



# Contesting sustainabilities in the peri-urban interface

**STEPS**  
Research  
report

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The STEPS Centre and Sarai

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# Introduction

This research report is intended to inform and encourage debate on the management of resources in the peri-urban fringe. In particular it demonstrates how the dominant, mainstream, strategies for water supply and management are failing in terms of social justice and environmental integrity, and the particular opportunities and challenges associated with the peri-urban situation. It then explores a range of alternative perspectives on priorities for peri-urban water management, and opportunities for opening up more socially just decision making processes in this regard. The information presented here is based on research carried out by the STEPS Centre and Sarai, New Delhi, between 2008 and 2010. It has involved many stakeholders in Delhi and peri-urban Ghaziabad.

This research recognized that despite an increased awareness of peri-urban issues and a growing research presence, there is still little insight into the management approaches that will tackle poverty alleviation and social justice alongside environmental integrity, and draw synergy from urban and rural relationships. The peri-urban project aimed to bring together the social, technical and environmental dimensions of peri-urban areas and chart how these interlock, reinforce - or contradict each other and change over time. The project has also aimed to track diverse pathways (ways in which interacting social, technological and environmental systems co-evolve over time) and assess which pathways can address the needs and interests of marginalized and disenfranchised groups in ways that enhance sustainability. In sum, our research has sought to unpack the politics of sustainability in peri-urban areas, and unravel alternative visions of sustainability that are often hidden due to issues of power and politics.



Coping Mechanism of Accessing Water

## Credits

This research has been funded by the ESRC STEPS Centre at the University of Sussex (see [www.steps-centre.org](http://www.steps-centre.org)). The fieldwork on which this briefing is based was carried out by a large number of scholars based at Sarai programme, Centre for Studies in Developing Societies (CSDS) and the STEPS Centre, University of Sussex. The team members of Sarai included Awadhendra Sharan, Alankar, Bhagwati Prasad and Lokesh Sharma while

those from STEPS Centre are Lyla Mehta, Fiona Marshall, Pritpal Randhawa, Linda Waldman and Hayley MacGregor. This briefing draws on collective research from the project and incorporates material from project reports produced by various team members. It has been compiled by Pritpal Randhawa with inputs from Fiona Marshall and Lyla Mehta. Photographs by Bhagwati Prasad.

## How has sustainability been understood and sought?

The future is increasingly urban, with a predicted 60 percent of the global population being urbanized by 2030 (UNFP, 2007). Alongside this rapid expansion comes the emergence of the peri-urban interface: the increasing intensification and co-existence of urban/rural linkages, marked by dynamic flows of commodities, capital, natural resources, people and pollution. Conflicts over land, water and tenure emerge: polluting industries, waste disposal, mining, construction and large-scale cash crops all jockey for position with small-scale agriculture and common lands. All these changes raise significant challenges with respect to basic service provision, the management of ecosystem services as well as environment and social justice. The impact of these changes is especially serious for the most marginalised residents, who remain largely excluded from service provision and bear more of the costs of the shrinking commons, of poor waste management and of environmental pollution. This rapidly-changing environment has significant impacts on the health and livelihoods of an increasing number of disenfranchised, poor and marginalised citizens who often lack access to basic health, water and sanitation services.

The term sustainability is used in many different ways. When sustainability is viewed in terms of increased environmental integrity and social justice, it is an appropriate goal in relation to the peri-urban. It is well recognised that environmental degradation, natural resource conflicts, health concerns and social injustice are particularly acute in peri-urban situations, but the implications of not addressing them are far-reaching, with implications across both time and space. There are many feedback loops between the urban core and the peri-urban. One example

is the re-siting of polluting industries from the urban core into more peripheral areas. The toxic pollutants appear to impact mainly on peri-urban localities and the poor who live in their vicinity, but these pollutants have impacts across time and space and will increasingly affect the urban population - for example, in the form of contaminated food which affects all sectors of society.

Failure to address these apparently peripheral issues, therefore, not only misses out on various opportunities from rural-urban synergies (for example, in waste management or providing affordable and nutritious fresh produce); it also undermines the ability to improve environmental integrity and social equity, and alleviate poverty, in growing cities.

