

1. Introduction

The Arabian Peninsula, also called Arabia, is a vast landmass, covering about 2,590,000 km². It is bounded by the Red Sea on the west and southwest, the Arabian Sea on the south, and the Gulf of Oman and the Persian Gulf on the northeast. It is composed of seven countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates, and Yemen).

Arabia is one of the driest subcontinents in the world. With an average precipitation of less than 100 mm per year it can be considered a desert region. It is also one of the hottest, with daytime temperatures often exceeding 50°C in summer. Yet, despite its general aridity, its ecosystems are surprisingly diverse. The rich biodiversity of the Arabian Peninsula is important to agriculture. The plants that are able to survive in this harsh environment might be carriers of traits useful in developing new drought and heat tolerant crop varieties.

However, the biodiversity of the Arabian Peninsula is under threat. An inherent fragility of the environment, combined with over-exploitation of the vegetation resources, has severely reduced the plant cover and narrowed the species pool. Huge parts of the Peninsula are now completely bare, not because of agroecological constraints, but because of overgrazing and fuelwood extraction. Given the long time required for biomass production in arid environments, recovery under conditions that do not provide total plant protection might be close to impossible. This is the true meaning of 'desertification' in a desert environment.

The Arabian Peninsula has enormous reserves of groundwater. In many parts of the Peninsula this precious resource has been exhausted in order to maintain agricultural production systems, such as irrigated field crops, which are essentially not adapted to the over-riding climatic constraint of hyper-aridity. Such systems are unsustainable because they consume huge amounts of water, where the supply is virtually non-renewable on a human time scale.

Combating desertification in the Arabian Peninsula requires good

information on the different environments. To some extent this information is already available. Many environmental studies have been undertaken, which have produced inventories of climatic, soil, terrain, vegetation, and water resources. Depending on the investments made by the governments of the region, the level of detail, updating, and integration varies considerably between countries. In addition, the access of the general public to this information is not always easy. As a result, it is difficult to obtain a synthesis of the agroecology at the level of the whole Peninsula.

Much information on the environments of the Arabian Peninsula exists also in the international community, in the form of books, journal articles, and international databases. Putting national and international data sources together in a concise booklet and integrating them through a Geographical Information System (GIS) is the main subject of this publication.

Given the size and diversity of this subcontinent, this publication is restricted to the level of 'exploration,' hence the title. Nevertheless, it is hoped that the 'bird's-eye view' it provides will be of value for agricultural research planning, biodiversity management, land use planning, and public awareness at the national and regional level. In short, the publication is meant to fill an important data gap and permit a better understanding of the resource diversity and environmental problems of the Arabian Peninsula.

This booklet is organized in several sections. The first gives a brief overview of the human geography of the Peninsula. The second describes the characteristics of the natural environment in terms of relief, climate, soils, land use, and cover. It also addresses the problem of land degradation assessment. A third section looks into the current status of agroecological characterization in the Arabian Peninsula, identifying knowledge gaps, thematic research priorities, and follow-up studies at the national and regional level.

This booklet is richly illustrated with maps. These maps were derived, through GIS techniques and methods of agroecological characterization, from the various data sources to which the author had access. Section eight briefly describes the methods used in generating the maps and lists the data sources. The maps in this publication are also available on a separate CD as GIS files (ARCView shape files and grids), and can be imported into compatible GIS software.