

6. Environmental Sustainability and Sustainable Development- Challenges and Mitigations

Swarupa Bhattacharjee

Assistant Professor,
Department of Zoology,
Bahona College,
Jorhat

Rajdeep Das

Research Scholar,
Department of Zoology,
Gauhati University,
Guwahati.

Ritupriya Das

PG Student,
Department of Geology,
University of Name,
Cotton University,
Guwahati.

Abstract:

In recent times the consciousness of people regarding the environment has seen a paradigm shift. With the growing concern regarding the various aspects of environment a change in the trends regarding the aim towards the reckless development without thinking about its cause and implications is seen. The need of the time is the sustainable development. The term Sustainable development is a catchphrase in the term of development. The concept of use of alternative and renewable energy is in the row has also gained popularity and momentum.

Keywords: *Environment, Sustainable development, energy, alternative energy.*

The word environment is a very inclusive word in itself. It falls in the category of most frequently used word in our day-to-day life. The origin of the word is the French word “environmer” which means “surround” is the root word from where the word “environment” originated. A lucid meaning of it can be written as such that anything that surrounds us constitutes the environment. All the biotic and abiotic factors and their interconnection and interdependence which also includes us constitutes our surroundings. Thus, environment is the totality of all the external conditions affecting the life, development and survival of an organism (UN, 1997).

The human history has seen those days where the uncontrolled destruction of environment at alarming rate due to many anthropogenic activities has gifted us with many major damages to the environment. An unfit environment for survival, many diseases, deterioration in the air and water quality, loss of tress and forest covers which in itself is one of the biggest losses which human civilization can see.

Historically, the term sustainable development emerged as a concept in the World Charter for Nature in the context of the environmental concern due to the gradual degradation in the environment. (UN 1982). These concerns were addressed later on 1987. In 1987, the United Nations World Commission on Environment and Development released the report *Our Common Future*, commonly called the Brundtland Report.

According to Brundtland Commission in its 1987 report “Our Common Future”, “*Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.*” Sustainable development has 3 goals: to minimize the depletion of natural resources, to promote development without causing harm to the environment and to make use of environmentally friendly practices. 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.— *World Commission on Environment and Development, Our Common Future (1987)*.

The Earth Summit 1992, can be attributed as one of the most significant results of the two events mentioned above. On one hand the Agenda 21 with 40 chapters extensively and inclusively elaborated the environmental concern. This can be seen as a significant achievement as through the event a middle ground between the two seemingly contrast views of economic growth and development on one hand and the other hand, efficient protection of environment and natural resources was found.

Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment. Agenda 21, the Rio Declaration on Environment and Development, and the Statement of principles for the Sustainable Management of Forests were adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, 3 to 14 June 1992.

The Commission on Sustainable Development (CSD) was created in December 1992 to ensure effective follow-up of UNCED, to monitor and report on implementation of the agreements at the local, national, regional and international levels. It was agreed that a five-year review of Earth Summit progress would be made in 1997 by the United Nations General Assembly meeting in special session.

This was followed by a trail of events of subsequent betterment and inclusion of various objectives to be achieved for the sustainable development.

From a practical view point, to achieve these goals, alternatives to different activities should be searched for. Thus, the scope for a better efficient and less harmful way for the production of energy needed for multiple operations is wide. Investment in the non-conventional and renewable sources for energy production is seen as a major contributor for achieving the goals of sustainable development. The sustainable development is the practice of developing land and construction projects in a manner that reduces their impact on the environment by allowing them to create energy efficient models of self-sufficiency. This can take the form of installing solar panels or wind generators on factory sites, using geothermal heating techniques or even participating in cap-and-trade agreements.

Wind energy- Wind energy is a popular form of non-conventional energy. It is the use of air flow through wind turbines to provide the mechanical power to turn electric generators. It is utilized for drawing water, electricity generators, milling, pumping. In India states like Tamil Nadu, Gujarat, Orissa, and Maharashtra are regarded as superior areas with respect to wind energy. In Muppandal wind farm the total capacity is 1500MW, the largest wind power plant in India. The total wind installed capacity in Tamil Nadu is 7633MW. Places that have regular and rapid wind flows are appropriate for this kind of power generation. Wind energy is an indirect form of solar energy created by a combination of factors including the current heating of earth's atmosphere by solar radiation, variation in topography and rotation of earth. Wind energy is the cleanest way for generation of electricity without creating air pollution. The present wind power installed capacity in India is around 32.5 GW which is approximately of total renewable power generation. In terms of the wind power install capacity India is globally at fourth position after China, USA, and Germany. Government of India has set an ambition target of reaching 175GW of renewable power capacity in the country by 2022; wind power production in India is 42.8%. National institute of wind energy formally known as centre for wind energy technology working at Chennai since 1998, which focus on technical point related to the wind energy technology. The government also promote wind energy sector in the country through Indian renewable energy development agency. Onshore wind is an inexpensive source of electric power generation cheaper than coal or gas plants. Offshore wind construction and maintenance costs are considerably higher. Jaisalmer Wind Park is the largest operational onshore wind farm in India located at Amarsagar, Rajasthan. Wind energy don't pollute the air like power plants that rely on combustion of fossil fuels. Wind turbines don't produce atmospheric emissions that cause acid rain or greenhouse gases. Reduces the amount of electric generation from fossil fuels which results in corner total air pollution and CO₂ emissions. Turbines might cause noise and aesthetic pollution. Noise produced by the turbine blades cause landscape. Turbine blades could damage local wildlife. The sun is the ultimate source of wind energy. As sun heats the surface of the earth, the air above it warms and rise upwards into the atmosphere.

