

Natural Resource Management (NRM)

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ABSTRACT

Management of natural resources refers to the plan of action related to renewable and non-renewable resources. Natural resources like land, soil, water, plants and animals are affected by global warming, overpopulation, industrial expansion and other related reasons. Following are the reasons why the management of natural resources is important:

1. To maintain a balance in the ecosystem.
2. To avoid further destruction of the environment.
3. To avoid over-consumption of natural resources.

Following are the 3 Rs of waste management:

1. Reduce
2. Reuse
3. Recycle

KEYWORDS: natural, resources, management, waste, global warming, 3R's, environment, ecosystem, industries

INTRODUCTION

Reduce

Reduce refers to smart purchasing of the products. The best way to reduce waste is by not producing waste. Following are the ways to reduce:

- Avoid using disposal products like paper cups and plates and straws instead switch to reusable products.
- Check for the durability of the products.
- Stop asking for carry bags at shops, instead carry cloth bags.[1,2]

Reuse

Reuse refers to using products that are economical and also environmental friendly. Following are the ways to reuse:

- Donate or sell old clothes, electrical appliances, furniture, etc.
- Reuse the paper and plastic bags.

Recycle:

Recycling refers to reusing products to get creative and by-products. Following are the ways to recycle:

- Recycling used paper to make paper bags.
- Purchasing products that can be recycled and also that are recycled.

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Need to Manage Natural Resources

Here are the reasons why we need to manage our natural resources:

- Everything that we use today – food, clothes, house, vehicles, fuel, notebooks, furniture, cooking gas, utensils, toys, roads, etc. is obtained from resources on the earth.
- A significant portion of the energy which we use today is obtained from non-renewable sources. This implies that once they are used up, they cannot be replenished. The most important source of non-renewable energy used extensively is the fossil fuels which have taken millions of years to be formed.
- Managing the resources would not only ensure their rational use but also put a limit to the degradation it is causing to the environment. For example, the usage of resources in different forms generates a lot of waste which is being disposed off into the water bodies. This, in turn, is polluting the rivers and lakes. Limiting usage will also reduce waste generation and pollution.[3,4]

Management of Natural resources is how communities manage the supply or access to the natural resources they depend on for their survival and growth. We

human beings are essentially dependent on natural resources. To maintain stable access to or a continuous supply of natural resources has always been central to the organization of civilizations and has historically been managed through several schemes of varying degrees of formality and participation from the central authority.

In sectors such as agriculture, forestry and fisheries, resource management focuses on preventing over-exploitation of resources. For example, as farms have grown and farming practices have shifted from manual labour to mechanics, and as the use of pesticides has increased, agricultural practices have become more harmful to the environment.

Natural resource management requires forethought and planning, and a few efforts are more effective than others. An example of a resource strategy that has gone wrong has taken place in Brazil, where selective logging of rainforests has been encouraged for constructing public roads in the rainforest.[5,6]

The management strategy aimed at reducing the environmental impact of Clear-Cutting has had the opposite effect. A survey of the region conducted in 2006 found that selective logging contributed to more widespread clearing because the roads offered access to previously pristine areas. It resulted in the loss of rainforest that is twice as fast as previously expected.

The reasons why the management of natural resources is necessary are:

- To maintain the stability of the ecosystem.
- To prevent further damage to the environment.
- Avoiding over-consumption of natural resources.

Following are the reasons why we need to manage natural resources.

- Everything we use today – food, clothing, home, automobiles, electricity, books, furniture, cooking gas, utensils, toys, roads, etc. – are acquired from earth's natural resources.
- A large amount of the energy we consume today comes from non-renewable sources. Which means they are irreplaceable after usage. Fossil fuels, which have taken millions of years to form, are the most significant source of non-renewable energy used widely.
- Managing resources will not only guarantee its rational usage. It would also limit the degradation it causes to the environment. For example, the use of resources in various ways produces a lot of waste, which, is being disposed into the water bodies. Which, in fact, pollutes rivers and lakes.

Limiting use would also reduce waste generation and pollution.[5,6]

A. Terms to know about Natural Resources Management

Clear-Cutting

Clear cutting or clear-cut harvesting is a forestry method in which most or all trees in the region are cut uniformly for economic growth.

Erosion

Erosion is the activity of surface processes (like water or wind) which remove soil, rock or dissolved materials from one location on the earth's surface and then transport it to another location.

