

Urban crisis in India:

new initiatives for sustainable cities

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India no longer lives in villages. At the dawn of the new millennium, 300 million Indians lived in its nearly 3700 towns and cities, in sharp contrast to only 60 million in 1947 when the country became independent. During the last 50 years the population of India has grown two and half times, but the urban population has grown nearly five times. In absolute terms, India's urban population is the second largest in the world after China's, and is almost twice the combined urban population of France, Germany, and the UK.

Yet, in relative terms India is still one of the least urbanised of the developing countries, with less than 30 per cent of its population living in towns, compared with 80 per cent in Brazil, 45 per cent in Egypt, and 35 per cent even in neighbouring Pakistan. But this scenario is changing fast.

While the rate of growth of population in the country is declining (from 2.16 per cent in 1991 to 1.9 per cent in 1999) the urban population is increasing more quickly (from 3.1 per cent in 1991 to 3.6 per cent in 1999) and demographers believe that it may grow even faster in the coming years. The urban population is expected to swell to 410 million in 2011, 550 million in 2021, and 800 million in 2041 when it will surpass that of China. At that point urban India will be larger than the total population of the whole of Europe (NIUA 2000).

This explosive situation has not been adequately appreciated at the national and international level. It is important, however, to focus on certain disturbing features of India's urban experience in order to highlight the implications of this growth in terms of sustainability.

For instance, there are large imbalances and disparities in the spatial patterns of urbanisation as measured by inter-regional and size-class distribution. While the western states of Maharashtra, Goa, and Gujarat are nearly 40 per cent urban, the eastern states of Orissa and Bihar lag far behind at 13 per cent. This has been both a cause and a consequence

of inter-regional migration. Surplus labourers from the relatively impoverished regions are crowding into urban centres in search of work and will continue to do so unless employment opportunities are created in the rural areas of the so-called backward states. Slightly over 40 per cent of urban growth in India has been a result of migration from the rural areas (NIUA 1988) and much of it has been dictated more by the absence of opportunities in these areas than by the presence of opportunities in the urban areas. Instead of contributing to urban growth as such, this has only impoverished the urban centres (Singh and Steinberg 1996). Therefore, the sustainability of urban growth in India is thus very strongly related to the development of rural areas, especially the backward pockets.

The imbalance in size-class distribution is another factor contributing to the abnormal growth of bigger cities. And while many of these are on the verge of collapse, many smaller cities lack adequate impetus for growth. Intra-city migration from smaller to bigger cities is continuing along with the migration from rural to urban areas. The government's Integrated Development of Small and Medium Towns scheme (IDSMT) has not been able to reverse this trend. Table 1 indicates the growth pattern of cities in India.

The percentage share of population living in Class I cities has increased sharply from 44.6 per cent in 1951 to 65.2 per cent in 1991, but has also declined in all other sectors, except in Class II towns, which have remained more or less the same. Again within the Class I cities, the share of population in metropolitan (1 million or more inhabitants) and megacities (10 million or more inhabitants) has been disproportionately higher. About one third of urban India is already living in metropolitan cities and this figure is expected to increase to 60 per cent

Table 1: Classes of Indian cities by size of population

Year	Class I 100,000+	Class II 50,000– 99,000	Class III 20,000– 49,999	Class IV 10,000– 19,999	Class V 5000– 9999	Class VI less than 5000	All classes
1951	27.5 m (44.6%)	6.1 m (10%)	9.7 m (15.7%)	8.4 m (13.6%)	8 m (13%)	1.9 m (3.1%)	61.6 m
1991	139.1 m (65.2%)	23.4 m (11%)	28.1 m (13.1%)	16.6 m (7.8%)	5.5 m (2.6%)	0.6 m (0.3%)	213.3 m (100%)

Source: Census of India (1991)

in the next two decades. Of the total increase in the country's urban population of 58 million between 1981 and 1991, 44 million were added to Class I cities alone, 28 million of which joined the metropolitan cities. The number of metropolitan cities in the country has grown from one in 1901 to five in 1951, and to 23 in 1991. It is estimated that it will further increase to 40 by 2001, 52 by 2011, and 75 by 2021 (Singh and Steinberg 1996). Similarly, the number of Indian megacities will double from the current three (Calcutta, Delhi, and Mumbai) to six by the year 2021 (new additions will be Bangalore, Chennai, and Hyderabad), when India will have the largest concentration of megacities in the world.

