UNIT-5 Environmental Planning

Learning Outcomes

By the end of this unit the learner will be able to:

- ✓ Explain the definition and scope of environmental management
- ✓ Understand the fundamentals of sustainable development.

Unit 5

Environmental Planning

Introduction

What exactly is environmental management? In laymen's terms, it is the process by which environmental health is measured and regulated. While human beings cannot take full control of the natural world, we can take steps to change our behaviour in order to bring positive, rather than negative, changes to the environment.

Green Trends in the Economy

Successful companies today are measured not only by their profits but also by the extent of their efforts to help create a sustainable future. All around the world, companies have begun to realize that **green**, or ecologically friendly, products often cost no more than regular products to make, but with the added benefit of providing a market niche in which companies can thrive. Many companies, such as Kodak and Xerox, have already found new success by rethinking their strategies and creating new management plans which pay special attention to environmental concerns.

Effective environmental management comes with a variety of benefits, including reduced risk of environmental damage, increased production and workplace efficiency, reduced production costs, increased revenue, and improved public reputation. Reducing energy consumption, pollution and waste and manufacturing green products can all help a company improve both profits and turnover.

On the other hand, accidents such as the Bhopal gas tragedy of 1984 and the *Exxon Valdez* oil spill the following year clearly demonstrate how destructive bad environmental management can be. Events such as these, in addition to causing significant harm to human and environmental health alike, can cost millions of dollars in clean-up costs, compensation and legal fees.

The trend toward green is on the rise in every sector of the economy. According to a study by Yanklovich Clancy Schulman, 78% of people are "influenced greatly" to buy products that make environmental claims. The Organic Trading Association notes that products with the word "organic" have a 34% sell-through rate compared to regular products. Furthermore, the rate of growth of natural or organic food has been steady at 18-25%, while foods not labelled as organic remain at a flat growth rate of 3-4%. The demand for organic products has also affected the clothing industry, where current trends call for the use of organic cotton.

In the energy industry, there is growing demand for **green power**. The National Association of Attorney Generals (NAAG) defines green power as the use of renewable or sustainable fuel sources for generating electricity and disposing of spent fuel. These fuel sources will neither pollute the air nor pose a significant threat to any ecosystem.

There is also growing demand for hybrid vehicles. Companies such as Toyota and Honda, which were among the first to manufacture hybrid cars (which combine gas engines with battery-powered electric motors), have skyrocketed in popularity. These products are not only environmentally friendly but also a wise, economical choice.

Reasons for instituting environmental management policies may include any (or all) of the following:

- **Pragmatic reasons**: obvious or immediate signs of danger can motivate people to seek solutions to a problem.
- **Economic reasons**: it is usually less costly to solve a problem in the present (or, better still, prevent it) than it is to suffer long-term consequences such as pollution, extinction, human deaths, and expensive lawsuits. In addition, environmental management may create a new market for pollution control equipment, new (cheaper) means of recycling or disposing of waste, and increasing the security and efficiency of energy and raw material supplies.
- **Legal reasons**: many organisations are required by laws or legally-binding agreements to take care of the environment.
- **Ethical reasons**: scientific evidence, media reporting, and the voices of activists may inspire new attitudes, agreements or laws on the basis of doing what is right for the environment.

For businesses and governments around the world, environmental management is no longer a fringe issue but, rather, a mainstream business issue. Global communities have reacted by adopting international and national laws to ensure compliance with environmental standards. Many national and international organisations, such as the World Business Council for Sustainable Development and the International Chamber of Commerce, have developed new environmental guidelines and standards and now promote environmental awareness among their members. Cleaner production, life cycle analysis, environmental impact assessment, and public reporting are all steps that companies might take to establish greener corporate practices.

Environmental Management

Environmental management can be defined in several ways. A cross between science and company policy, it is the process of managing the environmental performance of the corporate sector. It involves distributing resources efficiently in order to provide for human needs at the lowest possible cost to the environment.

To put it another way, it is the process of creating and maintaining environmentally sound development strategies. Through this process, we are trying to determine what is best for the environment and how to achieve it as efficiently as possible.

Proper environmental management involves three basic steps:

1. Identify goals.
2. Decide whether these goals can be met.
3. Establish practices and policies which will lead tothe fulfilment of these goals.

The current focus of environmental management is on taking action, rather than theoretical planning. While planning is still important, the core of management is to understand human-environment interactions and use that information to solve the problems we've created. Below is an example of a basic plan for environmental management (Fig 3.1).

