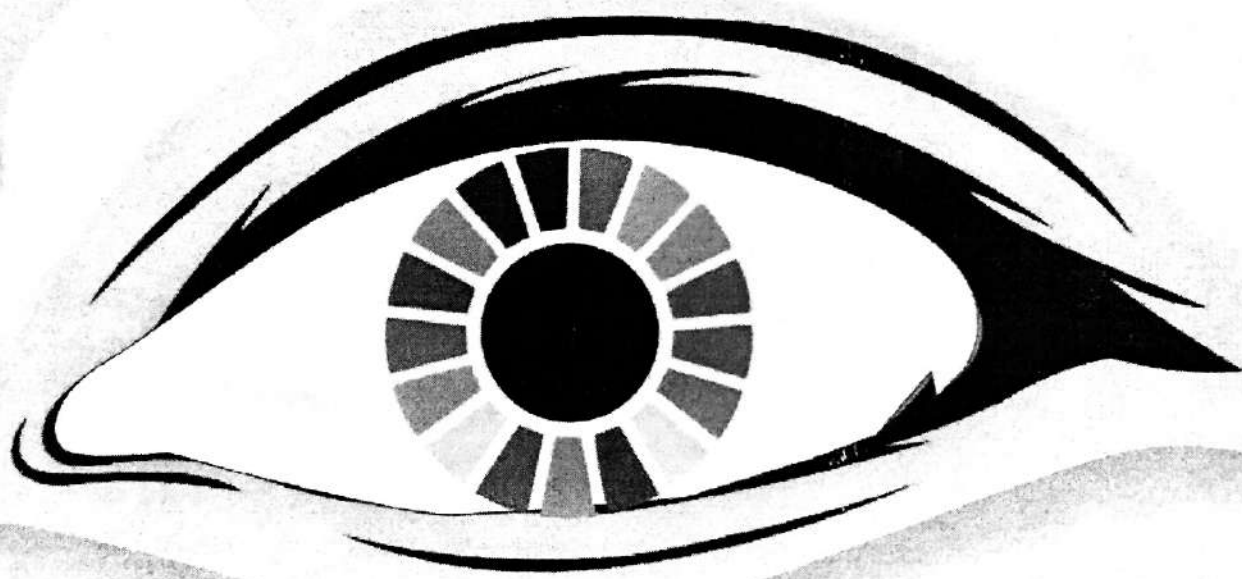


*Sustainable Development Goals  
Targets And Achievements*



**S. V. SUDHEER**

UGC-HRDC, University of Kerala  
Thiruvananthapuram

**SUSTAINABLE DEVELOPMENT GOALS**  
*Targets and Achievements*

Editor  
**S. V. Sudheer**

**UGC-HRDC, University of Kerala**  
**Thiruvananthapuram**

UGC-HRDC, UNIVERSITY OF KERALA

**Sustainable Development Goals:  
Targets and Achievements**

Sustainable Development Goals: Targets and Achievements  
(This book is an initiative of Society of Innovative Researchers and Academicians - SIRA)

First Printing, June 2020

Chief Editor

**S. V. Sudheer**

(Professor-Director, UGC-HRDC, University of Kerala, Thiruvananthapuram, Kerala)

Associate Editors

Dr. T.C. Thankachan (Associate Prof., St. Thomas College of Teacher Edn., Pala & President, SIRA)

Dr. T.V. Bindu (Assistant Professor, Govt. College of Teacher Edn, Trivandrum & Vice-President, SIRA)

Dr. Suramya Mathai (Assistant Professor, Titus II Teachers College, Thiruvalla & Secretary, SIRA)

Dr. Susmitha P.S (Assistant Professor, SNI Training College, Moothakunnam)

Dr. Latha Joseph (Assistant Professor, St. Joseph's Training College, Mannanam)

*Published by*

UGC-HRDC, University of Kerala, Thiruvananthapuram, Kerala, India

In Collaboration with Publication Division,

SH College (Autonomous) Thevara, Kochi, Kerala, India - 682 013

*Cover Design: Computer Graphics, Pala, Kerala*

*Printed at Global Reprographics, Pala, Kerala*

*Copyright © UGC-HRDC, Kerala*

All rights reserved. No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system, without permission in writing from the publisher.

