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Sub : Corrections and revisions in the thesis of Sri Sudhansu Kumar Koley titled 'Geo-environmental Appraisal of the Sali River Basin, Bankura District, West Bengal' along with an addendum (two copies).

1.0 The present thesis is concerned with the geo-environmental appraisal of the Sali River Basin (The Damodar Drainage Basin) covering 915 sq.km. in Bankura District, West Bengal. Primarily, this study relates to an assessment of the environmental factors of the Sali Basin, and is pre-requisite for amelioration of its age old poverty.

1.1 With regard to the application and test of various laws of drainage composition as enunciated by Horton, Strahler, Shreve, Scheideggar etc., in Chapter - 5 (Fluvial Environment And Landforms), the present worker has discussed in some details the three basic properties of a drainage basin : (A) Linear properties - one dimension ; (B) Areal properties - two dimensions ; and (C) Relief properties - three dimensions (Page 95 to 114 ; Fig. 5.3, 5.4, 5.5, 5.6, 5.7, 5.8 & 5.10 ; Table 5.1 & 5.2). The findings and observations thus obtained from the Laws of Drainage Composition as above are tested and the variations particularly concerning Linear Properties and Relative Relief Categories (areal coverage) are explained properly (Table 5.1 and 5.2, Page 96-106). Such laws of drainage composition involving Stream numbers (Nu), Stream lengths (Lu), Basin relief (Hu) etc. (Horton 1945), Schumm 1956, Morisawa 1962 and others especially relating to the laws of Sali drainage basin areas and relief are found to be valid for the data and information used (Table 5.1 and 5.2, Fig. 5.3 to 5.8 and 5.10). This is a fourth order drainage basin reflecting the suites of landforms and drainage patterns of maturely dissected landscape so far as the attainment of the stage in fluvial erosional cycles is concerned (Davisian concept, P 96).

1.2 The categorization of Relative relief as high (above 15 m), and low (below 5 m) as shown in the given Table 6.2 (P 106) conforms well

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to the occurence of variations in relief sistematically in a comperative sense thus maintaining the relief grades (Singh 1967, Mukhopadhyay 1980, 1982) of total area at different altitudes within the Sali Basin.

2.0 In order to discern the formation of four geomorphic surfaces scientifically in the Sali River Basin this worker has adopted the techniques of long-profile analysis in terms of both Actual Curve (y) and computed (yc) of the Sali river employing mathematical curves (exponential curve) also for the purpose of comparing the two curves (actual y and computed yc) with several breaks (knick points) as well as areas of drainage discrepancies within the Sali Basin (Croxton et al 1969, Chakraborty et al 1974, Marisawa 1968, Mukhopadhyay 1980, 1982 etc.). The Fig. 5.9 (P 111) illustrates the alignments of two curves i.e. the actual curve (y) which is different from the computed curve (yc) along with the locations of four distinct geomorphic surfaces (S-I, S-II, S-III, & S-IV) at various elevations namely S-I : Gangajalghati Surface (Upland), above 120 m., m.s.l ; S-II : Kora Surface (Upper plain), 80-120 m. above m.s.l. ; S-III : Sonamukhi Surface (Rolling Plain), 40-80 m. above m.s.l.; and S-IV Bodai Surface (Low flat plain), below 40 m. above m.s.l. (Table - 5.1, P 120).

2.1 With regard to the task of naming of the highest surface lying above 120 m. from mean sea-level (m.s.l.), this worker has called appropriately as Gangajalghati Upland (P 121) with consideration of the importance of Gangajalghati P.S. area covering a portion of laterite capped Chotanagpur Plateau fringe (45 sq.km.) with vallies, tors and hard crusts.

0 The present worker has also adopted advanced techniques for the analysis of the development of landforms and land uses specially introducing the statistical methods like correlations between the geomorphic variables and the land use variables with reference to four distinct geomorphic

surfaces as above. A detailed analysis of the physical and cultural properties through mutual correlations for S-I, S-II, S-III, and S-IV employing the morphometric parameters like Relative relief (in metres), Average slope (in degree), Drainage density (in per sq.km.) and Roughness index (Geomorphological variables) and Area under forests, Area under paddy, Area under other crops, and Area not available for cultivation (cultural variables) was made also for the purpose of ascertaining the degree of relationships between the physical (geomorphic) and cultural (land use) variables (PP 217 - 230). The given Tables i.e. Table 8.1 (P 219), 8.2 (P 221) 8.3 (P 226) and technical diagram i.e. Fig. 8.1 (P 224) illustrate the nature of correlation between the geomorphological and the land use variables of the surfaces (S-I, S-II, S-III, S-IV) lying at different elevations as above. Such correlations among the physical and cultural parameters inclusive of mutual correlation (surface-wise) has been conducted using computer. Besides, the techniques of Summary Measures with reference to the indices measuring properties of a distribution e.g., coefficient of variation, standard errors, range, z-statistic of pairs of surfaces etc., has also been adopted inorder to showing the characteristic relationship between different variables (geomorphological and land use variables) relating to the study on the impact of landforms on land use within the Sali Basin.

3.1 Mention may be made to the variations of the relationship between every pair of character over the surfaces (Table 8.2) which is marked significant statistically except in the case of drainage density character for example. Similarly, variation between S-I (Gangajalghati Upland) and S-IV (Badai Low Flat Plain), and S-II (Kora Upper Plain) and S-III (Sonamukhi Rolling Plain) is found to be statistically significant for the case of all the characters except drainage density. Further, correlation matrix among the characters (Table 8.3, P 226) reveals that there

is more or less significant positive correlation among the physical factors in all the land surfaces. Here Average slope and Roughness index in the entire Sali Basin. Likewise, variation of the relationship among different characters between the pairs of Surfaces, S-I (Gangajalghati Upland) and S-II (Kora Upper Plain) manifests that the S-II having better terrain condition and water availability as compared to S-I possessing the area under paddy (the main crop) much higher (PP 226-230). Finally the result of the analyses are shown in the Tables from 8.1 to 8.3 and are largely used for the purpose of presenting concluding remarks incorporating also suggestions (PP 236-239) for the optimal land use discussing also the appropriate steps for mitigations of the existing environmental hazards particularly flood, soil erosion including accelerated soil erosion, drought etc., in the Sali Basin.

3.2 The main findings and observations as made specially on the basis of the significant results of the analyses as discussed above are proved to be useful for the purpose of formulating the developmental strategy not only for the Sali Basin but also the Bankura district as a whole which is a notable backward area in the Rarh region of West Bengal (PP 239-241).

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