Sustainability has dimensions of both environmental and social justice. However, whilst there is much current debate in Delhi which focuses on the need for either pro-poor or pro-environmental actions, these two strands of debate are arguably becoming increasingly divergent. This is played out in myriad ways on the ground. For example, an environmental argument may be made for displacing poor people (beautification of the city); or a rights-based lobby may mobilise people through a social justice agenda to have legal access to groundwater, in an area where the water level is recognised to be critically low. This report demonstrates that it is essential to bring these strands of concern together as part of an overarching development agenda. Thus, in order to design alternative, more sustainable, pathways for peri-urban management, it is necessary to recognize and address the inevitable conflicts that arise, for example between access and environmental sustainability; justice and legality; and efficiency of use and equality. The STEPS research examined these, and other, priority issues from the perspective of a range of different stakeholders in exploring

alternative potential management strategies. Our research also looked at opportunities for building bridges between these alternatives, and current dominant perspectives.

## Water as an entry point

The STEPS peri-urban project has addressed the above challenges through a focus on water. This choice is not accidental. Until now, much of the peri-urban literature has been concerned with land-related transitions. This is indeed important, as some of the major changes underway are driven by land-related developments. However, this singular focus also limits what questions may be asked about sustainability in the peri-urban as an entire zone. The focus on water thus provides another entry point to ask questions about policy, science and engineering, in regard to supply and quality; how to adapt economic practices that rely on water as a major resource, most notably agriculture; and about the relationship between waste (water) and health, and the consequences that people feel that this has for their long-term reproduction and growth. Focusing on water also enables us to look at governance processes up close, especially through the many informal (and often illegal) practices through which people meet their demands for water as a basic survival resource. Water is also subject to multiple uses, the outcome of these competing demands having a significant bearing on the future prospects of a peri-urban zone.

## Peri-urban challenges in Ghaziabad

The STEPS project focused on the Trans-Hindon region of Ghaziabad, located in the state of Uttar Pradesh on the eastern border of Delhi. Ghaziabad was carved out of Meerut district in 1976. The River Hindon, which flows from the north of Ghaziabad, divides the city into Trans-Hindon (west) and Cis-Hindon (east) regions. Currently, the population of Ghaziabad is slightly less than a million

(Ghaziabad Development Authority, 2006, page 7). In the early 1960s there was a proposal in the first master plan of Delhi to develop Ghaziabad as a satellite town, but the industrial development that took place in Ghaziabad between 1960 and 1980 has transformed it into an industrial town (ibid, pages 4-5).

In accordance with transformations in Delhi, since the late 1990s Ghaziabad has also seen significant changes to its physical, social and cultural landscape. After the Supreme Court ordered the closure of polluting industries in Delhi in 1996 and 2000 respectively, numerous polluting industries were moved out of Delhi to Ghaziabad. In conjunction with the growth of industries, there was also a considerable rise in the construction of middle class flats in Ghaziabad. Numerous middle class colonies were developed close to the Delhi border in the Trans-Hindon region (including Koushami, Vaishali, Vasundhara, Indrapuram, Shalimar Garden, Lajpat Nagar, and Rajender Nagar). Most of the flats in these colonies are inhabited by the middle class population working in Delhi who could not afford to purchase flats in Delhi itself (ibid, page 41). Alongside the growth of industries and middle class colonies in the region, there was also an expansion of formal and informal colonies inhabited by poor people in the Trans-Hindon region. This expansion was mainly due to the significant migration that took place during this period of people attracted by the growth in job opportunities.

The growth of industries and middle class colonies in the Trans-Hindon region, as well as the rapid influx of poor labourers from different parts of India, have led to significant pressures on infrastructural provision, with inadequate responses from state authorities. We focused specifically on water supply and waste-water management in our analysis. The existing water supply in Ghaziabad, which was

dependent on groundwater extracted by tubewells, was supplemented by surface water brought into Ghaziabad at Pratap Vihar water treatment plant (WTP) through the Ganga Canal. The water treatment plant is being maintained by a private company, Enviro Engineering, through a contract with the government. For domestic wastewater, in addition to the sewerage treatment plant (STP) at Dudaheera (Cis-Hindon), there another STP was built in Indirapuram (Trans-Hindon) with the capacity to treat 56 mld (million litres per day) of wastewater. It has to be noted that even though Ghaziabad is an industrial town and in the recent past there has been a rapid growth of industries in the region, currently there are no common effluent treatment plants (CETP) in the district (although there is a proposal under the Yamuna Action Plan (YAP) III of building 3 CETPs).

