ENVIRONMENTAL ASPECTS

CHAPTER- 10

ENVIRONMENTAL ASPECTS

The National Capital Territory's (NCT) environmental situation is quite grim and the topics covered under this chapter are as follows:

- Current Environmental Situation
  - Air , Water and Noise Environment
- Environment Goals for Delhi by 2022
  - Future scenarios for air, water and noise
- Environment Management
- Ecologically Sensitive Areas
- Yamuna River Corridor
- Asola Wildlife Area and The Ridge
- Key Issues about Ecological Sensitive Areas
- Environment Issues in Hotels

CURRENT ENVIRONMENTAL SITUATION

Environment situation at any destination of vital importance not only for residents but also for tourists. If tourists perception of Delhi is to improve, the present environmental problem will have to be improved so that by 2022, Delhi as

tourist destination is one of the itinerary of every visitor and duration of stay will increase -- with all improvement in environmental standards.

Delhi has emerged today as one of the worlds fastest growing metropolitan centre and manifest the symptom of uncontrolled growth and short falls in the environmental infrastructure provision like sewage and water supply, public transport facilities, uncontrolled land use, social compartmentalisation, very high pollution levels for all the environmental components.

The statuses of environment for three major environmental components are highlighted below:

Air Environment

Statistics reveals that historical city of Delhi with many Gardens, forts and green spaces has turned into one of the world's most polluted city. The incidence of respiratory disease in Delhi is 12 times the national average and 30% of Delhi's population suffers form respiratory disorders due to air pollution.

The ambient air quality measurement taken from 1989 to 1999 reflect that SPM is the most critical pollutant of Delhi air environment and World Bank estimated health damage cost exceeding billions of US $ due to SPM pollution alone. The important considerations emerging from secondary data analysis are:

- Pollution load estimates of 1998 showed that about 3000mt of air pollution were being injected everyday in Delhi's atmosphere and the trend over the

past years reflected a gradual and fast increase of total pollution load being added in Delhi from 1450 mt. in 1991to 2400mt in 1994 and 2890 mt in 1995.

- The percentage contribution analysis of four major sources reflected that automobile exhaust is the major source (67%) followed by thermal plant (13%). Industrial activity contributes only 12 % and among industries, SSI is the major industrial sources and remaining pollution load comes from domestic combustion (8%).
- The percentage contribution of vehicular exhaust has been steadily increasing at a fast rate because of fast growth of registered vehicles in Delhi. With present trend, it is expected that by the end of next two decades this percentage shall be anywhere between 90-25%.

Water Environment

Probably the most pervasive environmental problem in Delhi is water pollution. Water pollution is responsible for substantial mortality particularly among the children as indicated by much water born epidemics occurring year after year. The statues of water pollution in Delhi can summarised as :

- The river Yamuna is the major surface body of Delhi serves as source of water supply as well as receives all the domestic and industrial effluent, treated or/ and untreated.
- The river Yamuna while entering Delhi (up stream of Wazirabad) is relatively clean.
- After Okhla industrial zone the river water quality deteriorates excessively with DO level dropping to 103 and BOD (Bio Oxygen Demand) rising to

16 mg/l. the coliform count also increases to 339312/100 ml as against the required standard of 500/100 ml.

- Major contribution of pollution load to the river Yamuna is Najafgarh drain (60 % of total waste and 45 % of BOD in 1998). During dry season when there is no release from Wazirabad the flow in the river is waste water from Delhi partially treated.
- On the basis of various degrees of pollution , the most critical stretches of Yamuna river across Delhi have been identified as : Wazirabad to Okhla.
- To restore water quality of Yamuna, an action plan called "Yamuna Action Plan" has been launched in 15 districts of UP, Haryana and NCT –Delhi with total wastewater treatment capacity of 2713 MLD(Million Litre Per Day) upstream of Delhi.
- Solid waste dump sites at Ghazipur, Bhalaswa Tughlaqabad, Hasthi & Mandawli are excessively polluting ground water.
- At many places, the existing sewerage lines are not able to carry the increasing load of sewage and are in a state of virtual collapse.
- Industrial effluents on a whole contribute a small percent of the total waste that are discharged into Yamuna river but the industrial effluents, should be potentially more hazardous than domestic sewage warranting segregation and treatment.
- **Discussion with DPCC also reflected one manor wastewater-generating source as Hotel industries contributing more than 50 MLD.**
- Waste minimisation (waste segregation) and cleaner technology option for SSI or even other medium scale industries are not at all seriously tried and awareness for such options is also manual.