Fig. 5.1: a basic environmental management plan of action

Ideally, lessons learned along the way should be passed on to improve management in the future. An evaluation of stages 4 and 5 (implementation and developing on-going management) will be especially useful when expanding on or creating new terms of management.

The Evolution of Environmental Management

Since prehistoric times, humans have used knowledge gained from their past experiences to inform how they use and interact with nature. Taboos, superstitions, common rights and, eventually, formal laws and national resource inventories have all been ways for us to create and enforce standards for resource usage.

Although we tend to think of the people of the past as being "closer to nature," the idea that pre-modern man had only a minimal impact on the environment is more myth than fact. Despite the population size being only a fraction of what it is today, the lack of any organized restrictions on hunting or land use meant that humans probably eradicated numerous species of plants and animals in the process of hunting for food and creating their weapons and tools of flint, bone, wood and leather (Tudge, 1995).

The people of the 20th century, however, did not fare much better. Widespread pollution, loss of biodiversity, soil degradation and spreading urbanization all point to a growing need for environmental management. Solving these problems will not be easy. However, a wide variety of organizations are involved in environmental management nowadays, including government agencies, international aid organizations such as UNEP and the World Bank, research institutes such as the World watch Institute, and NGOs such as the World Wildlife Foundation (WWF) and Friends of the Earth. The progress they have contributed to in gathering, handling, and analyzing environmental data and improving methods of modelling, evaluating and planning is an indication of hope for the future.

Since the 1970s, the emphasis of environmental management has shifted from listing problems and issuing warnings to taking action in the form of problem solving, creating practical tools for change, creating and enforcing new laws and bylaws, and developing new, more successful policies.

In the mid-1980s, new branches began to appear on the evolutionary tree of environmental management (Fig. 5.2), including:

- environmental law
- green business
- impact, risk and hazard assessment
- total quality management (TQM), which later led to total environmental quality management
- environmental standards
- eco-auditing
- environmental management systems

