STUDY AREA

2.1 LOCATION

The district of Vadodara having an area of 7794 sq km lies between latitudes 21^0 45 and $22^0$45 North and longitudes 72^0 48 and $74^0$15 East in western India at an elevation of 39 meters. It is the 18^{th} largest city of India with a population of 1.6 Millions according to 2001 Census. Administratively, the district is subdivided into twelve development blocks *viz.* Vadodara, Karjan, Padra, Savli, Waghodia, Dhaboi, Sankheda, Jetpur, Chhota Udepur, Nasvadi, Tilakwada and Sinor. Vadodara district forms a part of Great Gujarat plain. The Narmada and the Mahi are the chief rivers of the district. Jambuva, Surya, Vishwamitri and the Dhadhar flow through the district and empty into the Gulf of Cambay (Gazetteer of India, 1979).

2.2. HISTORY

Vadodara has a rich historical background. The ardent historian can trace Baroda's history over 2000 years and more. The City of Vadodara apty described by a medieval Jain writer as a "Tilak on the Brove of Lata." was a nodal center of the costal plain of Gujarat. Modern Vadodara is a great and fitting memorial to Maharaja Sayajirao. It was the dream of this able administrator to make Vadodara an educational, industrial and commercial centre and he ensured that his dream would come true. For this reason, the city is also referred to as Sayaji Nagari (the town of Sayaji).

2.3. LAND-USE

Dry deciduous forests cover about 10 percent (79, 400 ha) of the total land area and are found in the hills of Chhota Udepur and Jetpur. An extensive stretch of land along the Mahi river valley is affected by severs gully erosion. As a preventive measure, forest department has initiated social forestry programme in few villages of this problem zone. About 70 percent (540, 276 ha) of the total area of the district is under cultivation. Major crops are cotton, jowar, wheat, tur and rice. Other crops are bajra, gram, groundnut, maize, sugarcane, tobacco, potato, banana etc. However, about 20 percent (108,600 ha) of the aerable land is irrigated (Department of Science and Technology, 1991).

2.4. INTENSIVE STUDY AREA

After a reconnaissance survey, different intensive study sites were selected, within the Vadodara district, to unravel specific objectives (Figure 2.3, 2.4, 2.5). Rationale for the selection of the area was based primarily on the objectives and logistics. In order to have precise geographical position, each study site was located using a Geographical Positioning System (Garmin, GPS 12XL).

2.5. ABIOTIC FACTORS

2.5.1. Climate

The climate in Vadodara varies considerably in different seasons. Generally the climate is characterized by hot summer and general dryness except during the monsoon season.

2.5.2. Seasons

Three main seasons are recognized: Summer (March-Mid June), Monsoon (Mid June to September and Winter (October – February). The weather is hot through the months of March to June and, from November to February, the temperature drops down with an extremely dry climate. However, cold northernly winds are responsible for a mild chill in January. The southwest monsoon brings a humid climate from mid-June to mid-September.

2.5.3. Rainfall

Vadodara receives rainfall from southwest monsoon. The southwest monsoon normally commenced in the latter part of June and lasted till mid of September with occasional pauses. The variation in the annual rainfall from year to year is large. However, the area had an average annual rainfall of 348 mm during the study period, 2005 and 2006 (Figure 5.1 and 5.2).

2.5.4. Temperature

Maximum temperature varied between 28^{0}C and 40^{0}C during the study period, whereas the minimum temperature fluctuated between 12.5^{0}C and 27^{0}C. The highest maximum temperature was observed during May and lowest maximum in January, in both the years. The highest minimum temperature was in May for both the years and lowest minimum was in January in the first year and December in the second year (Table 2.1; Figure 2.1).

2.5.5. Humidity

Humidity was maximum during monsoon, corresponding to the total rainfall. Relative humidity of the atmosphere during monsoon is generally over 80% (at 8.30 hours), while during winter, it is around 50-60% (at 8.30 hours) (Table 2.2; Figure 2.2).

Table 2.1 Temperature (°C) data during 2004 and 2005

Months	Maximum Temperature		Minimum Temperature	
	2004	2005	2004	2005
Jan	28.6	27.3	13.7	12.6
Feb	33.1	29.7	15.6	14.48
Mar	36	35.8	19.8	20.85
April	38.5	36.9	24.9	24
May	40	40.09	26.4	26.75
June	36.5	34.9	27.5	27.6
July	33	30.9	26.4	25.17
Aug	30	33.4	25	27.4
Sept	34.5	34.5	25	25
Oct	34.3	36.3	23.12	23.12
Nov	33	33	20.25	19.2
Dec	30	30.5	17	17.5

