



INVESTIGATIONS INTO THE PROCESS OF INNOVATION IN THE INDIAN AUTOMOTIVE COMPONENT MANUFACTURERS WITH REFERENCE TO PUNE AS A DYNAMIC CITY-REGION

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1. Why Pune has been selected as a dynamic city region?

Pune is a major industrial centre, particularly for automobile manufacturing. It is home to one of the world's largest two-wheeler manufacturers – Bajaj. Tata also has its plant here. DaimlerChrysler also has an assembly line for its Mercedes Benz brand. Whirlpool has an appliance manufacturing plant near Pune. Pune also has a burgeoning software industry. Many of India's major software players such as TCS Infosys and Wipro and global majors like SAS, Veritas Software, BMC have a major presence in Pune. With the construction of the six lane Mumbai-Pune Expressway, this city is now less than a three hour drive from Bombay. These days people come for a meeting to Pune in the morning and go back in the evening comfortably. The six-lane, 95-km Mumbai-Pune Expressway has certainly been a 'concrete' milestone in cementing the distance between the two cities.



It is primarily during the last three decades that one sees so many companies turning to Pune (total investment in industry and related activities in the post liberalisation era were estimated to be Rs 52,000 crore). The reason being the core competencies Pune offers – proximity to Mumbai and well-qualified talent, abundant skilled IT manpower and better living

standards, to name a few. Certain restrictions imposed by the state government on industrial expansions in Mumbai have also been one of the key drivers for rapid industrialisation here. Pune's proximity to Mumbai, India's commercial centre with a seaport and an international airport makes it a favourable destination for commercial activities. It has significant opportunities to emerge as a global player in specific sectors given focused strategic planning. Today, Pune is the seventh largest industrial metro of the country.

Pune is the second largest city in Maharashtra and a thriving industrial centre with a population of nearly 2.5 million. Some of the country's most prestigious industries are located in Pune. The Pimpri-Chinchwad-Bhosari industrial complex is claimed to be one of the largest in the country. The major industrial segments in Pune include automobile, machine tools, chemicals, electrical and electronics, instrumentation and control, iron and steel, castings and forgings, telecom, packaging, auto components, material handling equipment, fuel and pumps, etc. A large number of small and medium scale equipment manufacturers produce basic electrical and electronic components, digital equipment, process control and communication equipment, computers and computer accessories, and also software.

Post liberalisation has seen the springing up of about 1044 units, which qualify to be termed as large-scale industrial units. As many as 100 of these projects could be termed as mega-projects with investments of over Rs 16,000 crore.

Pune is situated on the banks of the confluence of the Mula and Mutha rivers which are tributaries of the river Bhima which flows east rising from the Western Ghats of Maharashtra. The city is located at an altitude of over 1800ft above the sea level, with an average rainfall of 170cm. per annum. It has the bracing climate of a hill station. On the western side of Pune is the Pashan lake that is used to supply water to the city.

Pune district has several hill forts along with many ancient temples. Pune gets good quantity of drinking water. Industry also gets ample water supply, as it is supplied by MIDC, which is quite prompt.

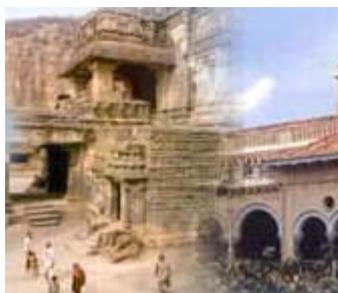
Recently, the IT industry has been viewing Pune to be a better prospect over Bangalore, because of abundant brain power and IT maturity. Pune has attracted around 43 per cent



of the industry in this sector and is obviously the preferred choice over Bangalore in the years to come. Even the State Government has chosen Pune city as a prominent centre for development of IT looking at the industrial growth in and around the city and the excellent international standard, educational facilities available. The centre for development of advanced computing (C - DAC), which is one of the premier institutes in country in the IT is also located at Pune. In

addition MIDC is coming up with a Talegoan High-Tech Park to support Pune's existing strong base of R&D institutions, IT & BT companies. Pune already scores a point in this regard with the presence of many software companies in this city. Some of the major companies that are already harnessing the IT potential of the city are: Infosys Technologies Ltd, Wipro Ltd, Satyam Computers, Tata Technologies, Kanbay Software (I) Pvt Ltd, Magic Infotech (I) Pvt Ltd, Varitas Software (I) Pvt Ltd, Cognizant Technology Solutions (I) Ltd, Geometric Software Solutions Pvt Ltd, KPIT System Ltd, Patni Computers, Mahindra British Telecom Ltd and Kalyani Group's Synise Technologies. Pune's skyline is increasingly getting decorated with such companies. With the development of large industrial areas within a radius of 50kms, having Pune as the nucleus, the city is now increasingly surrounded by industrial areas. This, essentially, signifies the all-round development of the local population in terms of better and improved job opportunities, scope for starting ancillaries and living an improved standard of life.

2. Brief History of Pune city and its related region



Pune, formerly called **Poona**, is the second largest city (after Mumbai) in the state of Maharashtra, India. This is historically an important city. The Maratha was headquartered here. History proves that the city was developed much earlier. The



archaeological relics point out that Pune was established as a township in the 8th century. Prior to the Marathas, evidence of inhabitation comes from relics like the Kasba Ganapati, Taambdee Jogeshwaaree, Pataleshwar cave. The cave, situated outside the old town, (but now squarely in the middle of the city,) on what is today Jungli Maharaj Road, is also called Panchaleshvara caves. It originated around 700 AD, similar in style to the much grander rock temple at Elephanta near Mumbai, but never completed. More importantly it

is an active Hindu temple. In front of the excavation is a circular Nandi mandapam (pavilion).



A copper plate inscription of 973 A.D. reveals that the name of the town was 'Punya -Vishaya' or 'Poonak-Vishaya', during the regime of Rashtrakoots of the Deccan plateau. The Yadavas of Davagiri overthrew them in 1294 A.D. Later on, the Bahamani kingdom had control for a



very short period. Delhi Sultans - successors of Khilji and Ghulam dynasties took interest in Pune and administered Pune in the 15th century. Later, Maloji Bhosale of Verool offered military aid to Nizamshahi and Mughals and got the Jahagir of Pune and Supe region in 1595. In 1674, Shivaji became the king in a traditional Hindu coronation ceremony, and took on the title of Chhatrapati, or Holder of the Umbrella (representing the protection he bestowed on his people). Shivaji is remembered as a just and wise king. He established an effective civil and military administration and adopted a policy of religious tolerance to accommodate all religions and sects. From 1700s to 1818, Pune was the de facto capital of India. The British power could rule the whole of India only after the tragic fall of Pune. Entire India then became a colony of the British empire and remained so for a little over 125 years. Pune was the cradle and the citadel of the Indian independence movement. Pune district has several hill forts along with many ancient temples. The city is close to many strong forts like Sinhagad, Rajgad, Torna, Purandar, Shivneri, Pratapgad, etc. Pune naturally attracted the empire builders who desired to gain control of coastal parts, western ghats and eastern plains of the present territory of western Maharashtra. No wonder that power after power employed its military strategies for capturing Pune and keeping it under its firm control. It grew in importance under the British when it housed a major cantonment town. Pune is the Headquarters of the Southern Command of the Indian Army. The Cantonment area is still a major fixture and adds to Pune's cosmopolitan flavour.

The following table chronologically captures the development of Pune city from the year 1637. ((Source: Industrial & Commercial Directory of Pune, Mahratta Chamber of Commerce & Industries, Pune 1995)

Year	Landmark developments in Pune city
1637	Town came under ' SHAHAJI' rule and Shaniwar, Somwar, Raviwar Peths founded.
1656	Town came in possession of Shivaji
1721	Bajirao Peshwal 1 reconstruction of Pune.
1761	Lakdi (Sambhaji) Bridge constructed.
1818	British rule commenced Pune and Khadi Cantonments established.
1856	Pune-Mumbai Railway introduced
1857	Pune city Municipality established
1880	Khadakwasls Dam constructed
1885	Mundhwa Paper Mill started
1916	First town planning scheme was undertaken by municipality.
1919	Underground drainage scheme introducer.
1920	Electricity introduced in the city
1934	Mahratta Chamber of Commerce & Industries established.

1941	Silver Jubilee Motor Transport City Bus Service started.
1950	Pune Municipal Corporation established and Municipal Bus Service, National Chemical Laboratory started functioning.
1952	First Master Plan of Greater Pune was prepared University of Poona and National Defense Academy established.
1953	A.I.R. Pune Station started
1956	Hindustan Antibiotics Ltd.- first public sector undertakings at Pimpri, and Hadapsar Industrial Estate established.
1961	Development of Bhosari Industrial Estate by the MIDC started
1970	Plan of the Pune Metropolitan Region released
1971	Vikram Satellite Earth Station at Arvi near Pune commissioned
1972	Establishment of Pimpri Chinchwad New Township Development Authority
1973	Installation of T.V Relay Tower at Sinhagad and introduction of Television in Pune.
1977	New Civil Airport at Pune opened.
1983	MITCON starts functioning with Pune as the headquarters
1986	National Information Centre at Pune started functioning
1987	Center for Development of Advanced Computing (C-DAC) started at Pune.
1989	Center for Development of material for electronic technology (C-MET) was set up at Pune.
1993	‘Sports City’ – a sports stadium of international standard started at Balewadi

3. The City Region Attractions

During the months of August or September each year, the city celebrates the Hindu festival of Ganesh. The festival culminates in a carnival like procession along the busy thoroughfares of the city. The city also has a active theater community. It is was the birth place of Meher Baba as well as the home of Bhagwan Shree Rajneesh. Rajneesh's Osho Ashram helps bring a very international flair to the city.

Places of Interest

- Parvati Temple
- Shaniwar Wada
- Aga-Khan palace also famous as Gandhi Museum
- Kelkar Museum
- Kamala Nehru Park
- The art Gallery at Balgandharva Rangamandir
- Osho Rajneesh Ashram
- Sinhagad Fort
- Handmade-Paper Factory
- Lonavala-Khandala hillstation
- Panshet Dam
- Khadakwasala Dam



4. Industrial base of the city and the related region

The major industrial segments in Pune include automobile, machine tools, chemicals, electrical and electronics, instrumentation and control, iron and steel, castings and forgings, telecom, packaging, auto components, material handling equipment, fuel and pumps, etc. A large number of small and medium scale equipment manufacturers produce basic electrical and electronic components, digital equipment, process control and communication equipment, computers and computer accessories, and also software.

5. Industrial Clusters of the city region

In India, industrial clustering has taken place in only certain regions due to some advantages. There are three types of industrial clusters, viz. (i) major industrial regions (ii) minor industrial regions, and (iii) manufacturing districts.

Industrial clusters are identified on the basis of the number of manufacturing units sited in close proximity or the quantum of industrial environment. Amongst these regions, Bombay-Pune, Ahmedabad-Vadodara belt, Madurai-Coimbatore-Bangalore, Hooghly industrial belt, Faridabad-Gurgaon-Ambala emerged as the most prominent.

The Bombay-Pune Industrial Region was also initially developed by the British. They obtained the Bombay island-site for developing a port in 1774. The construction of a 34 km long rail track between Bombay and Thane in April 1853 ushered in an era of developing link with the interior. The routes through the Bhor Ghat to Pune and through Thal Ghat to Nasik actually extended the influence of Bombay towards its hinterland. The opening of the Suez Canal in 1869 provided impetus to the growth of Bombay port.

6. Major Industrial Sectors contributing to Pune's dynamic growth



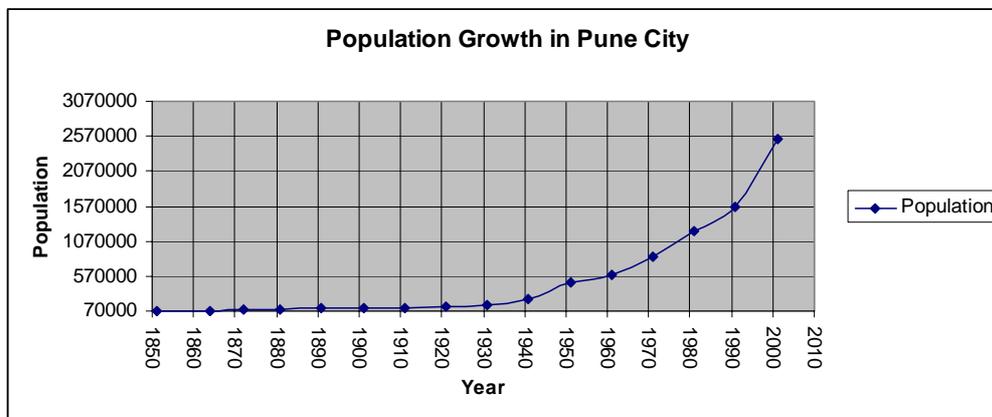
Pune's skyline speaks a lot about its assuming a new identity as an emerging industrial metro and potential manufacturing hub. Two or three large companies like Telco, Bajaj had set up their base in Pune. Such companies gave

rise to the ancillaries, and then multi-national engineering companies Sandvik, SKF, Alfa Laval, Sulzer, Mercedes Benz, Burckhardt and many other engineering companies started here. The strong presence of the Auto OEMs and the Auto Component Manufacturers (ACMs) have always made Pune as a favourite destination for Auto industries. However, its growing presence in IT has also recently made it a favourable destination for IT.