Fieldwork was conducted in the informal colonies, villages, middle class colonies and industrial areas including Vasundhara, Rajendra Nagar, Lajpat Nagar, Shalimar Garden, Karhera village, Karkar Model Village, Arthala village and its different localities (Sanjay Colony, Ambedkar Bastee, Chitrakoot Bastee, Balaji Vihar), Rajiv Colony, Anand and Loni industrial areas. The team interviewed and communicated with approximately 125 residents, ranging from farmers, migrant workers, school children and activists, to private water plant owners, property dealers and industrialists in different areas of the Trans-Hindon region in Ghaziabad. Additionally they interviewed 25 government officials, ranging from maintenance staff to the chief engineers and planners from several government departments in Ghaziabad and Delhi; the team also consulted a wide range of secondary data sources, including government and planning reports.

### Policy process and planning

Peri-urbanism is often considered to be a 'temporary' phenomenon by planners and officials and the word 'peri-urban' is not part of many officials' vocabulary. Hence, peri-urban residents' interests are rarely prioritised. Owing to a range of conceptual and administrative ambiguities, they fall between the cracks of jurisdictional divides (e.g. urban vs rural and centre vs state).

The policy and planning related to water and wastewater in Ghaziabad is an outcome of the complex interaction between several government agencies and actors at different scales within and beyond the water sector. For instance, at the national scale, the central government ministries and their subsidiary organizations prepare the water and waste water related policies, which are relayed to the relevant state government ministry/ department, which then translates them into schemes and programmes for implementation. The actual design and implementation of a scheme is largely carried out by the regional/city level government agencies. Evidence from Ghaziabad suggests that, despite a straightforward technocratic model of planned interventions to ensure safe and secure water supply, there is minimal or negligible interaction between these agencies.

#### Box 1: Plethora of agencies but minimal interaction

At the national scale,

- The Ministry of Water Resources (MOWR) is responsible for laying down policy guidelines and programmes for the development and regulation of India's water resources.
- The Ministry of Urban Development (MOUD) is responsible for formulating policies, supporting programmes, monitoring programmes and coordinating various Central Ministries, State Governments and other nodal authorities related to urban development issues across the country.
- The Ministry of Housing and Urban Poverty Alleviation (MOHUPA) formulates policies, funds and supports programmes, coordinates the activities of various Central Ministries, State Governments and other nodal authorities and monitors the programmes concerning all the issues of urban employment, poverty and housing in the country.
- The Ministry of Environment and Forest (MOEF) is responsible for planning, promoting, co-ordinating and overseeing the implementation of India's environmental and forestry policies and programmes.
- The Central Ground Water Board (CGWB) works under MOWR and monitors India's ground water resources.

- The Bureau of Indian Standards (BIS) sets national standards of water quality.
- The Central Pollution Control Board (CPCB) works under MOEF and deals with the issue of water and air pollution at national level.
- The National Planning Regional Board (NCRPB) was formed by the MOUD. It develops the regional plan for the national capital region.

In Ghaziabad,

- The Ghaziabad Development Authority (GDA) develops the master plan of Ghaziabad and acquires land for housing and other development.
- The Ghaziabad Nagar Nigam (GNN) is mainly responsible for providing public utilities such as water supply, sanitation and health services, whilst the regional office of Uttar Pradesh Jal Nigam (UPJN) executes various state-level schemes and programmes for the arrangement of water for domestic and industrial purposes in Ghaziabad.
- The Department of Irrigation (DOI) is mainly responsible for providing water for irrigation.
- The regional office of the Uttar Pradesh Pollution Control Board (UPPCB) deals with the water and air pollution-related issues.
- The Department of Medical Health and Family Welfare (DOMHFW) is responsible for public health issues, and occasionally carries out testing of drinking water.

