CHAPTER 5

APPROACHES FOR SUSTAINABLE PRODUCTION

نهج الانتاج المستدام

Environmental impacts of economic development

Globally, we are talking about global warming caused by greenhouse gases, hence the episodes of climate change[1]:

- Drought; Desertification الجفاف ؛ التصحر
- Hurricanes; Tornadoes; Tsunamis; Cyclones الأعاصير ؛ وأمواج تسونامي ؛ الأعاصير ؛ الأعاصير
- Sea level مستوى سطح البحر
- Acid rain مطر حمضي
- We must continually fight to minimize the negative effects يجب علينا أن نكافح باستمرار للحد قدر الإمكان من الآثار السلبية

environmental impacts.

- On a local scale, these include atmospheric air, water and soil pollution, with negative repercussions on the health of biological beings. Natural ecosystems will be contaminated and degraded.

History of international climate negotiations

1992: Earth Summit. States recognize the existence of human-caused climate change and commit to combating it within the framework of an international convention [1].

1997: Kyoto Protocol. Through this universal protocol, industrialized countries commit to reducing their greenhouse gas (GHG) emissions by 5%.

2009: Copenhagen Conference. Countries commit to limiting global warming to 2°C, but without setting binding targets to achieve this.

2014: Lima Conference (COP20): prepares negotiations for 2015 to conclude with an agreement in Paris. (Keep global warming below 2°C)

environmental indicators

- They allow for the measurement and reporting of the performance of environmental regulations. They form a subset of sustainable development indicators [2].

- There are 2 main groups:

Simple indicators: measure only what is being sought

Indicators linked to the PSR (Pressure-State-Response) model: They produce performance indices, which are themselves a function of:

- **Pressure indicators** (human activity, divided into flow indicators that quantitatively measure emissions or withdrawals from the environment, and impact indicators that measure impacts on the quality of ecosystems),

- **State indicators** characterizing, at the time of the study, the degree of artificialization, eutrophication, biodiversity loss, degree of fragmentation of biological continuums, and the environment's ability to heal and absorb these pressures. These indicators are defined in relation to a target or reference state (to be defined), in order to aid decision-making, and refer to regulatory values...

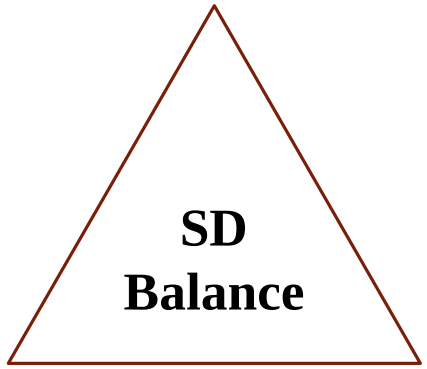
- **Response indicators** socio-economic, which characterize the actions implemented by society to make the pressure on the environment acceptable (e.g. habitat and natural infrastructure restoration management measures). They are defined in relation to target or regulatory values to validate the relevance of the measures taken and, through feedback, potentially redirect actions.

Sustainable Development (SD)