Recently, the IT industry has been viewing Pune to be a better prospect over Bangalore, because of abundant brain power and IT maturity. Pune has attracted around 43 per cent of the industry in this sector and is obviously the preferred choice over Bangalore in the years to come. Even the State Government has chosen Pune city as a prominent centre for development of IT looking at the industrial growth in and around the city and the excellent international standard, educational facilities available. The centre for development of advanced computing (C - DAC), which is one of the premier institutes in country in the IT is also located at Pune. Facilities such as the technology up-linking and infrastructure data centres are there. There is STPI (Software Technology parks). However, Pune already scores a point in this regard with the presence of many software companies in this city. Some of the major companies that are already harnessing the IT potential of the city are: Infosys Technologies Ltd, Wipro Ltd, Satyam Computers, Tata Technologies, Kanbay Software (I) Pvt Ltd, Magic Infotech (I) Pvt Ltd, Varitas Software (I) Pvt Ltd, Cognizant Technology Solutions (I) Ltd, Geometric Software Solutions Pvt Ltd, KPIT System Ltd, Patni Computers, Mahindra British Telecom Ltd and Kalyani Group's Synise Technologies.

7. Population

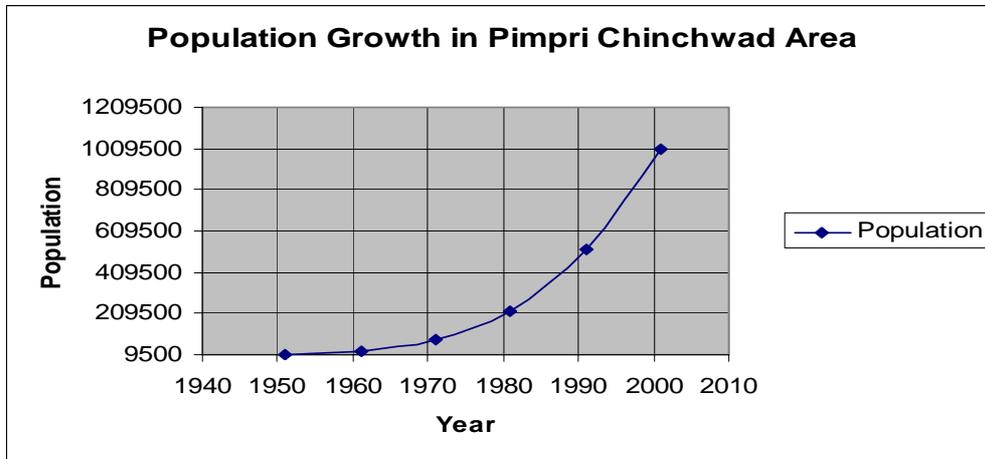
According to the 2001 census provisional results, Pune had - according to official statistics - a population of 3.755 million in 2001. This figure includes the people residing in the city of Pimpri-Chinchwad which has historically been considered as a twin of Pune.



The real population of the combined metropolitan area could be estimated between 4.5 to 5 million in 2004.

According to 2001 census, population of Pune district was 7,224,224. Two population trend charts have been presented here based on information collected from Industrial & Commercial Directory of Pune, Mahratta Chamber of Commerce & Industries, Pune,

1972, 1978, 1985, 1990, 1995, 2002). These trend charts present the population growth of Pune city and that of the Pimpri-Chinchwad area. Both the places have registered high increase in population (almost exponential). Pune's growth could be seen from 1950s while

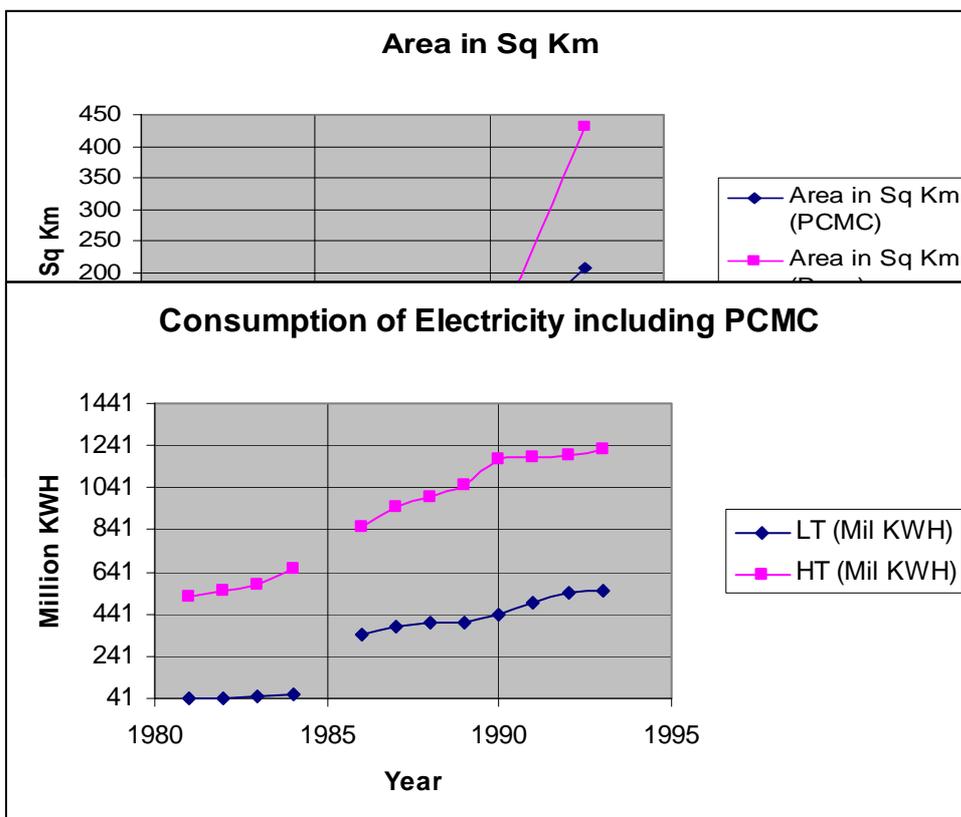


while that of Pimpri-Chinchwad could be seen from 1970 almost coinciding with the development of

the auto giants Telco and Bajaj.

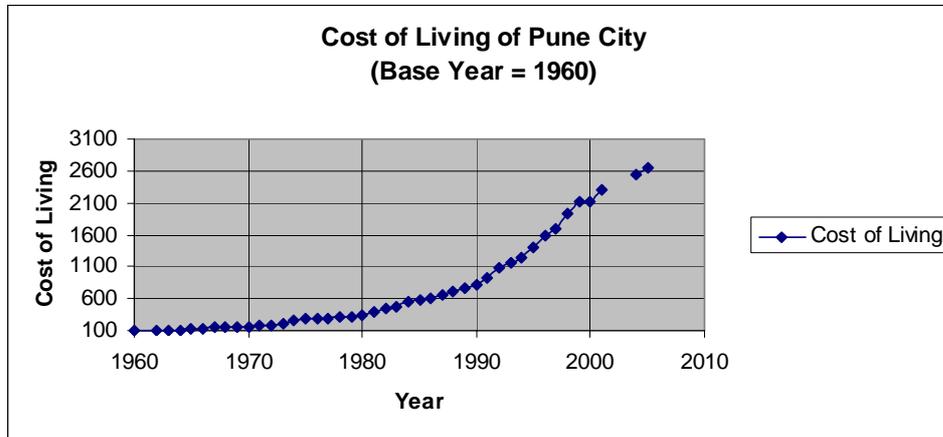
8. Facts and Findings of the region

Pune Division (Source: www.history.com) is one of the six divisions of Maharashtra. Pune Division is bound by Konkan Division to the west, Nashik Division to the north, Marathawada Aurangabad Division) to the east, and the state of Karnataka to the south.
 Area: 57,268 km²
 Population (2001 census): 99,973,761
 Districts: Kolhapur, Pune, Sangli, Satara, Solapur
 Literacy: 76.95%
 Area under irrigation: 8,896 km²
 Main crops: Jowar, wheat, bajra, sugarcane, rice, soybean, onion, groundnut, vegetables, turmeric, grape, pomegranate



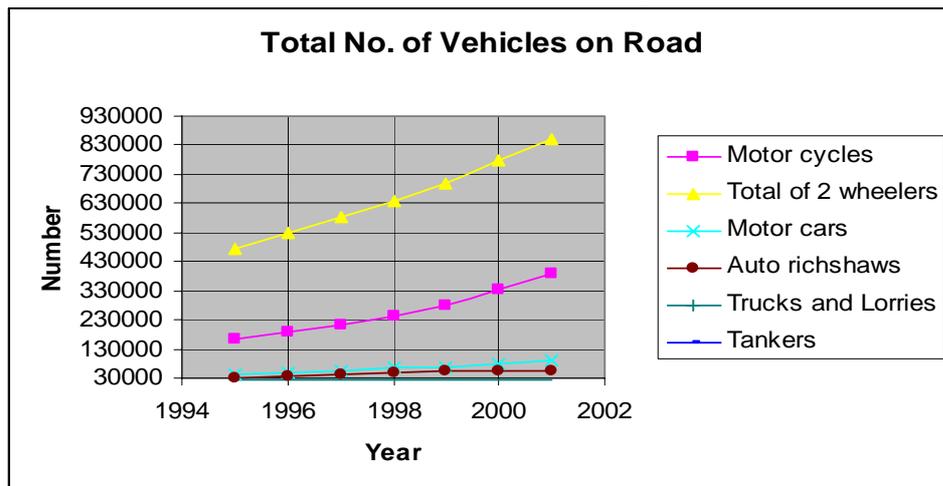
The Pune region consists of five districts: Pune, Satara, Sangli, Kolhapur and Solapur. Pimpri-Chinchwad, Talwade (Software park), Jejuri,

Kurkumbh, Pandare, Bhigwan are the major areas within the Pune district and the growth centres are Baramati and Shirur (Ranjangaon). Other major areas in above districts are Satara, Wai, Sangli, Miraj, Islampur, Kolhapur, Gokul-Shirgaon, Halkarni, Solapur and Chincholi. Growth centres are Karad, Kagal, Gadhinglaj, Hatkanangoe, Tembhurni and Mangalwedha. The District industries centres, which have been functioning since 1979, are a focal point for development of small scale industries. There are about 38,000 permanently registered and 27,000 provisionally registered small-scale units in the Pune



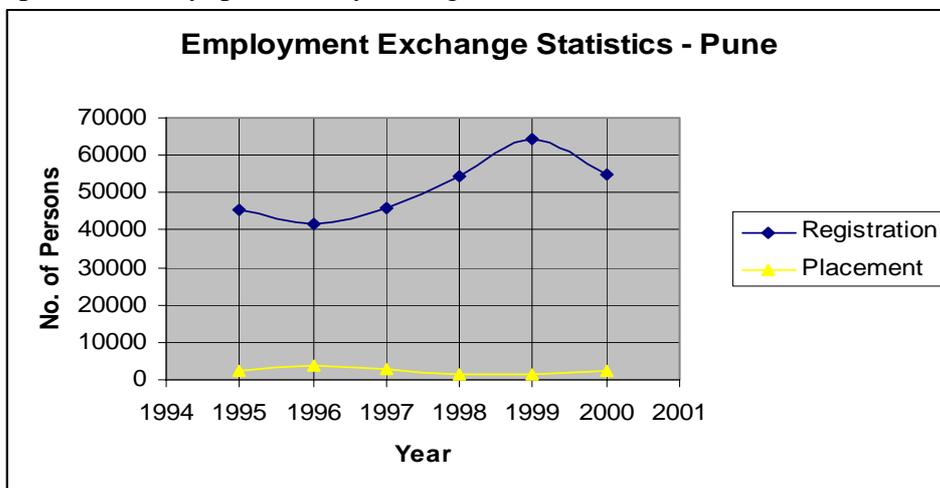
region. Marathi is the language of the majority of the people residing here. Residents of Pune city call themselves 'Punekar'.

'kar' is a marathi language suffix used to denote a person belonging to the preceding



village or city name. This being a metropolitan city with many English literate people, 'Puneites' is also a term commonly used to describe the

people of this city, particularly in English dailies.