The unplanned and uncontrolled growth of large cities has had negative effects on urban dwellers and their environment. The provision of infrastructure and services required for large and concentrated populations lags far behind the pace of urbanisation. Consequently, the urban environment, particularly in large cities, is deteriorating rapidly. Cities and towns are facing serious shortages of power, water, sewerage, developed land, housing, transportation, communication, and other facilities.

Imperfections in land and housing markets and exorbitant increases in land prices have left the urban poor with virtually no alternative except to seek housing in the mushrooming slums. About one third of urban dwellers live below the poverty line and in subhuman conditions in such slums, without access to the basic minimum facilities of drinking water, sanitation, medical care, and public hygiene (CSO 1997). The disparities in living conditions between slums and other areas are a potential cause of crime and social unrest in the large cities, which are no longer considered safe.

According to official statistics, 85 per cent of the urban population has safe drinking water. The average availability is less than four hours per day, however, and in some areas water is supplied only for one hour on alternate days (ADB 1997). Many people are forced to draw water from unsafe sources, which leads to widespread waterborne diseases like diarrhoea, hepatitis, roundworm, etc. The effect on public health and hygiene is telling. A recent study has indicated that about 30.5 million Disability-Adjusted Life Years (DALYs) are lost each year owing to the poor quality of drinking water and the absence of sanitation facilities.¹ The financial loss in terms of productivity has been quantified at Rs360 billion (US\$9 billion) annually (MUD 2000b).

Only 49 per cent of the population in the cities have sanitation facilities and the rest use either dry latrines or defecate in the open. Out of 3700 towns in the country, only 72 have partial sewerage facilities and 17 have some form of primary treatment facilities before final disposal.

About 39 million tonnes of solid waste is generated in the urban areas every day. Of this not more than 60 per cent is collected daily, which leads to the accumulation and decomposition of waste in public places with its adverse effects on public health. There is no arrangement for the processing of waste except in a few cities where composting is done on a limited scale.

Road space per Passenger Car Unit (PCU) is declining steadily in all cities. Traffic congestion is assuming critical dimensions in many metropolitan cities owing to a massive increase in the number of private vehicles, inadequate road space, and lack of public transport. This extreme congestion results in ever-slower speeds, an increasing accident rate, fuel wastage, and environmental pollution. Air-pollution-related health problems are reaching disturbing proportions in some cities:

India's urban centres are becoming lethal gas chambers. Most of the air quality standards in India are considerably more lax than those of the World Health Organisation. The WHO has rated Delhi the fourth-most polluted city in the world. (CSE 2000)

Unless a massive investment is made to improve urban infrastructure and living conditions significantly, most of the cities in India are heading for a major crisis. The Ninth Plan Working Group has estimated the investment requirement for housing in urban areas at Rs528 billion for the next five years (Planning Commission 1998). The annual investment needed for urban water supply, sanitation, and roads is estimated at approximately Rs280 billion for the next ten years (CPHEEO 1996). The Central Public Health Environmental Engineering Organisation (CPHEEO) has estimated the requirement of Rs1729 billion for total coverage of the urban population with safe water supply and sanitation services (DEA 1986). Estimates by Rail India Technical and Economic Services (RITES) indicate that the amount required for urban transport infrastructure investment in cities for a population of 100,000 or more during the next 20 years will be of the order of Rs2070 billion (RITES 1997). Against this, the combined investment of central, state, and local authorities from budgetary as well as

institutional sources (both domestic and foreign) in housing, water supply, sanitation, and transport is approximately Rs80 billion annually, or less than 10 per cent of the requirement (Planning Commission 1998). This sums up the enormous urban problem in India, which assumes more critical dimensions with each passing day.

Sustainable cities: philosophy and context

What would a sustainable city mean in the context of the urban crisis, which has brought the large cities to breaking point? The *Oxford English Dictionary* defines sustainable as 'the ability to be maintained at a certain rate or level'. This implies that there is no fixed standard of sustainability since it varies according to the context in which it is defined. The standard of sustainability differs from country to country according to its level of development. Environmentalists propose a more neutral and stringent standard of sustainability as 'the conservation of an ecological balance by avoiding depletion of natural resources' (UNCHS 1998). In the urban context this would mean the resources of pure air, water, soil, flora, and fauna.

