

# ***Chapter 2***

## ***Study Area***

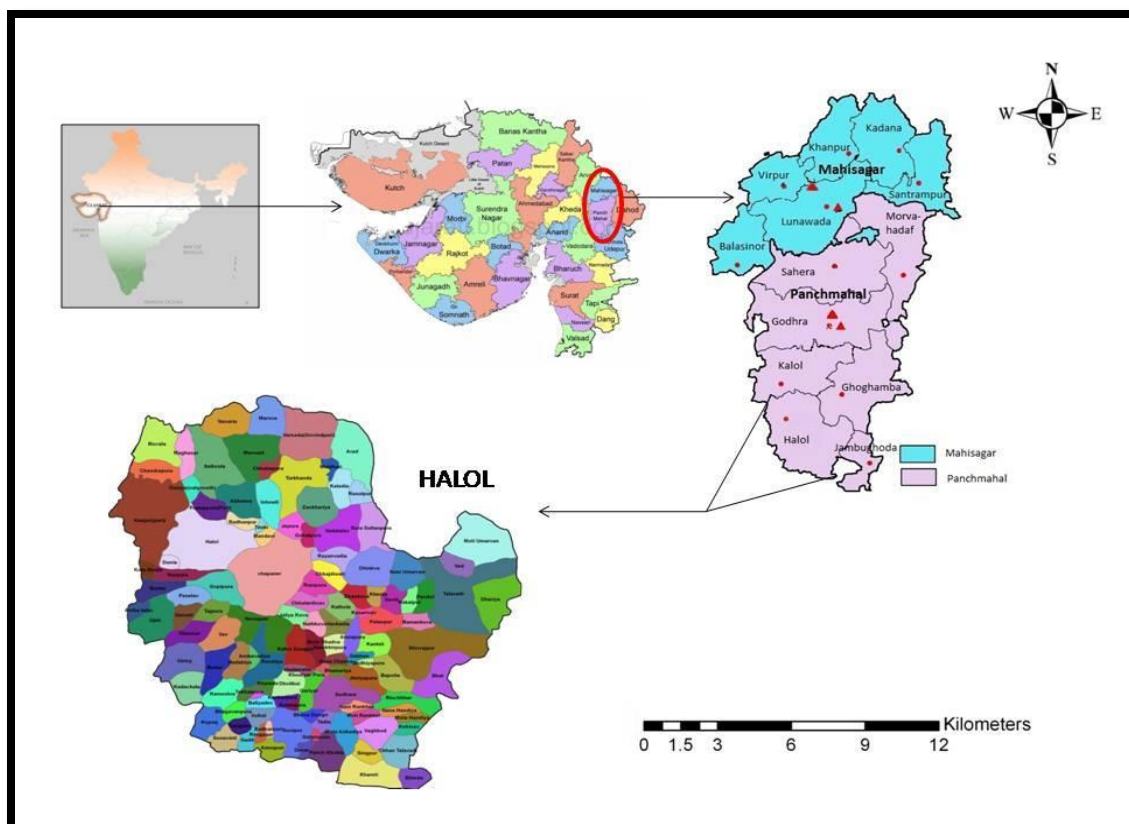
## 2.0. Study area: Pavagadh

Pavagadh, known to one and all in Gujarat, is the only hill in the Western districts of Panch mahal, which stands out conspicuously in the land scape. Champaner- Pavagadh is an important regional religious centre for the state of Gujarat. This makes it not just an archaeological site but a “living” settlement and a thriving pilgrimage destination. The temple of Kalikamata at the summit of the Pavagadh Hill is valued immensely in the region. It is a very important shrine and is visited by lakhs of pilgrims through the year. It is a place of historical importance having palaces, entrance gates and arches, mosques, tombs and temples, residential complexes, agricultural structures and water installations such as stepwells and tanks, dating from the 8th to the 14th centuries. There are five successive plateaus, Kalikamata Plateau, Mauliya Plateau, Bhadrakali Plateau, Machi Plateau and Atak Plateau. Reservoirs of these Plateaus form a chain up the hill. Pavagadh Hill has some unique features which include dense forest, reddish-orange rhyolite boulders, and a natural cave just below the summit. Champaner, a small town at the base of the hill, was inscribed on world heritage list by UNESCO in July, 2004. It was named as Champaner-Pavagadh Archeological Park. It is a living heritage site with a resident population living in Champaner village and on Machi and Mauliya plateaus. It attracts about 20 lakh visitors every year and has shown a growth of 10.92 % in the inflow of tourists in recent years. As this area is predominantly populated by the tribals called as “Bhils”, the government has granted many concessions and offered subsidies to the new industries coming up in this area. As a result of it, Halol town near Pavagadh has turned into a larger industrial estate covering 461 Ha. of area of the district.(Anon,2007) . The river Vishwamitri originates from the Western slopes of the hill. The hill is about 11 km in length from North to South with a width of

6.4 km. From the botanical point of view it is the only natural forest in the vicinity of Vadodara. It is likely to be the future sanatorium of Panchmahals.