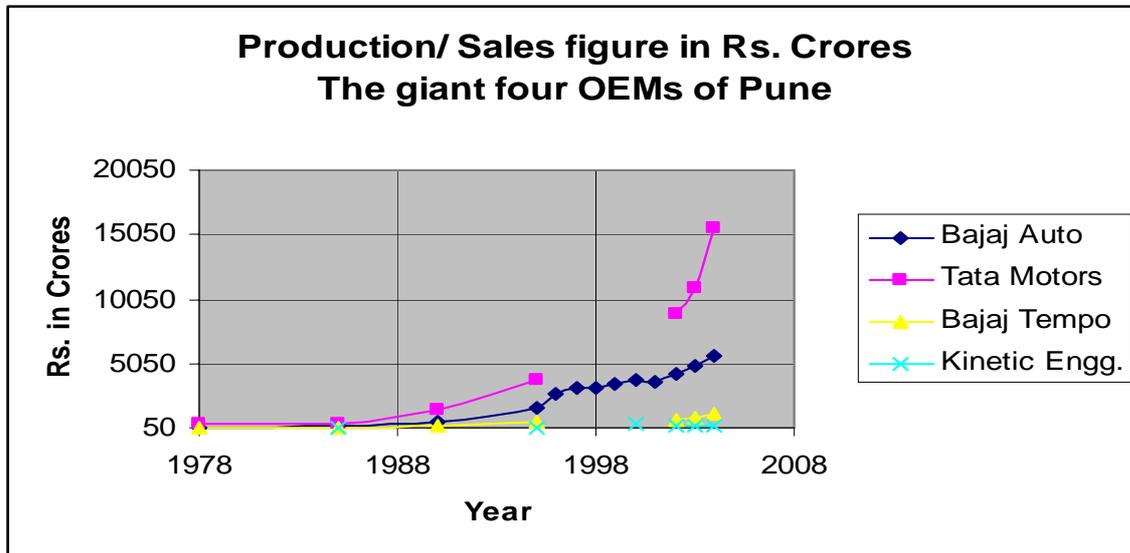


According to Industrial & Commercial Directory of Pune, Mahratta Chamber of Commerce & Industries,

Pune, 1972, 1978, 1985, 1990, 1995, 2002). The area in square kilometers have also been increasing. Since 1990 more and more villages are getting added to Pune city area and also to PCMC (Pune Chinchwad Municipal Corporation area). The cost of living has also been increasing almost exponentially since around the year 1980. Apart from other factors the economic prosperity of the region could be one among the important factors of this increase in cost of living. The cost of living has been calculated keeping the base year as 1960. The vehicles on road are also increasing linearly through the years. Number of motor cars which have not been reflected till 2001, have also gone up since then significantly. The alarming picture is that of number of two wheelers. Actually, the city was earlier referred as the city of two wheelers and though official data may not be available, Pune is said to be one among the Indian cities with high number of ladies traveling on two and four wheelers. This also speaks of the high quality of city life that the city enjoys. Roads are known to be safe to travel even during late hours due to crime rate relatively on the lower side. The employment exchange statistics though not exactly reflecting the data on the actual number of employed persons, the figure would be much on the higher side. Power consumption has been going up as the number of industries and also the population of the entire area has been going up. However, the power generation in the city region and also in the state has not increased to take care of the need. As a result the power situation continues to be grave. Similar problems have been felt in the city infrastructure and facilities particularly in water supply and road. As more and more vehicles are plying up and down everyday, and most of the city roads are facing traffic congestion. This problem is increasingly felt in Pune like other cities though measures have been taken to decongest roads through widening and also by constructing Bangalore by pass to avoid south bound traffic through the city. Number of fly-overs are relatively less which may be one of the reasons of the traffic congestion.

9. Growth of Auto and Auto Component Manufacturing Industry

The main focus of this study is around the auto component manufacturing industry in Pune. It will be imperative to discuss the background of the industry. As discussed earlier, Pune has been growing as an important industrial base for more than a century. Therefore, selecting Pune as the manufacturing location for some of the major auto giants was natural. The year



191945 is important as both Bajaj Auto and Tata Motors were established in that year. Through large scale ancillarisation and vendor development efforts of the auto giants in Pune which also include Bajaj Tempo and Kinetic Engineering, the auto component manufacturing companies got a boost to establish their factories in Pune. Gradually, Pune as an auto manufacturing city could place itself firmly. The graph projects the boost in production/ sales figures (Source: data indicate production figures in Rs. Crores (Ten Million) till 1995. Beyond 1995, the data indicate sales turnover) for the four auto giants based at Pune. Apart from these key players, some of the world's biggest names in Automobiles in Pune are:

- Mercedes Benz (Daimler Chrysler), Pune
- Fiat, Mumbai and Pune
- John Dierre, Pune

Some of the big names in Auto Components and auto Aggregates are in Pune. Tata established a cluster called the Tata Auto Component at Pune which include companies like:

- Tata Yazaki
- Tata Toyo
- Tata Nifco Fasteners
- TC Springs
- Tata Yutaka

Some of the other names representing joint ventures in Pune indicate foreign participation.

- Keihin Fie, Pune
- Lucas TVS, Pune
- Honeywell Garret, Pune
- Cummins, Pune
- Carraro, Pune
- Motherson Sumi, Pune
- Minda Stoneridge, Pune

Top 10 exporters

Company	Exports (Rs lakh)		% growth	Turnover (Rs lakh)	Export-turnover ratio (%)
	2001-02	2002-03			
BHARAT FORGE	11,034.5	27,100.0	145.59	68,100.0	40
MOTOR INDUSTRIES COMPANY	20,223.0	25,464.0	25.92	1,78,580.0	14
VISTEON AUTOMOTIVE SYSTEMS INDIA	26,378.0	22,200.0	-15.84	57,800.0	38
BRAKES INDIA	8,461.0	10,170.0	20.20	56,943.0	18
SUNDRAM FASTENERS	8,173.3	10,000.0	22.35	50,000.0	20
PHOENIX LAMPS INDIA	7,500.0	7,000.0	-6.67	14,650.0	48
MOTHERSON SUMI SYSTEMS	4,371.0	6,660.0	52.37	33,343.5	20
SIGMA CORPORATION (INDIA)	5,300.0	5,600.0	5.66	5,600.0	100
SUNDARAM BRAKE LININGS	4,285.0	5,431.4	26.75	10,170.4	53
GAJRA GEARS	3,144.0	4,465.0	42.02	13,160.0	34

Source: Market sources

Source: AUTO COMPONENTS SURVEY: EXPORTS; **New players, new learnings** Business World, February 23, 2004

There are other big names in Auto Component manufacturers of repute due to their excellence in Quality and exports include:

- Bharat Forge, Pune
- Kalyani Brakes, Pune
- ZF Steering, Pune
- Wheels India, Pune
- DGP Hinoday, Pune

Some of the remarkable achievements of Pune in Auto Segment could be summed up as below:

- About 70% of the medium and heavy trucks are produced in Pune
- India's only indigenous car producer is located in pune
- Pune Accounts for 80% of Multi Utility Vehicle output
- Nine out of every ten three wheelers are produced in the state

The table shows performance of some of the Pune based Auto Component Manufacturers in exports who figure among the top 10 auto component exporters in India. Similarly, the growth and opportunities triggered expansion programmes overseas. Bharat Forge was

one among the first to take over CDP of Germany to become world's number two in Forging industry.

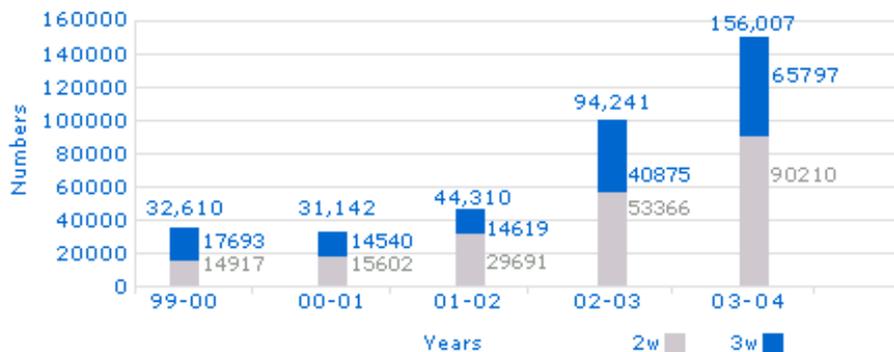
Expanding overseas

Indian company	Company/plant acquired/set-up abroad	Located in	Size of deal (\$ million)
AMTEK AUTO	Smith Jones Inc.	US	20
AMTEK AUTO	GWK Group	UK	37
BHARAT FORGE	Carl Dan Peddinghaus GmbH*	Germany	115 [#]
SUNDRAM FASTENERS	Dana Spicer Europe* (Forging unit)	UK	2.6
SUNDRAM FASTENERS	Sundram Fasteners (Zhejiang)**	China	5

* Plant ** Plant set-up # Approximate

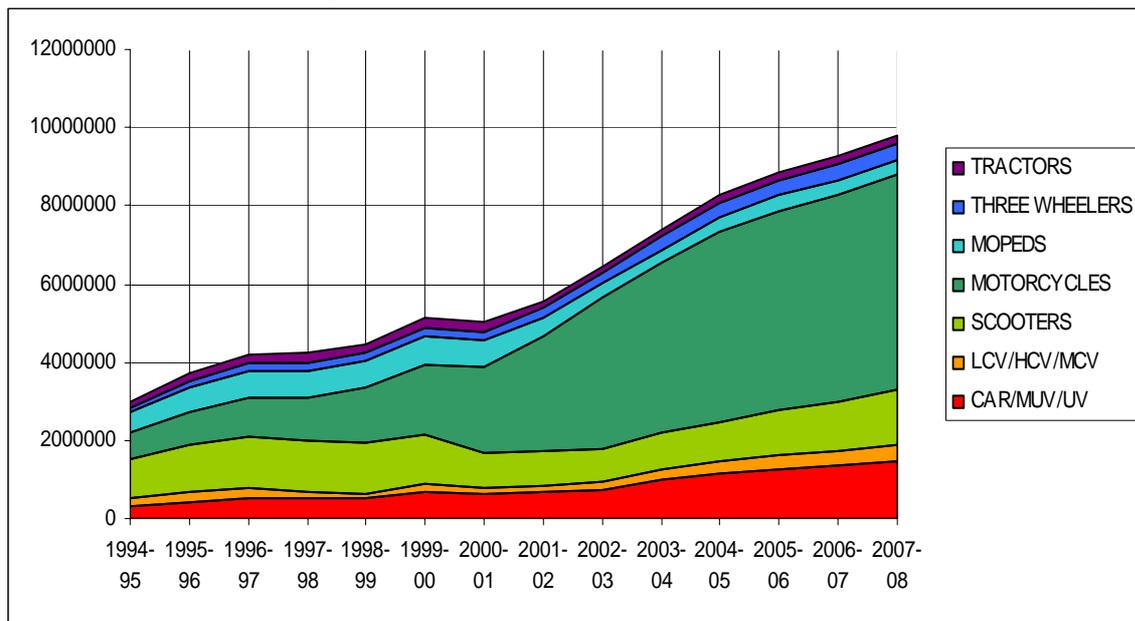
Source: AUTO COMPONENTS SURVEY: EXPORTS; **New players, new learnings** Business World, February 23, 2004

Growth in Exports



The growth in exports have been phenomenal over the years in the country as a whole and Pune also followed closely in terms of increase in exports. Though in terms of the export potential the number may be miniscule, but the registered rate of growth continued to be good. Obviously Pune played a lead role in the two and three wheeler segments.

Total automotive vehicle production trend in numbers (Projected trends indicated beyond



2005) indicate a significant rise (Source: ACMA) in the demand of two wheelers and particularly in the motorcycle segment. Auto component industry performance in India as a whole (production in number) for various segments (Source: ACMA) have been projected in the annexure. Pune being the centre of auto production and auto component manufacturer in India would continue to play a leading role. The production trend shown earlier indicate the similar trend for both Bajaj Auto and Tata Motors. Annexure shows the trend of country's investment, export and sales in auto component sector. It is clear that in order to meet the projected demand the city and its governance mechanism must play a supporting role to meet this challenging task.

10. Infrastructure

Potential for Business through Land development along the Mumbai - Pune Expressway has been identified by MSRDC. Corridor planning and Techno-Economic Feasibility report for the land development along the Mumbai - Pune Expressway has been made.



Sites have been identified for development of the Road Side Facility in a Profitable and Environmentally sensitive manner for commercialization. The



parties interested in developing the Road Side Facility have been asked to contact MSRDC. There is scope for development of Road Side Facilities like Rest Places, Hotel, Motel, Restaurant, Service Station, Truck Repair and Maintenance Facility, Auto Show Room, Convention Center, Hospital, Naturopathic and Ayurvedic Center, Discount Shopping Center, Multiplex corporate training and conference facilities, Farmers Market, call centers etc. This would definitely impact the economy of the entire stretch.

11. How did the city region reach its growth?

In the census of 1881 there were only eight urban places in the Pune district (Source: Gazetteers department, Government of Maharashtra, Mumbai 400 020, 1954). The number rose to 37 in 1951. The percentage of urban to total population rose from 18.5 to 42.8. Needless to say, the density of population went up from 163.4 to 323.7 per square mile. The remarkable growth of the urban as compared to rural numbers could be noted during this period. The population of the Poona urban areas had gone up by nearly 400 per cent. In 1881, Poona City answered for a little over one-tenth of the population, whereas it answered for more than thirty per cent in 1951. While part of the growing urbanization had been due to concentration of economic activity, the growth of the main city had been contributed to mainly by activities connected with public administration, either of the State or of the Union Government. Both the direct and the indirect effects of the location of these activities in Poona on the economic life of the district had been immense.

The main characteristics of the economic organization of the district are best illustrated by two tables (Source: Gazetteers department, Government of Maharashtra, Mumbai 400 020, 1954). The process of urbanization was for the most part being helped by administrative concentration in Poona City, and to a lesser extent in taluka headquarters. Out of Poona city's population of nearly five lakhs in 1954, nearly half depended on administrative and miscellaneous employment for their livelihood. Non-agricultural industry, however, supplied livelihood to one-fourth of the population. While, therefore, Poona was chiefly an administrative city, its industrial life was by no means negligible. Dapodi represented the process of gradual urbanization of villages coming under the sway

of a metropolitan city. Though the surroundings of the place were comparatively rural, employment was mostly urban and non-agricultural. The other process—the dwindling of villages—was represented by Sirur, the population of which place had gone down by over 48 percent during 1900 to 1950. Considering that the place had lost its administrative prestige because of the abolition of the cavalry, for which it used to supply fodder, one would naturally be prepared to expect a decline. The frequent droughts from which the taluka had suffered also depressed the economy of the place. These varying trends of the steadily urbanizing economy of the district were clearly traceable in the table that follows.

TABLE I.