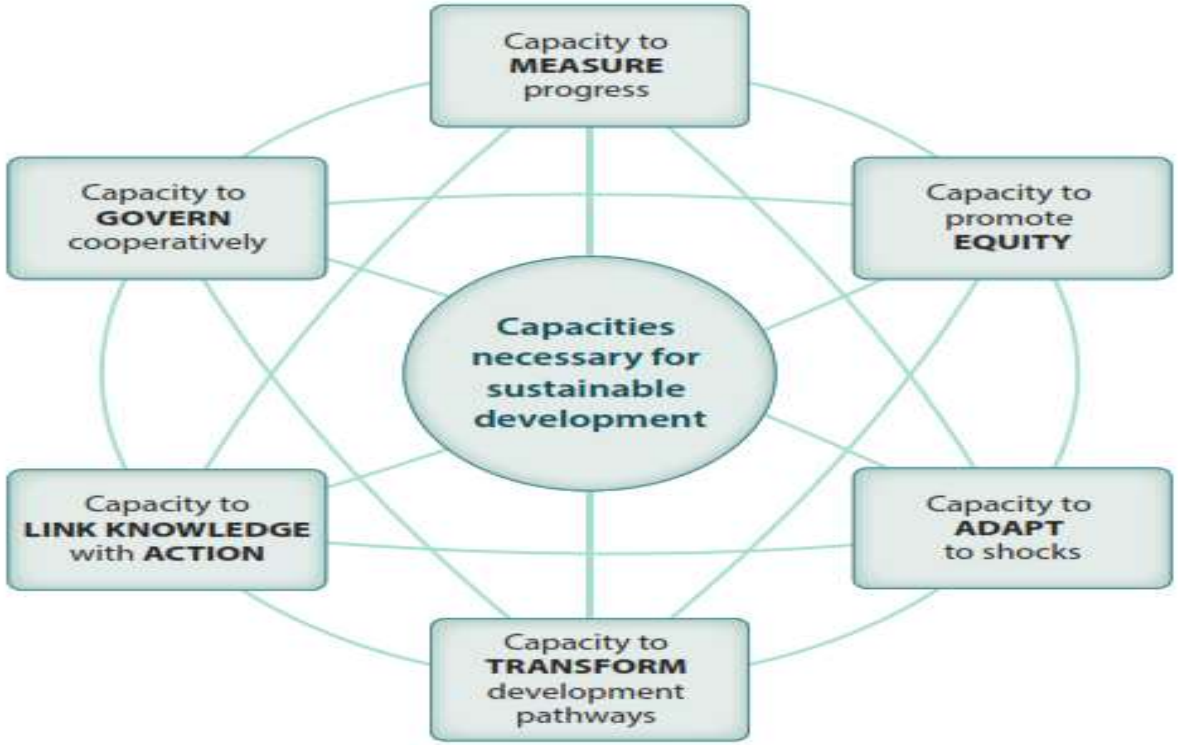
SD is a new way of thinking about the world. It is a political object whose ambition is to establish a better adjustment between three poles: economic, ecological and social[3].

Three pillars: ecological, social and economic

Environnement + **Governance**



Economy society

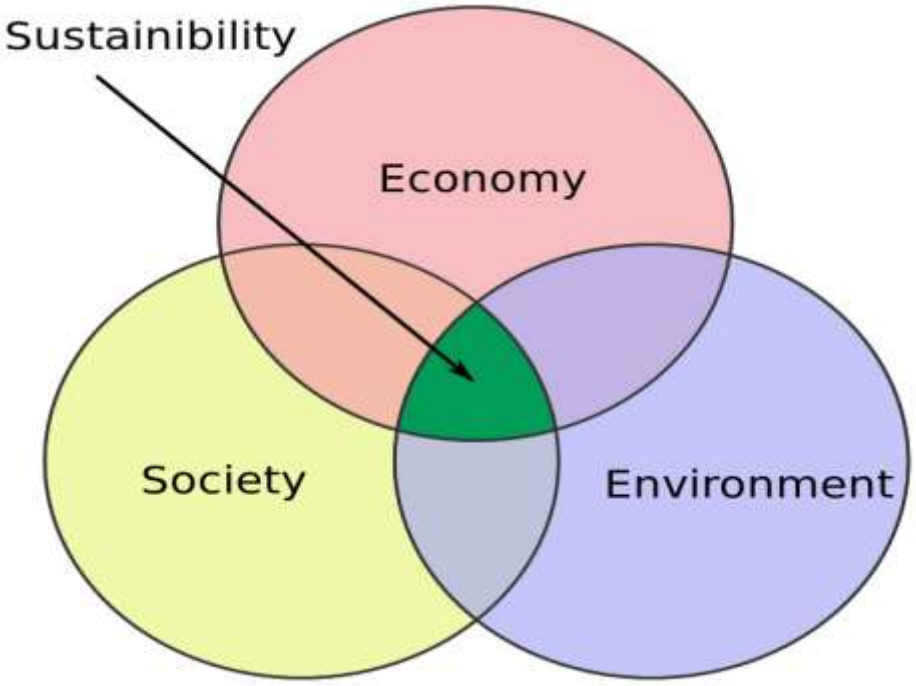


Sustainable Development (SD)