## 2.1. Location

Pavagadh is the gateway to Panchmahal and situated from  $22^{\circ} 26' N$  to  $22^{\circ} 30' N$  and from  $73^{\circ} 29' E$  to  $73^{\circ} 33' E$  in the middle of the Halol taluka (**Plate 4**). This makes it a complete landscape and locations of its hilly areas provide good scenery to the people. It is about 40 km south of Godhara (Capital of District) and 45 km north – east of Vadodara. Administrative boundaries of Halol taluka are bounded by the Kalol taluka on the north, to Jambughoda and Ghoghmba Taluka on the south-east side & to the Savli and Waghodia talukas of Vadodara district on the south.



**Plate 4 . Map Showing the Study Area**

## 2.2 Historical Background

Approximately 500 million years ago a volcanic eruption occurred at the place of Pavagadh hill and because of this its name is associated with eruption i.e. Pavagadh means 1/4<sup>th</sup> of the hill. Legend states that the hill's formation is attributed to the sage Vishwamitra Rishi, who lived here in bygone days. He had a cow named Kamadhenu who could speak and yielded lots of milk. One day, the cow slipped while grazing and fell into the valley, which resulted in the cow attempting to scramble up the hill. Finally she produced milk, which filled the valley, and swam to higher ground. The Rishi came to know of this mishap, and in order to prevent any such incident in the future, he prayed to the gods to fill the valley. The gods fulfilled his prayers with one fourth of a hill projecting out of the plains, Pavagadh Hill. It is said that the Rajput king Vanraj Chavda established Champaner at the foot of Pavagadh in fond memory of his wise minister Champa. In the eleventh century, Ram Gaur Tuar ruled, and Champaner was under the Ahilvadas until 1297 or so when they were defeated by Alauddin Khilji, who made it their stronghold. During this period, the Chauhan Rajputs had also settled in Champaner. The Pavagadh Hill was ruled by different Solanki kings and Khichi Chauhans till 1484, who built different fortresses like Budhiya Gate, Sadan Shah Gate, Atak Gate and other structures like Patai Rawal's Palace, Makai Kothar and Navlakha Kothar. In the year 1484, Muhmad Begda attacked the fort and captured it. He renamed the city as "Muhmudabad Champaner". He built elaborate ornate structures, made the hill fort his *Mauliya* (meaning Lord of the Hill) and his citadel over a period of 23 years and eventually moved his capital from Ahmedabad to Champaner. During this period, Champaner was famous for mangoes, sandalwood trees (used then for house building and sword blades), and colourful silks. After Mahmud Begda's death, in 1535, the Mughal Emperor Humayun invaded Champaner and looted the coffers. The city fell

into rapid decline, was largely abandoned and for several centuries was neglected and almost deserted.

During the Scindia's regime, the district was called Pavagadh Panchmahals because the Pavagadh was the headquarters of Scindia's Subas who administered the mahals from 1761 to 1853. The British visited the town of Champaner in 1803, at which time there were only 500 people residing there. They refounded it and it became a great exporter of silk, and preparing raw silk. Designation of Pavagadh Hill as Pavagadh Panchmahals remained meaningful till 1947. After the integration of the States in 1948, the district expanded from 5 mahals to 10 talukas. As a result, the district has ceased to be Panch-mahals but the old name clings to it because of historical antecedents. The medieval city of Champaner-Pavagarh is dotted with large number of historical monuments of various religious faiths, and water bodies - both natural and man made.

### **2.3. Tourist attractions**

Being in close vicinity of major cities, Pavagadh becomes the most popular among the tourist places of Gujarat. It also attracts many international tourist since it is the only world heritage site of Gujarat. It is also called as Champaner-Pavagadh Archeological Park. Pavagadh hill has total height of 864 meters and you can find many scenic trails to climb including waterfalls during monsoon time. The plateau at an altitude of 490 meters is known as Machi Haveli. The remains of the Raval Palace still exist at Machi. Navlakha Kothar, Saat Kaman, Pavagadh fort, Jame Masjid, Kevda Masjid & Nagina Masjid etc are many historical monuments which attract thousands of tourists to them (**Plate 5**). Forest trails (Van-kedi) in Nature Park around the hill give an adventurous experience to the nature lovers. To prevent the scarcity of water during summer, water from Water Falls were collected through the under ground tunnel constructed some 400 yrs ago and diverted to Halol lake & Patal talav. This tunnel

was repaired & brought to use by the forest staff during 1996-97. Till then Patal talav was never fed with water since years. Interpretation centre on the bank of Patal talav adds to the knowledge of forestry & environment to the visitors.