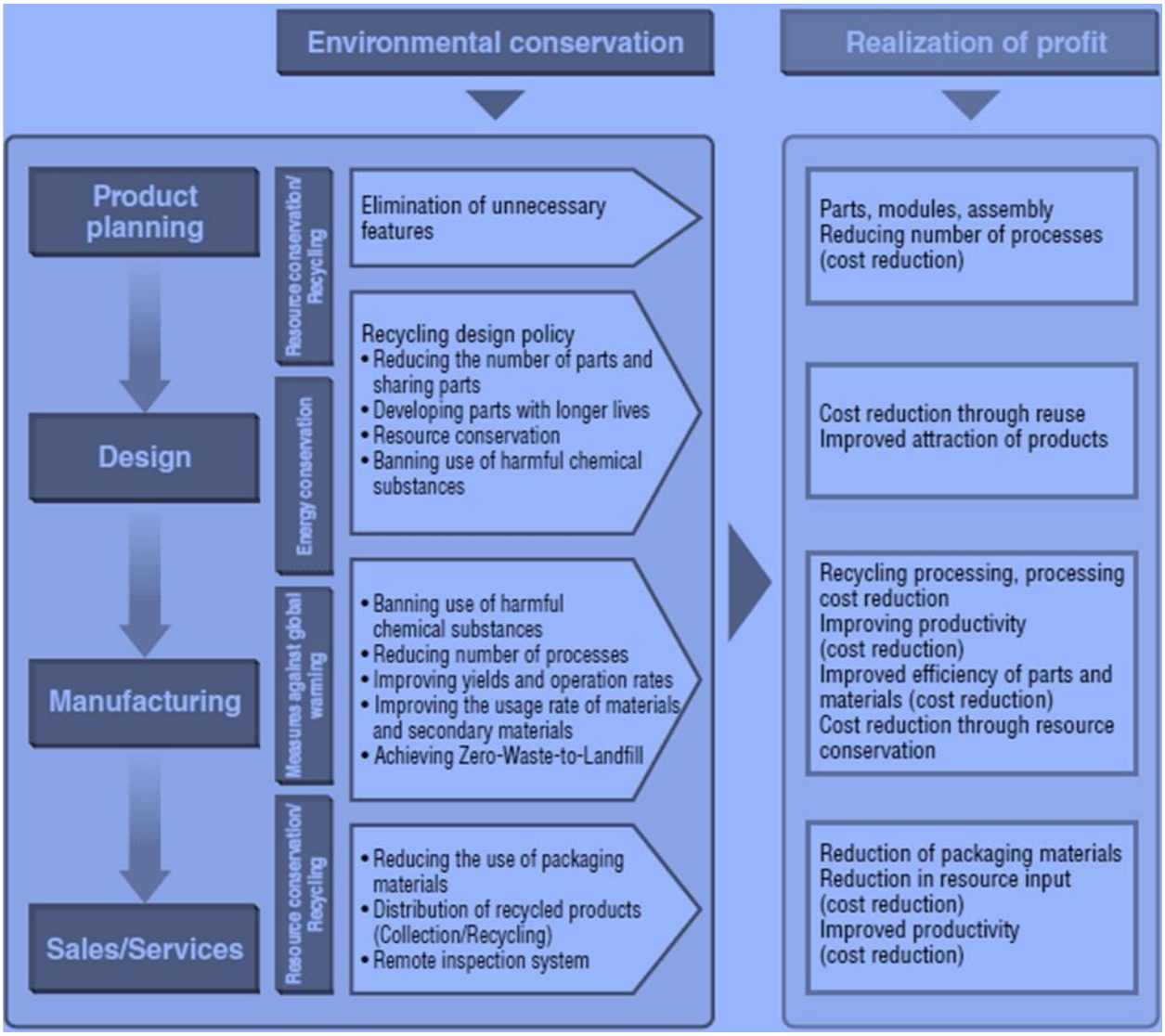

Fig. 5.2: branches of environmental management

While most environmental managers agree that sustainable development is the key, providing a universally acceptable definition of sustainable development has not been easy. At its core, sustainable development is about avoiding environmental degradation while still supporting human progress and living conditions. The idea is to minimize resource usage and harm to the environment while maximizing the overall health and wellbeing of the global human population. This goal can only be achieved with high-quality management of both the environment and humanity's impact on it, as well as the ability to foresee and prevent or adapt to future threats to humanity and nature alike.

Sustainable Development

In essence, **sustainability** is the capacity of something to endure. In ecology, it describes the level of diversity and productivity an ecosystem can maintain over time. For the purposes of this discussion, sustainability refers to the long-term maintenance of the health and wellbeing of humanity and the natural world, both of which are dependent on responsible usage of resources.

Sustainability is about improving the quality of human life without overburdening supporting ecosystems. It calls for humanity to meet the needs of the present population without impairing the ability of future generations to meet their own needs, and to shift the economy towards eco-friendly products and environmental awareness.

Sustainable development typically requires:

- environmental management and conservation
- honest reporting of environmental studies and management checks
- the adoption of an open-minded, internationalist attitude
- satisfying human needs and wants within safe ecological limits
- eco-friendly scientific and technological progress
- concern not just for the current human population but for other generations and other species as well

The Principles of Sustainable Development

For sustainable development to be possible, we must be ready and willing to protect our most vital natural asset – namely, our planet. Human evolution and social wealth have come at the high cost of widespread environmental damage. As the chief trustees, or guardians, of this planet, we have failed to use our wealth responsibly. Instead of managing our production and consumption wisely in order to achieve long-term prosperity, we have constantly sacrificed vast amounts of non-renewable resources for the sake of short-term growth and profit.

The problem is this: sustainable development is difficult to maintain without also maintaining economic and technological progress, which is in turn difficult to achieve without harming the environment. It is a vicious cycle which we are still working out how to escape.

It's tempting to think that the solution to this would be to shift our worldview entirely in favour of ecology over economy, but this is an idealized and unrealistic solution. Instead, we must find a balance between the two sides. Some basic principles which can help guide us toward achieving this goal include:

- Recognizing the value of biological diversity
- Respecting ecological limitations on human activity

- Understanding the complex and interconnected relationships between Earth's biotic and abiotic components
- Taking the thermodynamic irreversibility of natural processes into account
- Adapting to the unpredictable and constantly changing properties of the natural world