The environmental definition of sustainability is both too wide and too narrow: wide in the sense that it takes pristine nature as its standard, something that would by definition render three quarters of existing human settlements unsustainable; narrow in the sense that it ignores complex issues that have led human development to the state it is in today. Since human development has not followed a uniform pattern, it is futile and unrealistic to set a uniform standard of what constitutes a sustainable city, irrespective of the level of development.

A more pragmatic and realistic definition of a sustainable city is one that maintains the physical, human, and environmental standards it has set for itself and has the capacity, resources, and capability to achieve these. This calls for sustainability of governance and for sustainability of resources without which 'the sustainable city' is only a slogan.

The cities of India are facing the accumulated effects of past neglect when their affairs were not left to the citizens but to the extraneous forces of party politics and bureaucratic interference, when state control and the proliferation of parastatal agencies marginalised city governments, when cheap populist measures overshadowed sound financial considerations, when a kind of urban *laissez-faire* prevailed over discipline and control, when a culture of subsidy and concession was allowed to rule over cost effectiveness, when responsible and

capable urban leadership was not allowed to develop, and when developing the capacity of urban managers was not a concern. Urban crisis in India is an accumulation of years of neglect of the local urban bodies. A sustainable city cannot be built on the basis of direction and control from provincial or state governments; it has ultimately to rest on the initiative and efforts of local citizens, the involvement and commitment of the local community, the vision and understanding of local leaders, and the capacity and capability of local managers.

All these are the essential ingredients of successful local self-government, but unfortunately, despite India's strong and vibrant democracy at the provincial and national level, city-level democracy has not really been allowed to flourish. City governments were treated more as an appendage of provincial government than as governments in their own right. This is ironic, as the institutional machinery of India's city governments was set up as early as the mid-nineteenth century and some of the great national leaders in pre-independence days were apprentices of leaders in city governments.

Initiatives for urban reform

The first model of city government in India was set up by the British. The considerations were twofold, to allow the 'natives' to rule over their own local affairs as a strategy to absorb dissent, but to allow only limited autonomy for maintaining 'control' over the larger policy issues. The statutes governing the city governments underwent change after independence, but 'control' of the urban local bodies continued. Provincial governments were given overriding powers to sanction municipal budgets, to approve municipal taxation, to take away municipal functions, to set up parastatal organisations to deal with such functions, and even to suspend and dissolve municipal governments for an indefinite period. The result was that city governments lost their importance and ability to take decisions and became an appendage of state governments. Party politics at the state level were passed down to the city level and city-level consensus on the major issues was not allowed to develop. In short, the citizens remained alienated from governing.

The first major initiative to reform urban governance was taken in 1992 when the Constitution of India was amended (74th Amendment) to incorporate certain revolutionary changes in the organisation, powers, functions, and jurisdictions of the urban local bodies. For the first time, city governments were given a constitutional status and

released from the shackles of provincial governments. The Constitution of India formally recognised the city government as the third tier of government below the state and central governments.

Second, the powers of state governments to suspend or dissolve city governments were abolished. If a city government is to be dissolved, fresh elections must be held and a new elected body must be in place within a period of six months from the date of dissolution.² The era of prolonged suspension of city governments has come to an end.

Third, the Constitution provided that, apart from the city-level councillors, wardens are also to be popularly elected at the ward level and Ward Committees set up to interact with the citizens. These changes institutionalise the role of the grassroots in city governance.

Fourth, the Constitution defined the powers of the civic bodies and appended a separate schedule of their functions as follows:

- urban planning, including town planning;
- regulation of land use and construction;
- maintenance of roads and bridges;
- supply of water for domestic, industrial, and commercial purposes;
- public health, sanitation, conservancy, and solid waste management;
- provision of fire services;
- urban forestry, protection of the environment, and promotion of ecological aspects;
- slum improvement and upgrading;
- urban poverty alleviation;
- planning of social and economic development;
- safeguarding the interests of weaker sections of society, including the physically and mentally disabled;
- provision of amenities and facilities such as parks, gardens, and playgrounds;
- public amenities, including street lighting, parking lots, bus-stops, and public conveniences;
- regulation of slaughter houses and tanneries
- promotion of cultural, educational, and aesthetic aspects; and
- collection of key statistics, including registration of births and deaths.

