

## Periurbanization in Chennai: a city expanding southwards

Much of Chennai's recent urban expansion has been southwards. It is bound on the East by the Bay of Bengal, and Northwards, it touches the boundary of Andhra Pradesh. Thus, it is predominantly the South that provides space for the city to grow. In this context, the Old Mahabalipuram Road (OMR) has been the seat of urban expansion, expanding the frontiers of the city towards the World Heritage site and tourist attraction of Mahabalipuram. Parallel to this is the East-Coast Road, that has also witnessed some development over recent years.

South Chennai has since been growing as an IT corridor; in this process of expansion, the city has engulfed several fishing and agricultural villages and hamlets – of which Chennai has traditionally been an agglomeration - creating several ecological and environmental challenges that the current governance and administrative machinery is unable to cope with. Many of these problems have resulted from the growth of the city beyond its carrying capacity and the disconnect between urban and environmental planning.

In the course of the discussions with the various academicians, civil society representatives and government officials, it was highlighted that periurban areas of the city are affected because of lack of proper urban solid waste management techniques. Solutions sought for solid waste management are in general, not in line with land use planning. Further, most periurban areas are still connected only with open drains rather than with underground ones.

The fall in water tables and salinity intrusion are other emerging issues. Further, the building of embankments and roads is often done without any regard to the hydrology of the areas. Developments have taken place without regard to the carrying capacity of the aquifers as well. Sandmining for urbanization was identified as another emerging issue.

Another major and new problem is urban flooding, which was not the case till a few years ago. Flooding is a periurban issue that is human triggered because wetlands are converted to concrete and also because of the fact that slum rehabilitation is shifted to the wetlands and thus the natural course of water is severely tampered with.

There has been a shift in how periurban areas were conceptualized in the city, especially in terms of the administrative jurisdiction. Earlier periurban areas used to refer to scattered urban areas outside the city, that have now been brought into the fold of the Municipal Corporation.

Academicians from institutes like Anna University, Madras School of Economics, Madras Institute for Development Studies, the Dhan Foundation and the Geography Department of the University of Madras are carrying on research on various aspects of the multi dimensional periurbanization in Chennai.

Apart from academics, there has been an increased interest in these issues among several NGOs in the city that have taken up these issues for continued engagement. In particular, a number of NGOs have been widely active on the front of protecting periurban water bodies; such as Care Earth, Sustain and Dhan Foundation.

In the course of discussion with several stakeholders in the city, especially academics, NGOs and researchers, several areas for further research were identified. The first of these was eco restoration

of urban areas. Within the city, there are several marshy areas and wetlands, that are gradually being encroached upon by the city. This constitutes an area for further research, moreso on strategies for reviving them and protecting the livelihoods of those who depend on them. Another area for research is reviving the agricultural systems in the periurban areas around Chennai. The traditional way of growing paddy in the region is not lucrative any more ; horticulture has also not been very lucrative because of several factors such as lack of marketing chain. So there is a need for research and extension on alternative livelihoods options. There is a need for establishing norms for groundwater use. There is also a data need in terms of how much is contributed in volumetric or econometric terms through recharge. Rigorous studies are needed on resources and carrying capacity of aquifers and rain-water recharge.

