

Urban Land use Planning and Air Pollution in Hyderabad

ABSTRACT

The movements of people into urban areas together with the increase in consumption patterns and unplanned urban and industrial development have led to the problem of air pollution. In urban planning projects, air pollution control is considered but only as a minor component of urban sanitation. **Air pollution control** technologies and urban planning strategies available to reduce air pollution; however, worldwide costs of addressing **air pollution control** are high. Enforced **air pollution control** standards have reduced the presence of some pollutants. Hyderabad is one of the most air-polluted cities in India today. The focus of this paper is on air pollution in the megacities Hyderabad, in context with urban land use planning,

INTRODUCTION

Air is the ocean we breathe. Air supplies us with *oxygen* which is essential for our bodies to live. Air is 99.9% nitrogen, oxygen, water vapor and inert gases. Human activities can release substances into the air, some of which can cause problems for humans, plants, and animals. Each of these problems has serious implications for our health and well-being as well as for the whole environment.¹

The movements of people into urban areas together with the increase in consumption patterns and unplanned urban and industrial development have led to the problem of air pollution. In urban planning projects, air pollution control is considered but only as a minor component of urban sanitation. **Air pollution control** technologies and urban planning strategies available to reduce air pollution; however, worldwide costs of addressing **air pollution control** are high. Enforced **air pollution control** standards have reduced the presence of some pollutants.⁸ Hyderabad is one of the most air-polluted cities in India today.⁹ The focus of this paper is on air pollution in the megacities Hyderabad, Andhra Pradesh. One of the key indicators of the quality of life is a clean environment, which can be further disaggregated in terms of water quality, noise and air quality. Unfortunately, air in most

Indian cities has become highly polluted and the concentration of certain pollutants exceeds World Health Organization's (WHO) safety limits by large margins.

OBJECTIVES/ AIMS

To relate the air pollution and urban landuse planning. To do a case study on air pollution in the mega city Hyderabad, in context with urban landuse planning.

LIMITATIONS

Limitation of required data may lack complete evidence to prove the air pollution factors in Hyderabad.

SOURCES OF AIR POLLUTION

Awareness of air pollution has increased markedly within the last few decades. We know that the rising concentration of impurities in the air is associated with the increase of population, and of technological and industrial development, that is with the ever –increasing consumption of energy. Immediate sources of air-pollution include domestic fires, motors0traffic and industrial smoke and fumes.

Nevertheless all forms of energy-consumption by the people of industrial countries are significant causes of air pollution.

