

P R E F A C E

In a broad sense, the geo-environmental appraisal is an assessment of the factors of the environment whose relations are considered in terms of spatial location. Inevitably, it is impossible to be comprehensive with such a wide field to cover, but it is hoped that the appraisal of some of the selected major parameters like geological base, climatic conditions, fluvial environment and landforms, pedological variations, source of water for irrigation, and the land use pattern will help to unravel many of the problems arising from their interaction with the landscape, ecology and ekistics of a region.

The Sali River Basin (914.5 sq.km.) is a small but conspicuous geomorphic unit with variegated landscape pattern of physical and economic significance in the Chotanagpur plateau Fringe Belt (Rarh Region) of Bankura district, West Bengal. The researcher in this piece of geographical study has endeavoured to present a comprehensive inventory of the major characteristics of the geo-environment of the Basin for amelioration of its age old poverty-stricken agrarian economy through proper resource planning and economic development. It leads to identification of the natural endowments and at the same time the environmental problems on the basis of which proper delineation of the development corridors without causing any dis-equilibrium in the ecosystem is possible.

In an applied sense, the present study on the geo-environmental appraisal can be treated for both academic and utilitarian reasons being presented in the subsequent chapters for elucidation and a new approach to the recent trends of the geographical studies.

Chapter 1 contains an introduction to the subject, location and area, objectives, methodology and the existing literatures in connection with the geo-environmental appraisal of the Sali Basin, Bankura district, West Bengal.

Chapter 2 concerns the general geology of the area including the stratigraphical units, geological structure and history. Emphasis has been given on the quaternary formations upon which the present day land use pattern directly depends. Economic geology of the Basin has

also been described briefly. Correlation between morphostratigraphic units and land use has been established.

Chapter 3 discusses the climatic base of the Sali Basin. General elements of the climate such as temperature, rainfall, humidity, wind speed etc. have been briefly reviewed. Seasonal rhythms particularly the nature of monsoonal rainfall including its late arrival, early departure, inter-dry-spell conditions and climatic water balance have been analysed with a view to understand the response of the general land use pattern of the Basin to climate.

Chapter 4 reveals the pedological base of the Sali Basin. Classification of the local soils and the nature of soil texture have been included. Discussion has also been made on the soil moisture regime, soil reaction, fertility status of soils and soil erosion. The response of crops to soils and the productivity rating of the individual soil types in the Basin have been briefly reviewed.

Chapter 5 is a unified treatment of the fluvial environment and landforms as one of the major geo-environmental parameters of the Sali Basin. Discussion has been centred on the appraisal of the drainage systems with an attempt to morphometric analysis of the Basin. Micro-features have been identified and the terrain is divided into four distinct geomorphic surfaces. These are : (i) The Gangajalghati Surface (above 120 m. from mean sea-level) is identified as Upland, and (ii) the Kora Surface (80-120 m. from m.s.l.) is Upper Plain and both these two surfaces have formed the upper sector of the Basin characterized by denudational plains. (iii) The Sonamukhi Surface (40-80 m. from m.s.l.) is identified as Rolling Plain, while the, (iv) Bodai Surface (below 40 m. above m.s.l.) is Low Plain and both these two surfaces have formed aggradational plains in the Basin. Delineation of the surfaces have been done mainly on the basis of the knick points or breaks of slope across the long profile of the Sali main Channel. An account of the geomorphic history of the Sali Basin has also been given in this chapter.

Chapter 6 gives an appraisal of the source of water, both surface and ground water of the Sali Basin. Since water is the most vital and chronic problem in the agriculture of the region, an attempt has been

made to discuss the irrigation potential from both surface and ground water sources. A detailed discussion has also been made on the existing water management of the area keeping in view of some genuine environmental problems inherited so far.

Chapter 7 deals with the appraisal of the general land use pattern in the Sali Basin. Examples of micro-land use features have also been cited. Here the main objective is to understand how the major parameters of the physical environment like geology, geomorphology, pedology, climatology etc. influence the human activities particularly the land use of the region.

Chapter 8 is a statistical approach to verify the impact of landforms on land use pattern of the Sali Basin. Summary measures, Z-statistic, correlation co-efficient etc. have been analysed with the help of eight selected characters taking four from landforms (a : Relative relief, b : Average slope, c : Drainage density, d : Roughness index) and four from land use (e : Forests, f : Net area sown excluding paddy, g : Area under paddy, h : Area not available for cultivation), using computer - over the four individual land surfaces already identified (Chapter 7). Discussions have been made on (i) variation of the characters over the surfaces, and (ii) variation of the relationship between each and every pair of characters over the surfaces.

Chapter 9 includes conclusions. This chapter provides an assimilation of the important findings and observations emerged from the careful study of the dynamic process-relations linking with the geo-environment of the Sali Basin. Certain strategies for conserving the resource potential of the area, together with proper utilization of the land and water making the optimum productivity therein has been suggested.

In fine, the present researcher wishes to stress much on the appropriateness of an integrated inter disciplinary approach which seems to be meaningful in the fulfilment of the present study thus unveiling the complex realities of the geo-environment of the area. The facts and figures of the geo-environmental parameters obtained through keen observations of the Sali Basin would go a long way to helping the local people to apply others in their area to achieve maximum benefit for improving the socio-economic conditions.