CHAPTER-VII

RESOURCE POTENTIALITY AND DEVELOPMENTAL PLANNING

The geological formation in large parts of Saurashtra consists of alluvium, millolite limestone, Daccan Traps and Gaj beds. The soil of this region is infertile and rocky. Except some small pockets of Junagadh, Rajkot and Bhavnagar districts, the remaining part of the region is deficient in rainfall. Low level and unevenly distributed rainfall are common features of this region and consequently, drought occurs frequently in different parts of this region. Because of the combined effects of scarce and erratic nature of rainfall, short, non perennial river course, the surface water resources are far from satisfactory. Forests are inadequate, poor and ill formed. The salinity in the soil and ingestion of sea water in the long coastal strip, are physical characteristics of this region.

Along with physical problems, human resource development is also low, which leads to low level of industrialisation and certain other problems like unemployment, underemployment, poverty and migration. Migration has been affected by a series of negative feedback in the environment by over crowding, pollution and other problems related to environment in urban and semi urban areas. Day by day the serious
environmental problem and socio-economic inequalities have led to backwardness of the region. As a result, some areas developed at a faster rate while some are far behind.

An achievement of sustainable development requires, an in depth knowledge of the local resource, environmental conditions and processor which generate employment and solve problems related to under employment. Planning of these resources is needed for the socio-economic development. Land and water are the basic primary resources of any agricultural economy, which limit the economic growth and development of any region. The contribution of Saurashtra region in the development of primary sector of Gujarat's economy is considerable. This region accounts for 40% of Gujarat's gross cropped area and nearly 30% of gross irrigated area. Therefore, there is an urgent need to develop agricultural region along with agro industrial development. This will indirectly develop socio-economic conditions of the region and directly it will develop agriculture. Therefore, any planning for sustainable development of agriculture and growth needs as integrated multiscale understanding of potentiality of physical and human resources from all levels – macro, meso and micro levels. In this chapter attempts have been made to know the potentiality of different physical and human resources through identification and classification of regions and to know agro based industrial (ABI) development and their forward and backward resource linkages.
VIIA Resource Potentiality

VII.A. 1. Physical Resource Potentiality

VII.A.1.1. Water Resource Potentiality

Water and land are essential prerequisites for the primary production systems as well as for meeting the essential priorities. Availability of water resources is the major factor for the growth and development of agriculture as well as for industrialisation and overall human development. Water is a scarce commodity and the most valuable resources are for Saurashtra region. In Saurashtra, the water resources are available through surface as well as below surface or ground water. The surface water run off is high due to sloping topography, lack of vegetation, erratic rainfall condition, non-perennial rivers. The site available for construction of storage structure in the region is less. There are large areas where surface run off not only goes to the ocean but it also carries the soil and essential nutrients and thereby reducing the productivity of the land.

According to ground water resource potential in Saurashtra region by district a survey report of GWRE in 1997 shows the station of categorisation over exploited (OE), dark and Grey of different districts and talukas as per 1997 estimations are given in Table No VII.1. The district wise ground water recharges draft and ground water balance for the year 1997 shows that out of 69 talukas of the region, 3 talukas i.e. Kodinar taluka of Amreli, Vanthali and Manavadar talukas of Junagadh falls in the over exploited

- 220 -
category or above 100%, 2 talukas are in dark category i.e. Mangrol and Porbandar of

TABLE NO VII.1

Status of Categorisation of Talukas (OE, DARK, GREY)

<table>
<thead>
<tr>
<th>District</th>
<th>No of OE Talukas (&gt;100% GWD)</th>
<th>No of Dark Talukas (Between 90% to 100% GWD)</th>
<th>No of Grey Talukas (Between 70% to 90% GWD)</th>
<th>No of Talukas (Below 70% GWD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saurashtra</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Bhavnagar</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Amreli</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Rajkot</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Jamnagar</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Junagadh</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Total Saurashtra Region</td>
<td>3</td>
<td>2</td>
<td>24</td>
<td>40</td>
</tr>
</tbody>
</table>

OE = Over Exploited


Junagadh district (between 90% and 100%), and 24 talukas are under grey category (between 70% and 90%) and the last category as white in which 40 talukas have ground water development below 70% (Figure No. VII.1).
## STATUS OF UTILIZATION

<table>
<thead>
<tr>
<th>STATUS OF UTILIZATION</th>
<th>NO. OF TALUKA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABOVE-100% GWD V.HIGH</td>
<td>3</td>
</tr>
<tr>
<td>90 - 100% GWD HIGH</td>
<td>2</td>
</tr>
<tr>
<td>70 - 90% GWD MEDIUM</td>
<td>24</td>
</tr>
<tr>
<td>BELOW 70% GWD LOW</td>
<td>40</td>
</tr>
</tbody>
</table>

The over exploitation of ground water resources in talukas is also reflected by continuous decline in water level. Junagadh district also shows high percentage of ground water development the overall level of ground water in the state works out to be 75.57 %, in 1997. The Table No VII.2 shows the ultimate irrigation potential from ground water in 1997 is 10.75 lakh hectares. The irrigation potential of 7.39 lakh hectares has been created, leaving, the balance of irrigation potential of 3.358 lakh hectares as on 1997. The table also shows the net requirement of irrigation i.e near

<table>
<thead>
<tr>
<th>Name of District</th>
<th>tilsable round water recharge Ha.m/yr</th>
<th>Net irrigation requirement (cm)</th>
<th>Gross draft (Ha.m/yr)</th>
<th>Irrigation potential created (Ha)</th>
<th>Ground water balance (Ha.m)</th>
<th>Balance irrigation potential from ground water (Ha)</th>
<th>Ultimate irrigation potential from ground water (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surendranagar</td>
<td>50212</td>
<td>0.44</td>
<td>35421</td>
<td>80502</td>
<td>14791</td>
<td>33616</td>
<td>114118</td>
</tr>
<tr>
<td>Bhavnagar</td>
<td>75069</td>
<td>0.42</td>
<td>47274</td>
<td>112557</td>
<td>27795</td>
<td>66179</td>
<td>178736</td>
</tr>
<tr>
<td>Amreli</td>
<td>67699</td>
<td>0.42</td>
<td>48273</td>
<td>114936</td>
<td>19693</td>
<td>46888</td>
<td>161824</td>
</tr>
<tr>
<td>Rajkot</td>
<td>98419</td>
<td>0.42</td>
<td>68473</td>
<td>163031</td>
<td>29946</td>
<td>71300</td>
<td>234331</td>
</tr>
<tr>
<td>Jamnagar</td>
<td>65277</td>
<td>0.42</td>
<td>37497</td>
<td>89279</td>
<td>27780</td>
<td>66143</td>
<td>155421</td>
</tr>
<tr>
<td>Junagadh</td>
<td>96983</td>
<td>0.42</td>
<td>75245</td>
<td>179155</td>
<td>21738</td>
<td>51757</td>
<td>230912</td>
</tr>
<tr>
<td>Total Saurashtra</td>
<td>453659</td>
<td></td>
<td>312183</td>
<td>739460</td>
<td>141743</td>
<td>335883</td>
<td>1075342</td>
</tr>
<tr>
<td>Total Gujarat</td>
<td>1284830</td>
<td></td>
<td>970886</td>
<td>2150553</td>
<td>313944</td>
<td>758970</td>
<td>2909522</td>
</tr>
</tbody>
</table>