- 1) heating
- 2) industry and commerce
- 3) Motor traffic

EFFECT ON HUMAN HEALTH

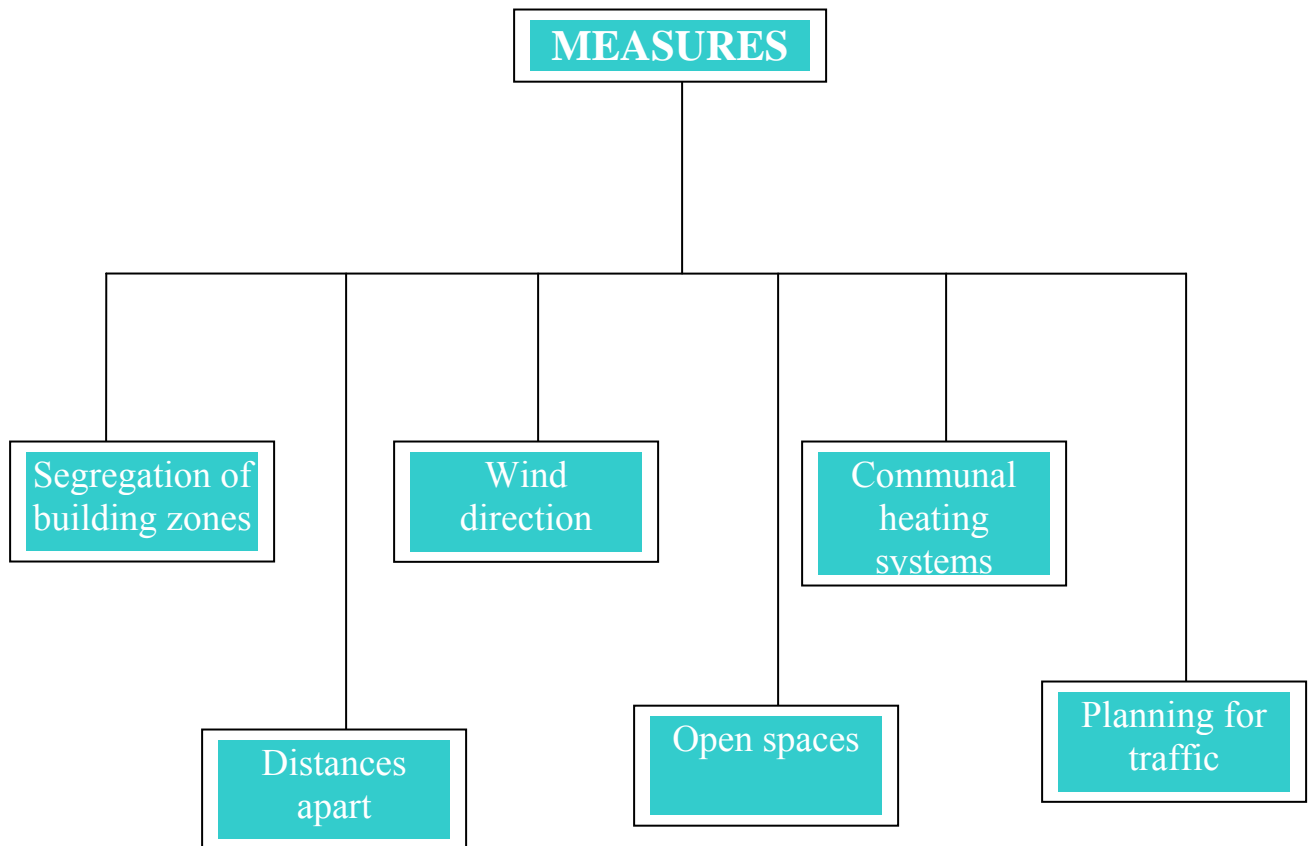
Air pollution is the contamination of air by the discharge of harmful substances. Air pollution can cause health problems including burning eyes and nose, itchy irritated throat, and breathing problems. Some chemicals found in polluted air can cause cancer, birth defects, brain and nerve damage, and long-term injury to the lungs and breathing passages in certain circumstances. Above certain concentrations and durations, certain air

pollutants are extremely dangerous and can cause severe injury or death.² Air pollution plays a statistically significant role as a predictor of inter-country and inter-temporal differences in subjective well-being. The effect of air pollution on well-being translates into a considerable monetary value of improved air quality.³ Local exposure to traffic on a freeway has adverse effects on children's lung development, which are Independent of regional air quality, and which could result in important deficits in attained lung function in later life.⁴ The mortality rate advancement attributable to traffic pollution was similar to that associated with chronic respiratory and pulmonary diseases and diabetes. This suggests that decreasing pollutant exposures may have a substantial public health impact.⁵

Humans may be heavily exposed to airborne pollutants resulting from industrial processes, residential heating, and motor vehicle exhausts. The relation between DNA adducts and B(a)P was found to be linear at low doses and sub linear at high doses, indicating that DNA adduct formation tends to reach some kind of saturation point at higher levels of exposure to the chemical mixtures present in fumes. When the authors examined the efficiency of DNA adduct production associated with increasing air pollution exposures, the production of DNA adducts per unit of exposure was significantly decreased at higher B(a)P exposure levels. These findings suggest that linear downward extrapolations based on DNA adduct levels associated with B(a)P concentrations of ≥ 20 ng/m³ might be affected by underestimation bias.⁶

Air pollution is the effect of unsustainable economic activities of production and Consumption. Burning of fossil and bio-fuels, industrial process and vehicles in the Transport sector- all contribute heavily to air pollution.⁷ Air pollution is aggravated because of four developments: increasing traffic, growing cities, rapid economic development, and industrialization. The Industrial Revolution in Europe in the 19th century saw the beginning of air pollution as we know it today, which has gradually become a global problem.¹ Most forms of air pollution have some damaging effect on human health and on natural or economic processes. This has resulted in a number of mega cities in India becoming among the worst polluted cities in the World.