Noise Environment

Noise has been notified as a major environmental concern in Delhi State. The source of noise pollution in Delhi can categorized as:

- Vehicular activity.
- Commercial Activities.
- Industrial activities (including all construction activity).
- Social and Cultural Activity.

The most important source of noise pollution having continued nature of impact is traffic movement in Delhi. The current situation of noise pollution in Delhi can summarised as:

- Only 30 % of the residential colonies of Delhi have noise level within the prescribed limits. Almost 25 % of residential colonies are having excessive day as well as night noise pollution exposure.
- In most of the commercial zones of the city, the noise level are higher than permissible levels and the cause again is near by traffic movements.
- The road side or traffic junction noise levels can not be taken linearly proportional to traffic volume because of various other factors associated with sound pressure wave propagation and source receptor configuration.
- Noise levels during cultural/religious festivals are highly annoying and exceed all the prescribed limits but these are of temporary in nature and need to be adequately controlled though awareness programmes and persuasion.

- Another important mitigation measure to control noise exposure is adopting strict land use norms or evolving laws pertaining to public nuisance or maintenance of law and order issues.

Environment Goals for Delhi by 2022

Future Scenarios

Before evolving a framework for environmental management or action plan (tasks ahead) to be implemented during 2000-2022, it is essential to know:-

What can be achieved though existing policy instruments if implemented in right earnest also what do we want to achieve as goals for Delhi 2022.

It is assumed that the following automobile emission control measure shall be fully operational by 2022.

Because these control measures have already been announced are expected that these control measure will be fully operational by 2022.

The control measure assumed under this scenario are:

- Catalytic convert fitness in gasoline powered vehicles.
- Fuel specification with respect to Sulphor +Cretone and Pb emission.
- Implementation of inspection and maintenance schedule.
- Phasing out of all 15 years old vehicles.

Estimates reflects that the all above mentioned mitigation measure if implemented fully can only meet the requirement of vehicle growth till 2005.

Air Pollution from Industries

As per Supreme Court order more than 990 hazardous units were closed down till 1996 and all industries in non conforming areas are required to be shifted in new industrial estates in conforming area.

But still the situation is grave as many such industries burn inferior fuel (any where between 2 to 10 mt of coal) and also have low stack height with no provision for air pollution control equipment at this stage.

Scenarios for Industrial Pollution
BAU (Business As Usual) Scenario

During 2022, the expected percentage contribution of industries shall be less than 10 % with the present scenario of various air pollution sources.

SO_2 concentration has been decreasing since 1995 and the reduction being of the order of 4 to 40 % over 1996-99.

Therefore even under BAU scenario: Delhi: 2022, the ambient air levels of SO_2 are not expected to rise because even if pollution load of SO_2 is increasing then the mitigation measure (though these are only partially implemented at this stage) may not allow SO_2 levels to exceed permissible level of 60-80 ug/m3, because of Low(s) content of fuels.

Water Environment

The scenario assumes that:

- All CETP are installed and fully operational for all the different industrial estates and each industrial unit is also having pre-treatment facility and are discharging effluent as per standard meant for CETP channel.
- STP plants capacities are upgraded and meet the demand for 3150 MLD in 2022

Even under these assumptions the following condition shall still be prevailing:

For the critical section (between Najafgarh and Okhla) the assimilative capacity of river Yamuna is only 19130 kg/day (NEERI study) which is too small for desired assimilative capacity.

Above projected conditions for Delhi –2022 demand that the effluent being discharged by different drains (at least at river out falls in the Yamuna) should have waste water characteristics same as that required for class B river characteristic and this can not be met with the CETP and STP treatmcnt level of 30 mg/l required under current rules.