about 0.42 cm in Saurashtra. The irrigation potentiality created is more in Junagarh and Rajkot and lesser in Surendranagar. The reduction in gross draft in 1997 and increase in ground water irrigation potential can be attributed to certain developmental policy and through certain steps, by which crop productivity can be increased and ABI can be set up. So it is necessary to take certain steps for developing talukas and take preventive action in problematic talukas of the region.

VII.A.1.2. Potentiality of Soil Fertility

In Saurashtra, the agricultural conditions depend on soil fertility. The soil fertility depends upon the use of organic and inorganic fertiliser, use of hybrid seeds, water, weather conditions and soil types that is soil texture and structure. The soil fertility in Saurashtra depends upon the existing condition of nitrogen, phosphorous and potash. Complete cycle for plant growth needs 17 important nutrients in which carbon, oxygen, hydrogen from water are important and nitrogen, phosphorous, potash are main nutrients of soil. Manganese, sulphur and calcium are micro nutrients, which are obtained from fertiliser for a balanced use. More quantity of production depends upon the soil fertility of region (Department of Agriculture, Ahmedabad).

The soil fertility of all the talukas has been grouped in five major categories according to the context of nitrogen, phosphorous and potash. Saurashtra region can be divided into 5 major groups as shown in Table No.VII.3. The fertility status (NPK) of soils in 1988-89 to 1992-93 are shown in Figure No. VII.2. The figure shows that only those...
SAURASHTRA REGION

FERTILITY STATUS (NPK) OF SOIL
YEAR - 1988-89 TO 1992-93

DISTRIBUTION OF NO. OF TALUKAS

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>P</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>M</td>
<td>H</td>
<td>14</td>
</tr>
<tr>
<td>L</td>
<td>L</td>
<td>H</td>
<td>10</td>
</tr>
<tr>
<td>M</td>
<td>L</td>
<td>H</td>
<td>25</td>
</tr>
<tr>
<td>M</td>
<td>M</td>
<td>H</td>
<td>18</td>
</tr>
<tr>
<td>H</td>
<td>L</td>
<td>H</td>
<td>02</td>
</tr>
</tbody>
</table>

L = LOW, M = MEDIUM, H = HIGH


FIGURE. NO. VII.2

-225-
### TABLE NO VII.3

**Soil Fertility by District and Taluka (NPK) in Saurashtra**

<table>
<thead>
<tr>
<th>Fertility Group</th>
<th>District</th>
<th>Talukas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Phosphorous Potash</td>
<td>Surendra nagar</td>
<td>• All the talukas</td>
</tr>
<tr>
<td>1</td>
<td>L M H</td>
<td>• Amreli, Lathi, Kankavav, Babra, Jafrabad</td>
</tr>
<tr>
<td></td>
<td>Jamnagar</td>
<td>• All the talukas</td>
</tr>
<tr>
<td>2</td>
<td>L L H</td>
<td>- Jamnagar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All the talukas</td>
</tr>
<tr>
<td>3</td>
<td>M L H</td>
<td>- Rajkot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All the talukas (except Dharaji)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All the talukas (except Paten Veraval)</td>
</tr>
<tr>
<td>4</td>
<td>M M H</td>
<td>- Amreli</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dhari, Khambat, Lilia, Rajula, Kodinar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All the talukas</td>
</tr>
<tr>
<td>5</td>
<td>H L H</td>
<td>- Rajkot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dhoraji</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Jamnagar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Paten Veraval</td>
</tr>
</tbody>
</table>

Index: L = Low, M = Medium and H = High

Source: Information Dept, Agriculture Dept. Ahmedabad.

Nutrients can be used for the soil in which their concentration is less, and according to fertility quality of seed and water should be given in Saurashtra not only there are...
problems of soil fertility but also of other serious problems, like salinity/ alkalinity, problem of lateral drainage, soil erosion, shallowness of soil, calcareousness nature and nutrient toxicity. There are certain hazards and constraints for the potential development of soil, so that the quality and quantity of raw material can increase.

VII.A.1.3. Natural Resource Potentiality- Fisheries and Animal Husbandry

The non availability of natural resources is an important problem of development in Saurashtra. Lack of knowledge and information regarding the use of natural resources also has a negative impact on development of the region. The attempt made here to find out potential and alternative development in various sectors i.e animal resources, mineral resources, forest resources, energy resources, water harvesting and land capability. The development of these activities indirectly helps the socio-economic conditions and improvement in agriculture and ABI.

Scarcity of fertile land resources is not sufficient to support the agricultural economy of Saurashtra region. The forest resources are low except in Junagadh and part of Amreli district. Due to urbanisation, industrialization, and over grazing, the fertile land and forest cover have been destroyed. Human beings have not given any effort to regenerate the forest resource, which is also a part of agro-industrial development, as ABI is also based on forest resource products e.g paper and paper based wood product, industries.
Saurashtra region is having good potentiality to develop processing activities based on fisheries and animal husbandry in the region. The talukas along the coastal track is potentiality better for marine activities by introducing new modern technology, training and co-operative society of the local people except Porbandar, Okhla, Jamnagar and Bhavnagar. At present there is a scope in such activities. In water resources, out of 71 streams, eight rivers can be developed for inland fisheries activities through preparation of check dams, which improves the social wellbeing of the people. Besides this, other important characteristic of traditional agriculture is that, by and large it is interlinked with animal husbandry in complementary way. The stalks, shrubs and grains of interior quality are used for fodder of animals and in turn its by-products are utilised as inputs in agriculture. The strong input-output linkages between agricultural operations and animal husbandry have given rise to two sub systems of cultivation and animal rearing in this region.