The evidence from Ghaziabad also indicates that policies, schemes and programmes related to water and wastewater are primarily guided by the politics of the ruling party in the centre and at state level, and the individual perceptions of the officials who implement them. The translation of policies into schemes and programmes is a top-down process. Interviews with the officials at different levels and departments that manage water supply and waste water suggest that the modus operandi of most of the officials is based on calculations and projections of the Ghaziabad Master Plan (Ghaziabad

Development Authority, 2006). Largely, problems related to water supply and waste water are deemed to be solvable through technical solutions. Our research and that of others highlights that this narrow focus on technical solutions produces an incompetent water management system, because it overlooks how technical solutions interact with conflicts and contradictions on the ground concerning access, provision, power and politics.



**Box 2: The inadequacies of technical solutions**

The Ghaziabad Master Plan (GMP) of 2021 states that 160 mld groundwater and 70 mld surface water is available in Ghaziabad. By the year 2021, the total demand of water is predicted to increase to 510 mld per day. This demand will be met by increasing the number of tubewells to extract 298 mld of groundwater and by enhancing the

capacity of water treatment plants to clean 212 mld of surface water. The GMP 2021 discusses the issue of increasing availability of water, but it does not discuss how this increased availability would be distributed between the different types of formal and informal settlement, and social groups. There are also no plans to improve services around sewerage provision in the informal colonies.

The field work in Ghaziabad also illustrated that there is a high degree of contradiction in the process of translating policy into action. Some officials with responsibility for

implementing the policy are either unaware of, or may intentionally ignore, elements of the policy which are in favour of informal colonies or the poor (see Box 3).

**Box 3: Contradictions within the system**

According to the Ghaziabad Master Plan (GMP) 2021, "there are about 33 percent of informal colonies in Ghaziabad, which would be regularised and also provided public utility services".

The Chief Engineer of the Ghaziabad Development Authority (GDA), the agency which prepares Ghaziabad Master Plan states:

"We don't do any planning for slums and unauthorised colonies... they are the responsibility of GNN". The Town Engineer (water) of GNN says that "GNN does not have mandate to regularise colony. GNN is merely a service provider organisation. It is the GDA who develops colonies and hand it over to us".

Our fieldwork has revealed that there has been a conscious elite bias in the implementation of the GMP. For instance, when surface water availability was increased in 2002-03, creating the capacity to supply 120 mld water, more than half of the treated water from this plant was supplied to the largely elite and middle class housing colonies of the Ghaziabad Development Authority and the Awas-Vikas Yojana (Housing Development Plan). The rest is supplied to Noida, an adjoining town in UP which leaves poor residents in the villages and informal colonies completely ignored and bypassed. Interviews with the residents of one of the middle class colonies (Vasundhara) suggest that the independent houses have individual supplies of water through GDA's Ganga water

provisioning. Residents enjoy up to 5-6 hours of running water. Additionally all the households have a motor installed on the main water pipeline provided into their housing premises by the GDA. The use of the motor is deemed 'essential' in order to fill up domestic storage tanks as well as overhead and underground reservoirs. The resident welfare associations (RWAs) remain in regular contact with the State officials of the GNN regarding any complaints about water supply provisioning. Even though poor and informal neighbourhoods exist alongside the elite and middle class colonies in the region, and despite the fact that they face serious scarcity of drinking water, no provision has been made to improve their situation under this scheme.



Coping Mechanism of Accessing Water

**Peri-urban realities/strategies**

The water situation in the villages and informal settlements in the Trans-Hindon region is very different to that of the middle class colonies. In the villages and informal settlements, water is accessed through a mix of formal supply and informal coping mechanisms: these include tapping water from the formal piped supply going to the formal localities; extracting groundwater through submersible pumps; and borrowing drinking water from the middle class colonies. It is largely women and children who go out to collect water from these different sources. Women are the ones who manage the small amount of water that is available and they endure the drudgery of everyday tasks related to water use; women also often bear the brunt of the poor water quality. By comparison, women living in middle class colonies have an easy situation. Their water-related tasks involve managing the motors to get the water storage tanks filled, washing clothes using washing machines, and cleaning the dishes either by themselves or with the help of housemaids, servants etc.