**Nagina Masjid**



**Atak Gate**



**Jami Masjid**



**A beautiful landscape**



**Bhadrakali Plateau**



**Manchi Plateau**



Naulakhi Plateau



Helical stepwell

**Plate 5. Tourist attractions of the study area**

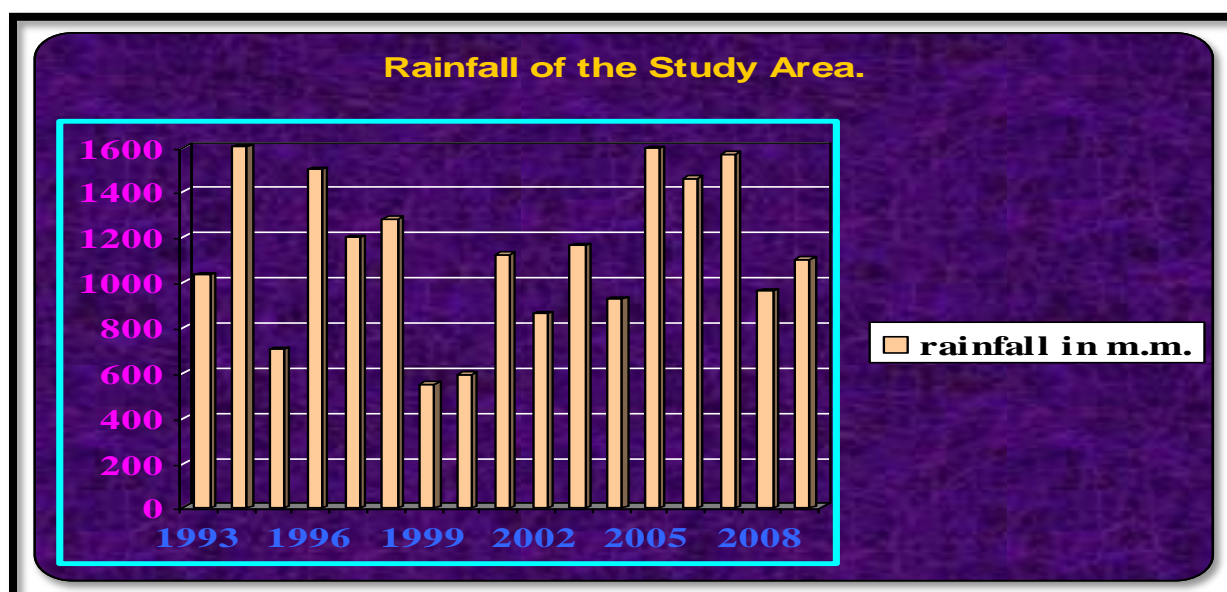
## 2.4. Geological Features

Geologically, it can be clearly visible from a distance that it is composed of lava of Deccan Trap. The hill has a terraced appearance and is very much like that of many other hills in the Western part of India. In this area the Champaner series formations are found. The rocks like rhyolite, green bedded tuffs, porphyritic basalt, olivine dolerite and non porphyritic alkaline basalt have arranged and formed the Pavagadh hill. The rhyolite gives the rocks a light yellow colour, tinged with red, like the colours of a champa flower. Thus the name Champaner has emerged. The Nimar Sandstones- the type of Infra –Trappeans rocks, are found only in this area. The most outstanding and important outcrops of Deccan Trap is found in this Pavagadh Hill in which several horizontally bedded lava flows are exposed. The imposing character of the hill is also largely due to the great height of the vertical scraps which bound the various lava-flows and thus impart to the hill its terraced appearance (**Merh, 1995**). The peak of the Pavagadh hill rises to about 864 mt (2811 ft.) above sea level and the hill is isolated and it can be accessed only by North- East corner, while the other sides have very steep slopes to climb (**Chavan & Oza, 1966**).

## 2.5. Climate

The climate of the area is dry and hot. The humidity extent from middle of June to end of September, winter climate is experienced during October to February end. Heat of summer is felt

during March to middle of June. The rainfall is received during mid June to mid September which is almost 80 % of the total rainfall. Minimum rainfall recorded for the area is 259 mm and maximum is 1550 mm. with average of 824 mm (**Figure 5**). The rainfall is erratic and irregular. Humidity varies from 38 to 63 %. The average wind velocity recorded is 16.30 km/hour. The average sunshine during the year is for 7.7 hrs a day. Average annual evaporation is worked out to 2400 mm for the area having highest evaporation during summer. The open surface water storage suffers high rate of evaporation. The wind direction is from South or South-West → North or North-East in the monsoon; and North or North-East→ South or South-West in winter.