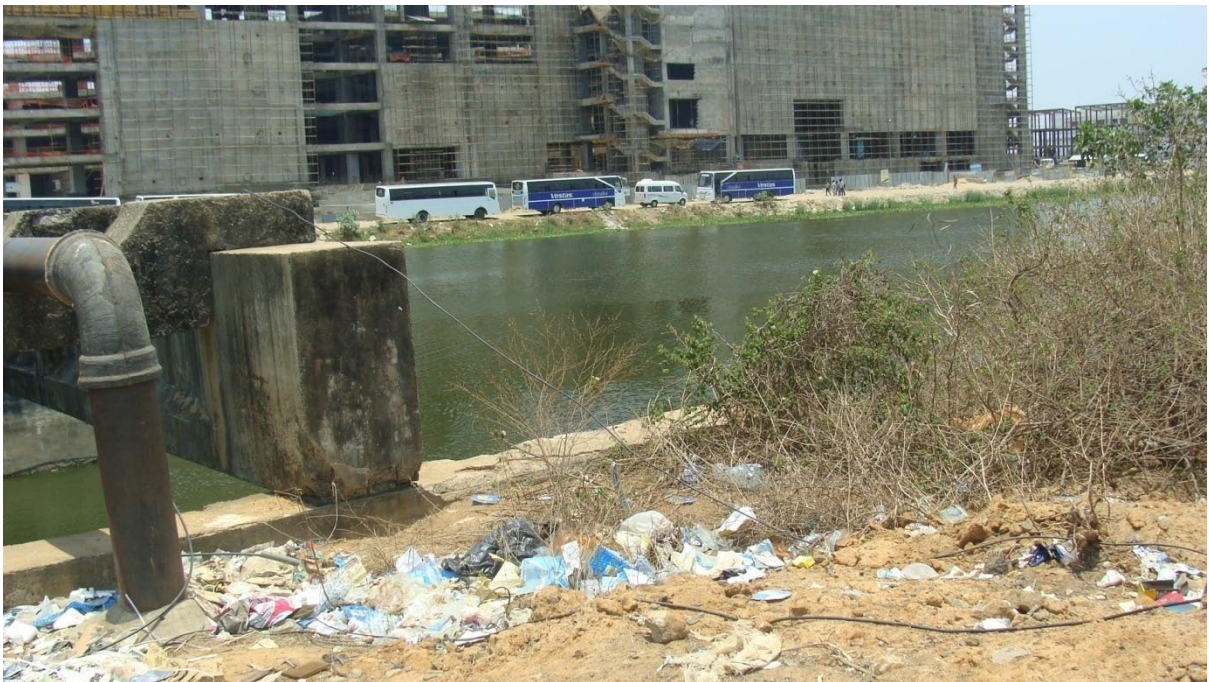
**Some interesting photos from the field visit to Chennai:**



Educational institutions and up market medical facilities catering to the needs of the urban elite exist alongside the rural village set up



Mahabalipuram is a tourist destination that also competes for the natural resources of the Peri urban area of Chennai.



Disposal of waste becomes a challenging problem in peri urban Chennai

## Ahmedabad

Ahmedabad is one of the fast expanding cities in India. Located on the banks of the river Sabarmati, it is very close to Gandhinagar (about 30kms) which is the capital of the western state of Gujarat.

The development in the peri urban areas of Ahmedabad is closely linked to transport routes. The city is growing radially. It is encompassed by the Sardar Patel outer ring road and the areas where the ring road converges with the National highways are being developed more rapidly than the others. This is suggested to be because constructing urban infrastructure along such a route is very lucrative for real estate developers. Thus the idea is that growth and development are not uniform in all peri urban areas of Ahmedabad though the city is expanding radially. The relationship between rural distress, development and connectivity to the city are inter linked and connectivity to the city is considered one of the most important reasons for development in the peri urban areas.

There is a new industrialization driven by the automotive industry along the peri urban road leading towards Sanand. It was highlighted that a couple of years back the industrialization in this area was textile led. In fact it was called the 'Manchester of the East' but the current scenario is that it is pharmaceutical chemical based products that are leading industrialization along with the automotive industry.

Apart from heavy industrialization that characterises parts of peri urban Ahmedabad, there are several residential complexes coming up here. Farm houses, golf clubs and other such luxury housing and infrastructure are part of this stretch as this is conveniently outside the main city yet not too far to commute and these luxury housing facilities are coupled with provision of luxury amenities.

The Sabarmati Riverfront development project is an initiative of the Ahmedabad Municipal Corporation to develop the Sabarmati riverfront that has several implications for the peri urban. Close to 2000 families have been moved as part of the Riverfront development project temporarily to wasteland areas outside the city, near Ganeshnagar, Pirana. The argument is that this slum rehabilitation even if temporary can have dire consequences as the area (Pirana) is a major dumping site for waste. The stench is unbearable and there could be several consequences in terms of health. Further, the idea is that these people who were in a regular urban residential area, albeit in slums when moved to area near industries or waste dump yards with no or less public transport, face a host of problems including denial of access to basic amenities and conveniences that were available to them in the city. While the distance of relocation may not be much on the map, but on ground such relocations were suggested to be very difficult for those being relocated.