MEASURES RELATED TO LAND USE PLANNING TO CONTROL AIR POLLUTION



1) **Segregation of building zones** for different purpose: it is essential to consider air pollution when working out the building plans for an area or a city. The first requirement is for residential areas to be protected against fumes from trade and industry and from through traffic. IN principle industrial zones should be located on the downwind side of the community. Not only should industrial zones be segregated, but both the nature and the extent of their emissions should be restricted, and the methods of estimating emission and diffusion based on maps of the distribution of factories should be suited to the local meteorological conditions. As far as possible industrial zones should be separated from other areas by green belts.

This demand that industrial zones should be segregated from other parts of the community runs counter to the views of many sociologists who think that it is desirable to have a mixture of 'living' and 'working' places. From the standpoint of environmental hygiene this principle is acceptable only if the air pollution from the trade and industry do not interfere with the health, well-being and enjoyment of life of people who live in such mixed zones.

2) Distance apart the distance that must separate industrial zones and major traffic roads depends on the following factors:

- **The extent of the emissions of fumes and smoke.**
- **Meteorological factors affecting their distribution**
- **The limits of allowable pollution laid down for the residential areas.**

Reichow recommended distance by which residential areas should be separated from the sources of many kinds of pollution, basing his figures on general experience in practice.

3) Wind direction: every major source of air pollution ought to be sited as far as possible in the wind-shadow of residential areas, but this principle is valid only where there is distinct prevailing wind and then only if there are not other meteorological factors more influential than the wind direction.

For example:

4) Open spaces: open spaces have the following effects on air pollution

- They encourage mixing of air masses and help to dilute the impurities.
- They act as settling places of solid particles and so have a direct cleansing effect.

Bernatzky, Kratzer, Dreihaupt and several other authors are of the opinion that the temperature differences that come into being between open spaces and the built-up areas round about create a local circulation of air which helps to renew it.

On the other hand trees and shrubs have been proved to have a filtering action upon solid particles in the air. The filtering action depends on four functions of the plants:

- **They cut down the speed of the wind.**
- **They cause turbulence.**
- **The leaves and pine-needles adsorb solid particles.**
- **Rain and snow wash off the contamination.**

For these urban planners should think of

- **Leaving spaces for plantation.**
- **Leaving spaces for garden and parks.**

5) Communal heating systems: communal heating has the following advantage in the pursuit of clean air

- **A high chimney.**
- **Better maintenance**
- **Greater flexibility in changing to newer fuels, e.g. natural gas and coal.**
- **It is an economic proposition to reduce fumes and smoke.**

6) Planning for traffic: the most effective measure to relieve traffic in towns is the ring-road, though this statement must be qualified by saying that a ring-road makes sense only if through traffic makes up considerable proportions of the total sense only if through traffic makes up a considerable proportion of the total.

Other effective measures of traffic planning include:

- **Speeding up public transport.**
- **A traffic-free city centre.**
- **Streets can be crossed more easily.**
- **Relieving residential roads of through traffic.**
- **Traffic further away from residential quarters,**
- **Encouragement of paths for pedestrian and cyclists.**

IN CASE OF HYDERBAD

Effect on health due to air pollution in Hyderabad: a study has been made “Integrated Environmental Strategies (Hyderabad, India) Project: Health Effects Analysis & Economic Valuation of Health Effects” in June 2004 and it is found that in Hyderabad the our door air pollution is taking toll and is affect on health of people specially children’s. The diseases caused by the air pollution are