Means of Livelihood of some urban areas (1951).

Name of city.	Percentage of population dependent on			
	Industry	Agriculture	Rent.	Services and Miscellaneous.
Poona City	25.0	2.6	0.5	47.0
Baramati	18.0	9.0	0.7	43.0
Kalamb	62.6	15.8	0.6	14.7
Khed	8.0	65.0	2.3	15.6
Dapodi	42.0	3.0	0.1	49.0
Sirur	16.0	8.0	1.0	41.8

TABLE II

Means of Livelihood.

Item.	AGRICULTURAL				
	Owner cultivation.	Other cultivation.	Cultivating Labour.	Rent.	Total.
Total Population 1951-19,50,976.	8,64,031	39,788	80,253	36,964	10,21,036
Percentage (1951)	44.3	2.0	4.1	1.9	52.3
Percentage (1901)	60.0

	NON-AGRICULTURAL				
Item.	Production	Commerce.	Transport	Services and Miscellaneous	Total.
Total Population 1951-19,50,976.	2,67,264	1,48,273	52,928	4,61,475	9,29,940
Percentage (1951)	13.6	7.7	2.7	23.7	47.7
Percentage (1901)	16.0	3.0	2.0	19.0	40.0

The growing urbanization of the district was accompanied by a shift from agriculture to non-agricultural employment as the principal source of livelihood for the population. During the last half century of Nineteenth century the percentage of population dependent on agriculture had been reduced from 60 to 52, and that on industry, including artisan industry, from 16 to 13.6. On the other hand, the percentage of population dependent on commerce had increased from 3 to 7.7, and that on services and miscellaneous employment from 19 to 23.7.

12. Policy Issues

A. Power problems: Lack of power seems to be the main issue today. Regular load sheddings and shut-downs in Maharashtra have started crippling the infrastructure

B. Roads: Internal roads is also a major issue. Most of the roads at the peak hours are not able to take the traffic. Though road widening plans are being taken up but looking at the increase in the number of vehicles, this could be a major issue. Also, the worsening condition of roads during the rainy seasons every year is a matter of concern for city life and industry. Inadequate and poor quality of road surface leads to increased Vehicle Operation Costs and also increased pollution. It has been estimated (source: SIAM) that improvements in roads will result in savings of about 15% of Vehicle Operation Costs.

Traffic on roads is growing at a rate of 7 to 10% per annum while the vehicle population growth for the past few years is of the order of 12% per annum. Poor road infrastructure and traffic congestion can be a bottleneck in the growth of vehicle industry. A balanced and coordinated approach needs to be undertaken for proper maintenance, upgradation and development of roads. Incentives need to be declared for encouraging private sector participation in these areas. Also, latest technologies and management practices are needed to take care of increase in vehicular traffic. For the convenience of traveling public the

Government proposes to promote multi-modal transportation and implementation of mass rapid transport systems.

C. Pollution and environmental issues: With traffic increasing containing pollution is also a major threat in the city life. Though in the major traffic areas the awareness in terms of pollution is much better than before due to display of pollution levels everywhere, the levels are alarming in many of the place. According to 'Research and Action in Natural Wealth Administration', Ranwa the low sequestration areas of Pune are by and large concentrated around North-West, South East and South East part. As far as carbon emission goes most of the city areas come under the Middle class area with 265.92 Kg of emission per capita per year. This indicates need to take priority action to contain the same. Besides promoting tree plantation as a mitigation measure, it is imperative to curtail the consumption of rich citizens by a quarter of the present emission. Some of the solutions forwarded by Research and Action in Natural Wealth Administration, Ranwa, Pune include switching from private transport to public and minimizing consumer goods that are vigorously promoted by globalization.

According to the Auto Policy of Government of India (ref. annexure A1), efforts should be directed to assist development of vehicles propelled by alternate energy sources. Development and introduction of vehicles propelled by energy sources other than hydrocarbons through promotion of appropriate automotive technology would certainly bring much desired change. Hybrid vehicles and vehicles operating with batteries and fuel cells are alternatives to the conventional automobile. These are however, still in their early stage of technological maturity. As an impetus for the development of such vehicles, an appropriate long-term fiscal structure need to be put in place to facilitate their acceptance vis-à-vis vehicles based on conventional fuels.

The other aspects related to policy which would directly impact the environmental conditions include use of low emission fuel auto technology. Recommendations have been made by Expert Committee on Auto Fuel Policy headed by Dr. R.A. Mashelkar to approve a road map for implementation for the auto fuel quality consistent with the required levels of vehicular emissions norms and environmental quality. Government of India has decided to formulate a comprehensive auto fuel policy covering the other related aspects and ensure availability of appropriate auto fuel/fuel mixes at minimum social costs across the country. With development of suitable institutional mechanism for certification, monitoring and enforcement of different technologies/fuel mixes, there could be some improvement in these aspects.

Government needs to come out with regulation on the use of short chain hydrocarbons along with other auto fuels of the quality necessary to meet the vehicular emissions norms. Since India embarked on a formal emission control regime only in 1991, there is a gap in comparison with technologies available in the USA or Europe. Currently, India is behind Euro norms by few years, however, a beginning has been made, and emission norms are being aligned with Euro standards and vehicular technology is being accordingly upgraded. Vehicle manufactures are also working towards bridging the gap between Euro standards and Indian emission norms.

The need for an integrated, holistic approach for controlling vehicular emission cannot be over-emphasised. More importantly, it is time now for the auto and oil industry to come together under the guidance of the Government in evolving fuel quality standards and vehicular technology to meet air quality targets.

Also, the domestic safety and environmental standards should be at par with international standards. However, the amount of investment towards research and development infrastructure and also towards application research should be able to support the policy. In view of the worsening condition of environment, these efforts are to be expedited.

D. Fuel Technology: In India we are yet to address the vehicle and fuel system as a whole. It was in 1996 that the Ministry of Environment and Forests formally notified fuel specifications. Maximum limits for critical ingredients like Benzene level in petrol have been specified only recently and a limit of 5% m/m and 3% m/m has been set for petrol in the country and metros respectively. In place of phase-wise upgradation of fuel specifications there appears to be a region-wise introduction of fuels of particular specifications. The high levels of pollution have necessitated eliminating leaded petrol, through out the country (Source: SIAM). To address the high pollution in 4 metro cities 0.05% sulphur petrol & diesel has been introduced since 2000-2001. The benzene content has been further reduced to 1% in Delhi and Mumbai.

There is a need for a holistic approach so that upgradation in engine technology can be optimised for maximum environmental benefits.

E. Water: As the city is located at the confluence of two rivers; Mula and Mutha, water situation as it is not very alarming at the moment. But due to constant use of the borewell for construction as well as for household purpose, the ground water level is going down. This could be a major problem. The city needs a firm policy on maintaining ground water level. Policies on rain water harvesting could help the city in this direction.

F. Foreign Equity: Auto policy of Government of India has made provision for automatic approval of foreign equity investment upto 100% of manufacture of automobiles and component. However, the other issues relating to land, water, tax, labour, etc. issues need to be addressed in a more congenial manner to make the investment process simpler and attractive.

G. Inspection & Maintenance (I&M) Of In-Use Vehicles: It has been estimated that at any point of time (Source: SIAM) new vehicle comprise only 8% of the total vehicle population. In India currently only transport vehicles, that is, vehicles used for hire are required to undergo periodic fitness certification. The large population of personalised vehicles are not yet covered by any such mandatory requirement. In most countries that have been able to control vehicular pollution to a substantial extent, Inspection & Maintenance of all categories of vehicles have been one of the chief tools used. Developing countries in the South East Asian region, which till a few years back had severe air pollution problem have introduced an I&M system and also effective traffic management.

G. Infrastructure: Pune ranked lowest in infrastructure support according to Gartner Analyst, Dec 13, 2004 Rediff.com and will need significant investment to be at par with cities like Mumbai and Bangalore or even cities like Chennai and Hyderabad in the future. However, Pune tops the list with the highest ratings in skills availability. The study has categorised and evaluated the cities into four tiers based on various factors including infrastructure, skills availability, skills retention, access, cost of living, political support and quality of life. Pune figures in tier 1.1 (refer table).

Tier 1
Bangalore, Mumbai and New Delhi
Tier 1-1
Chennai, Hyderabad, Pune, NOIDA, Gurgaon and Navi Mumbai (New Bombay)
Tier 2
Calcutta, Mangalore, Mohali/ Chandigarh, Bhopal
Tier 3
Coimbatore, Mysore, Nasik, Koji (Cochin), Nagpur, Jaipur, Indore, Shimla, Raipur, Lucknow, Kanpur, Panaji, Guwahati, Bhubaneshwar, Patna, Srinagar among others

FIGURE 1 – CITY: TIER CATEGORIZATION

(Source: Gartner Analyst, Dec 13, 2004 Rediff.com)

13. Incentives and resources

- **General incentives**
- **Sector specific incentives**

General incentives

According to the industrial policy of Maharashtra 2001 (Source: Ministry of Small Scale Industries, Government of India), new industries establishing in C, D, and D+ areas and No-Industry District(s) will be exempted from payment of Electricity Duty for a period of 15 years.

Government of Maharashtra proposes to promote Education and Research Institutions of international or national standards, including world-class business education institutions, by providing land in industrial areas/estates at nominal or concessional rates. This should encourage (subject to the real-term benefits and value that one sees out of the investment) set up of quality institutes and research organisations. Qualitatively this should have an impact on the governing mechanisms relating to the industry.

Sector specific incentives

In other parts of the State, 100% Export Oriented Units (EOUs), Information Technology (IT) and Bio-Technology (BT) units, and industries setting up in Special Economic Zones (SEZs), and Electronic Hardware Technology Parks will be exempted from payment of Electricity Duty for a period of 10 years.

New Industrial Townships: More recently, these concepts were extended through statutory amendments to enable the establishment of independent Industrial Townships. In the first phase, self-governing Industrial Townships with the power to raise resources and determine their application will be established in industrial areas being developed by MIDC at twelve locations across the State, i.e. at Vile-Bhagad (Raigad), Airoli (Thane), Talegaon (Pune), Hinjewadi - Man (Pune), Shendre (Aurangabad), Additional Latur (Latur), Nandgaon Peth (Amravati), Additional Yavatmal (Yavatmal), Tadali (Chandrapur), Butibori (nagpur), Additional Sinnar (Nashik) and Nardhana (Dhule). The industrial townships so set up will pay 25% of their revenue to the concerned Gram Panchayat(s) or local bodies for the initial period of 5 years.

Promotion of Education and Research Institutions: Educational and research institutions of international or national standards, including world-class business education institutions, would be provided land in industrial areas/estates at nominal or concessional rates.

14. Support Institutions and Organisations

It has many institutions of higher education, including the University of Pune, several colleges of engineering IUCAA (Inter University Center for Astronomy and Astrophysics), NCL (National Chemical Laboratory) and the Armed Force College. The National Defense Academy, which trains officers of India's armed forces is located at Khadakvasla, on the outskirts of Pune. Fergusson College happens to be one of the most important colleges in this city. It was established in 1885. Students from all over India, and many African countries come to Pune for higher education, particularly engineering and management. Pune is rapidly becoming a major centre of Information Technology in India. With numerous engineering and management institutes it was once called the "Oxford of the East" by Jawaharlal Nehru, India's first and longest serving Prime Minister.

- University of Pune
- College of Engineering, Pune
- Symbiosis Institute of Business management
- Maharashtra Institute of Technology
- Vishwakarma Institute of Technology
- Fergusson College
- Pune Institute of Computer Technology
- Symbiosis Institute of Computer Studies and Research

Some of the Research Institutes

- National Chemical laboratory
- IUCAA
- Bhandarkar Institute of Oriental Research
- Agharkar Research Institute

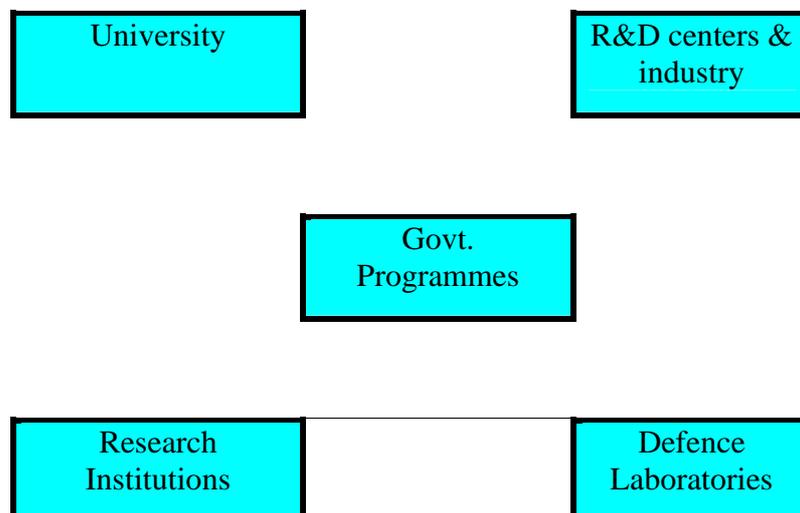
Some of the other Government, State Government, Non-Government Bodies connected to development of Pune City Region