The state of sanitation in the villages and informal colonies is largely dismal with open defecation which often robs women of their dignity and has significant health impacts.

The evidence from the field also illustrates that people in the poor colonies have to pay different types of costs for accessing water. For the people at the very bottom, for example residents of Rajiv Colony and a few localities of Arthala and Karhera villages, the costs involved are time and opportunity and most importantly the health cost associated with bad water, which is either drawn from hand pumps tapped from formal sources.

At its most extreme, for the poorest people living in Ambedkar Bastee, the cost of obtaining water is sometimes even life itself. This is down to the particular geography (or, to be precise, social geo-spatiality) of the Ambedkar Bastee. For the community here, being crushed under the wheels of a train was not unusual: they had to cross the railway line every day to borrow water from the adjoining middle class colony. Now, happily, local people have been able to persuade local political leaders to provide a submersible pump for the community. But, given that most of the poor neighbourhoods in the periphery or in the city are located in highly degraded or dangerous localities, such accidents are not likely to be confined to Ambedkar Bastee. In a situation marked by the gradual filling up of various water bodies, and the increasing centralisation of water management, residents of increasingly urbanized villages are nostalgic for the days of multiple water sources and local water management.

**Box 4: Traditional water storage system – Johads**

Until 1990 Karhera village was dependent on surface water sources from the river Hindon for agricultural purposes: johads, situated in the cultivable fields for storing rainwater, and wells inside the village for household usages. Until the 1980s the water of Hindon was clean, but it started deteriorating after the rapid industrialization in the region. Villagers say that there were three johads in the village. They were built and managed by the villagers but started disappearing in the mid-1990s, largely because of increasing pressures on

land and encroachments by both old village residents and newer migrants. Until the 1990s, seven wells existed in the village. These were important wells which provided very 'good' quality potable water to the villagers. The wells, like johads, were considered common property, were well-maintained and also had religious significance. Rituals (pujas) were performed on the wells during various ceremonies held as part of marriages, births, etc. All seven wells are currently not in use because of the deteriorating water quality in the region and the declining water table.

Water quality is another major issue. The regional office of Uttar Pradesh Pollution Control Board deals with water and air pollution-related issues. The Central Ground Water Board monitors the groundwater resources of the region. The Bureau of Indian Standards sets the national standards of drinking water quality. But there is very little coordination amongst these agencies. In official parlance, treated water is provided through chlorination. The Jal Board takes water to a certain distance, after which the Nagar Nigam or Ghaziabad Development Authority (GDA) take over. Similarly those in charge of water supply through Ganga water and other projects see their roles as ensuring good quality of water when it leaves their premises, after which it becomes the responsibility of those in charge of supplying it to the households.

Even for middle and upper middle class colonies, water quality is a major concern. It has been reported that all the new middle class colonies are being constructed with pre-installed Reverse Osmosis (RO) systems. Even though most of the middle class colonies such as Indrapuram, Vaishali, and Vasundhara receive treated Ganga water, they still use RO because of a lack of faith in the

treatment of water by the government agencies.

Water quality is assessed by the residents of villages and informal settlements in terms of colour. We were told that drinking water often turns yellow overnight. Buckets and taps frequently began to leak and eventually lose shape on account of bad water. Childhood memories are recalled, of a time when it was possible to cook with this water which is now unusable. "hamare bachpan mein is paani mein dal pak jaati thi!" (In our childhood we used to be able to cook dal with this water) And as another resident put it to us: "This much we can see. God alone knows how much damage it does to us once it enters our bodies." In other instances, quality of water is inferred from its presumed impact on people's bodies, such as premature falling of the hair and rashes on the skin.

Since water quality is a major problem for both the rich and the poor, a private industry of small-scale private retailers of packaged drinking water has boomed. Purifying water is both expensive and has high environmental costs (see Box 5). All the small-scale providers are connected to the larger system of water treatment which packages the drinking water.