Table 2.2 Humidity (%) during 2004 and 2005

Months	Humidity (%)	
	2004	2005
Jan	50.5	54.5
Feb	52.5	57.33
Mar	49.5	51.3
April	43.5	46.6
May	62.5	66.15
June	70.12	76.2
July	81	92
Aug	90.69	90
Sept	82	85
Oct	71.7	73.5
Nov	51.5	54.5
Dec	63.52	49.5

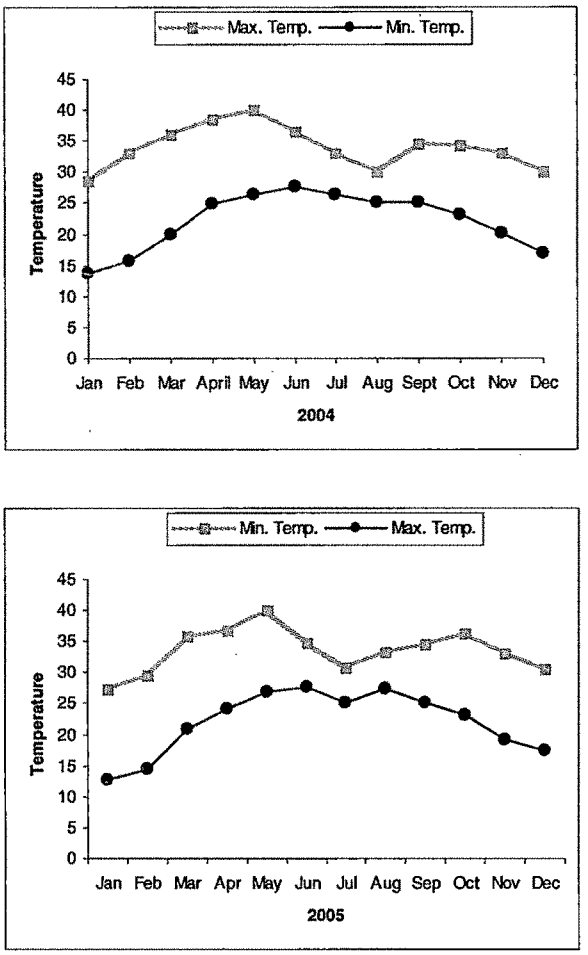

Figure 2.1 Maximum and Minimum Temperature during the year 2004 and 2005

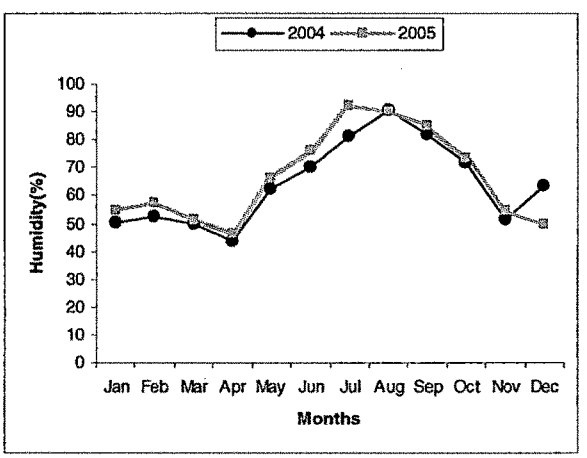

Figure 2.2 Humidity (%) during the year 2004 and 2005

Figure 2.3 Location map of Vadodara (Imperial gazetteer of India)

