CHAPTER - VII

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Outcome of the study and the broad conclusion arrived at are briefly summarised as under.

1. The alluvial formations of the study area, within their limited geographical extent have preserved a well developed record of Quaternary history. The Mahi-Narmada interstream area forms a part of the major pericontinental rift basins (Cambay & Narmada) filled up with 6000m thick varigated sediments of Tertiary and Quaternary. In this tectonic depression whose basement comprised of Precambrians, Mesozoics and Deccan Traps, more than 700 m thick Quaternary detritus reflect arid cold to humid warm climates during different phases of glacial and interglacial cycles and the related eustatic sea levels fluctuations in the range of -130m to +45m. The Cambay basin, formed by discontinuous normal faults, is an intracratonic type of graben comprising four structural blocks. Of which, the Jambusar-Broach block covers the major part of the study area. Neotectonic activity is manifested by the periodic reactivation of faults during Quaternary.

2. The present landscape scenario of the area represents a case of special terrain development under active Quaternary dynamics controlled by the major tectonic framework. The area is divisible into three broad physiographic units as Coastal Lowlands, Central Alluvial Plains and Eastern, Piedmont Zone. Each unit exhibits characteristic

development of depositional and erosional landforms. Variety of drainage pattern show predominent control of structural elements combined with subaerial denudational processes. The polygenic landscape of the terrain has been evolved under intensive interaction of endogenic and exogenic processes since the initiation of Cambay basin continuing till the present day. The differential movements and palaeo-climatic variations have affected the hydrodynamics of rivers and their metamorphosis. The ultimate landscape has been resulted due to subaerial exogenic processes characterised by hot humid to cold arid climates and strong influence of neotectonism.

3. The terrain of the area show a wide range of capability due to variations in the parent geological material and climatic conditions. These morpho-climatic factors have controlled the present landuse practices - about 77% of the area is used as cultivable land and only 10% of the area is covered by uncultivable waste which is due to salinity influence from sea side and gully erosion along river banks. The rest 13% is occupied by habitation and other developmental activities. The good agricultural land is under constant threat of degradation from several hazardous factors.

The soil resource of the area is rich for agricultural utilisation. It falls under three major orders as per modern soil classification (i) Vertisols are black medium to deep soils cover about 55% of the area (ii) Inceptisols are

alluvial sand, loam of uniform texture of medium soils cover about 30% of the area and (iii) Entisols are skeletal saline - alkaline soils along the coast cover the rest 15% of area Detailed classification comprise 5 suborders, 5 Greatgroups, 9 subgroups, 9 families and 17 series, which indicates wide range of variation in physico-chemical properties and diversity in genetic processes.

The mineral resources like salt, natural aggregates, brick-earth and Kankar have very high potential and their occurrence is attributed to the most conjential genetic environments related to depositional processes, climate and geomorphic setup.

4. The area has got very rich water resources. The surface water resources mainly comprise the aggregate annual river discharges of three major drainage basins of Mahi, Narmada and Dhadhar. It is of the order of 50,000 Mm^3 at a mean rainfall of 1100 mm. This high potential due to strategic location of the study area at the lowermost reaches of the two drainage basins of Mahi and Narmada.

The area has got very rich groundwater potential. Most of the groundwater is available as static storage within semi-confined and confined aquifers extending to a depth of 150 m to 300m. The quality deterioates laterally as traced from east to west and vertically towards increasing depth. This reflects the sedimentations under the fluctuating sea levels and neotectonic disturbances. Average annual gross recharge

is about 953.75 Mm^3/yr against net-draft of 1349 Mm^3/yr which leaves 686.9 Mm^3/yr as surplus potential for further development.

5. The prevailing set of geological activities like endogenic, exogenic and human-induced operating in the area form the hazardous parameters of geo-environments. These include seismicity, floods and inundation, erosion and deposition, salinity of land and water, cyclones and storms, agricultural activities, industry and urbanisation. Depending upon the collective influence of all these factors, the study area has been divided into four geo-environmental zones as (I) Central Alluvial - sensitive zone (II) Eastern Upland zone - stable (III) River banks Ravine zone - Fragile and (IV) Coastal Saline zone - Fragile. The overall rating for the area is 'sensitive' which calls for a fresh strategy of management including corrective measures to already identified areas of adverse impact and new approach for conservation and development taking into account the role of geological factors of the terrain.