**Box 5: Water Plant located in the middle of agriculture field**

EmKay Scientific Products Limited is a water plant located in the agriculture field of Karheda village. It treats, packages and sells drinking water by the brand name of 'Soft and Pure Packaged Drinking Water'. The owner informed us that the water treatment technology is based on a Reverse Osmosis (RO) system. He says that it is a legal plant which has been set up with a license from GNN (something which is contradicted by GNN, see below). He chose the business knowing well that this region has new settlements of middle and upper class who desire better quality drinking water. The RO system installed in the plant treats 3,000 litres of water per hour and the plant is able to produce around 20,000 to 25,000 litres of

treated water every day for sale. He also acknowledged that he needs to withdraw almost double the quantity of groundwater for treatment, because the RO technique is able to provide half of the water as a product, out of the total water put to treatment. In this way around more than 40,000 litres of water is daily extracted by the plant in Karhera's land which is then further treated and packaged to be sold off in the market.

The location of the plant was particularly suitable because, being an agricultural area, the groundwater level is relatively high; in addition, the river Hindon flowing nearby replenishes the underground water. He said that the Indian standard for treatment is defined between 50 to 100 TDS (total dissolved solids).

According to the technical secretary of the Central Ground Water Board, the RO technology used by the private water plant reduces the TDS in the water, but the main problem with the technology is disposing of its sludge. The sludge is highly saline. If not disposed of properly, it increases the salinity of nearby water supplies. While officials are aware of both the large and small-scale water plants in the region, there is currently no provision for regulating or monitoring them. They are considered 'illegal' by the GNN and do not have licenses but no action is currently being undertaken to stop them. At the time of fieldwork, a survey was being conducted by the GNN to ascertain how many water plants existed in the region after which action was going to be planned. In the absence of any monitoring, the quality of the water from RO plants may be highly variable and not necessarily safe to drink, although it is sold on the basis that it reduces risks to health.

Formal arrangements for wastewater disposal exist only in the middle class colonies. The process of dealing with wastewater is far less visible, both at the official and unofficial levels. Most residents of middle class localities have little knowledge of the fate of water once it leaves their residence. Re-use of wastewater has been unimaginable among middle class residents. By contrast, residents in poorer neighbourhoods are much more exposed to wastewater. This wastewater, in part, is seen as a major cause of disease, especially skin disease. On the other hand, the same wastewater is also used for agriculture. What is new is the utilisation of domestic and industrial wastewater for the cultivation of vegetables.

## Box 6: Wastewater scenario in a poor neighbourhood

### Example 1

In Arthala, which is a mix of formal and informal settlements, despite residents' long-standing requests and articulations at various levels, the government has never provided the settlements with any kind of underground sewage system. All the localities have an open drainage system for disposing of the waste, both liquid as well as solid. These networks of small drains do not connect to any large systematic network of waste disposal but empty into a large pond of accumulated filth and dirt behind the Arthala village boundary. Ironically, this large sewerage pond has been developed by the GDA to build an 'aqua' entertainment space called the Indira Priyadarshini Park. Boat rides and picnics take place on the filth of the wastewater.



Indira Priyadarshini Park

### Example 2

Villagers in Karheda, an old village in the Trans-Hindon region, use domestic wastewater to irrigate their fields. Villagers said that this activity is a part of the long history of the village. The drains running through the interior of the village are highly maintained. The wastewater carried through these drains runs very swiftly across and is well-directed to the fields behind the village. On reaching the boundary of the village, all the drains merge into a main drain which runs from the middle of the cultivable lands. From there, the wastewater from the bigger drain is systematically allowed to reach the farmlands. To manage an equitable distribution of this drain water, the villagers have formulated a daily rotational system, whereby water is discharged to different fields on a regular basis. To allow for this system to work, small inlets are opened and closed to make the distribution of water possible. The system has been made to work in an extremely efficient manner for a long time in this village.



Domestic waste water reuse for irrigation

The discharge of industrial wastewater is similar to that of domestic wastewater: that is to say, water is let out in drains where available; where such drains are not to be found, it is simply discharged outside. The signs of industry's contribution to water pollution are evident all around Ghaziabad.