Greenhouse Gas

Gas, whose concentration increases heat retention in the atmosphere.

Non-Renewable Resources

Any resource that is renewed or replaced quickly (as of human historical time scales) by natural or controlled processes is called non-renewable resources.[7,8]

RunOff

Water drops as precipitation and then spreads across the surface of land rather than sinking into the earth.

Sustainability

The Practices that ensure a balance between human needs and the environment and in between current and future generation requirements.

Discussion

NRM (Natural Resource Management) strategies can be classified by the form and interest of the stakeholders:

State property regime

Power and control of resource usage have been in the possession of the State. Any person can also use the resources, but only with the state's consent. Some examples are the national forest, national parks and military reserves.

Private property regime

Any properties owned by an established corporate or individual organization. The owner(s) are responsible for both the advantage and the responsibilities to the resources. The most prominent example is private property.

Common property regimes

It's a group's private ownership. The scale, complexity and structure of the group can differ, e.g., aboriginal community, village neighbor. Public parks, grasslands and water resources are few examples.[9,10]

Nonproperty regimes

Such assets do not have a definitive owner. Each prospective consumer has the same skill as they choose to use it. It is said that “the wealth of everyone is not the property of anyone.” A lake fishing is an example. This system of possession is often connected to the commons catastrophe.

Hybrid regimes

Some natural resource ownership regimes can include different elements of the above-mentioned regimes, and administrators of common resources will have to analysis the effect of hybrid regimes.

Management approaches

NRM things are complicated because they include ecological and hydrological cycles, environment, people, livestock, vegetation, demography, etc. All of these are interconnected and complex. Improvement could have extensive especially for prolonged effects.

In contrast to biological systems, the management of natural resources also has to handle specific actors and their desires, strategies, elections, geographic frontiers, economic implications and so on. Satisfying these things at the very same time is very complicated. It adds to circumstances that are contradictory.[11,12]

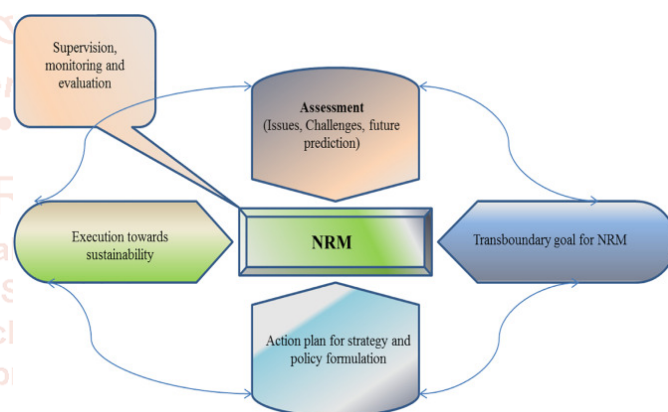
NRM is such an issue that encompasses various dimensions in order to achieve SD and sustainability. Firstly, one should focus on the use pattern of resources that comprises of sustainable harvesting and optimum utilization. Such type of approach would lead to conservation and management of biodiversity at various levels . Biodiversity is a crucial factor as it encompasses flora, fauna, and other biotic component of an ecosystem. It forms the fundamental building blocks of life. Ecosystem homeostatic and homeorhesis is dependent upon the diversity of the organism present in an ecosystem at a particular area and particular time. It indirectly hampers the availability of food to global population. It is noteworthy that the global biodiversity will determine the fate of human civilization in the upcoming time period and thus maintaining biodiversity at species, genetic and ecosystem level would become essential for survivality of human beings . From the beginning of the history of human civilization human beings started cultivation to meet up their hunger as well as natural conservation of germplasm. In this regard, they have maintained a variety of crop species in diverse habitat. From germplasm conservation perspective such approaches have maintained the wild varieties to a considerable extent throughout the human history. Such approaches have helped to maintained ecological integrity of agroecosystems. Sustainable resource use is based upon the

preservation of biological diversity. The major aim behind such type of approaches includes protection of the species as well as the habitat .

Sustainability is a big issue that requires environment friendly practices to maintained proper functioning of ecosystem as well as maintenance of environmental health. In this perspective, countries adopting eco-friendly technologies tend to reflect high environmental performance, good environmental health, as well as ecosystem vitality[13,14]

Results

The objective of NRM should have a transboundary approach for developing and developed world. Therefore, action plan requires development of proper strategy and policy formulation promoting the conservation of resources. The outcomes should be such that it would lead to ecological, environmental, economical and social sustainability.



