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Effects of Industrial Activities on Land Occupation in Ahmedabad – India

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Abstract

1 Since industrialization started in Ahmedabad in 1950s, the city becomes larger and larger in terms of population and size. The growth of Ahmedabad city is highly affected by three urban generators on eastern part of the city: which are the three GIDC industrial estates. The research' aim is to identify and analyze the urban shape caused by the industrial activities and business activity that occupy public areas and streets. Since industrial activities became urban generators to change the use of land, from agriculture into developed land, it has affected the physical morphology of the urban areas. As long as the urban generators exist, business activities also exist in both formal and informal. The formal commercial activity is developed in order to provide facilities for the workers particularly. Street vendor and hawkers also grow on the surrounding areas; along the main street and nearby the worker's facility inside the industrial estates. The existence of informal sector on these areas give an idea that industrial activity not only causes the change of land occupation, but also encourages the growth of informal commercial activity.

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Keywords: urban morphology, industrialization, informal sector

Introduction

Ahmedabad is the largest city in Gujarat state and the seventh largest city in India. It has been a fast growing city since its inception in 1411. Industrialization in Ahmedabad was highly generated by the cotton mills industry in the year of 1950s. During the year of 1960's, there were three industrial estates developed on the eastern outskirts of the city: Vatva, Odhav and Naroda; which were located outside the municipal authority. The three estates are under management of GIDC on Gujarat state level. Industrial activity of the three estates generates occupation of land in its surrounding area. The surrounding area becomes more and more developed and is occupied for residential and commercial uses. Furthermore, due to the city development triggered by the

increase in population, the area between the walled-city and the three industrial areas has experienced a great change.

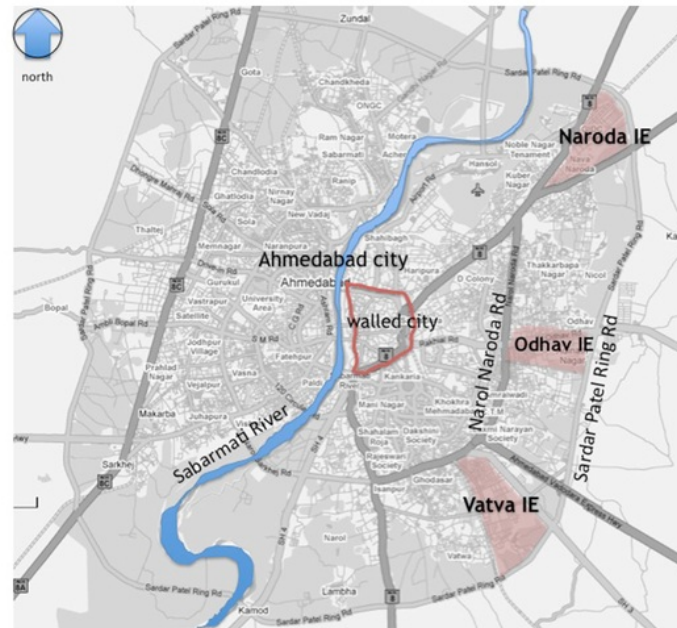


Figure 1. Location of the GIDC industrial estates in Ahmedabad

The paper based on research carried out in Ahmedabad, India from November 2008 to June 2009 with main objectives are: **to identify and analyze** Ahmedabad' **urban** area particularly generated **by the industrial activity** of GIDC industrial estates; to identify the use of public-space and streets for informal commercial uses (street vendor/ hawker) along main roads of the case study; and to identify the nature of linkages between the industrial estates and street vendor/ hawker activity.