**Figure 5. Rainfall Chart of the Area**

## 2.6. Demographic Features

Halol taluka has an area of 51942 sq.km with total population of 1,95,300. According to the Census 2011, the taluka has the highest growth rate i.e. 46.55% during the last decade.

## 2.7. Soil

In the Halol Taluka and surrounding areas the soil varies considerably in composition and constitution. As per the fertility status also, the soils are vary. It is chiefly sandy loam and black



in nature. The Pavagadh hill area has generally very shallow and poor soils and is totally devoid of soils at many places. Other characteristic features of soil are depicted in the following **Table 10.**

**Table 10. Soil characteristics of the district**

<b>Type of soil</b>	Deep black, medium black to loamy sand (Goradu) soils
<b>Soil Characteristics &amp; Land use classification</b>	Most of the area cultivated some area non-Cultivated under fallow and pasture forest
<b>Surface colour</b>	Reddish brown to insity soil of East dark Brown to dark yellowish brown and grey in alluvial
<b>Depth of the soil</b>	0.25 cm. in hilly area insity 90 to 180 cm
<b>Predominant Texture</b>	Alluvial soil. Sandy loam to loam (Hilly area), clay loam to clay in midland, floodplain and coastal saline area
<b>Soil Slope</b>	3.5 % in hill plateaus and 0-1% and 1-3% in mid-land flood plains
<b>General fertility</b>	N-low, P-Medium, K-High
<b>Cation Exchange Capacity</b>	30-50 me/100gm, in Baroda and Panchmahals 70 me/100 gms of soil in Broach district
<b>Electrical conductivity</b>	More than 10 mmhos /cms most of the area
<b>Exchangeable Sodium %</b>	Traces to more than 50% in Major area
<b>Order</b>	Inceptisols; Entisols
<b>Sub Order</b>	Ochrepts, Orthents, Usterts, Psamments, Fluvents

(source:Working Plan,2008)

## 2.8. Agriculture

Agriculture is a major source of livelihood for the district. Out of the total cultivable area around 95 percent of cultivated area is under food crops, and only 5 percent of the area is under the non food crops. The major crops grown in the irrigated area are wheat, maize, and cotton.

## 2.9. River & reservoirs

The rivers like Dhadhar, Vishwamitri, Karad and Dev River are the main rivers flowing through theis area. On Dev river only two dams are constructed namely, Tadiya Dam and Dev Dam (**Plate 6**). A Narmada Canal passes through the south-west part of the taluka. Besides this, many small ponds like Dudhiya talao, Chhasiya talao, Annapurna Talao, Patal talao and big tanks like

Vada talao are also there in the Pavagadh area. Numerous small rivers and streams are also there, which remain dry except monsoon season. All these rivers and reservoirs form the tributaries and sub-tributaries of other rivers and suffice the irrigation facility of the agriculture.



**Plate 6. Dev Reservoir**

## **2.10. Forest of Pavagadh**

Forest Area of Pavagadh falls under Halol Range of Godhara Division. Total 6356.98 ha area of Halol Range is covered under forest which is legally constituted as Reserve Forest. It comprises of four rounds and fifteen beats and their covered area is given in **Table 11**.

**Table 11. Forest area under different rounds under the Halol Range**

<b>Sr. No.</b>	<b>Name of round</b>	<b>Reserved Forest area (ha)</b>	<b>Protected/ Unclassed forests (ha)</b>	<b>Total forest area (ha)</b>
<b>1</b>	Pavagadh	2099.63	0.72	2100.35
<b>2</b>	Dhankuva	1593.74	0	1593.74
<b>3</b>	Vav	1482.15	0	1482.15
<b>4</b>	Shivrajpur	1180.74	0	1180.74
	<b>Total</b>	<b>6356.26</b>	<b>0.72</b>	<b>6356.98</b>



**Plate 7. Dry deciduous forest of the study area**

As per the revised forest classifications made by Champion and Seth, the forest of Pavagadh/ Halol Range fall in sub type C1b Dry Teak Forest under 5A Southern Tropical dry mixed deciduous forests. (**Plate 7**). Major dominant species found in this forest area are *Tectona grandis*, *Writia tomentosa*, *W.tinctoria*, *Anogessus latifolia*, *Mitragyna parvifolia*, *Zizhyphus mauritiana*, etc. Development of forest shall uplift the tribal people who are dependent on minor forest produces. Many medicinal plants are available in this area and climatic conditions are also favorable for commercial plantation /cropping. Timber, fuel wood, Mahuda seeds(kernels),flowers, Chapda (seed cake), Timru leaves, Ghatbor fruits, Gums, grasses and few medicinal plants form the main forest products of Pavagadh Forest area.