Natural resource management has focused more on the operation, observation, mitigation, and adaptation of ecological and environmental problems, rather than on their theoretical design. Although osmosis with contingency planning is desirable, the management of natural resources is mainly based on the consideration of the relationship between humanity, culture, and natural processes, heading to the science application to solve any problems that arise each time. In this context, nature can present risky alterations in the variables and features of human systems. Such undesirable alterations and/or hazards, such as earthquakes, droughts, and floods, the so-called natural hazards, can present intractable difficulties and complications to human systems. Today, natural resource degradation generates pressure in the environment, including qualitative and quantitative impacts on water resources, overexploitation, desertification, soil erosion, deforestation, and environmental degradation. This degradation is of increasing societal concern. In addition, human activities may pressure these delicate ecological systems and further load the status of natural resources.[15,16]

In this context, it is obvious that droughts are among the extreme natural hazards that can affect urban and industrial water supply and irrigation, and in general human life. Droughts usually score from a mixture of environmental principles that can increase due to human intervention. The initial reason for any drought event is a lack of precipitation values and, especially, the tempo spatial intensity and distribution of this shortage about the currently available water resources and water demand. This scarcity may lead to water shortages necessary for the operation of ecosystems and/or anthropogenic interventions. Drought definition can rise universally in high and low rainfall areas for any season. No drought definition can be explained to all drought aspects, making it difficult to define the starting and endpoints accurately.[17,18] Thus, the definition of drought remains a complicated state, which means that it is not unambiguous.

The current trend among politicians, administrators, and policymakers, and commonly between citizens, is to regard drought as an impermanent, random, and remote risk that involves only emergency mobilization. However, the available knowledge arising from the scientific observations and explorations of recent periods indicates that drought phenomena are unavoidable, as these events appear to be inevitable and perpetual facts of the global or local climate.

History has shown that today's drought usually becomes tomorrow's water resource crisis, and these issues are going to play a fundamental role in the next years worldwide. In Europe, there have been a plethora of drought incidents during the last 50 years, with little change in the variation of spatial extent, severity, frequency, and duration, as well as impacts. Specifically, the drought in Greece in 1989–93, in France and Spain, in 2005 and 2003, again in Greece in 2007–08, but also in northern Europe in the summer of 2018, are examples that confirm the phenomenon. Therefore, there is a need to take measures and strategies to mitigate the consequences not only for the Mediterranean environment but also for the whole of Europe.

Drought impacts and their costs should be considered from the initial phases of water resource management efforts. Otherwise, the high economic cost of drought may increase.

Therefore, any action to mitigate droughts should begin by learning the magnitude of the phenomenon. Practical explanations allow the determination of the stages and the degree of severity of drought, which are categorized into four different key lines: meteorological, hydrological, agricultural, and

socioeconomic drought. Drought is a provisional condition (months/years) compared to aridity (enduring climate state).[19,20]

The continuous development of studies related to drought indicators improves the methods and tools used, but also provides specific criteria for the implementation of policies (for drought management development, critical area recognition, comparability, threshold characterizations, monitoring improvement), and precision planning and mobilization of resources and moderation approaches. This study presents the Spatiotemporal variability of drought events using the Standardized Precipitation Index (SPI) with time steps of 6 and 12 months in Greece. In addition, the transformation from points (gauges) to spatial distribution used ordinary kriging.[21,22]

Conclusions

There is a small to moderate decrease in conservation actions in the CMPs (Conservation Management Plans) that substantially decreases conservation management.

All natural resource management actions in the CMPs are set aside in deference to land use for economic development. With extensive localized management, some native species may persist in park-like settings or in areas where land development is not possible. This scenario has substantial declines in natural resource conservation within the three CMPs. An increasing human population is supported in its use of land for economic development over the conservation of native ecotypes. Areas that cannot support development become the only areas of free-living native species. The anticipated changes, under Scenario Three, for each of the ecotype stressors important to Mesic Forests.[23,24]

Overall, this scenario would severely degrade and fragment native mesic forest habitat and result in their reduced resiliency, redundancy, and representation. Introduced mesic forest subtypes would significantly increase in resiliency, redundancy, and representation under this scenario. This scenario, along with Scenario Four, has the lowest likelihood of occurring in the foreseeable future.[25]

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