Other wise there should be additional dilution capacity available in the river with higher water from Wazirabad to enhance the assimilative capacity of the river.

Such a requirement is difficult to meet unless there is complete rethinking and approach to water management planning for the river basin for entire water and wastewater available. Hence, the management approach has to shift to Yamuna River Basin management instead of wastewater pollution management approach being adopted in isolation at present.

Noise Environment

It is assumed that the vehicles on the roads meet the manufacturing stage specifications with respect to noise standard and are also having control system (effective silencers). Besides major traffic junction shall be having the fly over arrangements, to meet the rise in traffic volume and road side plantation (green barriers). Other noise barrier can also be erected to attenuate noise.

After such mitigation measures, one can expect that the noise levels(even after growth in traffic up 2.4 time) in the road side environment shall remain same as to today but the current levels are also higher than permissible levels. The raising of traffic lanes (flyover) and plantation of effective green barrier and or other noise alternating basis can reduce the noise levels by more than 6dBA.

Air, Water, Noise Environment Scenarios

For these components of environment namely air, water and noise environment, these are number of control measures/strategies being implemented.

The addition control measure which shall be required to meet the desired scenario should be delineated after looking into the cost benefit aspects and the urgent need for the institutional capacity built up for effective implementation are the tasks ahead.

Delhi suffers from severe and increasing environmental degradation. The deterioration in urban environmental condition is a result of a wide variety of factors including the widening gap between demand and supply of infrastructral services, lack of basic housing and sanitation, limited financial and organizational capacity of urban institutions. There is not much experience of cross-sectoral and inter-governmental collaboration in environmental planning or management in Delhi, and limited consideration of the inter-relationship between the projects. The need for more effective environmental planning and management is therefore fundamental to environment improvement.

Although infrastructural development programme has been going on in Delhi for the last four decades, the extent of environmental degradation has increased, according to all available reports, to a higher level than before. This is mainly because no environmental improvement programme per se to attack directly the specific environmental hazards, has been launched which could have helped decease the urban vulnerability. Urban services and infrastructure are a vital component to determine the quality of urban environment, but infrastructure is a necessary but not sufficient condition to ensure a good urban environment.

The complexity of planning, project formulation, implementation, enforcement and monitoring in Delhi are many and multidimensional. The

multiplicity of authorities crossing the areas of each other is well recognised. There are different levels and dimensions to these problems. The major qualitative difference in Delhi is that so long as (a) it does not enjoy full statehood, and (b) the more important agencies are not brought under a single line of command, which enjoys the qualities of stability, transparency, effectiveness and accountability the existing uncoordinated situation will continue. It is understood that at present the issue of granting full statehood to Delhi is under active consideration by the Government of India. If such a situation does come into being, much will depend on what shape and form it takes, to see whether it will lead to any improvement in the situation.

Beyond Infrastructure

Environmentally, therefore it is being increasingly realized that the significance of the Delhi urban phenomenon is beyond the issue of water supply, sanitation, housing, transport, slum etc. i.e. the infrastructure planning and delivery issues that have traditionally dominated the thinking and practice in urban development Management of Delhi's environment with an understanding of the linkages among infrastructure, environmental health and ecosystem, capacity of the key institutions – an overall resource management is fundamental to improving Delhi's environment. This cannot be achieved as an event at given times. But has to be gained through a continuous process over time. DUIIEP should facilitate Delhi towards that process.

In Delhi's case the underlying causes of environment degradation can be traced to inadequate investment in pollution control, lack of inter- agency co-

ordination, neglect of the environmental outcomes of infrastructure investments, inadequate or little cost recovery, insufficient political will and public awareness. Partnership, stakeholder ship and ownership in their myriad ways are the key to remedy these deficiencies. There is growing awareness not followed by adequate action, of the need to improve their interaction among governmental organization, NGOs, CBOs (Community Based Organisation) and the rest of the society.

ENVIRONMENTAL MANAGEMENT

Environmental management is a process that entitles:

- Recognition of environmental problems;
- Emergence of public awareness and political commitment to address these problems;
- Formulation of an environmental policy;
- Expression of policies in regulation and legislation; and
- Implementation and enforcement of policies.