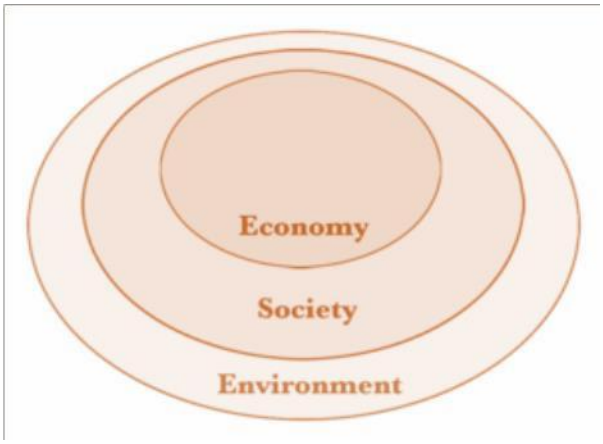

Fig. 5.3: a visual representation of sustainability

Successful sustainable development requires an understanding of policy and issues as well as technical and financial realities. Emphasis is placed on knowing how green design and technologies and their related cost implications can lead to a well-defined, effective plan for sustainable development.

Sustainability depends on maintaining a strong, stable economy. A sustainable economy operates more efficiently while offering eco-friendly alternatives to traditional, less environmentally conscious methods of production and consumption. Therefore, creating a sustainable economy plays an important role in improving human standards of living, as well as protecting the environment. The diagram below (Fig. 5.4) shows the three basic factors involved in sustainable development – society, the environment, and the economy – and their ideal intersection. If we are to create a sustainable future, these principles must take centre stage in our present lives.

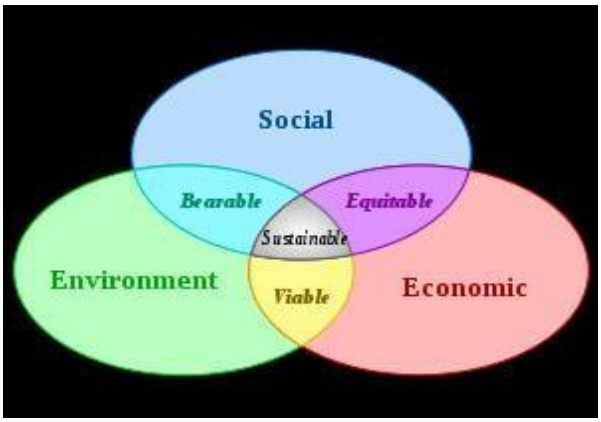

Fig. 5.4: factors of sustainable development

There are clearly many steps that need to be taken to create sustainability. These include:

- Encouraging diverse and efficient economic development
- Ensuring that we neither deplete renewable resources faster than they are renewed nor exhaust non-renewable resources
- Finding new, better ways to reduce or recycle waste created by economic activity
- Promoting environmental awareness education as well as enforcing political and legal measures to protect the environment
- Inspiring eco-friendly changes in human behaviour and attitudes

Carrying Capacity

Put simply, a habitat's **carrying capacity** is the maximum population that it can support without being overwhelmed. However, quality of life is also an important consideration, especially when it comes to human life. How individuals and communities define their quality of life affects how they interact with their environment.

For example, a community that values a rich and luxurious lifestyle will use up resources more quickly and in greater quantities than a community with simpler values. Therefore, carrying capacity might be better defined as a habitat's "optimal," rather than "maximum," population. For humans in particular, carrying capacity means the level of social and economic human activity that a region can sustain while maintaining an acceptable quality of life (Mabbutt, 1985).

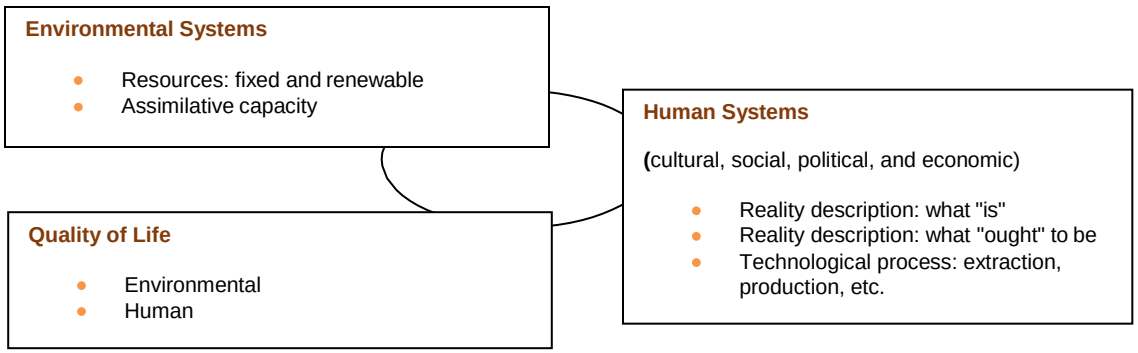

Fig 5.5: Carrying Capacity and Quality of Life (adapted from Mabbutt, 1985)

Sustaining the Environment

The environment plays a fundamental role in supporting our society; as such, it demands respect and consideration in any decision that may affect it. In all situations, we must strive to conserve natural systems for the sake of posterity.