The region has a vast potentiality to develop open grass lands for fodder crops in arid and semi arid land, which is not suitable for crops. According to 1991 livestock census, density of livestock population is 92 per sq. km. The cattle, buffalo, goat, sheep are some of the animals. Some Castes such as, Ahirs, Rubaris, Bharvads and Charans in this region are popularity known as “maldharis”, keep on moving from one place to another in search of green pastures with their herds. Bhavnagar, Junagadh and Rajkot districts are more favourably placed with respect to above factors in Saurashtra. However local level management of water and fodder may help to develop animal husbandry, which helps agriculture and agro-based processing industry.
The region has potentiality for small scale industries especially in engineering sector. It therefore appears that there will be a potential scope in the field of automobile and auto ancillary to get advantage of development in engineering industries. Similarly, there is a scope for machine tools and industrial machinery, diesel engine etc, which require support from ancillary ones.

The mineral resources of Saurashtra region has been explored especially to set up cement, soda ash industries. There is a potential for further modern development for setting up such projects, like pottery industry etc. This resource helps in improving the socio-economic conditions of farmer and also helps in the development of agricultural crop production.

VII. B. Human Resource Potentiality

Economic development of any region ultimately depends on its human resource. Human resource can be measured in terms of its quantity and quality. The quality of population is improved by increasing the capital content of population. Saurashtra’s economy is mainly based on agriculture and agricultural by products. The region is a draught prone one. As a result, providing considerable quantities of industrial raw material, like cotton, oil seeds, pulses sugarcane etc is a problem in development. The problem of instability and its implication in terms of farmer’s socio-economic conditions remain stagnant. The human resource, which depends on agriculture or land resources as a means of sustainability, therefore remains backward. The concentration
of large numbers of restricted and limited resources has created many problems in the urban area. The spatial distribution of population in the region is directly reflects, the backward socio-economic conditions in its sub region. The following sections deals with the various aspects of human resource potentiality.

VII.B.1. Agricultural Development Index (ADI)

Agriculture is the primary source of employment and income of people in Saurashtra region. The agricultural community consists of owner, cultivators, tenants, agricultural labours. These 5 major variables are considered here. The composite score of ADI (explained in the methodology chapter) shows that the majority of talukas are low or very low in the potentiality of agricultural development. The distribution of talukas in different categories of agricultural development potentiality has district relationship with the topographic conditions as well as socio-economic condition. 3 talukas have high score of ADI due to high production of crops, assured irrigation facility and better fertility. The talukas in medium category are 3 in number, whereas, the rest of the 63 talukas are under low and very low potentiality. Those are mostly located in the undulating physiographic condition of the region (Figure No. VII.3).

Talukas with high score are Patan- Veraval, Kodinar and Wakaner. Halvad, Dasada-Patdi and Talala are having medium score of ADI. The coefficient of correlation between ABI and ADI shows 0.59 and ABI and irrigation 0.58 respectively.
VII.B.2. Population Potential of Saurashtra Region

The concentration of population in Saurashtra region is unevenly distributed. Using the idea of gravitational potential of a taluka, as a measure of mass and proximity of that taluka to all other talukas in the region, Potentiality of a taluka has been worked out. Details are given in the chapter on methodology. Rajkot and Bhavnagar have high population potentiality to develop as settlements and as taluka. The agriculturally and industrially developed areas have large population potentiality. These centres are closely spaced and large in size. In order to bring out the characteristics of population concentration over space. Population potential surfaces have been prepared based on the calculation of population potential of each taluka. The isopleth map shows the area of potentiality of talukas Rajkot and Bhavnagar taluka show high population potential surface up to a distance of 10 to 20 km. Around these cities these is a sign of emerging of urbanisations in 1971 (Figure No VII.4.a).

In 1991 the pockets around Rajkot and Bhavnagar also showed very high population potential surfaces in Saurashtra region: The area around Rajkot i.e. Paddari and Kalavad, Bhavnagar, Sihor, Ghoga, Vallabhipur, Songadh and another connecting Surendranagar, Wadhwan, Limdi and area around Patdi, Dhari and Junagadh have been identified as medium population potential surface. In the coastal region comprising of Dwarka, Mithapur, Jamjodpur, Porbandar, Manavadar Keshod, Mangrol Malia, Veraval, Kodinar, Una and Jafarabad were located in areas with very poor population potential surface (Figure No VII.4.b ). With about 40% of total potential population of Gujarat estimated to reside in urban areas in 2011 and 50% of land of Saurashtra is

- 232 -
anticipated to be covered by very high population potential surface, which indicates potential market areas.

On sub regional level the potentiality is very low in those areas where the impact of marine ingression is felt. The availability of drinking water is also one of the major factors in the concentration of population potentiality. These areas suffer from severe shortage of drinking water during the dry months. The distribution pattern of settlement is high in central part and near Bhavnagar and towards eastern region. This is due to the impact of Ahmedabad Metropolitan region and better infrastructural facilities. The population potential surface shows a typical settlement system, which has grown on an agro based economy in Saurashtra over a period of time. A hierarchical system of settlement is developed in this region.

VII.B.3. Demographic Index (DI)

Demographic index is one of the important indices, as it influences a taluka in a distinct way. The factors of demographic pattern are total population, sex ratio, percentage of SC / ST population, growth rate, age group of 0-6, composition of population. According to certain factors i.e. high population potential 4 talukas are having high score of demographic index. The talukas are Rajkot, Bhavnagar, Jamnagar and Amreli. In medium category, 5 talukas are confined to population potential, sex ratio and growth rate are of population due to availability of employment. (Figure No VII.5.b). In case of low category, there are 9 talukas and very low category has 51 talukas having
NO. VBL5.a Source: District Census Handbook, 1990; Bureau of Economics & Statistics

SAURASHTRA REGION

DEMOGRAPHIC INDEX (DI)

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>NO. OF TALUKA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>1</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>2</td>
</tr>
<tr>
<td>LOW</td>
<td>3</td>
</tr>
<tr>
<td>V. LOW</td>
<td>4</td>
</tr>
</tbody>
</table>

DEMOGRAPHIC INDEX (DI)

0.75-1.49 | 59 |
1.50-2.24 | 70 |
2.25-3.00 | 80 |
3.01-3.75 | 90 |
3.76-4.50 | 100|
4.51-5.25 | 110|
5.26-6.00 | 120|
6.01-6.75 | 130|
6.76-7.50 | 140|
7.51-8.25 | 150|
8.26-9.00 | 160|
9.01-9.75 | 170|
9.76-10.50| 180|

SAURASHTRA REGION

OCCUPATIONAL INDEX (OI)