In Delhi the process approach has yet to take root. This approach involves understanding and acting on environmental issues, not only through allocation of institutional responsibilities (however clearly done), but also create and built around shared values and assumptions. This in turn implies that environment as a cross-sectoral management issue becomes the remit of not one department (DOE) or one agency (DPCC) but of many other departments and agencies like, Industry, Transport, Power, Health, Heritage, DDA, MCD, etc.

Of the elements mentioned above, Delhi does not have at present an environment policy in specific terms. It has a bundle of reactive approaches. Nevertheless, there are strong pressures, which could eventually lead to the formulation of such a policy. These pressures are:

- Supreme Court Orders;
- Individuals Communities and NGOs that have brought those Public Interests Litigations;
- Media Exposure;
- Rise in public health issues;
- Risks and hazards increasingly from traffic, congestion, unplanned mixed land-use, industrial accidents; etc.

ECOLOGICALLY SENSITIVE AREAS

Besides Delhi's magnificent built heritage there are important natural geography/ historical landscape features (Yamuna River Corridor, Delhi Ridge) and the associated protected areas of natural wildlife (Asola Wildlife Sanctuary) that characterize the urban form of Delhi and contribute to its national and international identity and liveability. All to varying degrees, can be considered to be worthy of special land management consideration.

YAMUNA RIVER CORRIDOR

The Yamuna River Corridor constitutes a special case. Perhaps foremost amongst these are

- Though an inter-state Water Sharing Treaty exists, there is a lack of an effective inter-state river basin hydro-policy regime. This results in upstream pollution from agricultural pesticides and sub-optimal water extraction practices.
- The presence of extensive, high density areas of informal sector low income housing generating large volume of untreated sewage and solid waste that is discharged into the river.
- A recent Supreme Court Order stipulates that Industrial effluent must be treated to a prescribed standard before being discharged into the Yamuna. Making this Order operational, through effective implementation, enforcement and monitoring, will be critical to environmental sustainability of the Yamuna.
- Within the context of the Yamuna Action Plan, the DDA has launched ambitious and controversial proposals. These includes a change of use for a 260-hectare central tranche to be classified for 'public use'. A vague definition that seems to offer wide interpretation since 45 hectare are proposed for a major temple complex and 'Manhattan style' CBD project has been slated and pending. In essence, such proposals without rigorous public examination constitute public encroachment by stealth.

Many other specific detailed land management considerations could be cited but suffice it to say, that the river has all but lost its potential cultural heritage, religious (bathing ghats), public amenity and recreational value. The task of reversing the environmental degradation that has been taken place, and

sustaining it in a good state, will involve the targeting of large functional resources together with the concerted and enduring commitment of many institutions.

ASOLA WILDLIFE AREA AND THE RIDGE

Similarly support for the sustainability of the sensitive ecological habitat of the Asola Wildlife area will also require the formulation and implementation of special case integrated area strategy that would likely include Delhi Ridge as the environmental context and 'buffer zone' to the sanctuary.

The Delhi Ridge has strong historical associates being the site of the old Presidential Palace and the backbone feature of the original seven cities of Delhi. Today, both its form and function have all about vanished. The key issues that continue to pose this threat area.

- Temporary incompatible use permissible granted for storage, assembly, temporary accommodation (e.g. exhibition related activities), have left behind a tyranny of 'junkyard' residual material. This despoils the area and renders it environmentally unsound and unsightly.
- Incremental quarry extraction activities have scarred the Ridge.

Today, giving the rapid and continuing growth of Delhi and associated environmental problems created, there is persuasive reason to support the creation of the Delhi Ridge and Yamuna City Regional Park System – "the Lungs of Delhi

" – to breath life back into the City. Such a theme could form another key strand of a new and challenging 2022 future "vision" of Delhi.

