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Environmental Impact Assessment

A Journey to Sustainable Development

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Foreword

As Vice Chancellor of Central University of Haryana, it is my steadfast commitment to nurture a generation of environmentally aware and responsible individuals. I am pleased to introduce the textbook titled *Environmental Impact Assessment: A Journey to Sustainable Development*, authored by Rachna Bhateria, Mona Sharma, Rimmy Singh, and Sumit Kumar. This book endeavors to equip the next generation with essential expertise in Environmental Impact Assessment (EIA).

This book is a timely contribution to the environmental discourse, providing a clear and practical guide for navigating the EIA process. The authors' expertise is evident throughout, offering structured insights and a comprehensive understanding of EIA, empowering readers to actively participate in shaping a sustainable future.

The book simplifies the complexities of EIA into digestible chapters, guiding readers through each stage of the process with clarity and precision. It goes beyond theory, providing practical tools, methodologies, and real-world examples to conduct EIA studies effectively and contribute to environmental decision-making. By covering topics like Strategic Environmental Assessment (SEA) and Environmental Risk Assessment (ERA) alongside traditional EIA, the book offers a holistic perspective on environmental impact analysis.

The book explores nuances of EIA regulations and relevant notifications, making it invaluable for Indian professionals, students, and policymakers.

This book is particularly valuable for:

Students: Building a strong foundation in EIA principles and practices for successful careers in environmental fields. Professionals: Enhancing their EIA expertise and staying abreast of the latest regulations and best practices. Policymakers: Making informed decisions that balance development needs with environmental sustainability. Concerned Citizens: Actively participating in the EIA process and advocating for environmentally responsible projects.

In conclusion, *Environmental Impact Assessment: A Journey to Sustainable Development* is an essential resource for understanding and influencing the EIA process. I wholeheartedly recommend this book to all stakeholders involved in environmental management and sustainable development. By equipping ourselves with knowledge and practical skills, we can collectively work towards a brighter future for our planet.

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Preface

Environmental Impact Assessment (EIA) has been recognized as an important tool in the path of sustainable development. EIA has gained importance in the last few decades due to global environmental concerns. EIAs have been performed for new developments and expansion of already existing establishments for almost half a century now. There has been a phenomenal growth in EIA studies and EIA reports in terms of the number and depth. The growing awareness of the environmental impact of developing activities on the ecosystem has been highlighted in various reports issued by international agencies which has further prompted governments of various countries to continuously update their environmental laws.

In India, EIA has been mandatory for development projects since 1994, re-engineered in 2006, and again revised in 2020. Good-quality EIA reports are required for development projects to facilitate decision-making with sustainability considerations. It is felt that many professionals engaged in the preparation and reviewing of EIA reports in developing countries are not aware of the basic aspects of EIAs. Moreover, students at universities are unaware of the roots of EIA report. Therefore, an effort is made to include a thorough explanation of EIA, an assessment of the environmental components, EIA procedures, and helpful advice on how to prepare EIA reports. The procedure of EIA varies from project to project and country to country. The book will facilitate the EIA consultancies dealing with development projects.

The book covers the basic principles and salient features of EIA. The authors attempt to cover the shortcomings observed in EIA reports, the manner of conducting EIA for the proposed project, and also to facilitate the preparation of good quality EIA reports. The book is written in the form of proper numbering. Long descriptive texts have been avoided to make it easily readable. It should be mentioned that although the book is written focusing on the Indian context in its discussion of environmental regulations and the EIA framework, however, the concepts and techniques of EIA described in this book are applicable universally. Hence, it will be very useful to a wide range of stakeholders, viz. Academicians, EIA professionals and consultants, project proponents, EIA review/appraisal authorities, and competent authorities, particularly in emerging economies where major developmental work is

being undertaken and which is expected to continue in decades to come. An environmental management plan (EMP) is also included which is an essential aspect of EIA in countries where priority is on economic development by way of development projects and the EIA process has inherent weaknesses. For continual improvement of EIA reports, EIA consultants may be assigned the task of implementing and operationalizing the suggested EMP for a certain number of years in addition to conducting an EIA study and in preparation of an EIA report. The system of peer review of EIA reports is also expected to improve EIA quality.