- Pune Municipal Corporation
- Pimpri Chinchwad Municipal Corporation
- Maharashtra Industrial development Corporation
- Maharashtra State Electricity Board
- Software Technology Park of India
- University of Pune
- Centre for Development of Advanced Computing
- Other local, National and International associations
- Secretary (Industries), Government of Maharashtra
- Development Commissioner (Industries), Maharashtra
- Directorate Of Industries, New Administrative Bldg., 2nd Floor,
- Maharashtra Industrial Development Corporation (MIDC)
- Maharashtra State Financial Corporation (MSFC)
- Maharashtra State Electricity Board (MSED)
- City and Industrial Development Corporation Of Maharashtra Limited (CIDCO)
- Maharashtra State Road Development Corporation Ltd. (MSRDC)
- Maharashtra Small Scale Industries Development Corporation Ltd. (MSSIDC)
- Software Technology Park Of India
- Centre For Development Of Advanced Computing (C-DAC)
- Department Of Telecommunications Maharashtra Telecom Circle,
- Maharashtra Pollution Control Board (MPCB)
- Maharashtra State Khadi & Village Industries Board (MSKVIB)
- 19-21, Manohardas Street, Fort,
- Maharashtra Tourism Development Corporation (MTDC)
- Maharashtra Centre For Entrepreneurship Development (MCED)
- All India Motor Transport Congress, New Delhi
- Association of State Road Transport Undertakings, New Delhi
- Automotive Component Manufacturers Association of India, New Delhi
- Automotive Tyre Manufacturers Association, New Delhi
- Automotive Research Association of India, Pune
- Bureau of Indian Standards, New Delhi
- Central Institute of Road Transport, New Delhi
- Confederation of Indian Industry, Pune
- Federation of Automobile Dealers Association, New Delhi
- Indian Institute of Petroleum, Dehradun
- Indian Machine Tool Manufacturers Association, New Delhi
- Vehicles Research & Development Establishment, Ahmednagar

- Automotive Component Manufacturing Organisation

15. The process of Governance

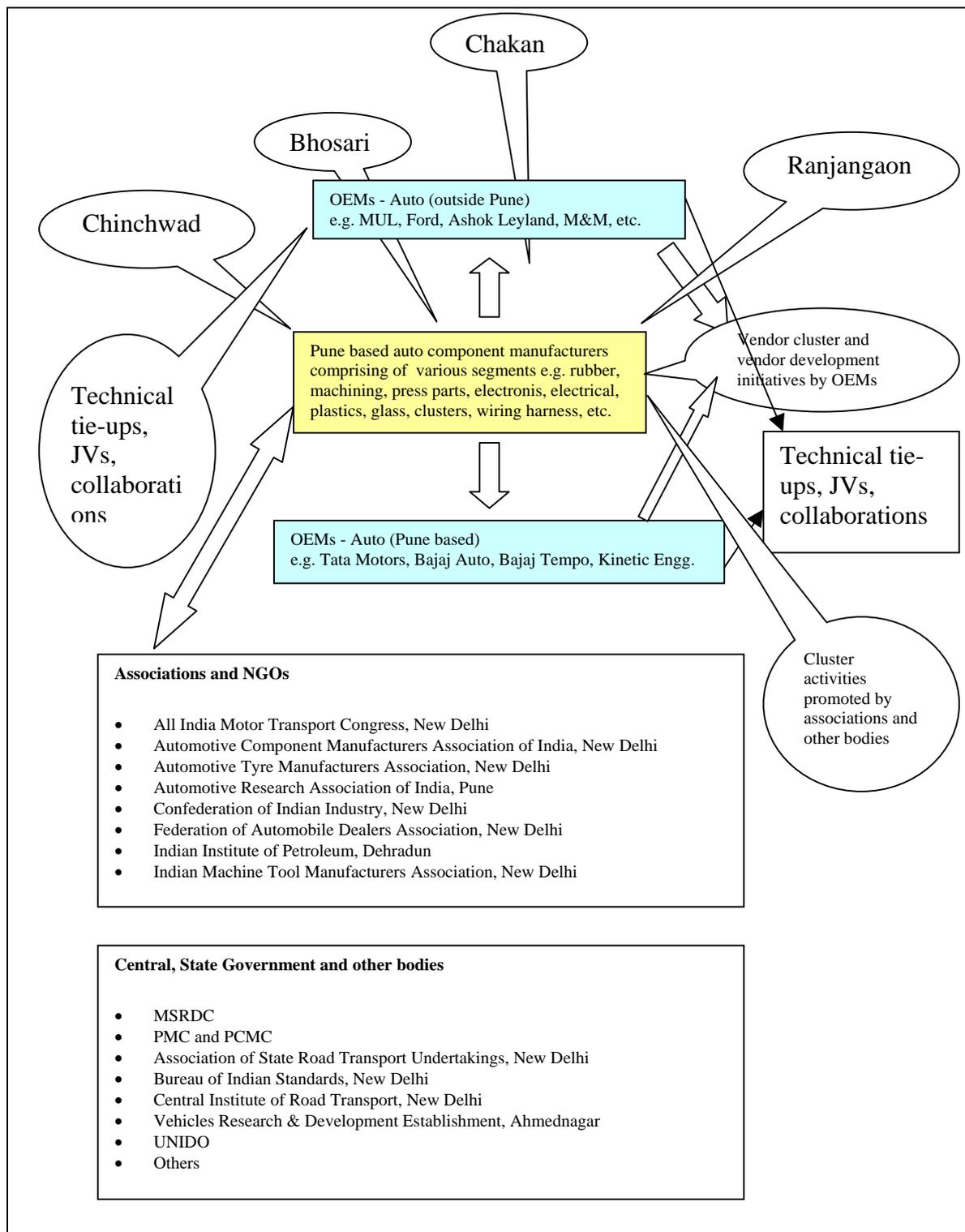
In view of the city's significant role played in the area of Auto, Auto Components, IT and other segments it becomes important to examine the governing mechanism which drives the development and decision making relating to supporting infrastructure, facilities and environment to support and sustain this growth. The process of interaction among various national, state level bodies and association; both government and non-government (some have been listed earlier) to foster this support mechanism need to be examined. This mechanism needs to evolve and lead to problem resolution process for triggering action in order to address needs of auto component manufacturing companies apart from others. The diagram shows the interplay of such bodies and associations in the early part (till 1990) of Pune city's development (Source: Industrial & Commercial Directory of Pune, MCCI). It would be interesting to note that the increase in the population growth, city area growth as well as the vehicle manufacturers growth (refer to facts and findings of the city region) all have registered the significant increase after 1990 which coincides with the beginning of the reformation process in 1990 for the nation as a whole.



Technological Infrastructure in Pune (MCCI 1990)

Based on the interaction with various persons both at industry, associations and government bodies, this mechanism of governance of the auto component manufacturers could be explained by the model presented. The auto component manufacturers (ACM) are by and large driven by two groups of OEMS; one group which are located at Pune and the other group which are located outside Pune. These OEMS basically drive the productivity, quality, cost, delivery and other aspects of the products manufactured by the auto component manufacturers. They also influence the managerial practices through periodic audits and assessment processes. Most of the Pune based ACMs have been members of vendor development activities initiated by OEMS like Maruti, Tata Motors, Bajaj, etc. These

An overview of the governing mechanism and process of meeting the developmental needs for the Pune based auto component manufacturing companies.



activities drove organisational excellence; both managerial and product/ process across the ACM companies. The growth of the ACMs depended on the ability of these companies to achieve lower manufacturing costs and quality excellence apart from other basic factors like delivery, product development, etc. It could be seen from the annexures that the growth of the auto component manufacturers and the growth of the Auto OEMs are similar. This trend could be seen in most of the cases except few cases where the ACMs have aggressively marketed their product abroad or acquired companies outside to boost their export targets. One example of such company is Bharat Forge, Pune which

figured among the top ten exporters among the ACM companies. The expansion and development of new technologies in the ACM companies often got triggered by the joint ventures and technical tie-ups with the foreign counterparts of The OEMS. This could be noted in case of Tata Motors, Bajaj Auto, kinetic Engineering, Bajaj Tempo, et all. Examples of such collaborations and technical tie-ups could be sited from all the four major OEMs who have contributed in a significant way to Pune ACMs growth.

Bajaj Auto	Areas	Collaborator/ tie-ups
1984	Motorcycles	Kawasaki Heavy Industries Ltd, Japan.
1995	Diesel Engine for 3 Wheelers	Kubota Corporation, Japan
1995	Scooter Development	Tokyo R&D Co. Ltd. Japan.
1996	Scooters	CAGIVA Motor spa Italy.

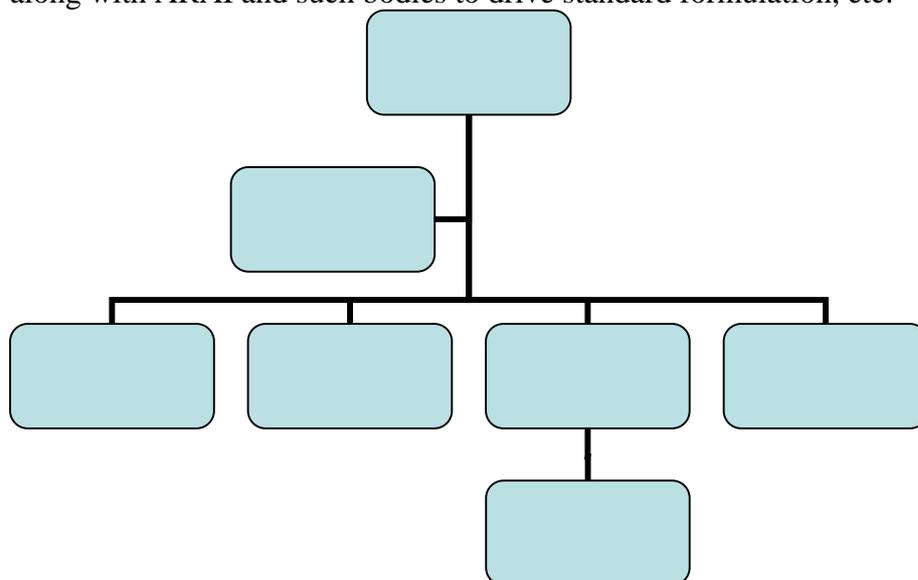
Bajaj Tempo (3 wheeler in collaboration with Vidal & Sohn temp Werke, Germany)	Areas	Collaborator/ tie-ups
1996	Hydraulic valves	Robert Gmbh, Germany,
1996	Germany Cargo velids	ZF Passau Gmbh
1995	Brake Caliper	Wabco Perrot Bromsen , Germany
	Financial Tie up—Daimler Chrysler, Germany, Foreign equity 16.8%	

Kinetic Engg.	Hyosung Motor, South Korea, 125cc & 150 cc 4 stroke motor cycles
Kinetic Motor	1986 Honda motor company ltd. Japan, scooter

Tata Motors	
92-93	AVL list Vmbh, Austria, Development of people & Diesel Engines
93-94	Sclaudt Maschi nenbau Gmbh, Germany CNC cylindrical grinding m/cs
95-96	Robert Bosch Gmbh , Germany, EMS for petrol engine
95-96	LDEA Institute , Italy Design & body styling of small cars
96-97	Nachi - Fujikoshi Corporation , Japan Robots
96-97	Le Moteur Moderne , France, development of diesel & petrol engine

	for small cars
Since 1996	Institute of development in Automotive for Tata Indica and its variants /design of body for small cars and its variants
Since 1996	Le Moteur Modeme, France, Engines for passenger cars Design & development of diesel & petrol engine

Most of the ACM companies are also members of the associations in their respective sectors, e.g. rubber, plastics, machine tools, etc. They are also members of the local chapters like MCCI, Pune, CII, Pune, etc. These chapters and associations interact with the central, state and other institutions like NCL, Pune university, PMC, MSRDC to bring forward their requirements. In order to understand the structure of such associations, it would be appropriate to take up one such associations. The example of ACMA (Automotive Component Manufacturing Association) could be taken up for this purpose. While the central chapter a Delhi take up policy and other matters with center and other associations, the local chapter work through the regional office located at the four regions of India. Pune chapter is attached to Western Zone. One person attached to Pune works along with ARAI and such bodies to drive standard formulation, etc.



ACMA has a president and vice president who are elected every year. It has an executive committee in which there are members who are both elected and coopted. Every region has a regional chairman. All forty-five Pune-based ACMA members are part of western region at Mumbai.

Therefore, the governing mechanism of the city follows a typical top down-bottom up approach where many proposals and recommendations would flow from the organisation through the associations to the regional or state counterpart. From the state or regional counterpart it would flow to the apex body be it government or non-government body for an appropriate action. According to some experts, companies like Telco and Bajaj have contributed to the infrastructure development, by ensuring that there is enough pressure on the local administration to see that things are up to the mark. While this is a typical way the bottom-up or lateral efforts work, there are other cases of top-down approach

where a proactive decision is taken considering the emerging issues or the futuristic projections.

Initiatives also are taken up through central, state and local bodies to bring about changes in the policies, structures and creation of facilities and promoting incentive schemes for planned developments. Development of economic zones, developing IT, BT parks, making of the fly-overs, conversion of express highway to green zone are examples of such planned initiatives. MIDC (Maharashtra Industrial Development Corporation) was instrumental in bringing the development of a large industrial area of 4,000 acres at Bhosari, which brought about a number of industries, small and big to concentrate in this area. The Pimpri-Chinchwad-Bhosari industrial complex is claimed to be one of the largest in the country.

