

Preface

In the majority of developing countries, the current approach to management and decision making regarding geo-based challenges tends to be defective for a number of reasons. These include, first, the nature of the decision-making process which is often subjective and reactive. Then, once the proposed objectives fail to materialise, the efforts tend to focus on managing and containing operations post event. Hence, mitigation actions are often designed to 'repair' and 'minimize the negative impacts' after the event. Secondly, information poverty is a restraining factor and, finally, the inability for developing sustainable management options based either on producing locally applied research or utilising relevant international research.

Experience shows that subjective and reactive decisions, actions and practices typically lead to eroding public rights and to continuous degradation of the environment and natural resources, i.e. water, soil, air, natural habitats and biological diversity. The consequences of these degradations can slow down the pace of development and threaten the process of nation building.

Evidently, there is a great need to enhance the process for, and to develop the capabilities for objective decision making and to move from being reactive to proactive. This objective requires managing the information poverty obstacle and energising research thinking and problem solving through enabling international level scientific research, capable of producing research-based solutions and sustainable management options.

The literature is poor in this domain and none seem to show the way forward or to present real and practical case studies utilising new technologies, scientific thinking and factoring in local conditions for informing the decision-making process and to develop effective policies.

This book presents the sustained and continuous research activity of the author over some three decades which was developed based on a multidisciplinary geo-based background and an enduring interest in understanding and managing issues and challenges facing developing countries, especially from the perspective of their processes and impact, and the ways in which applied science can provide a sound basis for informed decisions making. In fact it is based on a Doctor of Science (D.Sc.) thesis in Geo-Based Environmental Sciences submitted to the School of Environmental Sciences, University of East Anglia, Norwich, UK. The D.Sc. degree was obtained successfully by the author during February 2011.

The book is designed to provide information, advice, guidance and a sound conceptual framework for readers interested in using Geoinformatics to address geo-based challenges and to enhance decision making especially in developing countries. In addition, the necessary technical tools are explored and used to energise research thinking in a way that can develop locally driven practical and sustainable solutions. Consequently, moving the management of geo-based challenges away from reactive and towards proactive approaches. To facilitate the process, worldwide case studies based on the author's first-hand experiences in Arid/Semi Arid (Iraq, Tunisia, Morocco and Jordan), Temporal (UK) and Tropical environments (Malaysia, the Caribbean region, Indonesia and Australia) are presented. The ultimate goal is to influence future development choices and contribute to realizing sustainable futures and nation building.

In terms of readership, this publication is meant to assist researchers, students and interested readers with research and consultancy dealing with applied local and relevant issues and assist with capacity building necessary for the development processes. In a formal sense, it is most suited for researchers, postgraduate and advanced undergraduate students interested in:

1. Research Methodologies focusing on both the 'deductive' and the 'inductive' approaches for conceptualising and finding science-based sustainable solutions for geo-based challenges.
2. Using Geoinformatics to manage multidisciplinary Geo-based challenges.
3. Applications focused on Geo-Sciences, Disaster Management, Water Resources, Land use/cover mapping, Agriculture, Biodiversity, Climate change, Suitability and Sustainable Development Studies.
4. Higher Education and University Governance issues and challenges with a focus on developing countries.

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World-Wide Case Studies and Sustainable Local
Solutions

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