KEY ISSUES ABOUT ECOLOGICAL SENSITIVE AREAS

- A comprehensive Regional Yamuna River Basin Environmental Strategy that provides a common inter-state hydro policy to compliment the Water Sharing Treaty is required.
- Within the context of Delhi city and DDA's Yamuna Action Plan there is a need for Yamuna River Comprehensive Environment strategy that addresses the competing socio- economic demands and needs for the optimal utilization and management of this potentially valuable resource.
- An integrated Delhi Ridge and Asola Buffer Zone Environmental Strategy is needed to harness the further degradation of the area and reclaim it as a sustainable major open space system of Capital City scale and order.

Large markets lend themselves to segmentation, creating opportunities for service providers to cater for those seeking eco-tourism or other nature based tourism experiences. This group includes a segment whose choice is influenced by the extent to which products and services are environmentally responsible.

Various strengths are shaping the relationship between tourism and the natural environment, including:

- Growth in awareness of environmental issues in developed and developing nations;
- Growth in the proportion of relatively well educated people with significant disposable income and propensity to travel;
- New demographic groups, such as, two income households and 'baby boomers' reaching the peak of their earning capacities;
- Increased exposure to new and remote places through the media;
- Increased attention to indigenous cultures and cultural tourism;
- Major political and other events to seek out safe destinations;
- Improved scientific knowledge associated with ecological interest and combined with a belief that many natural environments are being permanently altered or destroyed;
- Increased desire for experiences that are authentic and incorporate learning, rather than contrived entertainment; and
- Increased concern about crowding at existing destinations.

These trends indicate that community values are changing in such a way as to increase the demand for eco-friendly experiences and the desire for a sustainable approach to tourism development. Increased availability and wider promotion of eco-tourism opportunities have increased community interest in eco-tourism.

In the light of above serious thought have to be given to the evnvironmentally sensitive areas of Delhi as mentioned above.

ENIRONMENT ISSUES IN HOTELS

Table 10.1 shows that only high category approved hotels are able to control and manage the environment within their suprestructure. Hotels in unapproved categories are unable to do so, because of haphazard growth, financial constraints and inability of existing civic authorities in providing sustainable basic infrastructure. The environmental parameters for hotels are as per international norms prescribed for such hotels. Federation of Hotels and Restaurants Association of India is currently preparing environmental guidelines for hotels. These guidelines should be strictly enforced by approving authorities for tourism and hotel projects.

Table 10.1
ENVIRONMENTAL ISSUES –PERCENTAGE OF HOTELS MONITORING QUANTITATIVE PERFORMACNE

(FIGURES IN %)

COMPOSITION	NEW DELHI			
	Five Star Deluxe & Five Star	Four Star & Three Star	Two Star & One Star	Others
Air (External Emission)	85.7%	20.0%	20.0%	10%
Air (Indoor Air Quality)	85.7	20.0	20.0	5
Community interaction	85.7	20.0	40.0	35
Energy Consumption (Electricity)	100.0	100.0	80.0	45
Energy Consumption (Gas)	100.0	80.0	40.0	50
Energy Consumption (oil)	100.0	80.0	20.0	30
Fresh Water Quality	85.7	70.0	60.0	35
Noise (External)	85.7	75.0	40.0	10
Noise (In House)	85.7	80.0	40.0	15
Solid Waste Disposal	85.7	80.0	40.0	25
Solid Waste Production (Quality)	85.7	50.0	10.0	0
Solid Waste Production (Segregation)	85.7	30.0	20.0	0
Solid Waste Production (Volume)	100.0	40.0	20.0	10
Staff training in environment issue	100.0	50.0	40.0	5
Use of Chemicals (house keeping)	100.0	80.0	20.0	5
Use of Chemicals (Maintenance)	100.0	40.0	20.0	--
Use of Pesticides & Herbicides (Dry Rations)	85.7	30.0	20.0	--
Use of Pesticides & Herbicides (Green Groceries)	85.7	80.0	20.0	15
Use of Pesticides & Herbicides (Pest Control)	100.0	80.0	50.0	10
Use of Pesticides & Herbicides (Public Area)	100.0	40.0	20.0	--
Waste Water Quality	100.0	40.0	20.0	10
Waste Water Volume	85.7	20.0	20.0	25
Water Consumption	85.7	74.0	60.0	50