Recently, the IT industry has been viewing Pune to be a better prospect over Bangalore, because of abundant brain power and IT maturity. Realising this inclination of IT industry towards Pune, the Pune Municipal Corporation (PMC) is promoting it as a favourable IT destination. PMC with the director of industries has announced special benefits to attract and facilitate the entry of this industry in Pune. A separate zone has been allotted, speedy clearances and infrastructural facilities are being offered for these projects. In addition MIDC is coming up with a Talegoan High-Tech Park to support Pune's existing strong base of R&D institutions, IT & BT companies. Ernst & Young is assisting MIDC in identifying a strategic JV partner to develop the park. This will help lure many new companies from India and abroad to patronise Pune as their IT destination in the near future.

16. Entrepreneurship and Training

Entrepreneurship and training are two fundamental pillars of corporate life. These to go hand-in-hand. Pune city for some time now has promoted both in various ways and means.

A. One such example is Pune – Bremen Cooperation through MCCI. Bremen is one of the important industrial city port of West Germany. At the initiative of the chambers of commerce in both the cities, a memorandum of understanding was signed between the MCCI (Maharashtra chambers of commerce and industries), Pune and Bremen chambers of commerce, West Germany. This understanding was made to explore new avenues for exports from Pune region to market products to Germany through the assistance provided by Bremen chambers of commerce. These efforts were made to promote exports. An importer's delegation from Bremen to Pune also was organised to help selection of products for export to Bremen. As a part of the MOU, training to the exporters from Pune, provision of a variety of services to the entrepreneurs from Pune etc. also were considered. Not only commercial contacts would be strengthened through such effort but it had also created a platform for the citizens of these two premier cities to exchange and share valuable information about the history, and culture of each city.

B. Pune based ACM companies derived direct help in the form of training as well as towards better entrepreneurship through programmes organised by ACMA. JETRO provided the necessary support. JETRO, or the Japan External Trade Organization, is a

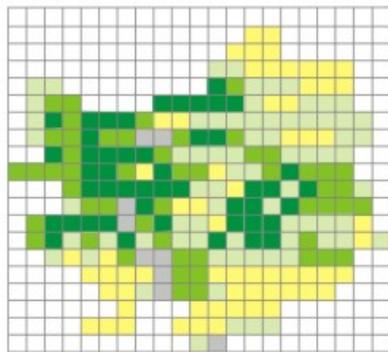
government-related organization that works to promote mutual trade and investment between Japan and the rest of the world. Originally established in 1958 to promote Japanese exports abroad, JETRO's core focus in the 21st century has shifted towards promoting foreign direct investment into Japan and helping small to medium size Japanese firms maximize their global export potential. Local sourcing and procurement of parts and materials is of obvious importance to Japanese automakers seeking to maximize their cost-efficiency and global competitiveness. As such, JETRO is actively involved in nurturing supporting industries, such as machining, mold and die technology, press working, plastic molding and related industries, in areas where Japanese industry is concentrated (primarily Asia, Mexico and South America). JETRO does this by dispatching specialists to these areas to work with local companies and organizations, providing them with technological guidance and training. These efforts help minimize the number of defective products and expand local business opportunities.

Two such visits have been made from JETRO experts to help Auto Component Manufacturers in the area of Sheet Metal and Press Parts. These visits have been organised through ACMA.

17. Environmental Issues

With the number of vehicles going up and the cost of living as well as the number of industries (refer to the 'facts and findings of the region) going up, the pollution level of the city is also going up in several areas. Research and Action in Natural Wealth Administration, Ranwa, Pune, has studied the carbon sequestration capacity of Pune. These estimates were mapped for each sq. km. grid according to the consumption pattern of various economic groups and tree cover density respectively. The chart has been

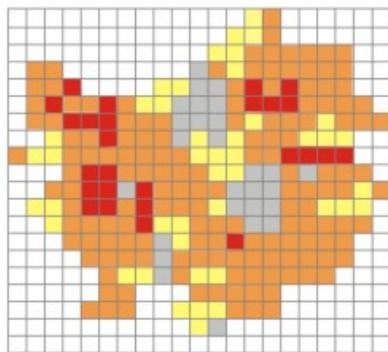
CARBON SEQUESTRATION MAP OF PUNE CITY



TREE COVER ZONES	
ZONE 1 - SEQUESTRATION CAPACITY = 27.5 t/km ² /yr	
ZONE 2 - SEQUESTRATION CAPACITY = 55.0 t/km ² /yr	
ZONE 3 - SEQUESTRATION CAPACITY = 82.5 t/km ² /yr	
ZONE 4 - SEQUESTRATION CAPACITY = 110.0 t/km ² /yr	
ZONE 5 - Well Wooded, Non- Residential area Biomass Variable	

SCALE
1 Grid = 1 sq. Km.

CARBON EMISSION MAP OF PUNE CITY



ECONOMIC CLASSES	
TOP CLASS C - Emission 898.26 kg/capita/yr.	
MIDDLE CLASS C - Emission 265.92 kg/capita/yr.	
LOW CLASS C - Emission 114.86 kg/capita/yr.	
NON RESI. AREAS (Forest + Cantt.)	

SCALE
1 Grid = 1sq. Km.

reproduced here. The study reveals that only 2 % of the total 7.8 lakh tons of Carbon emitted into the atmosphere each year can be trapped by trees, while the remaining 98 % overload contributes to global warming. Rich people generate 34 % of above emission with per capita emission, which is eight times that of the poor. The low sequestration areas of Pune are by and large concentrated around North-West, South East and South East part. This may be attributed to the emergence of residential areas in these parts of Pune. As far as carbon

emission goes most of the city areas come under the Middle class area with 265.92 Kg of emission per capita per year. This indicates need to take priority action to contain the same. Besides promoting tree plantation as a mitigation measure, it is imperative to curtail the consumption of rich citizens by a quarter of the present emission. Some of the solutions forwarded by Research and Action in Natural Wealth Administration, Ranwa, Pune include switching from private transport to public and minimizing consumer goods that are vigorously promoted by globalization.

18. Innovation and learning – ACM companies

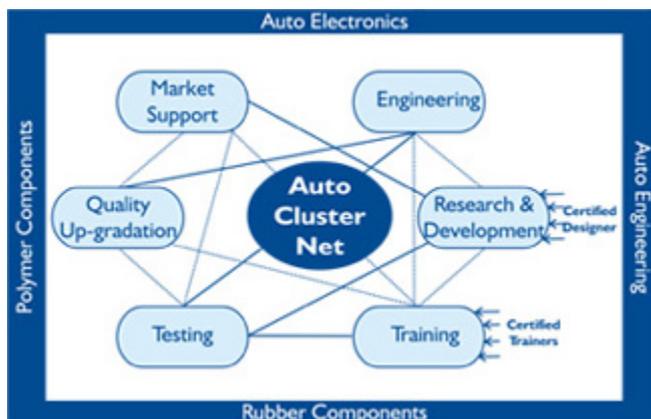
Innovation and learning are integral part of the governing mechanism. Without the innovation and learning mechanism important breakthroughs cannot take place in the development process.

a. Auto Cluster development in Pune city region

One such example of innovation and learning mechanism could be cited by the auto cluster development initiative in the Pune city region to improve the image, efficiency and effectiveness of the cluster companies. This scheme was envisaged to strategically to convert static local efficiency into dynamic competitiveness by:

- Promoting innovation and collective learning.
- Creating suitable customized infra structural support and service network.
- Promoting product design and development through focused support and association with specific R&D institutions.
- Assisting the units in setting up /developing common facilities like testing facilities, design centers, information hub etc.
- Assisting appropriate technology transfer, information sharing and quality improvement.

Established under the Industrial Infrastructure Upgradation Scheme (IIUS) of the department of Industrial policy and promotion, Ministry of Commerce and Industry, Government of India, Auto Cluster is the first of its kind set- up in this Pune zone. Auto Cluster project would be located in the industrial areas of Pimpri-Chinchwad, Pune would play host to some of the important names in the automobile sector. The auto components manufacturers including rubber and polymer associations had joined hands in the promotion and development of this cluster. Institutes including engineering colleges, R&D institutes, component manufacturers and their associations, Banks, Financial Institutions and various Government Agencies have become involved in this project. Auto Cluster targets industries like CAD / CAM, Polymer, Auto Electronics, Auto Engineering, Rubber components and general engineering sectors.



B. Small Industries Cluster Development Programme : The Ministry Of SSI's new thrust

Keeping in view need to launch a broad-based participative Cluster Development Initiative with a holistic approach, an earlier scheme of the DC(SSl) has now been renamed as “Small Industry Cluster Development Programme”. The Ministry is now set to start a large number of Cluster Development initiatives across the country. Twenty one clusters have been selected in July 2003 for cluster development by the DC(SSl) out of the 358 Indian SSI Clusters surveyed and listed by UNIDO. Discussions have been held with State Governments, local Industries Associations, Financial Institutions and other organizations involved in promotion of SSIs while selecting the clusters. It is now proposed to select 20 more clusters in near future for development under the same programme. Pune figures among the list as a region for promoting Automotive Cluster to address the objectives mentioned earlier. This cluster has almost come to the end of its projected period with satisfactory results achieved in most of the factors originally listed as a part of the automotive cluster companies slated objectives.

While selecting the clusters the following process steps were followed:

- Selection of the Cluster
- Selection of a Cluster Development Agent
- Diagnostic Study
- Preparation of Action Plan for intervention
- Approval of the project and release of funds through leveraging
- Implementation of Trust Building between Cluster Actors and Cluster Development Agent, and also among Cluster Actors
- Monitoring and Evaluation
- Self Management Phase

Credit needs of the clusters were met through (source: Ministry of Small Scale Industries, Government of India) cluster based credit plans. A high level meeting to review disbursement of Credit to SSI Sector was held in June, 2003 under the chairmanship of Deputy Governor, RBI attended by Secretary (SSI) and top officials of major Banks. In the meeting, it was decided that RBI will seek Ministry of SSI's advise regarding 60 SSI clusters to be identified for focused development of SSI's. It was also decided that RBI will disseminate the list of such clusters to all public sector banks for initiating further necessary action and incorporating their credit requirements in State Credit Plans. At the State Level Bankers Committee (SLBC) level, a sub group of bankers and the State Government officials would be set up to resolve various issues arising on financing in the clusters and to report the development to SLBC. This is a typical example of innovative and learning mechanism to bring about development in the companies through central, state and local interfaces.

SIDO's publication on Cluster Development highlights the various initiatives taken by different agencies for promoting cluster development. One of the key subjects slated for discussion on clusters is the promotion of public - private partnership for building up requisite infrastructure in clusters. While financial support is available through various schemes of Government which is the public component, innovative financing methods including SPVs, BOT, long term bonds etc. need to be explored to catalyse the private component. Monetary returns on such infrastructure will be an important prerequisite for attracting private capital.

C. New Industrial Townships

Government of Maharashtra has made statutory amendments to enable the establishment of independent Industrial Townships. In the first phase, self-governing Industrial Townships with the power to raise resources and determine their application will be established in industrial areas being developed by MIDC at twelve locations across the State, i.e. at Vile-Bhagad (Raigad), Airoli (Thane), Talegaon (Pune), Hinjewadi - Man (Pune), Shendre (Aurangabad), Additional Latur (Latur), Nandgaon Peth (Amravati), Additional Yavatmal (Yavatmal), Tadali (Chandrapur), Butibori (nagpur), Additional Sinnar (Nashik) and Nardhana (Dhule). The industrial townships so set up will pay 25% of their revenue to the concerned Gram Panchayat(s) or local bodies for the initial period of 5 years.

The self governing rules of generating resources and determining application would primarily decide the effectiveness of this initiative. This is a good initiative to bring empowerment at the local level. In Pune, talegaon and Hinjewadi locations would benefit out of this.

C. Bharatiya Yuva Shakti Trust (BYST), Pune help the tiny sectors based at Pune to take up businesses which are mentored by professionals from industry with adequate qualifications. BYST provides loan at low interest rates and also guides the tiny sector people to pursue their business successfully. BYST develops entrepreneurs by providing young disadvantaged people in India with loans against no collaterals and a business guru. BYST chapter in Pune has been effectively carrying out this programme for several years now. According to BYST, the concept of entrepreneurship development began taking roots in Pune. The business community both nationally and internationally started realising that entrepreneurship development is the key to tackle the global unemployment problem. This necessitated a partnership between non -governmental organisations and the corporate sector. In the midst of this scenario BYST was approached by DIAGEO, a multinational, to launch a youth entrepreneurship development programme in Pune (Western India) in 1994. CII, which was already a support partner to BYST in Delhi and Chennai, came forward to provide the infrastructure and managerial support.

21. ANNEXURES

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- A2. Industrial policy of Maharashtra 2001**
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- A7. Auto Component Industry Performance in India As A Whole (In Us \$ Mil)**

A1. AUTO POLICY OF GOVERNMENT OF INDIA

VISION

TO ESTABLISH A GLOBALLY COMPETITIVE AUTOMOTIVE INDUSTRY IN INDIA AND TO DOUBLE ITS CONTRIBUTION TO THE ECONOMY BY 2010

POLICY OBJECTIVES

This policy aims to promote integrated, phased, enduring and self-sustained growth of the Indian automotive industry. Some of the salient objectives are to:-

- Establish an international hub for manufacturing small, affordable passenger cars and a key center for manufacturing Tractors and Two-wheelers in the world;
- Ensure a balanced transition to open trade at a minimal risk to the Indian economy and local industry;
- Conduce incessant modernization of the industry and facilitate indigenous design, research and development;
- Steer India's software industry into automotive technology;
- Assist development of vehicles propelled by alternate energy sources
- Development of domestic safety and environmental standards at par with international standards

FOREIGN DIRECT INVESTMENT

Automatic approval for foreign equity investment upto 100% of manufacture of automobiles and component is permitted.