Report by Norwegian Gro Harlem Brundtland, 1987

This is the idea of development that can both reduce inequalities and reduce pressure on the environment.

- Responsibility for future generations
- A new approach: «think globally, act locally»
- Take into account the long time
- Three types of actors:
  - The Market
  - The state
  - Civil society



Procedure to follow

- Revision of Production and Consumption Patterns[4]
  - Industrial Ecology: Green Industry
  - Remanufacturing: Refurbishing used products
  - Eco design: Designing while respecting the principles of sustainable development
- Energy - Materials:
  - Renewable energy; Energy recovery
  - Renewable material resources (wood, water, etc.); Material recovery (recycling)
- Governance Modes
  - Local scale
  - Regional scale
  - Global scale

The Environment and Sustainable Development Professions

All professions are dedicated to the prevention and treatment of pollution, the protection of biodiversity and the anticipation of natural risks[4]:

- Eco-industrial enterprises,
- Design offices,
- Local authorities,
- Associations

All economic sectors are concerned: Primary- secondary and tertiary

The Role of Information Technology in Achieving Sustainable Development

In this era where technologies define competitive capabilities, information technology can play an important role in sustainable development. The boundless potential offered by information technology can be harnessed to bring about sustainable economic, social and environmental development through the following means of enhancing technology for sustainable development[5]:

1. Promoting research and development activities to advance new materials technology, information and communications technology, biotechnology, and adopting sustainable mechanisms.
2. Improving the performance of private institutions through specific inputs based on modern technologies, as well as creating new institutional models including technology cities and incubators.

3. Enhancing capacity building in science, technology and innovation to achieve sustainable development goals in the knowledge-based economy, especially since capacity building is the only means to promote competitiveness, increase economic growth, create new job opportunities and reduce poverty.
4. Developing plans and programs aimed at transforming society into an information society...where new technologies are integrated into social and economic development plans and strategies, while working towards global goals such as the Millennium Development Goals.
5. Preparing national innovation policies and new technology strategies with a focus on information and communications technology.

The Role of Communications in Achieving Sustainable Development

Knowledge and information are of course an essential element for the success of sustainable development, as they facilitate social, economic and technological changes, and help improve agricultural productivity, food security and rural livelihoods. However, this knowledge and information must be effectively communicated to people in order to benefit from it, which is done through communications[6]. Communications for development includes many media such as rural radio aimed at community development, multimedia approaches for training farmers, and the Internet to connect researchers, educators, extension workers, producer groups with each other and with global information sources.

[1] Historique du développement durable [archive].

[2] *Clark, William; Harley, Alicia (2020). "Sustainability Science: Toward a Synthesis". Annual Review of Environment and Resources. **45** (1): 331–86. doi:10.1146/annurev-environ-012420-043621.*

[3] Ben Purvis, Yong Mao et Darren Robinson, « Three pillars of sustainability: in search of conceptual origins », *Sustainability Science*, vol. 14, 3 septembre 2018, p. 681-695

[4] United Nations (2017) Resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313 Archived 28 November 2020 at the Wayback Machine)

[5] The 17 Goals". *Sustainable Development Goals*. UN. Retrieved 10 August 2022.

[6] Wills, Jackie (15 May 2014). "World Business Council for Sustainable Development: Vision 2050". *The Guardian*. Retrieved 17 May 2022.