The researcher undertook mainly qualitative approach, with three types of data collection: document/ literature study, land use survey, and a range of interviews. Document study of current town planning and literature study of related project regarding Ahmedabad' city growth will be used as a secondary data in analyzing the city growth related to the industrial activity

caused by the three cases study. Land use survey was taken in order to prepare map of street vendor location on each case study. The range and type of street vendor were defined by classifying each business according to types of retailer, goods of selling and degree of permanency. Interviews was useful in addressing information from planner in town planning authority: AUDA - Ahmedabad Urban Development Authority, planner in municipal authority: AMC – Ahmedabad Municipal Corporation, and director/secretary of industrial estates management: GIDC – Gujarat Industrial Development Corporation. The semi-structured interview was designed in addressing information from business proprietors of informal commercial activity. Almost ten percent of total street vendor on these areas became interviewees of the research in various locations inside the estates. In each case study, two or three vendors were the main source for in-depth interviews.

Background theory

According to Balchin, Isaac and Chen (2000) on their book entitled ‘Urban Economics’, industrial activity is a prime determinant in shaping city size and growth opportunities especially in developing country. Driven by industrialization, the city has become larger and larger in terms of population and size. In most Indian cities, such Ahmedabad, increasing number of both formal and informal economic activity always follows growth of city, because enlarging the urban size means more people need affordable and accessible goods/ service for living with high variety of price.

According to their level of industrialization, developing countries have been categorized into three groups (Balchin, Isaac & Chen 2000): maturing industrializing, contemporary industrializing and emerging industrializing countries. India has been classified into contemporary industrializing countries since the majority of the workforce is employed both in industrial sector and agricultural activity. These three groups, although different, share similar

experiences in the inception of industrial development. The location of this activity was typically located in primary gateway cities, such as in the principal ports where infrastructure and markets were comparatively well developed (Balchin, Isaac & Chen 2000).

Since industrialization, the cities have evolved to encompass wide ranging industrial activity focused on the ports, with central cores comprising local bazaars with densely developed commercial uses. The evolution of the pre-industrial city into an industrial city has generated increasing urbanization pressures (van Geenhuizen & Nijkamp 1995). The economic growth and prosperity of the city has been a major force in determining the migration of people from rural areas to the cities. Most industrial cities in developing countries are experiencing rapid growth of urban areas following economic restructuring into industrial activity (van Geenhuizen & Nijkamp 1995). High levels of urbanization are associated with high levels of industrialization that further raises the level of economic growth.

Industrialization absorbs large number of workers both skilled and unskilled occupations. Urbanization is a likely consequence of industrialization ¹¹ in order to meet the needs of employers and employees. In the 1960s, almost 50% of urban residents in developing countries were migrants attracted to jobs in industry (Williamson 1995). According to Turnham (1990), there are two types of migrants: temporary migrants who come to seek employment in the informal sector, and permanent migrants who are seeking jobs in the formal sector but who temporarily may accept work in the informal sector, or be unemployed.

An increasing population attracted to urban employment will produce the possibility of uncontrolled urban expansion, and a greater demand for urban infrastructure and urban land (Balchin, Isaac & Chen 2000). In brief, industrial development in developing countries is facing problems in adapting to the demands of urbanization. Currently, control of urban land and equal access to legal status is a major problem in many developing countries.

Industrialization in Ahmedabad

The following statement is cited from paper by Shyam S. Dutta (2000), a historian who examined the Ahmedabad city:

“ Unlike Bombay, Calcutta, Madras and Kanpur, Ahmedabad was not a creation of the British but a city which while remaining true to itself successfully adapted to the new industrial age carrying over commercial and industrial skills and patterns of traditional social organization. In no great city of India can the continuity of past and present be seen as clearly as in Ahmedabad”

² Driven by the growth of textile industry reached its peak in the 1940s, the city attracted migration from around Gujarat and India. In the post-Independence period, the city witnessed not only diversification of its industrial base but also significant development of professional and technical institutions, such as the ⁹ Physical Research Laboratory, the Indian Institute of Management, and the Centre for Environmental Planning and Technology (Dutta 2000).