Finally, the Constitution stipulated that every state is obliged to assign city governments such taxes, duties, and tolls that are levied, collected, and appropriated by them and ensure that the city governments are not discriminated against in the allocation of resources. The Constitution further provides that every state shall constitute a State Finance Commission (SFC) to decide which resources will devolve to the city governments in order to enable them to discharge their functions.

All these revolutionary changes will revitalise the city governments in the long run, but the pace of implementation has been so abysmally slow that their impact is yet to be felt. Elections to urban local bodies have been held in all but two states. Most of the state governments have either enacted a set of new municipal laws or amended the existing laws to bring them into line with the constitutional changes. Reports of many of the SFCs have also been brought into line, but considerable confusion persists with regard to the functions and jurisdictions of the city governments. A host of parastatal bodies set up in each state to deal with important functions like water supply, sewerage, urban planning, housing, etc. have not been brought under the jurisdiction of the civic bodies.³ Similarly, the line departments of the state government continue to deal with many of the functions that have been assigned to the cities. On the financial side, there has not been much devolution of resources, primarily because there has not been much devolution of functions and responsibilities. Therefore, the amendment to the Constitution notwithstanding, the status quo prevails largely because parastatal bodies already have their own statutory character and expertise, which civic bodies do not.⁴ Yet no significant effort has been made for building the capacity of civic bodies.

The urban reform agenda of taxation and financial reform, institutional reform, 'unbundling' of services, privatisation, etc., that should have followed the constitutional changes, has not taken place at all in most cities and been initiated only at a slow pace in a few. The status quo is that of continuing poor governance in most of the cities.⁵

There is considerable scope for generating sizeable resources from the cities through reforms in the system of property tax assessment and collection, and rationalisation of utility charges. However, there is no incentive for city governments to take such unpopular measures since most of the utilities are managed at state level, and managed so inefficiently that it will take real courage to break the coterie of vested interests that run them. The will and vision to do so are not forthcoming.

A truncated urban government cannot be expected to push the reform agenda and transform cities into self-sustaining and sustainable units of governance. What is required is 'a reform in the reform process' before it is too late.⁶ If the push does not come from the top it will have to come from the bottom, as is now occurring in many dispersed initiatives (see Mahadevia in this volume).⁷

Sustainable technology

Despite the constraints of poor urban governance, there has been some advance made in adopting and propagating a few innovative, low-cost, and environmentally sustainable technologies for solving some of India's pressing urban problems. This has been made possible through the effort of a few individuals and organisations, and by grants from central government and soft credit from international financial institutions. Three major initiatives in this regard are the techniques of low-cost sanitation, low-cost housing, and rainwater harvesting. But the spread of these technologies has been severely restricted because of poor urban governance, an inefficient delivery system for extending the incentives, and the non-involvement of civil society in any meaningful manner in terms of creating awareness of the benefits and efficacy of these technologies. These observations are based on my decade-long experience of urban management in India.

Low-cost sanitation

The low-cost sanitation movement has made some progress not only to provide an affordable solution to the problem of open defecation in the cities but also to do away with the demeaning practice of manual collection of human excreta, which has traditionally been carried out by low-caste groups. Mahatma Gandhi had started his political career with a campaign to liberate the scavengers, but it was not until 1993 that manual scavenging was declared illegal by an Act of Parliament and since then the Government of India (GOI) has taken up a massive programme of conversion of dry latrines into pour-flush latrines in the urban areas and rehabilitation of the scavengers.

The pour-flush latrine consists of: (a) a specially designed squatting pan, (b) a trap with a 20mm water seal to prevent the emission of odours and fly and mosquito nuisance, (c) two leaching pits which retain solid matter and allow liquid to leach and gases to disperse into the ground, and (d) an interconnecting system between pits and trap. The excreta are carried into subsurface leach pits through pipes or

covered drains and one pit is used at a time. The liquid seeps into the soil through the holes in the pit lining. The gases also disperse into the soil so a vent pipe is not necessary. When the one pit is full, the excreta are diverted automatically to the second pit. The filled chamber can be conveniently emptied after a rest period of 18 months, during which time pathogens are activated and the organic matter decomposed. Thus, the two pits can be used alternately and continuously (UNDP 1992).