*Price Rs. 600/-*

ISBN: 978-93-85657-23-8

- 32 **MAKING CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE** 216  
*Subina Beegum S.*
- 33 **DISASTER AND CRISIS: SAFEGUARDING THE WORLD'S CULTURAL AND NATURAL HERITAGE** 221  
*Parvathy Sudhakar S.*
- 34 **SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS** 228  
*Jincy Johny*
- 35 **SUSTAINABLE MANAGEMENT AND EFFICIENT USE OF NATURAL RESOURCES** 235  
*Dr Jaya P.J.*
- 36 **WASTE MANAGEMENT: PREVENTION, REDUCTION, RECYCLING AND REUSE OF WASTE** 240  
*Dr Anju K. Paul*
- 37 **SUSTAINABLE DEVELOPMENT AND SUSTAINABLE TOURISM** 247  
*Dr Asha P.*
- 38 **CLIMATE CHANGE AND ITS IMPACTS: NATIONAL AND GLOBAL LEVELS** 252  
*Sony Alfred*
- 39 **ISSUES AND CHALLENGES OF GLOBAL WARMING: A FUTURISTIC ANALYSIS** 256  
*Dr T.V. Bindu*
- 40 **CONSERVATION AND SUSTAINABLE USE OF OCEAN, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT** 262  
*Dr Thushara Murali*
- 41 **LIFE BELOW WATER: CHALLENGES AND PROTECTION** 267  
*Dr V. Vidhya*
- 42 **LIFE ON LAND AND BIODIVERSITY: PROTECTION AND SUSTAINABLE USE** 274  
*Dr S.Paul Mary Deborrah*

## SUSTAINABLE MANAGEMENT AND EFFICIENT USE OF NATURAL RESOURCES

Dr Jaya. P.J.

*Assistant Professor, Mount Carmel College of Teacher Edn for Women, Kottayam, Kerala*

### Introduction

Resources are especially the collective wealth of a country or its means of producing wealth. Usually resources that can be readily drawn upon when needed. A natural resource is what people can use which comes from the natural environment. Natural resources are important in our life because they are used to sustain life and meet people's requirements. For instance natural resources combine fresh water, timber, oxygen and solar energy. Conservation is the care and protection of these resources so that they can persist for future generations. Sustainability is important for many reasons including environmental quality. In order to make healthy communities we need clean air, natural resources and a nontoxic environment. Sustainability and healthcare are intricately related since the quality of our environment affects public health.

### Biodiversity Conservation

The issue of biodiversity conservation is regarded as an important element in natural resource management. What is biodiversity? Biodiversity is a comprehensive concept which is a description of the extent of natural diversity. Gaston and Spicer point out that biodiversity is 'the variety of life' and relate to different kinds of 'Biodiversity Organization. Natural Resource Management (NRM) refers to the sustainable utilization of major natural resources, such as land, water, air, minerals, forests, fisheries and wild flora and fauna with a particular focus on how management affects the quality of life for both present and future generations (Stewardship). These resources will provide the ecosystem services that lead better quality to human life.

### Precautionary Biodiversity Management

The 'threats' wreaking havoc on biodiversity include; habitat fragmentation, putting a strain on the already stretched biological resources; forest deterioration and deforestation; the invasion of alien species and climate change. Since these threats have received increasing attention from environmentalists and the public. The precautionary management of biodiversity becomes an important part of natural resources management.