Table 1. Characteristics of the Case Studies

		NARODA GIDC/ NIE	ODHAV GIDC/ OIE	VATVA GIDC/ VIE
1	Year of establishment	1968	1968	1968
2	Total area	357 ha	127 ha	512 ha
3	Number of plots	689	491	NA
4	Numbers of sheds	¹³	525	NA
5	Distance from central city (approximately)	8 km	4,5 km	4,5 km
6	Number of company/ factory	660	1502	1187

(source: Naroda Industries Association 2007 Directory, Odhav Industries Association 2008 Directory, Vatva Industries Association 2008 Directory)

² In order to accelerate the pace of industrialization in Gujarat, under the Gujarat Industrial Development Act of 1962, GIDC came into existence in 1962. GIDC operates all over the state of Gujarat. It operates and maintains industrial estates in various districts of Gujarat State. ⁸ These estates are self-contained sanctuaries capable of sustaining a large number of industries within themselves. ⁷ GIDC provides ready to occupy sheds for immediately starting an industry and also

provides go-down for storage of its material. In Ahmedabad, GIDC operates three estates: Naroda, Odhav and Vatva Industrial Estates. The three estates were developed around year of 1968. The estates occupy areas of 120-500 hectares of land on eastern part of Ahmedabad city. Currently, the estates are connected to each other by Narol-Naroda Road and Sardar Patel Ring Road; are also connected to other cities in Gujarat. The three estates are also connected to Kharikat Canal that lay from north to south. Accessibility becomes a major concern of entrepreneur to choose this location to run their business. Hence, after more than 40 years of development, the estates are still significant for its function in urban area. In 1982, GIDC handed over the estates to the AMC management, since they were located inside the AMC boundary.

In the late 1970s and 1980s, the textile industry has declined, resulting in the closure of more than half units and laying off about 60,000 workers. After 1990-1991, local economy has shown a revival. This is indicated by the reduction in the number of lowest income group and also an increase in regular workers. Compared to other cities in India (Bangalore, Pune and Hyderabad), Ahmedabad has the highest proportion of self-employed. It is a clear indication of the growing strength of the informal sector of the economy. The estimated share of the informal sector in the total workforce in Ahmedabad increased from 50% in 1981 to 64% in 1991 (Dutta 2000).

Population of Ahmedabad according to 2001 census was declared to be 3.5 million people. This number was only limited to the inside Ahmedabad municipal region (Wikipedia 2009). Total population of Ahmedabad agglomeration is around 4.5 million: 4,518,240 (City Population 2009). There are 886 females to every 1000 males. Ahmedabad has a literacy rate of 79.89%, which is the highest in Gujarat. There are more than 30000 rural families living in Ahmedabad and 5.41% of those are below poverty line. The city's population has increased in a major way following economic expansion and modernization. Ahmedabad becomes a centre for commerce and also government institutions and military base (Hindu 2008).

Characteristics of the street vendor

The research categorized the street vendor into local names and suffix 'wallas', which means 'vendor' (Jamdar 2000). The categorization of types of retailers are: *pathariwalas* (display their products on the ground and stay permanently in a particular part of street or public spaces), *lariwalas* (own a mobile cart on which they vend goods and go around in their respective areas to sell), *gallawalas-single* (perform a single permanent element of the streetscape, set up a semi-permanent shop to sell, mostly food products), and *gallawalas-shared* (similar to *gallawalas-single*, but they shared space with formal shops).

Table 2. Characteristics of the Street Vendors

no	Categorization	NARODA IE	ODHAV IE	VATVA IE
1	Types of retailers			
	Pathariwalas	4	5	1
	Lariwallas	23	28	47
	Gallawalas (single)	30	7	113
	Gallawalas (shared)	19	3	16
2	Permanency			
	Permanent	9	3	27
	Semi-permanent	23	2	14
	Non-permanent	44	38	136
3	Goods for selling			
	Chai/ coffee/ drinks	24	11	33
	Food	9	6	35
	Vegetables/ fruits	3	1	11
	House wares	15	7	1
	Sweets	11	3	24
	Others	10	15	19
	Other combination of goods for selling	4	-	58

The street vendors sell many types of goods; in this research, it can be categorized into: tea/ coffee/ *chai*/ drinks, sweets/ mints/ *paan*/ cigarettes, snacks/ food, vegetables/ fruits, housewares, and other categories, such as cloths, bangles, sandals, painter, bike repair, phone/ STD booth. To understand the type of building or hut where the business of street vendor has undertaken, the research was categorized into 3 types of permanency: permanent, semi-permanent, and non-

permanent. These three categorizations are based on its building materials, and possibility to remove.