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>NO. OF TALUKA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>1</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>2</td>
</tr>
<tr>
<td>LOW</td>
<td>3</td>
</tr>
<tr>
<td>V. LOW</td>
<td>4</td>
</tr>
</tbody>
</table>

OCCUPATIONAL INDEX (OI)

0.71-1.40 | 70 |
1.41-2.10 | 70 |
2.11-2.80 | 70 |
2.81-3.50 | 70 |
3.51-4.20 | 70 |
4.21-4.90 | 70 |
4.91-5.60 | 70 |
5.61-6.30 | 70 |
6.31-7.00 | 70 |
7.01-7.70 | 70 |
7.71-8.40 | 70 |
8.41-9.10 | 70 |
9.11-9.80 | 70 |
9.81-10.50| 70 |

FIGURE: NO. VII.5.b

Source: District Census Handbook, 1990; Bureau of Economics & Statistics
index as low due to lack of basic amenities i.e drinking water, connectivity and lack of job opportunity in their on place and due to high percentage of 0-6 age group growth rate, with low sex ratio and density.

VII.B.4. Occupational Index (OI)

The occupational index reflects the economic sustainability of taluka, in terms of types of work, level and skill of workers, nature of work and distribution of activity. According to occupational index 3 talukas are under high category of occupational index. These are Rajkot, Jamnagar, and Bhavnagar. This is because of development of the secondary and tertiary activities confined to these talukas. There is no taluka under medium category, whereas in low category, these are 7 talukas, they are in scatter form, due to availability of infrastructure facilities and development of industries. The last category i.e. very low having 59 talukas, because of a major part of the region is confined to primary activities and especially agriculture. As a result, development of occupational index is low. (Figure No VII.5.a)

VII.B.5. Infrastructural Facilities Index (IFI)

Infrastructural facilities are fundamental requirements for the development of any region. Economic development involves utilisation of natural, financial and human resources available in the region for the maximisation of social welfare for considerable length of time till a self-generating stage is reached. It is possible only if maximum production is available through its fair distribution and generation of new employment.
opportunities for regional planning. It is necessary to identify the services and facilities at the meso and micro level. Every settlement acquires certain types and levels of infrastructure, corresponding to size and location of taluka. There are few facilities, which are limited in number. Due to undulating topography, its geographical location and different agro-climatic problems, the region is financially and administratively different to provide all the basic infrastructural facilities to all the talukas. However 70% of the total talukas (48 talukas) are completely devoid of basic facilities for daily use, like drinking water, communication, post and telegraph facilities. Lack of good road leading to towns is one of the problems of the region. The infrastructural facility index shows that the overall availability of infrastructure facilities is very poor in almost all the talukas as shown in Figure No. VII.6. a. There are only 3 talukas of the region shows high amenities score, being located mostly in three parts of the region. Out of 69 talukas, 26% of the talukas come under the low category. The availability of infrastructure is slightly associated with the distribution of population and industrial development.

The talukas having medium to high scores show connectivity to major transportation facility like road, railway and economic facilities like commercial co-operative banks, marketing yard, industrial estate, etc. In general the distribution of infrastructure is uneven in Saurashtra region. Majority of the talukas is devoid of proper education facilities, medical facilities, drinking water and economic facilities. All talukas are normally of very low inadequate communication facility like without metalled road. Poor network of bus services are the common problems seen all over the region.
In order to measure the relationship of infrastructural facilities in relation to different human factors like population potentiality, population density, literacy, number of agricultural workers, correlation coefficient has been calculated and it is found:

a) The composite index of infrastructural facility is closely associated with population potentiality, correlation being 0.68 and with density \( r = 0.62 \).

b) The infrastructural facility index and literacy also shown fair amount of relationship, \( r = 0.54 \).

c) The infrastructural facility index and non agricultural workers exhibit a correlation of \( r = 0.68 \).

d) The relationship between infrastructural facility and ABI shown \( r = 0.52 \).

e) The composite index of infrastructural facilities in relation to agricultural productivity correlation with \( r = 0.55 \).

f) The level of development and ABI shows moderately positive correlation i.e 0.60.

In short it can be concluded that, the lack of knowledge and education, non availability of social infrastructure, inaccessibility of economic facility like commercial and co-operative banks, marketing yard, industrial estate, socio-economic organisations and unstable government policy have created strong barriers for many talukas to have good agricultural productivity and the development process for ABI.
TABLE NO VII.4

Association of Parameter with Infrastructure Facility Index

<table>
<thead>
<tr>
<th>S.No</th>
<th>Y-axis Dependent Variable</th>
<th>X-axis Independent Variable</th>
<th>Correlation Coefficient r*</th>
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<tbody>
<tr>
<td>1</td>
<td>Population Potential</td>
<td>Infrastructure Index Facility</td>
<td>0.68</td>
</tr>
<tr>
<td>2</td>
<td>Agricultural Potentility</td>
<td>Infrastructure Index Facility</td>
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</tr>
<tr>
<td>3</td>
<td>Density</td>
<td>Infrastructure Index Facility</td>
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</tr>
<tr>
<td>4</td>
<td>Agricultural Productivity</td>
<td>Infrastructure Index Facility</td>
<td>0.55</td>
</tr>
<tr>
<td>5</td>
<td>Literacy</td>
<td>Infrastructure Index Facility</td>
<td>0.54</td>
</tr>
<tr>
<td>6</td>
<td>Agro based Industries</td>
<td>Infrastructure Index Facility</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Source: Calculated by the Author

VII.B.6. Development Potentiality of Saurashtra Region.

Industrial development plays a crucial role in overall economic development of any region. Process of industrialisation changes the subsistence economy. The industrial development strategy should be human resource based or, in other words, the agricultural – industrial development together should be able to absorb the human resource potential. This requires a balanced policy, more relevant and important for Saurashtra’s economy, because the limitation on export earnings makes reliance on heavy import from abroad impracticable. Necessary agriculture would have to be linked up vertically with industrial development, especially with ABI.
SAURASHTRA REGION

DEVELOPMENT POTENTIALITY INDEX

COMPOSITE FUNCTIONALITY INDEX

FIGURE NO. VH.6b1
Source: Calculated Values, 1971-91

FIGURE NO. VII 6.a

<table>
<thead>
<tr>
<th>DPI</th>
<th>CATEGORY</th>
<th>NO. OF TALUKAS</th>
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<tbody>
<tr>
<td>ABOVE 84.91</td>
<td>V HIGH</td>
<td>3</td>
</tr>
<tr>
<td>68.53 - 84.90</td>
<td>MEDIUM</td>
<td>8</td>
</tr>
<tr>
<td>52.15 - 68.52</td>
<td>LOW</td>
<td>13</td>
</tr>
<tr>
<td>35.77 - 52.14</td>
<td>V. LOW</td>
<td>30</td>
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</table>