### Administration and Guidelines

According to Cooney there are four methods to manage the precaution of biodiversity in natural resources management;

Management "including more risk-averse and precautionary management where given prevailing uncertainty regarding ecosystem structure, function and inter-specific interactions, precaution demands an ecosystem rather than single-



*[Signature]*  
Principal  
Mount Carmel College of Teacher  
Education for Women  
Kottayam-4, Ph: 0481-2573120

species approach to management. 'Adaptive Management' is a management approach that expressly tackles the uncertainty and dynamism of complex systems. *Environmental Impact Assessment* and exposure ratings decrease the uncertainties of precaution, even though it has deficiencies, and 'Protectionist Approaches' which most frequently links to biodiversity conservation in natural resources management.

### Management and Ways to maximize Sustainable Use of Natural Resources

Natural Resource Management deals with managing the way in which people and natural landscapes interact. It will bring together land use planning, water management, bio-diversity conservation, future sustainability of industries like agriculture, mining, tourism, fisheries and forestry. It will also help to recognize people and their livelihoods rely on the health and productivity of our landscapes and their actions as stewards of the land play a critical role in maintaining this health and productivity.

After the United Nations Conference for the Environment and Development (UNCED) held in Rio de Janeiro in 1992, most nations subscribed to new principles for the integrated management of land, water, and forests. Although different names were given to the same programme by different nations, all express similar aims. Various approaches applied to natural resource management includes: Top-down (Command and Control), Community-based natural resource management, Adaptive management, Precautionary approach and integrated natural resource management.

### Community-based Natural Resource management

The community-based natural resource management (CBNRM) approach combines conservation objectives with the generation of economic benefits for rural communities. The three key assumptions being that: locals are better placed to conserve natural resources, people will conserve a resource only if benefits exceed the costs of conservation and people will conserve a resource that is linked directly to their quality of life. When a local people's quality of life is enhanced, their efforts and commitment to ensure the future well-being of the resource are also enhanced. Regional and community based natural resource management is also based on the principle of subsidiarity.

### Adaptive Management

The primary methodological approach adopted by catchment management authorities (CMAs) for regional natural resource management in Australia is adaptive management. This approach includes recognition that adaption occurs through a process of 'plan-do-review-act'. It also recognizes seven key components that should be considered for quality natural resource

management practice: Determination of scale, Collection and use of knowledge, Information management, Monitoring and evaluation, Risk management, Community engagement, Opportunities for collaboration.

### **Integrated Natural Resource Management**

Integrated natural resource management (INRM) is a process of managing natural resources in a systematic way, which includes multiple aspects of natural resource use (biophysical, socio-political, and economic) meet production goals of producers and other direct users (e.g., food security, profitability, risk aversion) as well as goals of the wider community (e.g., poverty alleviation, welfare of future generations, environmental conservation). It plans to focus on sustainability and at the same time tries to incorporate all possible stakeholders from the planning level itself, reducing possible future conflicts. The conceptual basis of INRM has evolved in recent years through the convergence of research in diverse areas such as sustainable land use, participatory planning, integrated watershed management and adaptive management. INRM is being used extensively and been successful in regional and community based natural management.

A more integrated approach was implemented recognizing the intertwined social, cultural, economic and political aspects of resource management. A more holistic, national and even global form evolved from the Brundtland Commission and the advocacy of sustainable development.

Natural resource management issues are inherently complex. They involve the ecological cycles, hydrological cycles, climate, animals, plants and geography, etc. All these are dynamic and inter-related. A change in one of them may have far reaching and/or long term impacts which may even be irreversible. In addition to the natural systems, natural resource management also has to manage various stakeholders and their interests, policies, politics, geographical boundaries, economic implications and the list goes on. It is a very difficult to satisfy all aspects at the same time.

### **Conserving Natural Resources**

Buy less stuff (use items as long as you can, and ask yourself if you really need something new), Reduce excess packaging (drink tap water instead of water from plastic bottles), Recycle materials such as metal cans, old cell phones, and plastic bottles.

Three ways of conserving resources are:

1. Resorting to alternative sources of energy which are renewable.
2. Recycling of unwanted and waste products.

3. By passing laws and abiding by it. Also it is important to spread awareness to bring about resource conservation.

### Methods of Conservation

Methods of Conservation carried out by law, giving protection to animals and plant species or special areas of land or water, Restoration. To restore unsightly countryside (e.g. waste tips and slag heaps etc.), Rewilding, Alternative Energy, Nature Reserves and Zoo, Recycling and Education.