- Respiratory diseases
- Headaches
- High blood pressure
- Heart problems
- Kidney damage
- Neurological and brain damage
- Cancer
- Reproductive problems
- Various other health effects

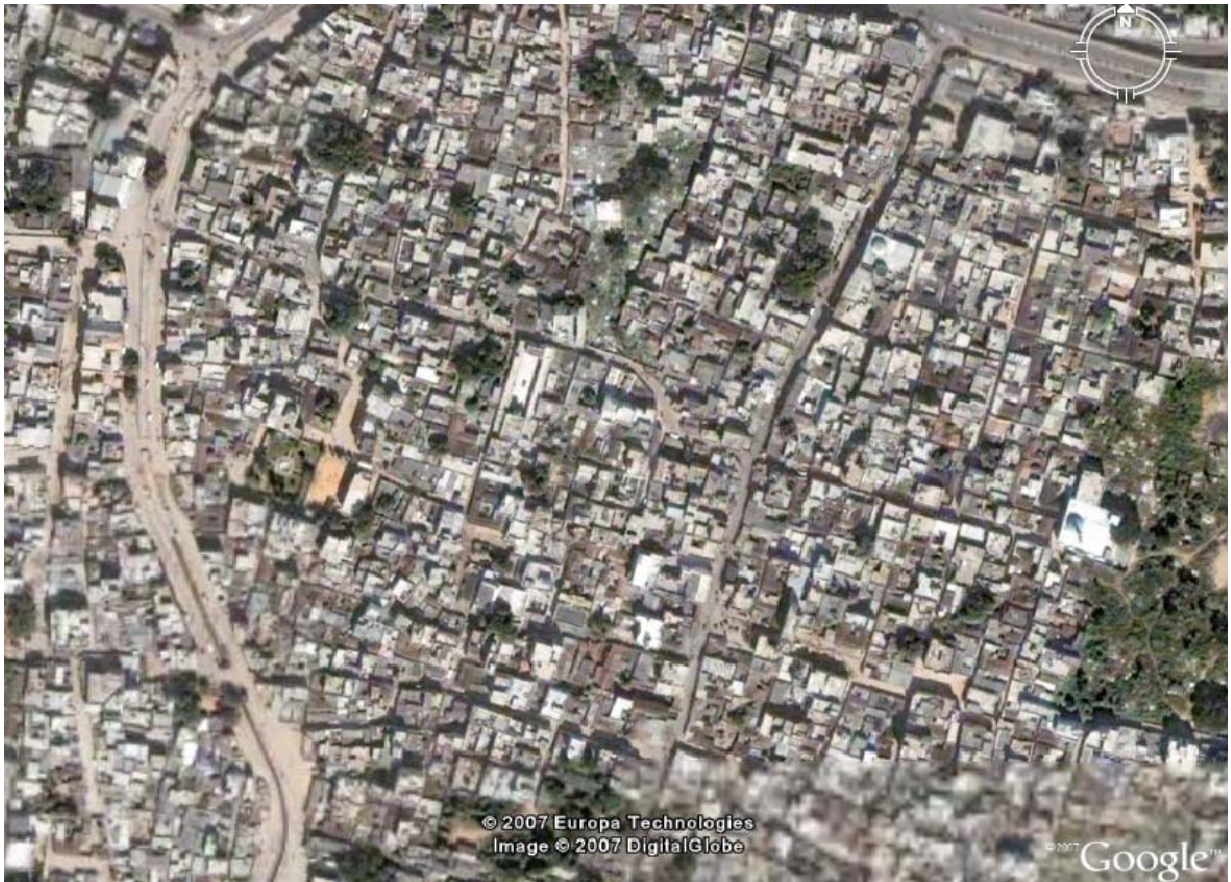
Improper Zoning: As it is said before in this paper that the important of the location of industries plays and important role. Many pharmaceutical companies are located inside housing areas. There is clear lack of zoning as many residential areas are have commercial complex. Many farms which produce milk are located inside the residential areas producing bad smell.