Environmental Impact Assessment: A Journey to Sustainable Development is an attempt to cover EIA according to new knowledge acquired through research and experiences which will make this tool more versatile and dynamic. It is recognized that since EIA is continuously expanding in the context of contents, hence there will always be scope for improving the contents and expanding the coverage of the book to make it more useful to the users as per their requirement.

Rohtak, India — Rachna Bhateria
Mahendragarh, India — Mona Sharma
Gurugram, India — Rimmy Singh
Hisar, India — Sumit Kumar

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Abbreviations

BPEO	Block Primary Education Officer
BS	British Standards
BSI	British Standard Institute
CM	Compliance Management
CPCB	Central Pollution Control Board
CTO	Consent to Operate
DPR	Detailed Project Report
EA&RI	Environmental Auditing and Related Investigations
EAC	Expert Appraisal Committee
EC	Environmental Clearence
ECI	Environmental Condition Indicators
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EIMS	Environmental Process Management System
EIS	Environmental Impact Statements
EL	Environmental Labelling
EMAS	European Environmental Management System
EMP	Environmental Management Plan
EMS	Environmental Management System
EN	European Standards
EPA	Environmental Protection Agency
EPD	Environmental Product Data
EPE	Environmental Performance Evaluation
EPI	Environmental Performance Indicators
EU	European Union
GEN	Global Ecolabelling Indicators
GIS	Geographic Information Systems
HLS	High Level Structure
IAIA	International Association for Impact Assessment
IEO	International Energy Outlook
IFC	International Finance Corporation

ISO	International Organization for Standardization
LCA	Lifecycle Assessment
MoEF	Ministry of Environment and Forest
MoEFCC	Ministry of Environment, Forest and Climate Change
NABL	National Accreditation Board for Testing and Calibration Laboratories
NEPA	National Environmental Policy Act
NGOs	Non-Governmental Organization
NOC	No Objection Certificate
PDCA	Plan Do Check Act
PR	Public Relations
SAI	Supreme Audit Institution
SEA	Strategic Environmental Assessment
SEAC	State Expert Appraisal Committee
SEIAA	State Environmental Impact Assessment Authority
SOPs	Statement of Purpose
SPCB	State Pollution Control Board
TD	Terms and Definitions
ToR	Terms of Reference
U.S.EPA	United States Environmental Protection Agency
UNEP	United Nations Environment Program
USNEPA	US National Environment Policy Act

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Chapter 1
Introduction to Environment Impact Assessment

The EIA process is a crucial instrument for advancing sustainable development and incorporating environmental factors into decision-making processes. It is utilized throughout several sectors such as infrastructure, energy, mining, agriculture, and tourism. EIA is mandatory in numerous nations, and global entities including the United Nations, the World Bank, and the European Union have established protocols and benchmarks for carrying out EIA. Nevertheless, while EIA offers advantages, there are also critiques of the procedure. These concerns encompass the impartiality of the process, the quality of the data utilized, and the efficacy of mitigating actions. There are worries that the Environmental Impact Assessment (EIA) procedure can be lengthy and costly, and that it might be employed to postpone or obstruct development initiatives.

The Environmental Impact Assessment (EIA) is crucial for evaluating the possible environmental effects of planned development projects and encouraging sustainable development. Despite complaints, the benefits of Environmental Impact Assessment (EIA) are widely acknowledged, and initiatives are underway to enhance its efficacy and efficiency.

1.1 EIA: Definition

Environmental Impact Assessment (EIA) is a decision-making technique that identifies and evaluates the significant environmental effects of a project to see if they can be reduced or controlled. Simply said, EIA is the assessment of the possible environmental effects of a planned project and deciding on ways to reduce or prevent those effects. This definition emphasizes the main aspects of the EIA process, which involve identifying and evaluating environmental impacts with the aim of fostering sustainable development through the reduction or prevention of adverse environmental

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