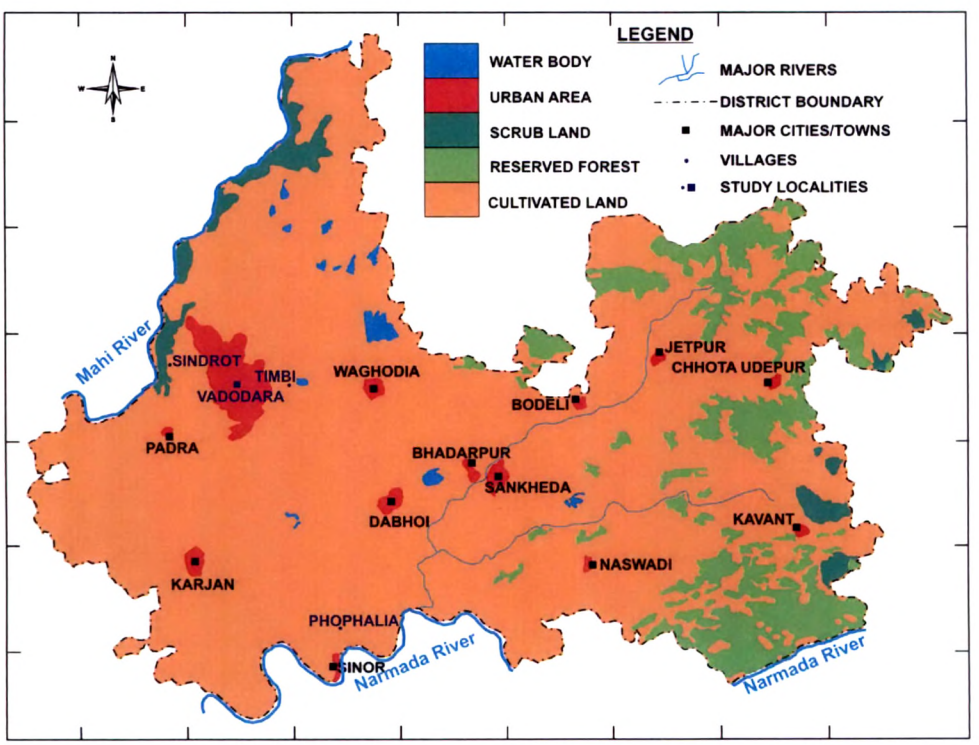

Figure 2.4 Study Area (Vadodara district)

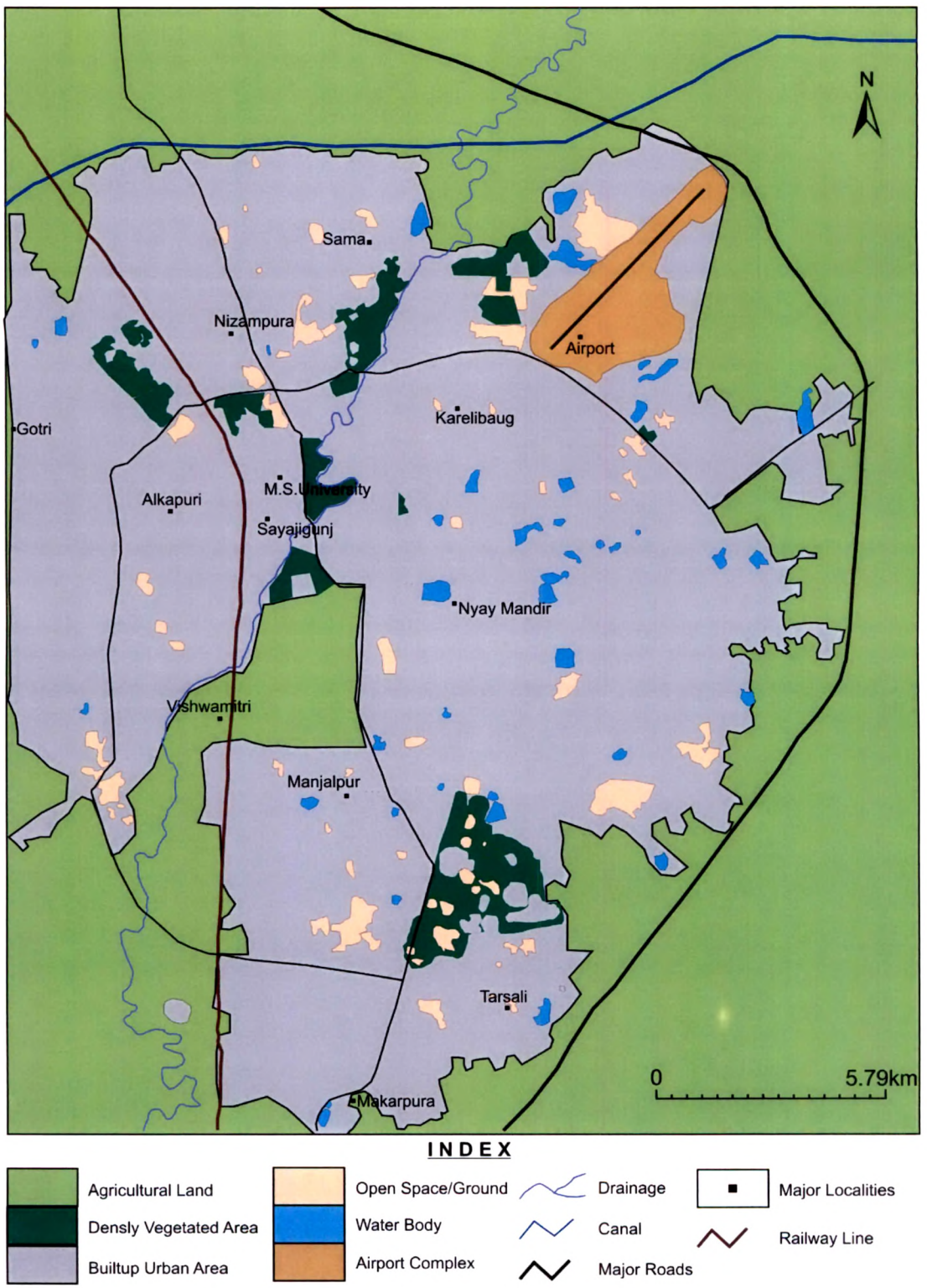

FIGURE 2.5 Land use pattern of Vadodara city