At the same time, there are others who are in favour of this move, they opine that instead of living in slums, they are given pucca houses which increases their asset value and which would be lucrative for them

The questions of infringement of citizenship rights and the issue of transparency were brought during the course of the discussions with the academicians and civil society representatives.



It was suggested that there is a need for a long term pan geographic approach to planning and that it shouldn't be ad hoc. At the same time there was an emphasis on the fact that the dynamic nature of the peri urban area should be kept in mind and that here must be provisions made for that. Further, this must be done by evolving mechanisms to actively involve the local people based on a needs assessment. And in making all the plans, environment must be a major concern. It was suggested by some of the interviewees that at present despite many efforts by many agencies in the peri urban area, there is a lacuna in addressing the environmental problems of these areas of Ahmedabad.

The idea is that the city limits are being drawn and re-drawn based on public and private real estate planning for commercial, housing and industrial purposes. And the fact remains that while there are several bodies working in parallel for many causes in the peri urban of Ahmedabad, there is a need to bring in more correlation among the various bodies and to understand the needs of the peri urban dwellers, thus making the planning process more comprehensive and inclusive. It was thus highlighted that there must be a conscious, concentrated and coordinated effort by all the stakeholders as well as the other agencies working in these areas to create a conducive atmosphere for all.

#### **Some interesting photos from the field visit to Ahmedabad:**

Heavy vehicles like lorries transport heavy industrial material between the industries located along the peri urban stretch towards Sanand and the main city (Ahmedabad)





Photos of industries in peri urban Ahmedabad towards Sanand



Concrete mixing is being done in this plant

Pratiksha Chemicals is one of the major chemical industries along the peri urban road towards Sanand . Below is the photograph of the industrial plant of Pratiksha Chemicals





## Patna

Peri-urbanization in Patna is an expression of process of growth and reorganization of internal space, significantly affected by a host of political, cultural and socio-economic factors. The total Urban Agglomeration population of the city is about 1,707,429, in addition daily commuters and floating population, like, tourists etc is estimated to be around 2 lakhs. Over the last 5-6 years Patna has gone multiple transformations—physical, morphological, socio-demographic, cultural, economic and functional in its peri urban interface. It became a space constituting of underprivileged settlers (migration to the cities by the rural poor and the resettlement of slum dwellers from the city after the demolition of their homes) coexisting with urban affluent. This has resulted into diverse and conflicting stakes, culminating into several environmental and socio economic hazards. In absence of any revised master plan the city started showing the signs of decay both within and along its fringes. Among several environmental hazards that the city is presently struggling with solid waste management, poor drainage and arsenic pollution are most critical ones.

Solid waste management is among the most poorly rendered services here – the systems applied are unscientific, out dated and inefficient; and population coverage is extremely low. There is no specified landfill site and the wastes are dumped in the low-lying areas along the periphery.



**Heaps of Garbage is found everywhere in and around the city's periphery**

segregated way. Citizens have not been educated to keep domestic, trade, and institutional bins for storage of waste at source and stop littering on the streets.

The sewerage system in Patna is fairly old, established in 1936. The city has open drainage system, with only 10% is closed in selected pockets. The peri urban areas of the city are completely neglected in terms of sewerage treatment. There are no well defined channels and all the untreated

Situation is all the more worse in the fringe areas coming outside the ambit of the Patna Municipal Corporation. Problem not only lies in dumping the waste, but also the mode of transport use and the time of dumping. Mostly uncovered vehicle is used to transport the waste, resulting into frequent droppings. Besides, there is no fixed time for dumping. During rainy season such heaps of environmentally hazardous waste becomes the source of critical water borne diseases. There is no practice of storing the waste at source in a scientifically





domestic and industrial waste gets dumped into the open ground or in nearby river making the living environment unhygienic. There is frequent intermixing of storm water and sewerage. Drains are often clogged with garbage and silt thus reducing their carrying capacity. People suffer from persistent water logging for months together, during and after monsoon. The situation is worse in the marshy low lying areas of peri urban slums, where water logging continues year after year. The



**Open drainage is common in Peri Urban Patna**

drainage pumping plants does not work to designed capacity and the unplanned growth of the city creates further pressure in the infrastructure.

