Chapter 5
Discussion

5.0 Discussion:

For the sustainable planning of an area, the knowledge of resources with the variable linked with it is necessary. A large set of database should to be generated and integrated for learning logical and sustainable solutions for a specific query. Geospatial technique in such case has the strength to generate spatial and non spatial information that helps immensely in the efficient and scientific decision making process. Such analysis has been used in the present work for generating an ecologically sustainable plan for Pavagadh forest area. The present approach through remote sensing data have aided in generation of a model for sustainably maintaining these forest areas.

For the generation of this ecologically sustainable development plan, current status of all attributes linked with this resource is required which can be achieved through the generation of various thematic maps. Understanding road network for sustainable management of forest is one of the important criteria as this can aid in achieving fourfold objectives of forest organizations viz., protection, restoration, development and principal exploitation. The present study has highlighted the increase in road length over five decades due to construction of national and state highways that provided easy access to this forest area. This has created a greater anthropogenic pressure on these areas. Understanding drainage pattern of a forest area can serve as a significant input for water management, an essential component of sustainable development of forest. Study carried out to understand ground water quality, soil pH, electrical conductivity, air pollution level showed the values of these factors were within permissible limit defined by CPCB. This will help in checking the future degradation of this component. It was really a good finding that with reference to analysed parameter during this research all the harmful components for

the human health were in a good state. Various authors have studied the well-known association between climate and the vegetational shifts due to microclimatic change on the various slope and aspects (**Turesson, 1914; Cantlon, 1953; Bale & Charley, 1994; Boerner, 2006**). Such association has also been distinctly observed during the present study. The south facing slope exhibited a distinct increase in species diversity. Thematic maps of Population and arable land generated will give insights regarding how much land can be converted to agriculture in coming future for fulfilling basic need i.e. food.

Primary and secondary vegetation analysis conducted in the present study showed variations. Differential values of standing biomass at various sites may be due to selective removal of forest products during different periods. As such, the higher tree biomass at different sites may be related to the presence of more trees at larger girth classes. The increased TBA in spite of the lower density in turn increased the biomass at sites. More number of understorey species at various sites is indicative of the fact that the space/resource created by disturbances are efficiently utilized by these species due to their smaller niche size. This situation may be attributed to the higher regeneration potential of those sites. The higher shrub biomass at younger site than of the disturbed sites may be due to the higher regeneration potential of different tree species at this site as indicated by higher number of seedling (**Pande, 2001**).

Numerous factors stimulated by the activity of man are responsible for massive conversion of forest cover land into other land use units. The use of remote sensing data in recent times has been of immense help in monitoring the changing pattern of forest cover (**Forkuo and Frimpong, 2012**). It provides some of the most accurate means of measuring the extent and pattern of changes in cover conditions over a period of time (**Miller et al., 1998**). Satellite data have become a major

application in forest change detection because of the repetitive coverage of the satellites at short intervals (**Mas, 1999**). In the present study, satellite image analysis and discussion with locals revealed that the leading causes of forest cover change in Pavagadh forest area is legal land issues and enchroacment due to urbanization and tourism activities in these areas. As it has been explained in study area description part, Pavagadh forest is attracting large number of tourists because of its heritages. In order to generate the sustainable development plan, population and other demographic features are of great significance which can help in analyzing the impact of biotic pressure on the forest area. Population growth is also factor affecting forest resources in the study area. In the developing world, increasing population size has two-fold impact on the forest resources. On the edges, sedentary cultivators are nibbling away in order to create more land to grow food, while in the forest itself the expanding numbers of shifting cultivators are forced to shorten rotations, leading to permanent change (**Williams, 1990**).

Forest Canopy density is other major factor in evaluation of forest status and is an important indicator of possible management interventions. Many authors have derived Forest land cover information using remotely sensed images using classification algorithms (**Franklin et al, 1986; Mickelson et al, 1998**). The present study indicated that the degradation has occurred in the Pavagadh forest.

It has been noted that several workers have carried out extensive studies on the land suitability analysis using GIS based MCE procedures (**Collins et al., 2001, Mokarram and Aminzadeh, 2010**) for land development. In addition, GIS based land suitability analysis techniques are useful for decision makers, engineers and planners. As stated in the literature, it provides a framework for land development (**Murrey, 2003; Saaty, 2007; Mohit and Ali, 2006; Abadi, 2007; Graymore et al.,**

2009). From the suitable categories, ESA were chosen which then were further integrated with other variables to develop ESD plan for Champaner. In India, the natural virginity of most of the forest areas selected for the protection has already been adversely attended by human activities even in the core area. On scrutiny, large patches of natural habitat within each protected area are found degraded for one reason or the other. Since the environmental process in totality are linked to each other very intricately and man being the biggest destroyer or alternator of the Earth's unique ecosystem, it becomes necessary to review our approach towards generating in puts for resource management plans of all the ecologically sensitive areas in the country. ESD is essential as it takes into consideration the ecology and environment of different resources. It also follows the principle of intergenerational equity by ensuring quality, health, diversity and productivity to future generation. In the present research, for maintaining the sustainability of forest areas ecological factors were heavily weighed the valuation of assets and services to provide more incentive for the conservation of biological diversity and ecological integration.