VIE has the most street vendors, namely 117 vendors, with highest land ratio compared to other case studies. In NIE and VIE, gallawalas-single were dominant; whereas in OIE, lariwallas is the most dominant one. Gallawalas-shared in NIE and VIE has significant number, which is almost 25% of the total vendors in that area. In OIE, more than 10% of the vendor is pathariwallas. Most of the vendors (more than 65% of total vendor) in the three case studies build their vendor using non-permanent material; such as wood, multiplex, and zinc. In the three IEs (NIE 11%, OIE 7% and VIE 15%) some vendors build their building base on permanent materials, such as bricks and cement. Semi-permanent materials in NIE and VIE has a significant number of more than 5%.

There is a wide of variety of the goods sold, but most of them are food, drinks and other goods related to house-holds. In NIE, the two highest numbers are the sale of drinks and house-wares, in OIE are others (such as mobile phone accessories, clothes, and kids-toys) and *chai* seller, while in VIE the two highest number of goods sold are food and *chai*+sweets seller. Vegetables and fruits seller are also significantly sold in the three estates. The variety of goods sold in these three estates is similar, but in VIE most sellers sell more than one item, such as *chai*+sweets+food, food+housewares, and also sweets+food.

Nature of Linkages of Formal and Informal Sector

The estate' management has provided affordable canteen and area for shops and market. During the survey, in the three estates, canteen has already been closed by the management, because only few workers wanted this facility (Shah 2008, Varghese 2009, personal communication). Most workers prefer food and drinks from the street vendor because of the taste and price. Street vendor sell their food/ drink with less price than canteen with relatively tastier food. Area for

shops or market inside the estate (absent for VIE) was built near the housing. Main customer of the shops is the housing resident, which in current time, not only industrial estates workers lived in this housing but also other people who has no relation to the estate (case of NIE).

Most proprietors live in villages near the industrial estates, and gets raw material from other villages as well (especially for fruits and vegetables). In average, most vendors have run their business inside the estate for more than 5 years and some of them started their business from the early development of the estate, and earned around 7500 rupees per month. There is no management regulation covering this kind of business, but there is only informal protection from factories (where they are located). Hence, most vendors are not satisfied with their environment for running their business, since there is no regulation for them.

Most vendors open from 8 am to 9 pm daily, except for vendor near the main entrance of the three estates. Opening hours depend very much on the workers working hour. Some vendors' huts that are physically attached to the factory open for almost 24 hours. Vendors that operate near main entrance only open after working hours to provide food/ drink for labors and people passers-by. Street vendor that serves construction workers (especially in OIE and VIE) only open during working time, from 8 am to 4 pm.

The linkages between two sectors exist not only in term of target market of the street vendor, but also in terms of protection from the factory. Based on in-depth interview with informal sector proprietor in NIE and VIE, especially vendor that run their business for generations, worker's factory has offered a/ some plot in front of the factory to their relatives who became street vendor proprietors. In this case, the worker works as the factory's security or others in the factory, which is later called as 'protector'. This man will arrange how long the vendor will occupy the land, in which area the hut will be built (vacant land, building setback, or hard shoulder), and how much the reward will be. The arrangement is only based on trust and no paper sign is required. The factory management knows this arrangement for some cases in order to provide

cheap and nearest food/ drink for their workers. The arrangement will work for ages and generations of the vendor proprietor (case study of NIE), even the factory' workers have changed for many times. It is difficult for the vendor to open a business informally inside formal area if they do not have this agreement. In other words, the factory provides food and drinks in reasonable price for the worker via allocation of street vendor inside or outside his area as long as they have the arrangement.

