

2012



RIO+20

2009

3rd World Climate
Change Conference

2011

COP 17

COP 15 - Copenhagen
Accord

Some Key Dates in Sustainable Development

- **1968** United Nations Biosphere Conference, Paris.
- **1968** Conference on ecological aspects of international development, Washington DC.
- **1972** UN conference on the human environment, Stockholm.
- **1973** Patterns of resource use, environment and development strategies, Mexico.
- **1974** 'North:South - A program for survival' (Brandt Report) published.
- **1975** World Conservation Strategy adopted.

Some Key Dates in Sustainable Development

- **1982 UN** General Assembly adopts Charter for Nature.
- **1983** World Commission on Environment and Development established.
- **1987** Commission produces 'Our Common Future' (Brundtland Report). Popularises the term 'sustainable development'.
- **1987** Montreal Protocol on substances that deplete the ozone layer.
- **1988** Toronto Convention on greenhouse gas emissions.
- **1988** Centre for Our Common Future established.

Some Key Dates in Sustainable Development

- **1991** Caring for the Earth conference.
- **1992** Earth Summit (UNCED): UN conference on environment and development, Rio de Janeiro. Agenda 21 established.
- **1992** UN establishes Commission on sustainable development.
- **1993** Convention on biodiversity ratified.
- **1994** Convention on climate change in force.
- **1994** UN conference on population and development, Cairo.
- **1997** Special UN discussions on implementation of Agenda 21.

Some Key Dates in Sustainable Development

- **1997** UN conference on climate change, Kyoto.
- **2000** The Millennium Declaration adopted by UN General Assembly defines 'respect for nature' as a fundamental value, and commits 'to integrate the principles of sustainable development into country policies'.
- **2002** World Summit on Sustainable Development in Johannesburg promotes environmental protection, economic and social development as interdependent and mutually reinforcing.
- **2005** UN Decade of Education for Sustainable Development (DESD) is launched to advance lifelong learning of knowledge, skills and values required for durable social transformation.

Some Key Dates in Sustainable Development

- **2012** United Nations Conference on Sustainable Development, Rio+20
- **2015** Paris Agreement

Review of Sustainability Terms and Their Definitions



Available online at www.sciencedirect.com



Journal of Cleaner Production 15 (2007) 1875–1885

Journal of
**Cleaner
Production**

www.elsevier.com/locate/jclepro

Review of sustainability terms and their definitions

Peter Glavič*, Rebeka Lukman

University of Maribor, Department of Chemistry and Chemical Engineering, Smetanova 17, SI-2000 Maribor, Slovenia