In order to do so, we must respect the integrity of certain ecological processes that sustain natural productivity, adaptability, and the renewal capacity of all kinds of resources. These processes include maintaining the chemical balance of the planet, stabilizing the climate, recycling nutrients, breaking

down pollutants and cleansing air and water, stabilizing water flow, forming and regenerating soil, and supplying food and suitable habitats for all species.

Nurturing the biological diversity of various species and their precious genetic stocks, as well as the ecosystems they populate, is also important, as is anticipating and preventing future negative impacts on the environment. When making land and resource decisions, we must be cautious and thorough in addressing related environmental concerns. We must make sure that environmental as well as social costs are accounted for in every one of these decisions.

We must recognize that we are responsible for caring for this planet. No one but us can undo the harm we've done. If the human race is to live and thrive in the future, we must ensure the survival and sustainability of the world in which it will do so.

Progress towards sustainability has been imperfect, to say the least. Having witnessed numerous accidents and incidents of resource misuse, public trust in the ability of governments and corporations to effectively manage the environment has dwindled, while general concern for the environment has increased. A number of factors may have contributed to this, such as:

1. Increased media monitoring and reporting on environmental issues,
2. Publications in North America and Europe which have been raising awareness of issues since the 1960s,
3. Legal actions, such as passing the US National Environmental Policy Act and creating the US Environmental Protection Agency (the EPA) in 1970,
4. The establishment of environmental agencies such as UNEP (1973),
5. Aid and funding agencies requiring environmental assessments and management prior to funding development, and
6. Various international conferences, agreements, declarations and reports (such as the Brundtland Report of 1987) which have publicized issues and supported environmental management.

Sustainable Manufacturing

Sustainable development is a key component of environmental management. Sustainable development is not achievable, however, without **sustainable manufacturing**. Sustainable development is a means by which manufacturers might increase the value of their products by making the most efficient use of Earth's limited resources, generating the least pollution possible, and opting for clean energy and greener production systems.

Sustainable manufacturing requires the re-engineering of an organization's design, process, work attitudes and perceptions. It requires the entire company to be environmentally conscious and top management in particular to be supportive and active in adopting these changes. Most importantly, it will require retraining of the workforce and investing in the future.

Environmental Management Problems and Solutions

Studies of natural resource reserves have concluded that the increase observed in average global temperatures over the last century is largely due to human activity, rather than naturally-occurring processes. At the same time, the human population has seen huge growth, even in just the past 50 years.

Population Problems

The impact of so many humans on the environment takes two major forms: consumption of resources such as land, food, water, air, fossil fuels and minerals. As long as we exist, our behaviour and lifestyle choices will be major factors influencing the extent of global warming. As previously mentioned, industrialized society contributes to climate change in the form of GHG emissions caused by burning fossil fuels and the CO2 emissions of most modern transportation vehicles. Due to both the growing population and increased social wealth, there has been a rapid increase of energy consumed per person.

Do we need so many cars? Do we have to burn fossil fuels to create the energy we need for daily activities such as transportation, manufacturing, heating and cooling buildings, lighting spaces, and cooking food? Why not strive for moderation and opt for greener alternatives?

The effect of human behaviour on the environment goes far beyond mere energy consumption and the burning of fossil fuels. Due to activities such as logging, farming, ranching, mining, building dams, expanding urban areas and using wood as fuel and lumber, nearly half of the world's supply of forests (16 million hectares of virgin forest, to be more precise) has been cut down or burned. These forests are meant to absorb CO2 and release oxygen as part of the Earth's natural process of regulating the climate. In other words, we are releasing more CO2 than ever, while simultaneously destroying the very things that help keep CO2 levels in check.

Possible Solutions

Becoming more energy efficient is a necessary part of managing the environment and creating sustainable development. We must discover new, renewable energy resources, encourage the design and use of low-energy buildings, remove government support for fossil fuel use, promote energy-efficient industrial policies, improve and promote public transportation, and continue the development of hybrid vehicles.

We must also restrict deforestation as much as possible, while increasing and improving our recycling habits. We should opt for eco-friendly paper alternatives whenever possible, insist on forest product certification (which indicates when a product's materials come from sustainable forestry), and provide incentives to help motivate developing countries to limit deforestation.

