

Institute of Natural and Life Sciences

Biological Sciences, / Agronomic Sciences / Semester 3 / Section A

Chapter II: Sustainable development

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2.1 Definition of sustainable development

Sustainable development is a concept of carrying out projects of different types taking into consideration three basic criteria: social equity, economic efficiency and respect for the environment. (figure 2.1).

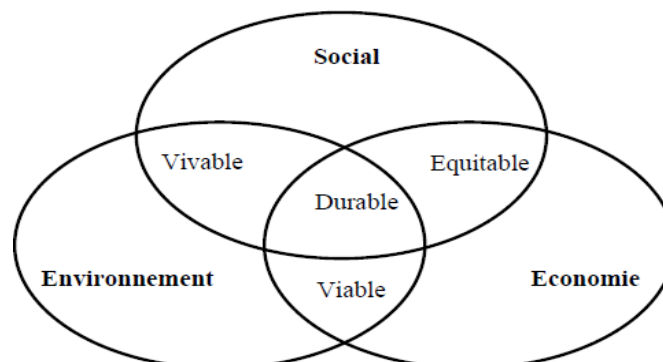


Figure 2.1 Diagram explaining that sustainable development involves optimizing decisions in the economic, social and environmental fields.

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

(Brundtland Report 1987. UN)

Currently, at the global level, raw material resources are diminishing. Pollution is increasing and continues to have more and more visible effects on the planet. On the other hand, social and economic problems are increasingly felt, such as unemployment, overpopulation, health problems, education, exclusion, poverty, malnutrition.

Sustainable development aims to solve all of these problems at once.

Through social equity, workers' rights are respected, unemployment decreases which solves many other social problems and stops inequalities. Human beings are respected and their rights preserved. The most deprived are protected.

Through economic efficiency, projects are successful and profitable for the country or region, and also for workers.

Through respect for the environment, pollution is reduced and the planet is preserved.

Sustainable development is based on a fundamental idea which consists of being aware that the planet's resources are not unlimited, while the population continues to increase (2 billion inhabitants in 1960, more than 6 billion today and 9 billion in 2050 according to UN forecasts) and technologies continue to develop.

Sustainable development is therefore beneficial for future generations while benefiting current generations. It is a long-term development.

2.2 Brief history

The first model of sustainable development was proposed by the economist Thomas Malthus, who analyzed in 1798 in his work entitled *Essay on the Principle of Population* [3] the sustainability of society. He highlighted the relationship between the availability of food and population growth.

Later in 1968, a non-political and independent group called the Rome Group was established to analyze the major problems of humanity in order to assist decision-makers and inform the general public. This group consisted of scientists, economists, statesmen, businessmen and high-ranking international dignitaries.

Their goal was to develop a universal vision of the situation of humanity. They entrusted the simulation of the future of humanity to a team of researchers led by Jay Forrester of the prestigious American university Massachusetts Institute of Technology. The results of this work led the Rome Group to recommend stopping global economic growth.

This group still exists and currently has the role of raising awareness among leaders about problems related to the planet.

A model of economic development that takes ecology into account was born there. This is eco-development. According to this model, developed countries must use all means to preserve the environment because they are the first responsible for pollution in the world and the only ones who have the financial means to do so.

The "Stockholm Declaration" is considered the beginning of sustainable development.

It consists of 26 principles that focus on environmental protection, poverty eradication and the improvement of economic conditions in the world.

On November 16, 1972, the UN established a convention that concerns the protection of the world's cultural and natural heritage.

A report by Norwegian Prime Minister Brundtland in 1987 and commissioned by the United Nations brought out the concept of sustainable development for the first time. This report advocated a radical change in the development process by considering environmental protection as a priority and insisting on a fair redistribution of global wealth.

On June 13, 1992, a United Nations Framework Convention on Climate Change was signed in New York. It came into force in 1994 with the aim of stabilizing greenhouse gas concentrations in the atmosphere.

The Brundtland Report led to the organization of a United Nations conference on the environment and sustainable development. This was the Rio de Janeiro Conference of 1992, which is considered an action plan for the 21st century. This conference, held from June 3 to 14, brought together more than 172 countries and 2,400 representatives of non-governmental organizations. 108 heads of state or government participated. The importance of this conference gave it the name of Earth Summit. It is the extension of the Stockholm Conference to political action and decisions.

The concept of sustainable development is then embodied in actions: an agenda has been adopted. This is Agenda 21, which aims to put the three principles of sustainable development into action. In addition to this agenda, several documents have been adopted:

- the Rio Declaration on the Environment and Sustainable Development, which is not legally binding and is based on 27 principles and constitutes an extension of the Stockholm Declaration,
- the Convention on Biodiversity,
- the Declaration of Principles on Forests,
- the Convention on Climate Change.

In 1993, Europe launched the "European Sustainable Cities" programme, which aimed to implement Agenda 21 at continental level, by helping and encouraging these cities to implement this action plan.