Some industries bore large holes and discharge their wastewater directly into the ground, which contributes to the contamination of the groundwater supply. Others use tankers to have wastewater carted away to destinations unknown. Mutual blame games are common: the pollution control

authorities blame the municipalities for inadequate attention to waste; residents blame industry – “jab se low-grade industry aiye hai, pollution kiya hai” (ever since low-grade industries have come pollution has increased) - and industrialists blame the government for having provided inadequate drainage facilities on the one hand and irregular electricity supplies on the other, which makes the running of effluent treatment plants (ETPs) a difficult proposition. The talk of a common ETP is very much in the air - there is a proposal of building 3 CETPs in the different areas of Ghaziabad including Tonica City (Loni), Pelukua Textile City and Moussori Ghulauti Industrial Area, although these are likely to be subject to the same difficulties in effective running. Whilst pollution monitoring does take place, resources are limited and the system seems unable to manage, particularly in relation to the numerous, high polluting small scale industries, which may or may not be registered.



Anand Industrial Area - discharging wastewater

## Conclusions and moving forward

Our research has focused on how the official water system in the peri-urban interface in Ghaziabad is shaped – how and why priorities are set, what actions emerge, and what

implications these have, particularly for the poor and marginalized. In an area characterised by increasing air and water pollution due to the relocation of polluting industries from Delhi, water quality has emerged as a major issue.

Whilst some existing initiatives focus on equity of water supply, enormous inequities remain and their causes and implications are still not fully understood. Furthermore, there is little focus in official circles of issues beyond supply – i.e. how water is actually used by poor and marginalised communities, the coping strategies that they develop to deal with essential daily water requirements, and the implications of these. It becomes difficult to address such issues within a formal system where different agencies deal with the various aspects of water management such as access, quality and pollution, with little coordination between them.

In contrast to the formal system, local dwellers do not distinguish between supply and quality issues. Yet bureaucratic and institutional responses separate these critical issues which impact negatively on the lives and livelihoods of the poor and marginalised who bear the costs of polluted water through negative impacts on their health. Residents in so-called unauthorised colonies completely lack any official provision, putting themselves at great risk to meet basic needs - some cross high-speed railway lines to access water and may pay for water with their lives.

Insights from this case study have demonstrated that, in order to move towards more sustainable water management, there is a need to re-conceptualise notions of risk, quality, and waste in dynamic peri-urban localities. It is also important to look at the peri-urban as a process that lies beyond geographical boundaries, and to rethink the concept of regional planning, which has failed

to create a harmonious relationship between the city and its peripheries. This needs to be complemented by environmental planning, which keeps the city at its centre, but also looks at the problems faced by core and peripheries at different temporal and spatial scales.

Our work explored ideas around the development of more socially just decision-making processes that might provide opportunities for more sustainable peri-urban water management strategies. To this end, decision-making processes need to be opened up. Existing decision-making bodies are closed forums and are framed narrowly. They do not take on board the needs and interests of poor and marginal peri-urban dwellers, or indeed consider ideas for alternative management strategies, and other opportunities that these people may contribute. Therefore, there is a need to democratise the existing forms of decision-making so that a range of stakeholders (especially those who lack voice and visibility) can co-frame planning and policy processes in ways that can address environmental integrity and social justice in the context of the peri-urban interface in Delhi, other parts of India and beyond.

The designing of alternative water management approaches will need to recognise potential conflicts between:

- Access and sustainability (e.g. the lining of canals to improve water supply prevents the recharge of aquifers; ground water extraction in critical ground water areas)
- Justice and illegality (e.g. access to water for the poor is a matter of justice which sometimes demands resorting to illegal means: this contrasts with the narrative of 'the poor stealing water')
- Good governance and social justice; and
- Efficiency and equality (Concern over 'leakage' and government plans to reduce this vs tapping into formal supplies as an essential form of access for poor people)