Here are some ways to save Natural Resources

- (1) Follow the 3 R's. It is time to apply the three R's of the environment that is Reduce, Reuse and Recycle
- (2) Save Water because without water nothing can live
- (3) Save electricity
- (4) Save fuel
- (5) Say No plastic
- (6) Go Green
- (7) Use renewable resources
- (8) Conserve Biodiversity.

### Measuring the Use of Resources and its Impact on the Environment

High use of natural resources increases the pressure on these sources (e.g. maintaining the availability of supplies and ensuring sustainable yields) and on sinks (e.g. managing the environmental impacts of resource use and whether ecosystems can absorb discharges). It is generally accepted that there are physical limits to continuing economic growth based on resource use.

However, there are many uncertainties in assessing reserves and the regeneration dynamics of natural resources. The overall consumption of material resources is known only for a small number of countries. Eurostat's MFA indicators have been compiled for some countries, but the tools to measure resource use and the related environmental impacts is still at an early stage of development. However, while the world population is growing and industrialization is increasing rapidly, the availability of natural resources is not likely to rise dramatically.

### Frameworks and Modelling

There are various frameworks and computer models developed to assist natural resource management.

**Geographic Information Systems (GIS)** - GIS is a powerful analytical tool as it is capable of overlaying datasets to identify links. A bush regeneration scheme can be informed by the overlay of rainfall, cleared land and erosion. In Australia, Metadata Directories such as NDAR provide data on Australian natural resources such as vegetation, fisheries, soils and water. These are limited by the potential for subjective input and data manipulation.

**Natural Resources Management Audit Frameworks** - The NSW Government in Australia has published an audit framework for natural resource management.



to assist the establishment of a performance audit role in the governance of regional natural resource management. This audit framework builds from other established audit methodologies, including performance audit, environmental audit and internal audit. Audits using this framework have provided confidence to stakeholders, identified areas for improvement and described policy expectations for the general public. Natural Resource Management specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those resources. Environmental Management is also similar to natural resource management. In academic contexts, the sociology of natural resources is closely related to but distinct from Natural Resource Management.

### Conclusion

Natural resources are resources that exist without actions of humankind. This includes all valued characteristics such as magnetic, gravitational, electrical properties and forces. Natural resources have a double-edge effect on economic growth, in that the intensity of its use raises output, but increases its depletion rate. Natural resource is a key input in the production process that stimulates economic growth. Natural resources are materials and components (something that can be used) that can be found within the environment. Every man-made product is composed of natural resources (at its fundamental level). We need to conserve our natural resources because it is the main source of our daily needs. We need to conserve it because they are limited only. And if these resources are abused and harmed, we will have short quantity of sources for food and living. Remember our future generation will need also our natural resources.

### References

- Clarkson, M.B.E. (1995) 'A stakeholder framework for analyzing and evaluating corporate social performance,' *Academy of Management Review*, vol. 20, Issue. 1, pp. 92-117
- Committee on Environmental Impacts of Wind Energy Projects. National Research Council. (2007). National Academies Press
- Cooney, R (2004). *The Precautionary Principle in Biodiversity Conservation and Natural Resource Management (PDF)*. IUCN Policy and Global Change Series. Archived from the original (PDF) on 9 May 2010. Retrieved 20 March 2020.
- Freeman, E.R. (1999) 'The politics of stakeholder theory: some further research directions,' *Business Ethics Quartile*, vol. 4, Issue. 4, pp. 409-421
- John L. Seitz. (2008). *Global issues: an introduction*. Blackwell Publishing Ltd.

# *Sustainable Development Goals Targets And Achievements*



**UGC-HRDC, University of Kerala  
Thiruvananthapuram**



ISBN: 978-93-85657-23-8