On December 11, 1997 in Kyoto, Japan, a protocol was signed by 38 industrialized countries to reduce their emissions of the main greenhouse gases by at least 5% during the period from 2008 to 2012. These gases considered responsible for global warming are: carbon dioxide CO₂, methane CH₄, nitrous oxide N₂O, sulfur hexafluoride SF₆, hydrofluorocarbons HFC and perfluorocarbons PCF.

The Kyoto Protocol issues emission permits that allow the sale or purchase of rights to emit these gases between countries. This protocol also allows for investments aimed at reducing greenhouse gases outside industrialized countries and thus benefiting from emission credits produced by the reductions thus obtained.

"Clean Development Mechanisms" or CDMs can be set up in developing countries and financed by a developed country. It should be noted that the United States has refused to sign the Kyoto Protocol.

The Johannesburg Earth Summit took place from 26 August to 4 September 2002, following on from the Stockholm and Rio summits. The exclusive focus of this conference was sustainable development and the progress of Agenda 21. It also aimed to identify possible additional efforts to reduce pollution and to encourage rich countries to collaborate more with

developing countries in this area. The summit brought together 22,000 participants from 193 countries. 100 heads of state attended. Representatives from business and industry were present in large numbers.

Unfortunately, it was found that the recommendations of the Rio summit had not been respected since very few rich countries had put in place sustainable development strategies and aid to developing countries was derisory. New provisions were therefore developed. The new action plan included several themes: renewable energy, biodiversity, aid to developing countries. The decisions concerned water, energy, health, agriculture and aimed to reduce poverty and pollution.

However, the results of this summit were disappointing. The objectives are far from being achieved.

Although several industrialized countries such as Russia, China and Canada have announced the upcoming ratification of the Kyoto Protocol, the United States still refuses to do so.

Together with the European countries, they have been content with promises of aid to poor countries, which does not change the current situation in the world.

The Jakarta Summit in Indonesia held in 2007 aimed to launch a comprehensive sustainable development over the next 30 years. A deep comprehensive reform was proposed regarding global ecological, social, economic and political conditions, while respecting the cultural specificities of each country.

Several measures were taken, including the creation of a system of governance of the world's natural resources such as water, oceans, atmosphere and the promotion of peace and culture in the world. The creation of new indicators of environmental preservation and the application of a tax on international transactions as well as the promotion of sustainable education and development were also among the measures taken at this summit.

2.4 Sustainable Development Goals

Sustainable development is economic development accompanied by social and ecological development. It is not just about economic and consumption growth. The word sustainable

means development that aims to improve the human condition in the long term, along with the economy and the environment. These three elements are inseparable.

Indeed, poverty eradication cannot be achieved without economic development to finance social programs. On the other hand, it is not possible to meet the needs of the world's population without economic growth.

Environmental protection must accompany economic growth, otherwise the Earth's resources will be exhausted.

Environmental protection must accompany the fight against poverty because poor populations are forced to take non-ecological actions to survive, such as the destruction of forests, waterways, or intensive fishing.

This is why the three objectives of sustainable development, which are: ecology, the fight against poverty and the protection of the Earth's resources, are simultaneous.

2.5 Environmental issues of sustainable development

One of the main challenges of sustainable development is the reduction of pollution.

Greenhouse gases are currently the main goal in this regard. The particular case of reducing CO₂ emissions helps to address climate change. This is the major challenge of the 21st century. These emissions must be reduced by 50% to 85% by 2050 in order to limit, according to experts from the Intergovernmental Panel on Climate Change, dangerous and irreversible disruptions to the climate system. This goal of reducing CO₂ emissions is very difficult to achieve because of the origin of these emissions, which are fossil resources such as oil and coal. Achieving this goal implies profound changes in the mode of production that industrialized countries currently have.

Industrialized countries agreed to reduce their emissions by signing the Kyoto Protocol, but demanded in exchange greater flexibility in the use of CO₂ quotas. This translates into the possibility for a country to exceed its quota by buying the emission rights of another country. The overall ceiling of all countries is thus not exceeded.

It therefore becomes interesting for a State to reduce its greenhouse gas emissions in order to be able to sell its excess emission rights on the international market.

The Clean Development Mechanism or CDM has been operational since 2005.

It helps encourage technology transfer to developing countries. Greenhouse gas emissions can be regulated by two mechanisms:

- A permit system: administrative authorizations to emit CO₂ are issued.
- A credit system: which consists of a system of tradable credits. Regulations in this area are flexible but sometimes very restrictive, as in the system applied in the United States.

2.6 Sustainable development in Algeria

The first Algerian laws in the field of sustainable development date from the 1990s. The High Council of the Environment was created in 1994. This Council is responsible for monitoring the state of the environment in Algeria, determining major strategies for environmental protection and monitoring measures at the international level. It must submit an annual report to the President of the Republic.

In 2002, the National Observatory for the Environment and Sustainable Development was created.

In 2002 and 2003, laws were established for the creation of new environmentally friendly cities.

Several agreements with different countries have been signed in the context of environmental protection.

Laws on the regulation of fishing and clean tourism have also been enacted. Laws concerning energy production have also been created.

Recently, a National Environmental Action and Sustainable Development Plan was launched by the Ministry of Water Resources and the Environment.