#### Policy-relevant conclusions:

- Water scarcity in peri-urban areas is usually not absolute or natural. It is largely due to skewed processes of access and distribution. The hidden costs of water access (opportunity, time, access to electricity and storage) need to be recognized in planning and management – water access does not end at the point of supply.
  - Informal colonies should not be bypassed for water supply due to their so-called illegal status.
  - Environmental and social justice movements/expertise should be brought together to address issues of resource planning in peri-urban situations.
  - There is a need to explore more environmentally sustainable and socially equitable alternatives (e.g. rainwater harvesting) to large scale engineering solutions for water provision in peri-urban areas
  - Indigenous methods of water management and storage (e.g. johads) could be rejuvenated.
  - Agencies need to coordinate water supply and quality concerns. Water quality is often framed in a very technical manner, ignoring the concerns of, and impacts on poor and vulnerable people.
  - Wastewater recycling and re-use need to be developed in a way that maximizes benefits and reduces adverse health and other impacts.
- More recognition needs to be given to the diversity of private and informal arrangements around water provision and water treatment. However, the means of effective regulation to ensure safety need to be thoroughly explored.
- Lack of knowledge of on-the-ground realities, in terms of both water access and quality, and actual water use patterns, tend to result in decision-making processes that undermine sustainable approaches to water management. More on-the-ground knowledge is required.

- While invisible/informal/illegal water uses are ignored, important linkages between water, health, agriculture and the environment are also disregarded. This can result in policies that completely fail to address emerging and growing threats to human health (such as through the use of contaminated wastewater).
- Our research suggests that it is not possible to achieve a sustainable water management system without bridging the gap between the dominant and alternative strategies which emerge from insights on the ground. This will involve decision-making processes that consider a range of alternative perspectives and potential management scenarios.

- Existing participatory platforms are dominated by the elite and middle class, so there should be additional participatory forums for the poor.
- Where there is already a sense of unity in communities, built up through mobilisation around the issue of water access and wastewater reuse, this should be recognised by involving the people in the process of implementation and maintenance of any water supply and wastewater related project in the peri-urban locality.

#### References

- Ghaziabad Development Authority. (2006) Ghaziabad Master Plan 2021, Government of Uttar Pradesh, Ghaziabad
- Marshall, F., Waldman, L., MacGregor, H., Mehta, L. and Randhawa, P. (2009) On the Edge of Sustainability: Perspectives on Peri-urban Dynamics, STEPS Working Paper 35, Brighton: STEPS Centre
- Mehta, L., Marshall, F., Movik, S., Stirling, A., Shah, E., Smith, A. and Thompson, J. (2007) Liquid Dynamics: challenges for sustainability in water and sanitation, STEPS Working Paper 6, Brighton: STEPS Centre
- Sharan, A., Alankar, Prasad, B. (2010) Peri-urban Sustainability: A Case Study of Ghaziabad's Trans-Hindon Area, Unpublished STEPS Peri-urban Project Report, Sarai, New Delhi
- Sharan, A. (2009) Peri-Urban Sustainability: Of Water and Other Flows in and around Delhi, Unpublished STEPS Peri-urban Project Report, Sarai, New Delhi

Thapa, S., Marshall, F. and Stagl, S. (2010) Understanding Peri-urban Sustainability: The Role of the Resilience Approach, STEPS Working Paper 38, Brighton: STEPS Centre

UNFPA (2007) State of World Population, 2007: Unleashing the Potential of Urban Growth, United Nations Population Fund, available at [www.unfpa.org/swp/2007/presskit/pdf/sowp2007\\_eng.pdf](http://www.unfpa.org/swp/2007/presskit/pdf/sowp2007_eng.pdf), accessed 01 September 2009

#### Further reading

- STEPS Centre: Peri-urban project <http://www.steps-centre.org/ourresearch/urbanisation,%20asia.html>
- Peri-urban sustainability <http://periurbansustainability.org/>  
A web-based platform, provided by the STEPS Centre, for debate about sustainability and the peri-urban, bringing together academic literature from many disciplines, with non-academic material, films and other media, and links to relevant organisations throughout the world.





## Contesting sustainabilities in the peri-urban interface

### **About the STEPS Centre**

The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub uniting development studies with science and technology studies.

We aim to develop a new approach to understanding, action and communication on sustainability and development in an era of unprecedented dynamic change. The STEPS Centre is based at the Institute of Development Studies and SPRU Science and Technology Policy Research at the University of Sussex with a network of partners in Asia, Africa and Latin America and is funded by the Economic and Social Research Council. Find out more: [www.steps-centre.org](http://www.steps-centre.org)

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