<table>
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<tr>
<th>DPI</th>
<th>CATEGORY</th>
<th>NO. OF TALUKAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABOVE 63.77</td>
<td>V HIGH</td>
<td>2</td>
</tr>
<tr>
<td>50.36 - 63.77</td>
<td>MEDIUM</td>
<td>7</td>
</tr>
<tr>
<td>37.49 - 50.62</td>
<td>LOW</td>
<td>11</td>
</tr>
<tr>
<td>24.35 - 37.43</td>
<td>V. LOW</td>
<td>23</td>
</tr>
<tr>
<td>BELOW 24.35</td>
<td>V. LOW</td>
<td>25</td>
</tr>
</tbody>
</table>

SAURASHTRA REGION

Source: Calculated Values, 1971-91
The most important resource is human resource. The nation’s or region’s prosperity entirely depends upon health, wealth, and wisdom of human resources. The region has plenty of human beings but the quality of a substantially major part of this is of low type. The problem of mounting unemployment and under employment is attributed to large number of unskilled people. To know the overall potentiality for the development of Saurashtra region a qualitative measure has been calculated at taluka level using both physical and human factors. These factors of levels of development and represent the progress and backwardness of the Saurashtra by taluka.

The analysis of the distribution pattern of development potentially of individual taluka shows a strong relationship with physical characteristic and its relationship with natural problem. Spatially the pattern changes gradually low to high according to agro climatic condition or distribution of rainfall, soil and cropping pattern based on final score of the developmental potentiality. At sub regional level distribution reveals that the low and very low area is much larger in extent. It includes 48 taluka’s of Junagadh, Jamnagar and Bhavnagar districts of Saurashtra region. The medium development area covers nearly 13 talukas mostly located in south and south western part, north and north east part. 8 talukas come under the high and very high developed potentiality in scattered form in 1991. (Figure No VII.6. b) It has been marked that the development potentiality is generally low or very low in those talukas where area has scarcity of water, high soil salinity, lack of irrigation facilities, use of substandard technology.
The talukas lying in the north, north east and south, south west and parts of Rajkot districts show medium potentially of development. There are some other parts of Junagadh and Bhavanagar districts where potentiality is a medium development. (1991) these talukas are located in a scattered form. In few talukas the connectivity, relative location, introduction of primary and secondary activities, availability of cooperative and commercial bank, marketing yard industrial estate etc have made the taluka developed. The secondary and tertiary activities also developed but their concentration is low. These activities provide talukas for new source of development opportunities, which would bring important economic condition of the taluka in Saurashtra region.

The last categories of talukas having 8 in numbers are in high and very high development potentiality. These are located in scatter form. They are Dasada patadi and Limbdi taluka in Surendranagar district, Talaja and Bhavnagar taluka in Bhavnagar district, Wankaner and Rajkot taluka in Rajkot district and Jamnagar taluka. (Figure No VII.6.b). These talukas are having minimum environmental problem and better fertile land, comparatively good quantity and quality of agricultural production mainly groundnut, cotton, sugarcane, castor etc. A high percentage of populations are engaged in all the three activities. In this talukas high density of population, connectivity or network facility, better location and high level of infrastructural facilities are some of the reasons for the development of talukas.
The existing pattern of development potentiality of Saurashtra region shows clearly that the development of talukas is enhanced by the geographical location and associated with industrial development of ABI, availability of abundant water at surface level as well as ground water level. Poor physical and human resource base and less economic opportunities have forced people to migrate to the other parts of the region.

VII.C. Developmental Planning

VII.C.1. Management in Physical Resource

VII.C.1.1. Management in Water Resource

Water management in large part of Gujarat, specially Saurashtra and Kutch and north Gujarat, is facing an acute problem due to over exploitation of water resources. This has led to a multitude of problems like steep decline in water levels, reduction in yields, increase in salinity in wells particularly floride contents and water intusion of sea water in coastal areas.

The Mou (Israeli) and Gujarat State Fertilizers Company (GSFC) will help prepare a master plan for water resources development and management, artificial recharging of aquifers, recycling and reclamation of waste water, arresting of desertification and desalination of sea water. The different categories of water management are stated below.
1. Recycled effluent and waste water or sewerage water can be used wherever possible for irrigation for industrial crops, such as, cotton.

2. Developing crops using irrigation with Brackish water – Brackish water which is slightly treated can be used for irrigating agricultural crops with somewhat tolerant capacity, like cotton, jojoba, certain fruits and vegetable combined with the development of specialised legumes and other use in ABI.

3. Drip irrigation – Drip irrigation has the potentiality of reducing the burden on the water usage. Through this process the water is applied at a low rate, long period of time, applied directly into the plant’s roots system and applied via a long pressure delivery system. The advantage is, 20 - 70% water can be saved, 32 % to 100% increase in growth and yields can be done. This will be useful for ABI as agricultural raw material. In Bhavnagar district 22,000 hectares are presently under cultivation of a long staple variety of cotton, whose productivity is 160 kg per hectare under rainfed condition? The productivity can be substantially increased to 1800-2000 kg of mt per hectare if we scientifically adopt Israili drip irrigation system. The price realisation would results into 23 % times increase in the value of cotton produce. If the experiment is replicated in other cotton growing talukas the returns can be high and as a result the cotton based industries can grow at a faster rate. Drip irrigation is suitable for undulating and poor soils, possibilities of using saline water and quality improvement. Low cost return crops may become uneconomical to adopt irrigation in such crops e.g.
a very good on the capital investment in the development of ABI in rural sector.

