

MCN-201 :

SUSTAINABLE ENGINEERING

MODULE 1

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Sustainability: Introduction, concept, evolution of the concept; Social, environmental and economic sustainability concepts; Sustainable development, **Nexus between Technology and Sustainable development; Millennium Development Goals (MDGs)** and Sustainable Development Goals (SDGs), Clean Development Mechanism (CDM).

Nexus between Technology and Sustainable development

- ★ Technology is a big part of sustainable development.
- ★ Technology development is a big part of meeting SDG goals because it makes new, more sustainable ways of developing more efficient and effective.
- ★ So, we need to make new technologies that help with research and encourage new ideas.

The Role of Technology in Sustainable Development

Agricultural Technologies

improve productivity and soil and water conservation, and maintain reasonable costs of food and fiber.

improving soil fertility, improving water availability and efficiency of use, enabling farmers to modernize as this becomes feasible to them.

Energy Technologies

- Technologies to provide and improve **energy services** for developing world populations
- more efficient **biomass stoves** to reduce fuel use and reduce the hazardous smoke emissions
- simple **motor-driven systems** for pumping water or grinding grain to reduce the burden of these physically demanding tasks on women
- energy-efficient pumps, fertilizers, and mechanical traction to improve agricultural productivity.

Environmental Technologies

- For many developing countries, provision of basic water, sewer, and refuse disposal services are major environmental priorities. These are the areas where spending technologies on environmental is concentrated.

- . Developing countries more sanitary services systems serving rural and urban areas.

- Electric power, chemical, petroleum refining, steel, and paper, food, textile, and other process industries are potential major buyers of environmental technology.

Millennium Development Goals (MDGs)

- ★ At the September 2000 Millennium Summit, the greatest assembly of world leaders in history adopted the United Nations Millennium Declaration, pledging member nations to a new global partnership to reduce extreme poverty and establishing a number of goals with a 2015 deadline.
- ★ These are known as the Millennium Development Objectives (MDGs).
- ★ The MDG monitoring framework was amended in 2007 to include four new goals agreed to by member states at the 2005 World Summit: full and productive employment and decent work for all, access to reproductive health, access to treatment for HIV/AIDS, and protection of biodiversity.
- ★ Indicators for these new targets were operational in January 2008, and this framework is used to track progress toward reaching the Millennium Development Goals..

Millennium Development Goals (MDGs)

Keyfacts

- ★ Globally, the number of deaths of children under 5 years of age fell from 12.7 million in 1990 to 6.3 million in 2013.
- ★ In developing countries, the percentage of underweight children under 5 years old dropped from 28% in 1990 to 17% in 2013.
- ★ Globally, new HIV infections declined by 38% between 2001 and 2013.
- ★ Existing cases of tuberculosis are declining, along with deaths among HIV-negative tuberculosis cases.
- ★ In 2010, the world met the United Nations Millennium Development Goals target on access to safe drinking-water, as measured by the proxy indicator of access to improved drinking-water sources, but more needs to be done to achieve the sanitation target.

The following are the eight Millennium Development Goals:

1. to eliminate extreme poverty and hunger;
2. to achieve global primary education;
3. to empower women and promote gender equality;
4. to reduce child mortality;
5. to promote maternal health;
6. to fight malaria, HIV/AIDS, and other diseases;
7. to promote environmental sustainability; and
8. to develop a universal partnership for development.

MDG 1: Eradicate extreme poverty and hunger

Millennium Development Goal 1 has three targets:

1. To halve the proportion of people whose daily income is less than \$1.25
2. To achieve full and productive employment, as well as decent work for all, including young people and women
3. To halve the proportion of individuals suffering from hunger in the period between 1990 and 2015.

MDG 2: Achieve universal primary education

There is only one target for millennium development goal 2:

1. To ensure that children universally – including both boys and girls – will be able to complete a full course of primary education by 2015.

MDG 3: Promote gender equality and empower women

There was only one target under millennium development goal 3:

- To eliminate gender disparity in primary and secondary education by 2005, and in all levels of education by 2015.

MDG 4: Reduce child mortality

The **Millennium Development Goal 4** has only one target:

- **To reduce the under-five mortality rate by two-thirds in the period between 1990 and 2015**

MDG 5: Improve maternal health

In this regard, millennium development goal 5 has two targets:

1. **To reduce the maternal mortality ratio by 75 percent**
2. **To achieve universal access to reproductive health**

MDG 6: Combat HIV/AIDS, Malaria and other major diseases

In this regard, Millennium Development Goal 6 has three targets:

1. **To halt by 2015 and have started to reverse the spread of HIV/AIDS**
2. **To achieve global access to treatment for HIV/AIDS for those who need it by 2010**
3. **To have ceased and started reversal of the incidence of malaria and other major diseases by 2015**

MDG 7: Ensure environmental sustainability

As such, millennium development goal 7 has 4 targets:

1. To integrate the principles of sustainable development into every nation's policies and programmes, and also reverse the depletion of environmental resources
2. To reduce biodiversity loss and achieve a substantial reduction in the rate of loss by 2010
3. To halve the proportion of the universal population without sustainable access to clean and safe drinking water and basic sanitation by 2015.
4. To achieve substantial improvement in the lives of a minimum of 100 million slum dwellers by 2020.

MDG 8: Develop a Global Partnership for Development

Millennium development goal 8 has 6 targets that seek to develop global partnership for development, namely:

- To further develop an open, predictable, rule-based, non-discriminatory trading and economic system
- To address the special needs of the least developed countries
- To address the special needs of small island developing States and landlocked developing countries
- To deal exhaustively with the debt problems of developing nations
- To provide access to affordable essential drugs in the developing world – in collaboration with pharmaceutical companies
- To avail benefits of new technologies, especially information and communications, in collaboration with the private sector