Biomass energy- Biomass is plant or animal material used for energy production, heat production, or various industrial processes as raw material for a range of products. Or we can say biomass is fuel that is developed from organic materials, a renewable and sustainable source of energy used to create electricity or other forms of power. Biomass is probably our oldest source of energy after the sun. We use four types of biomasses today – wood and agricultural products, solid waste, landfill gas and biogas, and alcohol fuels. Biomass is fuel that is developed from organic materials, a renewable and sustainable source of energy used to create electricity or other forms of power.

In India total biomass power generation capacity is 17,500MW. Currently about 32% of total primary energy used in India is derived from biomass. More than 70% of the country's population depends upon biomass for its energy needs. Some advantages of biomass energy: Biomass used as a fuel reduces need for fossil fuels for the production of heat, steam, and electricity for residential, industrial and agricultural use.

Biomass is always available and can be produced as a renewable resource. Some disadvantages of biomass energy: Agricultural wastes will not be available if the basic crop is no longer grown. Additional work is needed in areas such as harvesting methods.

The other ways through which the long-term goals of sustainable developments can be catered includes a better workplace water sanitation and hygiene, proper encouragement of 4R principle i.e., Reduce, Reuse, Recycle and Recover. The role of women in the conservation of environment has been given a keen importance in many international platforms. Also, the inclusion of indigenous tribes and a proper channelized way to more aptly conserving the environment can be found out.

The biggest criticism of sustainable development is that it does not do enough to conserve the environment in the present and is based on the belief that the harm done in one area of the world can be counter balanced by creating environmental protections in the other.

Thus, on a conclusive note, it can be said that the sustainable development is the need of the hour. We as a society cannot put limitations to economic growth. But it's high time we should change our perspective and a reluctant attitude towards Mother Nature and its wellbeing. Thus, sustainable development is the only way. For the purpose of conservation more inclusive approaches should be looked for were a greater number of people and institution should come forward for the purpose of achievement of the goal.

6.1 Further Readings:

1. Beder, S. (1996). *The nature of sustainable development*. Newham: Scribe Publications.
2. Blewitt, J. (2012). *Understanding sustainable development*. Routledge.
3. Chichilnisky, G. (1997). What is sustainable development? *Land Economics*, 467-491.
4. Duran, D. C., Gogan, L. M., Artene, A., & Duran, V. (2015). The components of sustainable development-a possible approach. *Procedia Economics and Finance*, 26, 806-811.
5. Hák, T., Janoušková, S., & Moldan, B. (2016). Sustainable Development Goals: A need for relevant indicators. *Ecological indicators*, 60, 565-573.
6. Holmberg, J., & Sandbrook, R. (2019). Sustainable development: what is to be done? In *Policies for a small planet* (pp. 19-38). Routledge.
7. Jabareen, Y. (2008). A new conceptual framework for sustainable development. *Environment, development and sustainability*, 10(2), 179-192.
8. Lallas, P. (2001). The Stockholm Convention on Persistent Organic Pollutants. *American Journal of International Law*, 95(3), 692-708. doi:10.2307/2668517
9. Munasinghe, M. (1993). *Environmental economics and sustainable development* (Vol. 3). World Bank Publications.

10. Parris, T. M., & Kates, R. W. (2003). Characterizing and measuring sustainable development. *Annual Review of environment and resources*, 28(1), 559-586.
11. Pezzey, J. (1992). Sustainable development concepts. *World*, 1(1), 45.
12. Robert, K. W., Parris, T. M., & Leiserowitz, A. A. (2005). What is sustainable development? Goals, indicators, values, and practice. *Environment: science and policy for sustainable development*, 47(3), 8-21.
13. Rogers, P. P., Jalal, K. F., & Boyd, J. A. (2012). *An introduction to sustainable development*. Routledge.
14. Sachs, J. D. (2012). From millennium development goals to sustainable development goals. *The lancet*, 379(9832), 2206-2211.
15. Sachs, J. D. (2015). The age of sustainable development. In *The Age of Sustainable Development*. Columbia University Press.
16. SDG, U. (2019). Sustainable development goals. *The energy progress report. Tracking SDG*, 7.
17. Stockholm Declaration on the Human Environment, in *Report of the United Nations Conference on the Human Environment*, UN Doc.A/CONF.48/14, at 2 and Corr.1 (1972).
18. United Nations Conference on Environment and Development, & Johnson, S. (1992). *The Earth Summit: The United Nations Conference on Environment and Development (UNCED)*. London: Graham & Trotman/Martinus Nijhoff.
19. Van den Brink, P. J., Boxall, A. B., Maltby, L., Brooks, B. W., Rudd, M. A., Backhaus, T., ... & van Wensem, J. (2018). Toward sustainable environmental quality: Priority research questions for Europe. *Environmental toxicology and chemistry*, 37(9), 2281-2295.
20. Zhang, K. M., & Wen, Z. G. (2008). Review and challenges of policies of environmental protection and sustainable development in China. *Journal of environmental management*, 88(4), 1249-1261.