VII.C.1.3. Reclamation and Management of Soil

The soil in agriculture is considered to be medium for plant growth if it is free from certain hazards. Saurashtra region is suffering from various problems related to soil. Due to such reason the production quality is less. As a result, ABI is suffering from serious problems related to quality as well as quantity or raw material. The main problems regarding soil and their developmental suggestion among them are as follows

1. Salinity / Alkalinity

The Bhal area in Bhavnager and Ghed area in Junagadh district face problems of salinity and alkalinity due to topographic condition of the region. The saline / alkane
TABLE NO VII.4

Suggested Crops for Salt Affected Soils of Saurashtra

<table>
<thead>
<tr>
<th>Field Crops</th>
<th>Orchard Crops</th>
<th>Forest Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karif'</td>
<td>Rabi</td>
<td></td>
</tr>
<tr>
<td>Bajra</td>
<td>Barley</td>
<td>Datepam</td>
</tr>
<tr>
<td>Jawar</td>
<td>Wheat</td>
<td>Ber</td>
</tr>
<tr>
<td>Cotton</td>
<td>Sunflower</td>
<td>Coconut</td>
</tr>
<tr>
<td>Castor</td>
<td>Mustero</td>
<td>Guava</td>
</tr>
<tr>
<td>Groundnut</td>
<td>Onion</td>
<td>Pormganable</td>
</tr>
<tr>
<td>Math</td>
<td>Isabgul</td>
<td></td>
</tr>
<tr>
<td>Rise</td>
<td>Cumin</td>
<td></td>
</tr>
</tbody>
</table>

Source: Problems and Prospects of Saurashtra, Bhavnagar University, 1989 Kanzeira
(M.V. and Patel M.S.)

Situation of water and the inundation of the coastal areas by tidal waters worsen the situation. The production of crops like wheat, bajra and groundnut goes on decreasing with the increasing salinity. The preventive measure to improve the cause of salinity/alkalinity is to reduce the withdrawal of water from wells and by adopting recharge techniques of wells. The intrusion and ingress of sea water can be controlled by putting tidal regulators, planting mangrove, creation of shelter belts by growing appropriate trees to prevent the deposition of salt containing soil particles through winds.

Change in cropping pattern to of salt tolerant ones may be helpful. Provision of drainage, use of organic compost and inorganic fertilizer (Gypsum, Sulpher, Iron pyrite) can be helpful for soil amendments.(Table No. VII.4)
2 Shallowness of Soil

The soil of Saurashtra region being shallow, they need special management practices because the crop cannot attain the expected growth due to restricted soil masses providing limited nutrients, water and the depth of soil has a great bearing on water and nutrient storage capacity, which finally reflects on the overall growth of the crop. The frequent irrigation with less quantity of water and split application of fertilizer in small dose are recommended for such soils.

3 Calcariousness

In southern Saurashtra region the soil is calcarious in nature i.e. medium black soil. Such soils are difficult to manage from fertility point of view because of the difficulty of loss of nitrogen through volatilization, conversion of soluble phosphate into soluble one and the non-availability of micro nutrients.

For this soil special treatment like coating area with sulphur, lac and neem cake or use of fertilizer materials with super granules etc is adopted to increase nitrogenous for fertilizer. Phosphorus, prawn in rows is more effective and it minimises the immobilization of phosphorous. In case of micro nutrients especially zinc, iron and boron the foliar application prove better rather than the soil application, use of chelated forms of micro nutrients is also suggested.
4. Soil Fertility.

There are various types of situation with respect to fertility of soils depending upon the nature and type of soils in a region. As these soils are shallow in depth in comparison with other parts of Gujarat, different crops in kharif and rabi seasons show the deficiency of nitrogen and phosphorous. Among micro nutrient, iron, zinc need special attention to be given whereas sulphur has been found to be deficient in case of groundnut and wheat after introduction of high purity fertilizer like area and diammonium phosphate. All these situations need special fertilizer management in specific set of soil, climate and crop condition.

5. Nutrient Toxicity

Salt affected areas especially along the sea coast of Jamnagar and Junagadh districts, the concentration of baron in the well waters has been found to have gone beyond permissible limits. A particular problem of flouride toxicity has been reported in the area of around Lathi and Lilia talukas of Amreli. The water when used for irrigation purpose affects the quality of fodder and food grains, which create certain health hazards. Gypsum can help reducing the toxic effect of these elements.

VILD Developmental Planning in Backward and Forward Linkages of ABI

The deep seated problem of under development in Saurashtra region's economy is related to its low level of agricultural development, lack of income, and capital formation, widespread unemployment and under-employment which stem from a
peculiar economic structure. Low level of technology in the vast primary sector, low level of industrial activities (including ABI) are related to the modern sector which is relatively small in forms of its share in regional income. Employment contributes to the growth of the total product mostly through acceleration of productivity and hence cannot be depended upon to absorb labour force on large income. On the other hand the overall economic growth rate in underdeveloped areas tends to weaken and so the rate of capital formation. There is an urgent need for taking effective steps and remove constraints in integrated multi dimensional planning for semi arid and dry sub humid regions of Saurashtra.

The need for an integrated resource management through effective implementation from grass root level including rural people is vital for the region. So even the smallest cultivators, agricultural labourer or small entrepreneurs become directly involved in the planning process. The emphasis should be given on multi level regional, developmental planning from macro, meso and micro levels. The location of ABI and their forward and backward linkages in the region should be identified through procurement, processing and marketing factors. The development of backward talukas and weaker section should be involved in the provision of opportunities for optimum and sustainable use of agricultural resources. Therefore planning has to be based on ABI and potentiality of land, water, agricultural raw material. Infrastructural policy should be such that rural population can achieve their sustainability on their own land. To achieve better socio-economic condition initial emphasis should be given to primary sector i.e. agro industrial integration and expansion of ABI and modernisation of
agriculture. ABI has ability to give a powerful thrust to economy through sizeable savings, which are required for capital formation and industrial sector.

The present study aims to suggest few selective planning of physical and human resources which have been analysed in the form of its potentiality of water, agriculture, infrastructural facilities etc. and their impact on ABI as well as potentiality of human resources within the region.

VII. D.1. Management of Procurement Factor

Starting of ABI in any region, it is necessary to know the marketing and procurement activities. ABI transforms inputs. If those inputs are defectives, processing, and marketing will suffer accordingly. In addition to raw material the dominant cost factor of ABI, the procurement system is a major determinant of industrial economic feasibility. Procurement has an effect on regional development because it links the industrial and agricultural sectors, by transmitting the market stimuli to the farmer. The procurement system directly affects the rural families and their socio economic states.

The five main characteristics which are effective for development of ABI that provides a solid foundation for the processing operations (Austin.E.J). These are also effective in Saurashtra region, they are as follows:

- 250 -
VIII.D.I.1 Adequate Quantity

Agro based industries have excess capacity because they fail to ensure that an adequate supply of raw material will be available. The entrepreneur should examine the determinants of output i.e. area planted and crop yields, expected land use pattern, crops rotation, nutritional value, expansion of industrialisation and urbanisation in the area, agricultural reforms, firm input usage and techniques of cultivation, use of fertilizer and improved seeds and knowhow to use them and farmer's choice of crop, are some of the factors which directly affect the ABI.