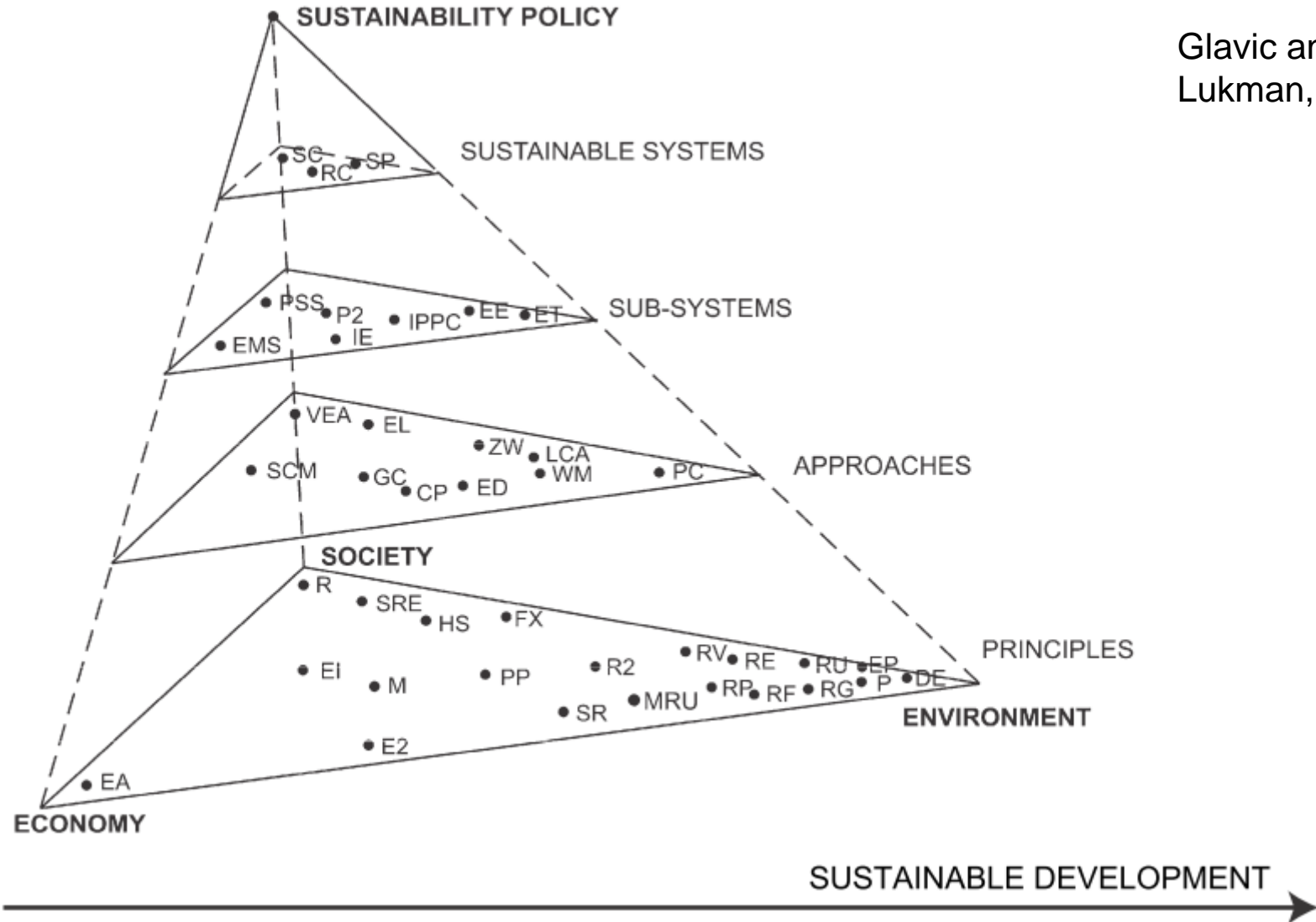
Received 13 December 2005; accepted 11 December 2006

Available online 27 February 2007

https://www.researchgate.net/publication/223250145_Review_of_sustainability_terms_and_their_definitions

Classification of Sustainability Oriented Terms

Glavic and Lukman, 2006



Classification of Sustainability Oriented Terms

- **CP**, cleaner production;
- **DE**, degradation;
- **EA**, environmental accounting;
- **ED**, eco-design;
- **EE**, environmental engineering;
- **EI**, ethical investment;
- **EL**, environmental legalisation;
- **EMS**, environmental management strategy;
- **ET**, environmental technology;
- **E2**, eco-efficiency;
- **FX**, factor X;
- **GC**, green chemistry;
- **HS**, health and safety;
- **IE**, industrial ecology;
- **IPPC**, integrated pollution prevention and control;
- **LCA**, life cycle assessment;
- **M**, mutualism;
- **MRU**, minimization of resource usage;
- **P**, purification;
- **PC**, pollution control;
- **PO**, policy;
- **PP**, “polluter pays” principle;

Classification of Sustainability Oriented Terms

- **PSS**, product service system;
- **P2**, pollution prevention;
- **RC**, responsible care;
- **R**, reporting to the stakeholders;
- **RE**, recycling;
- **RF**, remanufacturing;
- **RG**, regeneration;
- **RP**, repair;
- **RU**, reuse;
- **RV**, recovery;
- **R2**, renewable resources;
- **SC**, sustainable consumption;
- **SCM**, supply chain management;
- **SD**, sustainable development;
- **SP**, sustainable production;
- **SR**, source reduction;
- **SRE**, social responsibility;
- **VEA**, voluntary environmental agreement;
- **WM**, waste minimization;
- **ZW**, zero waste.