Urban form of Ahmedabad city

The boundary of Ahmedabad city has been expanded due to its increasing population and services. The development of the industrial estates (NIE, OIE, VIE) on eastern side significantly gave impact to the Ahmedabad Municipal Corporation (AMC) area. The growth of Ahmedabad city in this case is AMC area, could be seen in three different stages of growth. The growth could be defined in three types of urban shape of Ahmedabad city driven by industrialization.

AMC has changed its boundary three times to respond to the city development and to meet the demand of its citizens. The three stages are:

1. In the year of 1960s, the economy of the city became stronger and cotton manufacturing activity became more and more developed around the walled city. The western side of the river was developed due to service development, city boundary was expanded to western side and outside walled city in the eastern part. This shape could be defined as the first changing of city' boundary generated by industrialization. Physical development of eastern and western side of the city is relatively balanced in shape; it is also driven by the development of bridges which connects both sides. Odhav, Naroda, and Vatva industrial estate are located outside the AMC boundary, since it is connected to dirty activity and inappropriate land use inside the city.

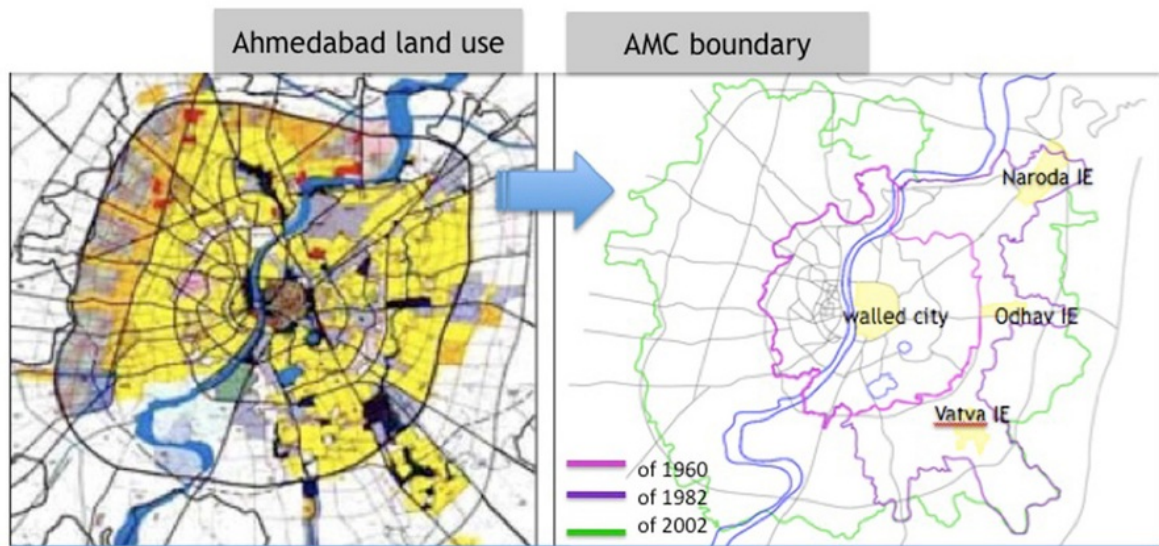


Figure 2 Urban Form of Ahmedabad City since 1960 (source: AUDA 2009 - edited)

2. In 1982, the boundary of AMC was ²expanded only to the eastern side. The urban shape has protruding figure of the three GIDC industrial estates, Naroda, Odhav, and Vatva, which are located on the eastern part of the city. The western boundary still remained the same. Naroda, Odhav and Vatva became part of AMC area due to the development of area in between the city and the industrial estates. The new urban shape at that time could be understood as a result of the change of land occupation development in between city centre and the industrial estates, from agriculture to developed land. It is also triggered by the development of ring roads and state/ national highway around the city. Surrounding areas of the three estates became developed (radius of 1-2 kms from the estate) and they changed from agriculture into developed land, housing land occupation into commercial occupation. Some *talukas* (villages) that are located around the estates merged with the estate as one big area. From 1968 to 1986, the three estates mostly generated the growth of the surrounding areas, the three became urban generator of Ahmedabad city growth

particularly on eastern part. After 1986, not only the industrial activity generated the areas, but also other service development, such as school, market, and some institutions.