The second step, which is necessary for production determinants are the supply of raw material net availability, is computed as follows

\[
\text{Gross production} = \text{On farm consumption} - \text{Animal consumption} - \text{Fresh consumption's} - \text{Other industrial uses} - \text{Competitor's purchases} - \text{Losses} = \text{Net availability}
\]

The remaining production is net availability of raw material used in the ABI.

VIII.D.I.2 Acceptable Quality

Agro based industrial sector not only has to depend on adequate supply of raw material, but the material should meet the qualitative requirements of the operation also. Poor quality of raw material may yield a product of poor quality that can create consumer
resistance and have long range effect on the farm's market positions. The raw material of the region is comparatively inferior quality. As a result, the product is unable to sustain in the market. The quality of raw material depends upon following aspects:

This criteria depends on standards of acceptability in consumers market. Within the same market different qualitative standards are dependent on variations in consumer's buying patterns. Once the qualitative demands of raw material are identified, ABI entrepreneurs should translate them into qualitative requirement for the raw material.

The quality of raw material is adjusted to attain the quality required by the market place. Three factors are important. Inputs, handling can affect product's characteristic and quality. The most significant is the seed. The firm must test seed selection according to soil, availability of water etc or agro climatic condition of its growing areas. The other inputs such as insecticides and fertilizer must be properly used to achieve desired results. The nutritional quality and early growing seed varieties can significantly influence the final product's protein and micronutrient content.

The handling and transport of ABI product can also significantly affect its quality, and this is particularly true of more fragile and perishable products. Rough handling can bruise them, excessive exposure to sun can burn them and they can wilt during transport delays. In case of sugar cane if the industry is away from raw material the recovery is less as well as fruit and vegetables are subjected to mechanical injury and
the conditions of temperature and humidity during handling and storage. Loss of vitamin occurs when fresh, leafy vegetables are stored at high temperatures, low humidity or both harvesting can be minimised in the cool night hours, by quick application of precooling and by avoiding delays before shipment. To take care at the time during harvesting, grading, cleaning, washing, transporting, packing and unpacking and sale in market are also important in the development of ABI. Because of poor storage facilities it can also affect the quality of product remaining after losses form, excessive humidity or heat or insect damage.

VII.D.I.3. Appropriate Timing

Time is an important factor for shaping the ABI procurement system because of its biological nature of the raw material. The major characteristics that depend on time are the raw material, seasonality, perishability and period of availability. Most of the crops are seasonal. In ABI a farm does not have flexibility in supply. The crop cycle can be lengthened or shortened by planting the appropriate seeds, and only irrigation can allow double cropping.

Raw materials are perishable in varying degree. Sugarcane, vegetables and fruits are some materials must be processed immediately otherwise the product suffers a significant loss in quality and economic value. Harvest programming and scheduling of farm to factory, transport must be adequate to the resources of suppliers. The “life span” of the supply means length of time between the raw materials planting and the
beginning of its flow into the industry. A crop’s availability can be jeopardized when suppliers switch to other crops. This risk is especially acute when the raw material is a by-product of another crop in case of cotton or sugarcane. When cotton prices in the region fall, farmers shift to other crops and seeds are less available. As a result the supply of cotton seed based industries get affected. Cotton seed represents a negligible portion of cotton farmer’s revenues, a cotton seed – oil processor’s increasing seed prices would not be an effective stimulant to increase cotton production.

VII.D.I.4. Reasonable Cost

Raw material costs dominate the economics of most ABI. Agro based industrial units usually do not perform an additive process such as the assembling of components. Agro processing is usually subtractive, reducing the original material. It main additional inputs are labour, ingredients and packaging. Several factors including supply and demand, opportunity costs, system structure, logistical services and government interventions are some of the factors that affect the cost of raw material. The other forces influence the cost of industries raw material are spot prices, multiple sources or shift the mix of raw materials for achieving best cost and helping to control price variability and economic risk, and support prices also one of the factors to pay the industry minimum commodity price as fixed by the government, in case of commercial crops like groundnut, cotton and sugarcane. These prices would prevail under free market supply and demand representing the farmer opportunity costs. Contracting is one of the methods ensuring the supply of raw material to extend purchase contract to producers. Such contracts often specify delivery quantities, quality standards, delivery
dates and prices, this also happen in cotton ginning and pressing industry in Saurashtra region.

VILD.I. Organisation of the Procurement System

Obtaining an adequately supply quality raw material at the appropriate time and for a reasonable cost ultimately rest on the organization of the procurement system. This organization can be examined through system’s structure, power, vertical integration and producer’s organisation. The structure of the raw materials is production and distribution of several dimensions. This should be examined through number of producers, transporters, buyers, industry size, location of the ABI, cropping patterns specialization, ownership pattern etc. A poorly managed ABI can become an economic burden to farmers if their production profits are only consumed by processing losses. Successful producers’s cooperatives exist but they generally have developed over time. This is what happened in Una sugar cane factory.

VILD.2. Management of Processing Factor

The processing stage is operationally central to an ABI. Processing operation for food and fibers vary widely in farm. Despite such diversity in the region there are several common factors that should be considered when examining an ABI. They include the following.
VII.D.2.1. Selection of Processing Technology

The selection of the technology is often most important decision in the design of the industry. The major criteria for selecting technology are qualitative requirements, process requirement, socio economic cost, capacity utilisation management capacity and nutritional consequences.

VII.D.2.2. Plant Location

The location of the processing industry i.e. ABI is another critical decision for entrepreneurs. Location is the relation between raw material and market, with transport as an essential factor to be considered. Other consideration is labour supply, the availability of infrastructure, land cost and development effects.

VII.D.2.3. Inventory Management

Inventory management for ABI is also important, which is complicated by the biological nature and the seasonality of the raw material. The entrepreneur should also particularly examine the capacity factors, physical facilities and financial aspects of the industry.

VII.D.2.4. Supplies For Processing

The dominant input for the processing operation is the raw material. There are other supplies that also deserve the entrepreneur's attention. The entrepreneur should determine whether adequate quantities and qualities of these ancillary supplies will be
available when needed at a reasonable cost. Alternatives and nutritional aspects should also be examined.

VII.D.2.5. Programming and Control.

There are two aspects of programming and control that particularly merit the ABI, attention should be given to production design, its implementation plans, engineering and production, scheduling and quality control. Due to lack of quality control, if the product quality is erratic it can cause consumer dissatisfaction and sometimes it can be hazardous for consumption e.g. in ground nut based industries or processing of fruits and vegetables etc.

