Chapter 1
Environmentally Friendly Technologies:
Concept and Need for Sustainability

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ABSTRACT

Any technology that is developed and used will have certain components or constituting mechanisms such as materials used, procedure, or technological process involved. The quality of life on planet with respect to environment such as fresh air to breathe, clean water for drinking, and other purposes are essential for all forms of life on earth. Therefore, whatever developments are undertaken should not degrade our environment. It is essential to bear in mind that whatever development, be it construction, new power plants, transportation modes, etc., should be carefully weighed in terms of its contribution to the environment, especially if there are any negative aspects that emerge from use of machinery, equipment, technologies, etc. We should analyze any technology that we use in terms of its cost-benefit study. Here in this chapter, the authors have discussed environmentally friendly technologies for our sustainability to use the natural resources wisely with some case studies of natural as well as manmade disasters.

BACKGROUND

Environment is basically, the support system that upholds life on earth. It provides the basic requirements to support life such as fresh air that living organisms respire or breathe, food to eat, fresh water for plants & animals and also land where living beings live. There is a rhythm or pattern or natural order in the environment, which keeps the environment in a self-sustaining mode. However, man is in constant interaction with the environment. As a result of developments of civilization over the years; the industrial development; and new breakthroughs in various fields, he has had interventions with Nature. Many of the self-sustaining in-built order in nature are being threatened by way of various human and industrial activities.

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ENERGY REQUIREMENTS AND DEVELOPMENT

Energy is a pre-requisite or in fact essential for meeting our developmental needs or accomplishing the development goals for any economy. While moving from a solely agrarian economy and further on the coming of the industrial revolution and later on, with the further developments in Information and Communication Technologies, mankind has come to increasingly depend on various sources for power to run the machinery and equipments, gadgets etc. in our homes and in industrial units.

Renewable Energy and Non-renewable Energy

We can broadly categories our energy sources into two - namely, Renewable Energy and Non-renewable Energy. Renewable Energy refers to the energy that can be generated from renewable sources. Renewable sources are basically those which are in nature and which gets renewed or replenished by the natural processes in the environment. For instance, Water. Water is a natural resource that gets replenished in nature. There is lot of fresh water resources on earth such as the rivers, streams, pounds, springs etc. Apart from this, there are oceans and sea as well. By the process of evaporation, water gets evaporated. This water vapor gets condensed to form clouds. Further, by way of rain or snow etc., it comes down to the earth's surface. Thus, water changes to water vapor form and again to water during this cycle. Water in fact, is getting continuously circulated by this natural process. That is why, we say, water is a renewable resource provided by nature. Another renewable resource we have is from the sun, the solar energy. Sun's light and heat fall on the earth's surface daily and can be considered by us for meeting the energy needs. Yet another one, is the Wind energy, which can be harnessed in areas where there is potential for wind energy.

Now talking about Non-renewable Energy, Non-renewable Energy, on the other hand, it refers to the energy from sources, which cannot be easily replenished, as is the case of renewable energy. Non-renewable energy comes from depleting sources. This means that we need to be concerned about such sources as it cannot be made available for all ages. Therefore, non-renewable sources are not sustainable energy sources and when we use it in the present generation, it is by limiting the future generations to such energy sources. As a big measure towards environment sustainability and environment management, it is imperative that we turn to Renewable sources of energy to meet our energy needs. Every region should explore the scope for use of renewable energy there. This means the scope of using renewable sources of energy needs to be explored. Areas which are abundant with water sources, solar energy, wind etc. are to be assessed for harnessing renewable energy.

Further, it is matter of concern that even now, electricity is not available in many parts of a country, as in case of India. It is required that it is made available to all parts of a nation so that development takes place everywhere. In case of more populous countries, the challenge is higher. It has to be well taken care of, so that infrastructural bottlenecks do not hamper the developmental goals. Depending only a single source of power will have limitations, if the supply-demand gap in power sector is high. Also, the institutional arrangements that are put in place for power needs may not suffice to meet requirements. Environment is the hub of rich natural resources. The rich flora and fauna, streams, rivers, oceans, mountain ranges are not only sources of natural beauty but also are sources of abundant energy. These natural resources found on our planet Earth is the source of rich energy sources which are of great use for mankind. The use of any technology is for a stated purpose. The technological product or the equipment would have been designed to perform certain stated predefined or predetermined tasks that would serve