INCENTIVE FOR RESEARCH AND DEVELOPMENT

The Government shall promote Research & Development in automotive industry by strengthening the efforts of industry in this direction by providing suitable fiscal and financial incentives.

ENVIRONMENTAL ASPECTS

1. The automotive and oil industry have to heave together to constantly fulfill environment imperatives. The Government will continue to promote the use of low emission fuel auto technology.

2 The Government after considering the recommendations of the Expert Committee on Auto Fuel Policy headed by Dr. R.A. Mashelkar, have approved a road map for implementation for the auto fuel quality consistent with the required levels of vehicular emissions norms and environmental quality. The Government will formulate a comprehensive auto fuel policy covering the other related aspects and ensure availability of appropriate auto fuel/fuel mixes at minimum social costs across the country. Suitable

institutional mechanism will be put in place for certification, monitoring and enforcement of different technologies/fuel mixes. Appropriate fiscal measures will be devised to achieve milestones in the roadmap for implementation of auto fuel policy.

3 In the short run, the Government will encourage the use of short chain hydrocarbons along with other auto fuels of the quality necessary to meet the vehicular emissions norms.

4 There is prime need to support the development and introduction of vehicles propelled by energy sources other than hydrocarbons by promoting appropriate automotive technology. Hybrid vehicles and vehicles operating with batteries and fuel cells are alternatives to the conventional automobile, which in their early beginnings, lie intreasured. As an impetus for the development of such vehicles, an appropriate long-term fiscal structure shall be put in place to facilitate their acceptance vis-à-vis vehicles based on conventional fuels.

SAFETY

Government will duly amend the Central Motor Vehicles Rules, Bureau of Indian Standards (BIS) and other relevant provisions and introduce safety regulations that conform to global standards.

A2. INDUSTRIAL POLICY OF MAHARASHTRA 2001 (Source: Ministry of Small Scale Industries, Government of India)

The economic reforms initiated in the country in 1991 brought about a paradigm shift in the approach to economic growth, industrialization and income distribution. A number of control regimes were dismantled in the areas of industrial policy, taxation, export-imports and foreign investment. De-licensing of industry, de-reservation of the public sector, easing of competition controls, reduction of import tariffs, deregulation of interest rates, and opening up of capital markets were among the reforms undertaken to encourage investment and capital formation.

The Industrial Policy of Maharashtra 1993 mainly aimed at simplification of procedures and rationalization of rules and the **Industry, Trade & Commerce Policy 1995** aimed at empowering people at all levels with special focus on infrastructure development with private sector participation. A comprehensive **Information Technology Policy** was announced in 1998, keeping in view the importance of the financial sector, media and entertainment, and health, education and research.

Strategies:

The State has entered into the phase of second generation economic reforms, with emphasis on structural changes in addition to fiscal incentives for the promotion of industry and balanced regional growth. This has coincided with increasing international competition and rapid technological changes, which pose new challenges for industry. The Industrial Policy 2001 has been formulated in this context, keeping in view the objectives of sustained growth and employment and an expansion in livelihood opportunities. It supplements the provisions of the Information Technology and other sectoral policies announced earlier. The components of the new Package Scheme of Incentives contained in this Policy will be operative from 1st April, 2001 upto 31st March, 2006:

New industries establishing in C, D, and D+ areas in a No-Industry District(s) will be exempted from payment of Electricity Duty for a period of 15 years. In other parts of the State, 100% Export Oriented Units (EOUs), Information Technology (IT) and Bio-Technology (BT) units, and industries setting up in Special Economic Zones (SEZs), and Electronic Hardware Technology Parks will be exempted from payment of Electricity Duty for a period of 10 years.

New Industrial Townships: Maharashtra pioneered the establishment of institutions of democratic decentralizations and local self-governance several decades ago. More recently, these concepts were extended through statutory amendments to enable the establishment of independent Industrial Townships. In the first phase, self-governing Industrial Townships with the power to raise resources and determine their application will be established in industrial areas being developed by MIDC at twelve locations across the State, i.e. at Vile-Bhagad (Raigad), Airoli (Thane), Talegaon (Pune), Hinjewadi - Man (Pune), Shendre (Aurangabad), Additional Latur (Latur), Nandgaon Peth (Amravati), Additional Yavatmal (Yavatmal), Tadali (Chandrapur), Butibori (Nagpur), Additional Sinnar (Nashik) and Nardhana (Dhule). The industrial townships so set up will pay 25% of their revenue to the concerned Gram Panchayat(s) or local bodies for the initial period of 5 years.

Promotion of Education and Research Institutions: Educational and research institutions of international or national standards, including world-class business education institutions, would be provided land in industrial areas/estates at nominal or concessional rates.

A3. Emission Standards (Source: SIAM)

INTRODUCTION

The automobile industry has to address the following issues at all the stages of vehicle manufacture:

- Environmental Imperatives
- Safety Requirements
- Competitive Pressures and
- Customer Expectations

There is a strong interlinking amongst all these forces of change, influencing the automobile industry. These have to be addressed consistently and strategically to ensure competitiveness.

Since pollution is caused by various sources, it requires an integrated, multidisciplinary approach. The different sources of pollution have to be addressed simultaneously in order to stall widespread damage.

THE PARAMETERS DETERMINING EMISSION FROM VEHICLES

- Vehicular Technology
- Fuel Quality
- Inspection & Maintenance of In-Use Vehicles
- Road and Traffic Management

While each one of the four factors mentioned above have direct environmental implications, the vehicle and fuel systems have to be addressed as a whole and jointly optimised in order to achieve significant reduction in emission.

VEHICULAR TECHNOLOGY

In India, the vehicle population is growing at rate of over 5% per annum and today the vehicle population is approximately 40 million. The vehicle mix is also unique to India in that there is a very high proportion of two wheelers (76%).

History of Emission Norms in India

The significant environmental implications of vehicles cannot be denied. The need to reduce vehicular pollution has led to emission control through regulations in conjunction with increasingly environment-friendly technologies.

It was only in 1991 that the first stage emission norms came into force for petrol vehicles and in 1992 for diesel vehicles.

From April 1995 mandatory fitment of catalytic converters in new petrol passenger cars sold in the four metros of Delhi, Calcutta, Mumbai and Chennai alongwith supply of Unleaded Petrol (ULP) was affected. Availability of ULP was further extended to 42 major cities and now it is available throughout the country.

The emission reduction achieved from pre-89 levels is over 85% for petrol driven and 61% for diesel vehicles from 1991 levels.

In the year 2000 passenger cars and commercial vehicles will be meeting Euro I equivalent India 2000 norms, while two wheelers will be meeting one of the tightest emission norms in the world.

Euro II equivalent Bharat Stage II norms are in force from 2001 in 4 metroes of Delhi, Mumbai, Chennai and Kolkata.

Since India embarked on a formal emission control regime only in 1991, there is a gap in comparison with technologies available in the USA or Europe. Currently, we are behind Euro norms by few years, however, a beginning has been made, and emission norms are being aligned with Euro standards and vehicular technology is being accordingly upgraded. Vehicle manufactures are also working towards bridging the gap between Euro standards and Indian emission norms.

FUEL TECHNOLOGY

In India we are yet to address the vehicle and fuel system as a whole. It was in 1996 that the Ministry of Environment and Forests formally notified fuel specifications. Maximum limits for critical ingredients like Benzene level in petrol have been specified only recently and a limit of 5% m/m and 3% m/m has been set for petrol in the country and metros respectively.

In place of phase-wise upgradation of fuel specifications there appears to be a region-wise introduction of fuels of particular specifications. The high levels of pollution have necessitated eliminating leaded petrol, through out the country.

To address the high pollution in 4 metro cities 0.05% sulphur petrol & diesel has been introduced since 2000-2001. The benzene content has been further reduced to 1% in Delhi and Mumbai.

There is a need for a holistic approach so that upgradation in engine technology can be optimised for maximum environmental benefits.

A4. Milestones – Bajaj Auto

2004 - September

Bajaj Discover DTS-i launched

New Bajaj Chetak 4 stroke with Wonder Gear launched

Bajaj CT100 Launched

Bajaj unveils new brand identity, dons new symbol, logo and brandline

2003

Pulsar DTS-i is launched.

107,115 Motorcycles sold in a month.

Bajaj Wind 125, The World Bike, is launched in India.

Bajaj Auto launched its Caliber 115 "Hoodibabaa!" in the executive motorcycle segment.

Bajaj Auto launches its latest offering in the premium bike segment 'Pulsar'.

The Eliminator is launched.

1999

Caliber motorcycle notches up 100,000 sales in record time of 12 months.

Production commences at Chakan plant.

1998

Kawasaki Bajaj Caliber rolls out of Waluj.

Legend, India's first four-stroke scooter rolls out of Akurdi.

Spirit launched.

1997

The Kawasaki Bajaj Boxer and the RE diesel Autorickshaw are introduced.

1995

Bajaj Auto is 50.

Agreements signed with Kubota of Japan for the development of diesel engines for three-wheelers and with Tokyo R&D for ungeared Scooter and moped development.

The Bajaj Super Excel is introduced while Bajaj celebrates its ten millionth vehicle.

One million vehicles were produced and sold in this financial year.

1986

The Bajaj M-80 and the Kawasaki Bajaj KB100 motorcycles are introduced.

500,000 vehicles produced and sold in a single financial year.

1977

The Rear Engine Autorickshaw is introduced.

Bajaj Auto achieves production and sales of 100,000 vehicles in a single financial year.

1972

The Bajaj Chetak is introduced.

1970

Bajaj Auto rolls out its 100,000th vehicle.

1959

Bajaj Auto obtains licence from the Government of India to manufacture two- and three-wheelers.

1945

Bajaj Auto comes into existence as M/s Bachraj Trading Corporation Private Limited.

A5. Milestones - Tata Motors)

It has been a long and accelerated journey for Tata Motors, India's leading automobile manufacturer. Some significant milestones in the company's journey towards excellence and leadership.

1945

- Tata Engineering and Locomotive Co. Ltd. was established to manufacture locomotives and other engineering products.

1948

- Steam road roller introduced in collaboration with Marshall Sons (UK).

1954

- Collaboration with Daimler Benz AG, West Germany, for manufacture of medium commercial vehicles. The first vehicle rolled out within 6 months of the contract.

1959

- Research and Development Centre set up at Jamshedpur.

1961

- Exports begin with the first truck being shipped to Ceylon, now Sri Lanka.

1966

- Setting up of the Engineering Research Centre at Pune to provide impetus to automobile Research and Development.

1971

- Introduction of DI engines.

1977

- First commercial vehicle manufactured in Pune.

1983

- Manufacture of Heavy Commercial Vehicle commences.

1985

- First hydraulic excavator produced with Hitachi collaboration.

1986

- Production of first light commercial vehicle, Tata 407, indigenously designed, followed by Tata 608.

1989

- Introduction of the Tatamobile 206 - 3rd LCV model.

1991

- Launch of the 1st indigenous passenger car Tata Sierra.
- TAC 20 crane produced.
- One millionth vehicle rolled out.

1992

- Launch of the Tata Estate.

1993

- Joint venture agreement signed with Cummins Engine Co. Inc. for the manufacture of high horsepower and emission friendly diesel engines.

1994

- Launch of Tata Sumo - the multi utility vehicle.
- Launch of LPT 709 - a full forward control, light commercial vehicle.
- Joint venture agreement signed with M/s Daimler - Benz / Mercedes - Benz for manufacture of Mercedes Benz passenger cars in India.
- Joint venture agreement signed with Tata Holset Ltd., UK for manufacturing turbochargers to be used on Cummins engines.

1995

- Mercedes Benz car E220 launched.

1996

- Tata Sumo deluxe launched.

1997

- Tata Sierra Turbo launched.
- 100,000th Tata Sumo rolled out.

1998

- Tata Safari - India's first sports utility vehicle launched.
- 2 millionth vehicle rolled out.
- Indica, India's first fully indigenous passenger car launched.

1999

- 115,000 bookings for Indica registered against full payment within a week.
- Commercial production of Indica commences in full swing.

2000

- First consignment of 160 Indicas shipped to Malta.
- Indica with Bharat Stage 2 (Euro II) compliant diesel engine launched.
- Utility vehicles with Bharat 2 (Euro II) compliant engine launched.
- Indica 2000 (Euro II) with multi point fuel injection petrol engine launched.
- Launch of CNG buses.
- Launch of 1109 vehicle - Intermediate commercial vehicle.

2001

- Indica V2 launched - 2nd generation Indica.
- 100,000th Indica wheeled out.
- Launch of CNG Indica.
- Launch of the Tata Safari EX
- Indica V2 becomes India's number one car in its segment.
- Exits joint venture with Daimler Chrysler.

2002

- Unveiling of the Tata Sedan at Auto Expo 2002.
- Petrol version of Indica V2 launched.
- Launch of the EX series in Commercial vehicles.
- Launch of the Tata 207 DI.
- 2,00,000th Indica rolled out.
- 5,00,000th passenger vehicle rolled out.
- Launch of the Tata Sumo'+ Series
- Launch of the Tata Indigo.
- Tata Engineering signed a product agreement with MG Rover of the UK.