Wise public investment, effective natural resource management, cleaner agricultural and industrial technologies, and reduced pollution are also essential to achieving sustainability. CFCs, for example, are

used in coolants for refrigerators and as a propellant for spray cans. They are also one of the biggest contributors to overall pollution, and they need to be restricted or (ideally) banned.

Finally, we need better intergovernmental responses and action on a large scale, as well as more efficient urban planning on a smaller scale. We must plan our cities better with the help of strong local governments supported by active citizen groups who are willing to take whatever steps are necessary to support sustainable development.

Environmental managers need to be aware of all these threats, as well as those steps that might be taken to reduce human vulnerability while enhancing our adaptability. Awareness of the past helps us to plan for the future.

Financial Problems and Solutions

Since the 1980s, structural adjustment programmes, rising oil prices and increased debt have reduced the funds available to deal with pollution, conservation and other challenges. To increase support and find the financial and social support necessary to enact change, environmental management will need to influence the behaviour and beliefs of individuals, groups and society as a whole in order to achieve sustainable goals.

There are three basic approaches which management can take to solve this issue:

1. **The Advisory Approach**, which involves solving the problem through
    - education,
    - demonstrations (e.g. model farms and factories),
    - media reporting and advertisements, and
    - public advice (e.g. leaflets, drop-in shops, or helplines).
2. **The Economic Approach**, which involves solving the problem through
    - taxation (“green” taxes),
    - government or corporate grants or loans,
    - subsidies, and
    - quotas and trade agreements.
3. **The Regulatory Approach**, which involves solving the problem through
    - standards and laws,
    - restrictions and monitoring,
    - licensing, and
    - zoning (restricting activities to a given area).

Complications

Environmental problems often lack one single, obvious solution, and addressing a problem often presents multiple alternatives to consider and challenges to overcome. Bennett (1992, p. 5-9) explored the numerous difficult choices facing environmental managers, including:

- Ethical dilemmas – choosing, for instance, between the needs of Inuit hunters and whales
- Efficiency dilemmas – how much environmental damage is considered acceptable?
- Equity dilemmas – deciding who should benefit from environmental management decisions and who should pay the costs
- Liberty dilemmas – to what degree must individual freedom be restricted in order to protect the environment?
- Uncertainty dilemmas – needing to choose a course of action without having enough knowledge or data
- Evaluation dilemmas – how should we compare the different effects of various options or actions on the environment?

Summary

Environmental management is faced with various real-world challenges, including socially- endorsed greed, corrupt management, limited knowledge and technology, increasing human population and the accompanying increase in demand for material goods, insufficient information and technology, and limited time (it has been estimated that the point of no return will come in less than fifty years).

In addition, the overall environmental movement has largely originated from, and been influenced by, Western culture. Thus, many concepts and materials require translations or adaptations in order to suit the attitudes and values of other countries.

Environmental management needs to research, model and monitor natural systems and factors to better understand and predict climate change. Some threats occur randomly and are difficult, if not impossible, to foresee. Others develop so subtly that they are overlooked. Causes of a given threat may be numerous, indirect and cumulative. Some processes may create positive or negative feedback which respectively accelerates or slows down development.

Given that the “green revolution” only began to take root about 30-40 years ago, humans have made significant progress. However, we still have a long way to go and much yet to learn about the environment and sustainable development.

Environmental managers frequently find that they face:

- poorly understood threats,
- transboundary or global challenges,

- problems demanding rapid solutions, and
- increasing exchanges of information with NGOs via the Internet and other networks.

(The last point means that managers must stay informed on the activities of numerous organizations. However, it also means there are more opportunities for working together and gathering data from multiple sources.)

Before the 1970s, environmental problem-solving seldom involved international negotiation. Now, thanks to various helpful developments, environmental management can draw upon improved knowledge of the structure and function of the environment, as well as information on human institutions, group interactions, and public perceptions. There are also powerful new tools available that can improve monitoring, data gathering, assessment, information processing, decision making, and communication.

In other words, although environmental managers face an ever-increasing list of challenges, they also have more powerful aids than ever on which they can rely to discover new solutions, as well as growing public and institutional support.

Further Reading:

- ✓ ***Environmental Management, (2019), By Peter R. Mulvihill***
- ✓ ***Environmental Planning, (2018),*** **By Jerome G. Rose**