Ground water is the main source in Patna and its fringes. Over the last 10 years groundwater extraction has increased particularly in the outskirts in order to cater to the ever mounting demand of newly established commercial, residential and up market

colonies. The immediate problem associated with

groundwater is of arsenic. Most of the shallow aquifer of the Patna Peri Urban Areas of Danapur, Maner etc are heavily affected by arsenic. Shallow tube/bore wells, which are predominant in these fringe areas, are thus more susceptible to arsenic pollution. Discussion with the villagers in Maner block of Patna made it very evident that people are not aware of this grave problem. There is lack of efforts both from Government and NGO side in terms of addressing this issue effectively and urgently.

## Guwahati

Historically, Guwahati has been a port city, where its build up area was confined around two major river ports of Brahmaputra namely, Sukleswar and Kachari Ghat. City experienced piecemeal growth since 1970s with shifting of Assam's capital from Shillong to Dishpur (Guwahati). During the initial period of its expansion the tendency of the growth was linear along the roads in the periphery. Between 1990-2000 the city started growing in all directions more pronounced on the southern side to the Dispur-Basistha plain across the narrow corridor between Japorigog and Fatasil hills. The growth was also seen along the National Highway 37 from Basistha to Tetelia. Post 2000 direction of growth changed from south to more west east and north wards. Physical constrained by the presence of Meghalaya plateau and presence of large wetlands restricted city's growth further south. Presently, Guwahati metropolitan area (GMA) covers Guwahati Municipal Corporation, North Guwahati Town Committee, Amingaon Census Town and 21 revenue villages .The total area covered under GMA has increased from 262sq km to about 315.72 sq.km within two years (i.e 2010-12). Today, fringe areas of the city is in speedy transaction from rural to a peri urban landscape. Inclusion of 5 more municipal wards and satellite townships west and north of Guwahati testifies to such fast sprouting peri urban corridor.

The most crucial issue in understanding the peri urban dynamics is perhaps to identify and demarcate it. Arguably, peri urban areas is often been referred to the areas located on the outskirts of the contiguous built-up area of the established cities, having mixed land use. Interestingly, in many cases peri urbanization does not follow the conventional pattern of growth along the city's periphery but moves in a haphazard and sporadic way. In fact they are not merely one zone amongst others constituting the metropolitan space, but a space whose use corresponds to diverse and often conflicting stakes, indicative of processes signifying a political and societal vision of the city and access to it. Guwahati typifies such phenomena where nuclei of peri urban areas can be found within the so called contiguous build up areas of the core city. Growth of such pockets of peri urban zones within the urbanized area makes Guwahati an interesting area to study.

Guwahati always has a rich natural resource base of forests, hills and natural wetlands. Interestingly, for the past 10 years, the city has experienced deranged growth leading to drastic change in its land use and land cover. Travelling in the outskirts along transit corridors of NH31 and 37 clearly shows fast developing peri urban landscapes consisting of an intense mixture of agriculture, industry, commercial and residential use. Vast agricultural land and several water bodies have been filled to give place to high rise apartments. Disappearing wetlands, decreasing forest cover and

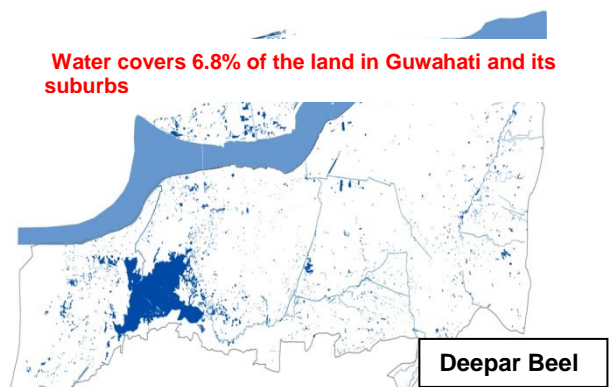


**Hill cutting leading to increased soil erosion and siltation of the open drainage in the peri urban areas of Guwahati**

declining cultivable area has not only disrupted the natural ecosystem but also displaced many of the aboriginal tribes like Kargies, Boros, Garos generally occupying these fringe areas.