2003

- Launch of the Tata Safari Limited Edition.
- The Tata Indigo Station Wagon unveiled at the Geneva Motor Show.
- On 29th July, J. R. D. Tata's birth anniversary, Tata Engineering becomes Tata Motors Limited.
- 3 millionth vehicle produced.
- First CityRover rolled out
- 135 PS Tata Safari EXi Petrol launched

- Tata SFC 407 EX Turbo launched

2004

- Tata Motors unveils new product range at Auto Expo '04.
- New Tata Indica V2 launched
- Tata Motors and Daewoo Commercial Vehicle Co. Ltd. sign investment agreement
- Indigo Advent unveiled at Geneva Motor Show
- Tata Motors completes acquisition of Daewoo Commercial Vehicle Company
- Tata LPT 909 EX launched
- Tata Daewoo Commercial Vehicle Co. Ltd. (TDCV) launches the heavy duty truck 'NOVUS' , in Korea
- Sumo Victa launched
- Indigo Marina launched
- Tata Motors lists on the NYSE

2005

- Tata Motors rolls out its 500,000 th Passenger Vehicle
- The Tata Xover unveiled at the 75th Geneva Motor Show
- Branded buses and coaches - Starbus and Globus - launched
- Tata Motors acquires 21 % stake in Hispano Carrocera SA, Spanish bus manufacturing Company
- Tata Ace, India's first mini truck launched

A6. LIST OF PUNE BASED AUTO COMPONENT MANUFACTURERS WHICH ARE MEMBERS OF ACMA (Source: www.acmainfo.com)

Company	Products
<u>Ashra Consultants Pvt. Ltd.</u>	Air, Lube Oil, Fuel Filters, Air Oil, Fuel Water Separators, Separation and Filtration Solutions filters and separators, upto 2000 cfm, suction filters, air filters, air oil separators, air cleaner assemblies.
<u>AUTO ELECTRONICS</u>	MANUFACTURER OF ELECTRONICS ITEMS FOR TWO, THREE & FOUR WHEELERS
<u>Autofield Engineers Private Limited</u>	IC ENGINE VALVE Inlet & Exhaust valves for internal combustion Engines of all types
<u>Automotive Stampings & Assemblies Limited</u>	Sheet Metal Components, Assemblies, Modules & Aggregates.

Bharat Forge Ltd.	Steel forgings and finish machined components AUTOMOTIVE: Crankshafts, Front axle beams & Steering knuckles (forged & machined); Connecting Rods, Camshafts & Rocker Arms (Forged). NON AUTOMOTIVE: Forged & Machined components for oilfield industry; Forged & Machined components (Open die forgings) for sugar, cement, steel, mining, power, chemical, forging, fertilizer, shipbuilding industries & general engineering equipment
<u>Caltherm Thermostats Pvt Ltd.</u>	Automotive & Heavy Duty Thermostats
<u>Chaphekar Engineering Pvt. Ltd.</u>	Hand Brake Assy., Bonnet Lock, Steering Column, Radiator Frames Strainer, Brackets, LCV & MCV LOAD BODIES.
<u>Dali & Samir Engineering Pvt. Ltd.</u>	Fuel tanks, Exhaust Systems, auto components
<u>DGP Hinoday Industries Ltd.</u>	Ceramic Arc Segment magnets, Ceramic ring magnets, Ferrite core magnets, Colour deflection yoke core magnets, S.G. Iron Automotive castings
<u>Dyna-K Automotive Stampings Pvt. Ltd.</u>	Sheet Metal Press Parts for Automtove Application
<u>Enginetech Systems Pvt. Ltd.</u>	REAR VIEW MIRROR, AIR FILTER, AUXILARY WATER TANK, BRAKE OIL TANK, SERVICE INDICATOR, WATER SEPARATOR REAR VIEW MIRRORS BRAKE OIL TANK SERVICE INDICATOR FUEL WATER SEPARATOR SAFETY SEAT BELTS AIR FILTER
<u>G.B. Rubber Products</u>	RUBBER TO METAL BONDED *Engine Mountins, Isolator, Buffers, Dampers, Tentioner Cam Chain, Guide Cam Chain, LInk Bushes OTHER THAN METAL BONDED Viton MultiLip Seal, O Rings, Bellows, W/C Boot for brake system, components in shokc absorber & struts, component for vaccum brake, CV Boots
<u>GKN Sinter Metals Ltd</u>	Sintered Bearings & Parts, Sintered Automotive Components, Filters & Metal Powders
<u>Indo Schottle Auto Parts Pvt. Ltd.</u>	1. Engine Valve Collets 2. Rocker Arm Screws 3. Turbocharger components viz. Oil Seal Plates, Journal Bearings and Wastegate Bushings 4. Other precision parts viz. Fuel System Parts, Gear Pump Bushings

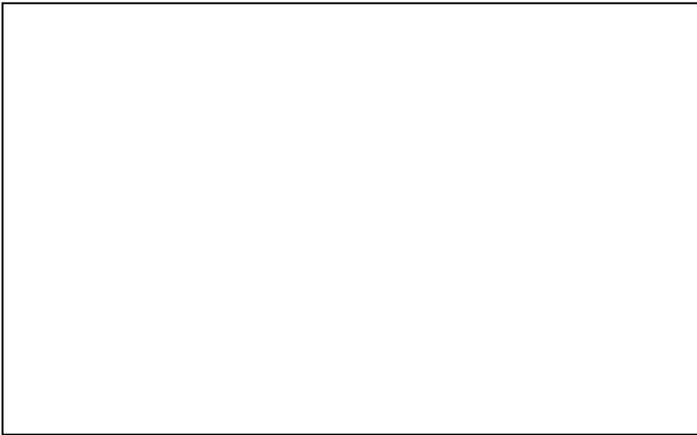
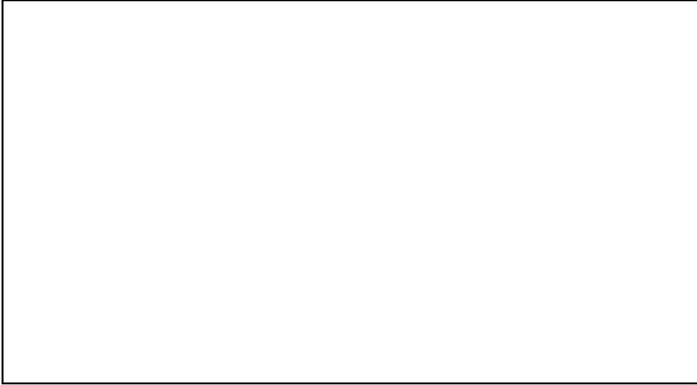
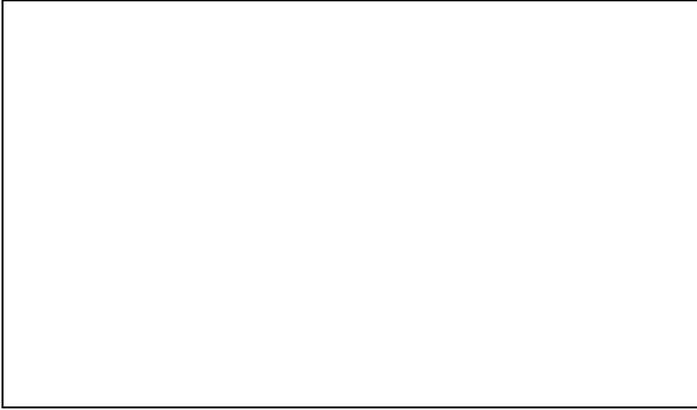
<u>Jaya Hind Industries Ltd.</u>	Die cast components, Auto electrical, Magnetos, AC Generators and Ignition coils
<u>Kailash Vahan Udyog Ltd.</u>	Sheet Metal Components, Load Bodies – LCV, MCV, Trailors, Tippers Buses.
<u>Kalyani Brakes Ltd.</u>	Air & Hydraulic Brake systems Hydraulic, Air & Air over hydraulic brake components
<u>Kemen Springs Pvt. Ltd.</u>	All types of springs within a range of wire dia 0.2mm to 5.0mm
<u>Kirloskar Oil Engines Ltd.</u>	Bearing, Bushes, T/washers Thin walled engine bearings, Bushes, Thrust washers and engine valves
<u>Mahle Filter Systems (India) Pvt. Ltd.</u>	AIR, OIL, FUEL, CANISTER FILTERS
<u>Metlon Engineers Pvt Ltd.</u>	Sheet metal pressed and fabricated components for Automobile industries
<u>Minda Stoneridge Instruments Ltd.</u>	Instrument cluster, Speedometer, Tank unit/Gauges etc
<u>Motherson Sumi Systems Ltd.</u>	wiring harness
<u>Panse Autocomps Pvt. Ltd.</u>	Sheet metal pressings, Assemblies and Aggregates
<u>Patodia Glass Industries Ltd.</u>	Automobile Bulbs
<u>Pefco Foundry (A Div. of Kores (India) Ltd.)</u>	Ductile Iron Castings, Valve Seat Inserts, Tappet Valves, Centrifugally Cast Cylinder Liners.
<u>Polybond India Pvt. Ltd.</u>	High performance moulded rubber parts, Rubber-to-Metal bonded parts, Rubber Hoses
<u>Poona Shims Pvt. Ltd.</u>	OIL COOLERS
<u>Rinder India Pvt Ltd.</u>	Automotive Lightings & Signaling Equipments. Head lamps, Tail lamps, Indicators, Reflex reflector
<u>Rojee-Tasha Stampings Pvt. Ltd.</u>	Heavy Sheet Metal Stampings Automotive pressings
<u>RSB Transmissions (I) Ltd.</u>	Manufacturing Fully finished automotive Gears, Propeller Shaft Components, Machined components such as exhaust manifold, Housing etc.
<u>S M Auto Engineering</u>	RADIATOR EXHAUST SYSTEM AIR FILTER

<u>Pvt. Ltd.</u>	FUEL TANK SILENCER
<u>Saint-Gobain Sekurit India Ltd.</u>	Tempered & Laminated Automotive Safety Glass
<u>Shutham Electric Ltd.</u>	Steering column mounted combination switch, Window lift switch, Facia switch, Mirror adjustment switch, Transfer case selection switch, Hazard warning switch, Glove box switch, Door ajar switch, Battery isolator switch, Reverse light & Low pressure switch
<u>Siemens VDO Automotive Ltd.</u>	Auto components e.g. wiring harness
<u>Spaco Carburettors (India) Ltd</u>	Carburettors for 2 & 3 Wheelers (auto components)
<u>Syndicate Exhaust Systems (P) Ltd.</u>	Silencer Exhaust System
<u>Tata Auto Plastic Systems Ltd</u>	Automotive Interiors & Exteriors
<u>Tata Ficosa Automotive Systems Ltd.</u>	Rear view mirrors, Command & Control cables, Parking brake lever, Gear shifter and Windshield washer system
<u>Tata Johnson Controls Automotive Ltd</u>	Seating System
<u>Tata Toyo Radiator Ltd.</u>	Aluminium Brazed Heat Exchangers
<u>Tata Yazaki Autocomp Ltd.</u>	WIRING HARNESS FOR AUTOMOTIVES
<u>Tyco Electronics India</u>	Design, Development and Manufacturing of Cable Assembly/Harnessing For Domestic Appliances For Exports 1. Designed & Developed end-to-end harnessing system for Indica - the first indigenously developed small car in India 2. Cable assys for antilock Braking System & Air bag 3. End-to-end harnessing system for Sumo (Multi utility vehicle) 4. End-to-end harnessing system for Mobile (Multi utility vehicle) 5. End-to-end harnessing system for Magna (Luxury car Under Development) We export to countries world wide : USA France Germany Japan Great Britain Holland Singapore
<u>Western Pressing Pvt Ltd.</u>	MANUFACTURERS OF EXHAUST SYSTEMS FOR AUTOMOBIL
<u>ZF Steering Gear (India)</u>	Integral Hydraulic Power Steering Gears and

Ltd.

Mechanical Steering gears for Automotive
Applications

**A7. AUTO COMPONENT INDUSTRY PERFORMANCE IN INDIA AS A
WHOLE (IN US \$ MIL)**



22. REFERENCES

1. <http://www.ciionline.org>
2. <http://acmainfo.com/#stat>
3. <http://www.mcciapune.com/>
4. <http://www.virtualpune.com>
5. <http://www.thebharat.com>

6. <http://indiaimage.nic.in/>
7. <http://goidirectory.nic.in>
8. <http://goidirectory.nic.in>
9. <http://www.maharashtra.gov.in/>
10. <http://www.punediary.com>
11. <http://www.dgciskol.nic.in/>
12. <http://www.gipe.ernet.in>
13. <http://www.siamindia.com>
14. <http://www.indiainfoline.com>
15. <http://www.midcindia.org/>
16. <http://www.smallindustryindia.com>
17. <http://www.wto.org>
18. <http://www.business-standard.com>
19. <http://economictimes.indiatimes.com>
20. <http://www.stat.ufl.edu>
21. <http://www.worldhistory.com>
22. <http://www.reuters.com>
23. <http://www.valuebasedmanagement.net>
24. <http://prdomain.com>
25. <http://www.tata.com>
26. <http://www.millenniumassessment.org>
27. <http://ces.iisc.ernet.in>
28. <http://ces.iisc.ernet.in>
29. <http://web.kbl.co.in>
30. <http://bystonline.org>
31. <http://autoclusterpune.org>
32. Industrial & Commercial Directory of Pune, Mahratta Chamber of Commerce & Industries, Pune, 1972, 1978, 1985, 1990, 1995, 2002).
33. Ph.D Thesis: Large Scale Industries of Maharashtra, Pendse
34. M.Phil Report: Appraisal of Industrial Estate Programme form 1955 to 1975