3. In 2002, AMC expanded its area, both to eastern and western side of the city. There is no more protruding figurine of the three industrial estates. The three protruding shape has merged each other, hence become one solid shape with western boundary. The only boundary that remain the same is on the northern side, since it is connected to boundary of capital city; Gandhinagar. Issue of urban agglomeration became major concern of AMC to expand its area. It is mostly driven by the development of many ring roads and state/ national highway. Surrounding area of the estates has been appointed as commercial areas and light industrial areas.

Conclusion

After studying the AMC land use, it can be concluded that the closer a city is to the three estates, the more developed is a city and vice versa. The shape of its urban areas on eastern side actually has three protruding shapes, in which each shape is the location of Naroda, Odhav and Vatva industrial estates. Areas between these protruding shape previously were vacant land and agricultural land. As predicted by AMC, these areas developed and grown in response to urban generator of the industrial estates, as long as the industrial activity operate.

Similar case is faced by most cities in developing countries, such as India and Indonesia: growth and development of the city, in terms of population and size, always followed by occupation of urban land illegally. The urban land occupation mostly for illegal housing and illegal commercial activities, which in some research called as informal city. Developing country adopted urban planning regulation from developed country, which ignored the existence of informal land occupation. Therefore, conflict between formal and informal sectors always occur, such as

government and street vendors. The existence of informal urban land occupation or informal city is a phenomenon of most city in developing countries.

The paper is a part of a bigger scenario of research to understand the growth of city triggered by location of industrial estates as urban generator to change the use of land both formal and informal. According to Balchin (2000), in urban area there are prime urban activities as urban generator that triggered the change of urban land value. The urban generator causes the change of use of land into higher value, such from agriculture land to residential, or residential to commercial use. Ahmedabad as an Indian city that has strong industrialization and cultural, the city grow particularly on the eastern part mostly driven by industrial activity of the three estates of GIDC. The boundary of Ahmedabad city was shifted three times follows the form of urban growth caused by developed land surrounding the industrial estates and also the land in between the estates and central city (walled city). Urban agglomeration is a significant issue for this case.

Ground data from street vendor in three estates of GIDC in Ahmedabad shows some important phenomena that there is a strong linkage between labors' and street vendors activity. The vendor provides daily drinks and foods (mainly) for the labor, such as *chai*, vegetables, fruits and lunch/ snack. This fact shows level of significance of the goods of sell of the street vendor. Even the estate management has provided facility for the workers (canteen and market), the workers prefer to buy they daily needs from the street vendor for reason of accessibility and price affordability. Market (for formal vendor) is more useful for resident of workers housing inside the estate (case of Naroda and Odhav) and also people passing by the main street of the estate (highway). The linkages between two sectors exist not only in term of target market of the street vendor, but in terms of protection from the factory. Behind location choice of the vendor, protection from the factory where the vendor built is equally important factor. Both factor should work equally since both sector (formal and informal) need each other; the formal need affordable and accessible food/ drinks while informal sector always search for business location. In Ahmedabad, since the fall of textile industry, informal sector activity is very significant in numbers and give economic

beneficiary to the city growth overall. Can be concluded here that flexibility factor of land occupancy for service facility to support workers activity is important, since it has high dependency with location of the factory and also with time of factory' operation.

As a final discussion, currently cities in most developing countries are facing fast development; both formally and informally. Planning and designing of the city are only respect to urban land occupancy formally or permanency for one single use. Needs to be considered by planner and architect that informal urban land occupancy always works parallel with formal occupancy. Therefore, the research highlighted the idea that the growth of city particularly in developing country should respect the existence of the informal sector. The existence should be a part of government' or municipal authority' strategy, by providing space and regulation for them. In Delhi for example, have a regulation for the vendor to have business license to run their business in a particular area. Thus, the city authority can control the growth as well as minimize the congestion caused by street vendors.

For further study is how to accommodate the informal urban land whether as temporary users or shared urban space in particular uses.

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