Glossary of SD

- **Access to safe water:** Measured by the number of people who have a reasonable means of getting an adequate amount of clean water, expressed as a percentage of the total population. An adequate amount of water is enough to satisfy metabolic, hygienic, and domestic requirements, usually about 20 liters per person per day.
- **Birth rate:** The number of births in a year per 1,000 population.
- **Carrying capacity:** The population that an area will support without undergoing environmental deterioration.

Glossary of SD

- **Child mortality rate:** The probability of dying between the ages of one and five, if subject to current age-specific mortality rates.
- **Death rate:** The number of deaths in a year per 1,000 population.
- **Demography:** The statistical study of human populations, especially with reference to size and density, distribution and vital statistics.
- **Developing country:** Low- and middle-income countries in which most people have a lower standard of living with access to fewer goods and services than do most people in high-income countries.

Glossary of SD

- **Economic growth/development:** The process by which a country increases its ability to produce goods and services.
- **Fertility rate (total):** The average number of children a woman will have during her lifetime.
- **GNP (gross national product):** The value (in U.S. dollars) of a country's final output of goods and services in a year. The value of GNP can be calculated by adding up the amount of money spent on a country's final output of goods and services, or by totaling the income of all citizens of a country including the income from *factors of production* used abroad.

Glossary of SD

- **GNP per capita:** The dollar value of a country's final output of goods and services in a year (its GNP), divided by its population. It reflects the average income of a country's citizens. Knowing a country's GNP per capita is a good first step toward understanding the country's economic strengths and needs.
- **Indicator:** A numerical measure of quality of life in a country. Indicators are used to illustrate progress of a country in meeting a range of economic, social, and environmental goals.

Glossary of SD

- **Infant mortality rate:** The number of infants, out of every 1,000 babies born in a given year, who die before reaching age 1. The lower the rate, the fewer the infant deaths, and generally the greater the level of health care available in a country.
- **Investment:** Money spent now in order to make the economy grow and have more money—or goods and services—later.

Glossary of SD

- **Life expectancy at birth:** The average number of years newborn babies can be expected to live based on current health conditions. This indicator reflects environmental conditions in a country, the health of its people, the quality of care they receive when they are sick, and their living conditions.
- **Literacy:** The ability to read and write a simple statement about one's everyday life and do simple mathematical calculations.

Glossary of SD

- **Natural resource accounting:** The process of adjusting national accounts such as GNP to reflect the environmental costs of economic production. Although methods are still being developed, natural resource accounting strives to determine the costs of depleting natural resources and damaging the environment.
- **Natural resources:** Materials that occur in nature and are essential or useful to humans, such as water, air, land, forests, fish and wildlife, topsoil, and minerals.
- **Population growth rate (average annual):** The increase in a country's population during one year, divided by the population at the start of that year.

Glossary of SD

- **Population projections:** Demographers make predictions about future population based on trends in fertility, mortality, and migration.
- **Renewable:** Able to be replaced or replenished, either by the earth's natural processes or by human action.
- **Sanitation:** Maintaining clean, hygienic conditions that help prevent disease through services such as garbage collection and wastewater disposal.

Glossary of SD

- **Social services:** Services generally provided by the government that help improve people's standard of living; examples are public hospitals and clinics, good roads, clean water supply, garbage collection, electricity, and telecommunications.
- **Under-5 mortality rate:** The probability that a newborn baby will die before reaching age five, if current living conditions stay the same. Unlike child mortality rates, under-5 mortality includes infant (0-1 year) deaths.
- **Urbanization:** The process by which a country's population changes from primarily rural to urban.

Glossary of SD

- Note that, this glossary is compiled for Environmental Engineering Students who are familiar with environmental terms.