VII.D.2.6. By Products

The final aspect of processing plant in ABI is the rope of by products in case of sugarcane or cotton based industry. Unlike the other manufacturing operations, ABI generally disagree one raw material. The biological nature of raw material allows to have many useful parts and the product often has multiple derivatives because of by product and chemical change.

VII.D.3. Management in Marketing Factor

The marketing factors examine the external environment in response to an industrial product, consumer characteristics and the nature of consumption. Such information
helps the industry to design procurement and processing strategies and construct a comprehensive marketing plan. The market demand is the agronomic capacity to grow the raw material upon which the ABI will depend. The agro industrial system obviously requires both market and supplies for ABI success. The primary elements that will be considered in the marketing of ABI product are follows

VIII.D.3.1 Consumer Analysis

The potential consumer must identify the needs. The product has to satisfy the market and method of purchase or, in other words, research is needed. The consumer needs are created by a complex interaction of physiological, sociological and psychological motives. The social status is also affecting consumer purchasing market and numerous variable by geographical location, socio-economic or demographic characteristics etc.

The buying process can guide the entrepreneur to design the market plan. The buying process can be examined by looking at who decides to purchase the product, how they decide and when and where they make the purchase. Market research identifies consumer's need, market segments and buying process to facilitate sound marketing decisions. This process consists of four-steps: data specification, source identification, and data collection and data analysis.
VII.D.3.2 Analysis of the Competitive Environment

ABI do not exist in vacuum. A market place may be crowded with ABI and different kinds of products and their success partly depends on their ability to compete with each other. Accordingly a marketing analyst should examine the structure of the market. A market can begin by identification of the competitors which can be public or private enterprises, regional, national or multinational companies, old or new branded etc. or unbranded products etc.

Competition occurs simultaneously. In a competitive society, price is the primary method of competition. Product quality is the second parameter of competition service is the third parameter of competition. The market environment and industrial feasibility are also affected by barriers to enter in the industry.

ABI is influenced by institutional constraints; from economic, political and legal institutions, tariffs, import quotas, export incentives, price controls, subsidies, licensing, antitrust statutes and patents requirements are some of the other variables.

VII.D.3.3 The Marketing Plan

Marketing plan is to know the position of the industrial product. The determinants are product design, pricing, promotion and distribution. Product design consideration for ABI are taste, texture, colour, order form, nutritive value, convenience, pricing strategy should be chose according to its competitive environment and market segment All
products are promoted to some extent in that consumer are provided with product information (price, quality and so on) to use in the buying decision. The promotional massage should be derived from an evaluation of consumer informational needs and the competitive market. Because of this informational needs vary, there may be numerous promotional objectives, including supplying factual product information, generating product awareness, creating product image, stimulating immediate purchase and approving reinforcement after purchase and the last promotional massage can be communicated to direct or indirect methods.

Distribution is important in the marketing because it links the processing of agro product or to the market place. It should be examined by looking at the structure and functions of distribution system. The structure of distribution can be described by length of its channels – the number of intermediaries between the ABI and the consumer. It can also be described by the breadth of the system – the number of wholesalers and retailers at each level. Functions must be performed to move the product from processor to the consumer including logistical operation (transport, assembly, repackaging, storage and inventory management), financing promotion, and information collection etc. Opportunities for integration mean decide between using the distribution services of the existing institutions and undertaking distribution itself. In case of outlet the entrepreneur of ABI must choose wholesalers and retailers. Wholesalers can be selected according to cost, quality dependability, and control retail outlets. However, it must reflect the products, the market segment and the prospective consumer’s buying process.
VII.D.3.4 Demand Forecasting

It is needed to estimate the economic implication of the marketing plan and are used to the ABI profitability, financial and raw materials needs and plant capacity. This involves collecting and analysing past data to understand future market behaviour and to reduce the uncertainty of decision making. Discussion of data is based on three main categories: judgement estimates, time series analysis and causal models of raw material and ABI are some of the factors for forecasting the data.

VII.E. Industrial Estates

Infrastructure is the key to globalisation of Indian agricultural operations. Capital is a scarce commodity in our country and only industrial estates would ensure optimum utilisation of the capital invested in providing the critical infrastructure. This will attract entrepreneur to set up project in a given location, thereby providing the critical mass, necessary to ensure focused flow of scarce government resources into development of critical infrastructure. It is necessary for ABI to have cold storage, packinghouses, and refrigerated vans, transport linkages to international markets, which is absolutely essential for the development of this sector.

It is necessary to have every talukas headquarter or district headquarters such infrastructural facility for developing this sector. A separate area should be put for such sector i.e. Food Processing Industrial Estates (F PIE) This decided industrial estate would also make it easy to introduce the concept of common brand with centralised
quality control, which should help to reduce the cost of marketing products globally. This estate should be providing water availability and treatment facilities, cold storage, specific food analysis and testing laboratory, warehousing facility for packaging material.

VII.F. Management in Government Policy

Due to high cost of input of material, increasing cost of cans, bottles, corrugated box, sugar, edible oil and fresh fruits and vegetables, break point is 55% but industry is working to its 40% capacity only. Many food processing industries are closed and a number of industries are sick and are for sale. Only government can save this industry by giving relief in token and providing proper environment to strenghten domestic market and exports. Certain steps should be taken by the government for ABI. Those are:

1. To treat ABI and food processing industry on a fiscal purpose i.e. there should not be any central excise duty on any input of raw material.

2. To make available cheaper packing material and promote indigenous production.

3. Providing non-window operations

5 ABI should not be treated as seasonal industry and hence area required to pay minimum electricity charges even during off season. This pushes up the cost of production making the products.

6 To put products of the process of food industry in the lowest tax slab.

A separate price stabilisation fund should be created under the new agro policy. This fund shall be utilised for Market intervention operation (M.I.O) to provide reasonable price to the farmers. This will go a long way in establishing a directed relationship between the producer and processors and to eliminate the middlemen from the government and agro industrial corporation one can together look after this fund.

Summary of the Chapter VII

In general the development potentially of the Saurashtra region is rather low comparatively in terms of land, water and soil condition as well as human resources. However with proper organisational ability, technical training for appropriate local technology and proper management in forward and backwards linkages of ABI their procurement, processing, marketing and infrastructural facilities as well as certain governmental policy, are the basic criteria for development of Saurashtra region because agriculture is the backbone of Saurashtra’s economy. Saurashtra’s economic activities have developed on land, soil and agriculture, and agro based industries (ABI) in particular cotton, oilseeds, sugarcane, fruits vegetable based industry. The
development of ABI will solve the problem of out migration and unbalanced development of the region.