Discussions with policy makers, researchers, academicians and civil society organizations have time and again surfaced the issue of ecosystem disruption due to unplanned city growth. They all agreed to the fact that peri urbanization has caused the city to lose a considerable amount of its land of high ecological value. Invasion of city's space into the rural hinterland has disrupted the micro ecosystem of forest, wetlands and hilly landscape. Thinning down of forest cover has promoted illegal poaching and selling of woods to the Meghalaya border. Hill cutting for construction of hotels or institutes has forced the animals to intrude into the human habitation. In fact frequent attacks of elephants and panthers have been reported for last two years.

Guwahati's natural terrain consists of a bowl shaped valley interspersed with numerous water bodies. Since centuries these wetlands, locally known as 'beels', has helped in natural recharging of the ground water aquifer Besides, they have formed the livelihood sources of small and marginal farmers of the fringe villages. Over the last couple of years with rapidly expanding city's build up area these wetlands are getting filled up. Constructions of institutions, apartments, industries over these swampy wetlands have not only bodies but also snatched the livelihood source from the marginalized local villagers.



Source: Carrying Capacity Based Urban Development Regulations study, by Center for Environmental Planning and Technology, 2010

Urban flooding is a not a new phenomena for Guwahati as the city is bowl shaped, and 40% of its area is susceptible to flooding. However, for the last couple of years the incidence and duration of flood has increased noticeably. Civil society representatives have pointed out that disappearing wetlands, rock cutting and siltation of the open drainage system are factors responsible for such dismal situation. Furthermore, river beds and wetlands are converted into real estate plots causing reduction in the recharge and consequent flooding.



The city of Guwahati is presently served by piped water supply in limited quantity (only 30%) and in specific areas. These facilities neither cover the entire Greater Guwahati Metropolitan Area marked by Town & Country Planning Department nor fulfil the standard of per capita demand within and outside the Municipal boundaries. It is observed that the system is not fully a close network distribution system. It is mostly of dead-end type, which does not ensure



the equitable distribution of water everywhere. Most of the existing schemes are running with very low capacity utilization. The peri urban Guwahati is entirely ground water dependent. In fact, though some pockets of the outskirts do served by piped water, the source always remains groundwater aquifer. According to Central Groundwater Board the city falls under safe category, and sufficient resources are still available for future development. However



**Open drains in the peri urban Guwahati**

researchers and civil society representatives complained about the fast growing groundwater extraction leading to groundwater depletion in parts of Guwahati and the problem becomes more severe in winters. Discussion with them surface the fact that groundwater extraction should not be allowed indiscriminately as possibilities of extracting is remote in the hard rock areas. The recent survey has revealed that Groundwater sources are not suitable for drinking because of the presence of high level of dissolved solids and iron content. Of late, presence of excessive fluoride and arsenic has also been detected in underground water in certain pockets of peri urban Guwahati. Such arsenic pollution is essentially man made, result of intermixing of sewage and storm water.

One of the crucial issues that found cursory mentioning in otherwise growing literature of Peri urban in India is the whole issue of governance. Since these are the zones of both rural and urban local governments, there is often duplicity of service delivery. The city is expanding fast as seen from the inclusion of 5 municipal wards, which otherwise were under gram panchayats, into greater Guwahati Municipal Area. Such notification came suddenly leaving the local governance functionaries no space to develop their capacities. Civil society organizations often complained about loss of the work due to such transformation in the governance. Like Mr. Samata Kalita from Center for Environment and Education mentioned that they had to withdraw themselves from a village which got transformed into urban local body.