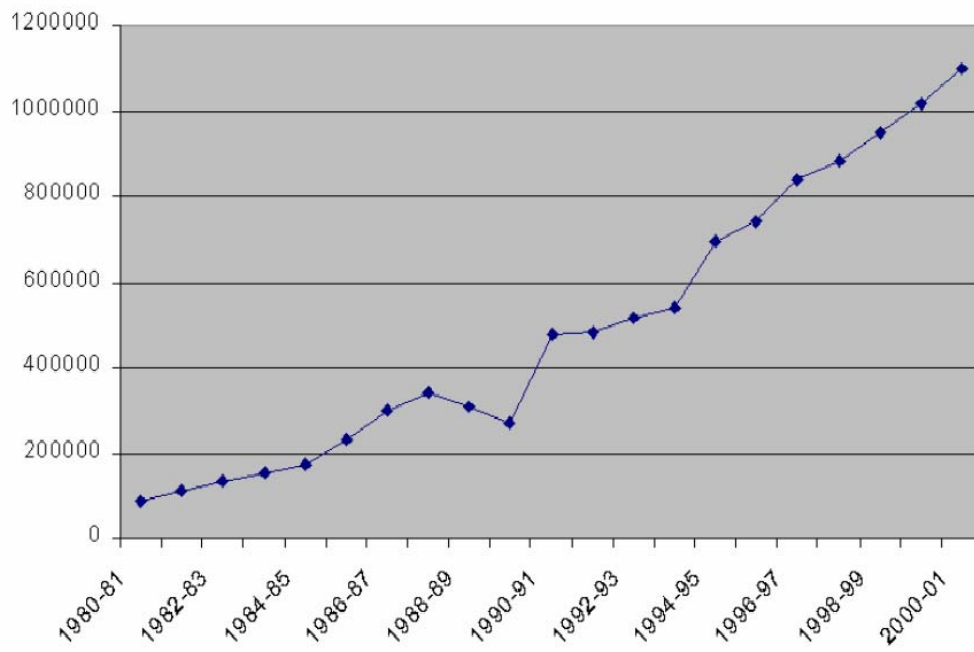
Improper zoning: Location of farms within the residential area of Mallepally (17degrees 23' north: 78degrees 27' east)



Improper zoning: Location of pharmaceutical company within the residential area of Narayanguda (17degrees 23' north: 78degrees 29' east)



An example improper zoning and improper transportation facilities (17degrees 21' north: 78degrees 29' east)



Vehicular growth in Hyderabad (Source : IES)

Hyderabad is one of the most polluted cities in India. It is one of the fastest growing centers of urban development in India. This growth has also brought with it air quality and congestion problems. For a number of reasons, motorized two wheelers, auto rickshaws And private passenger cars have displaced trip making which has been more traditionally accomplished by public transport and bicycle.

REFERENCES

- 1 <http://edugreen.teri.res.in/explore/air/airintro.htm>,
- 2 <http://www.nsc.org/ehc/mobile/airpollu.htm>,
- 3 Heinz Welsch, "*Environment and happiness: Valuation of air pollution using life satisfaction data.*" (October 2005),
- 4 H Vora Gauderman, R McConnell, K Berhane, Gilliland, D Thomas, E Avol MS, J Peters); Sonoma, "*Effect of exposure to traffic on lung development from 10 to18 years of age: a cohort study.*" (January 26, 2007),
- 5 Michael Jerrett Murray M. Finkelstein, and Malcolm R. Sears, "*Traffic Air Pollution and Mortality Rate Advancement Periods*", (2004),
- 6 M. Ceppi M. Peluso, A. Munnia, R. Puntoni, and S. Parodi1, "*Analysis of 13 32P-DNA Postlabeling Studies on Occupational Cohorts Exposed to Air Pollution*", Air pollution, (2001),
- 7 Sajal Ghosh, "*Sustainable Energy Policies for Clean Air In India*",
- 8 <http://www.byboh.com/technology/air-pollution-control.html>,
- 9 <http://www.hyderabadair.com>,