A five-user pour-flush latrine costs as little as Rs4500 (equivalent to US\$100), while a ten-user unit costs Rs8000.

The pour-flush water seal latrines are low in cost but involve high technology. They comprise a collection, transmission, and treatment system all within one on-site facility, which is hygienic, safe, and satisfactory. In addition, the technology is internally and externally upgradeable, meaning that the toilet interiors can be upgraded to accommodate improved systems such as the incremental flush. Furthermore, the system can be externally connected to sewers, if enhanced water-supply levels and sewerage can be afforded (HUDC 1988).

Since 1989–1990, the GOI has been supporting this low-cost sanitation technology with a mixture of subsidies and soft loans, which vary in scale according to the paying capacity of the user (see Table 2).

The scheme – called the ‘Liberation of Scavengers’ – has been taken up on a ‘whole-town basis’ so that the problem is solved for the town once and for all and the scavengers do not return to their original occupation. Simultaneously, a massive rehabilitation and training programme for scavengers has been launched to help them to pursue alternative vocations, and this is backed up with soft credit to set up microenterprises (MUD 1999).

In most towns, the survey and identification of dry latrines, the location and design of pour-flush latrines, and supervision of construction have been entrusted to the engineering wing of the civic bodies. NGOs, community-based organisations, and self-help groups have been involved in a few cities, but more as implementing agencies than as partners or stakeholders of the programme.

Table 2: Forms of GOI support for low-cost sanitation technology

User category	Subsidy (%)	Loan (%)	User contribution (%)
Economically weaker sectors	45	50	5
Low-income groups	25	60	15
High-income groups	Nil	75	25

During the decade since the scheme began, 900,000 low-cost sanitation units have been constructed, and 30,000 scavengers liberated from the inhuman practice of manual scavenging. But this does not mean that the problem has been solved, as 6,300,000 more dry latrines have yet to be converted into pour-flush latrines and, until that has been done, the problem of manual scavenging will persist despite the legal restrictions. The problem remains one of both resources and management. It is estimated that a subsidy of Rs25.2 billion and soft credit of Rs63 billion will be required to convert all the dry latrines. Against this, the government allocates annually Rs270 million in subsidies and Rs1080 million in loans. The irony is that even this meagre amount is not fully deployed, and an accumulated unspent subsidy of Rs1 billion will reportedly have accrued by the end of financial year 1999–2000 (MUD 2000b). This points to the abysmal capacity of the urban local bodies and the low involvement of civil society in implementing such socially and environmentally sustainable schemes.

Low-cost housing

The Indian Building Centre movement for the promotion of low-cost housing technology is another example of how technology can mitigate the problem of having only few resources. High land prices and construction costs have driven as many as 100 million urban poor to seek refuge in the proliferating urban slums, although these are dangerously lacking the basic amenities of sanitation, drinking water, drainage, etc.. In many long-established slums, the emphasis has been to take up *in situ* development of basic amenities. In most other places, city agencies have resettled slum-dwellers on alternative sites at subsidised rates. The GOI has set a target of construction of 700,000 additional houses every year for the economically weaker sectors and low-income groups in the urban areas.

Much research has gone into the development of low-cost construction and design technology in order to permit poor people to own their houses. The thrust of this initiative has been to recycle various forms of industrial, agricultural, and domestic waste to provide new building materials that are affordable, sustainable, and environmentally friendly. Some of the new materials are listed in Table 3.

These new materials are not only energy efficient and environmentally friendly, but also cost effective: up to 25–30 per cent cheaper than conventional materials and 15–20 per cent more energy efficient to manufacture and use.

Table 3: Materials developed for low-cost construction

Waste materials	New building materials
<i>Industrial waste</i>	
Fly and bottom ash from thermal power plants	Bricks
Cement factory waste	Asbestos
Basalt, slate, and laterite stone waste	Blast furnace slag
Coal washery waste	Copper/ferro-alloy slag
Gypsum mine waste	Iron railings
Limestone waste/lime sludge	Low-grade aggregates
Mica scrap	Phosphogypsum
Red mud/bauxite waste	Steel-making slags
<i>Agricultural waste</i>	
Rice husks, jute stalk, bagasse	Insulation boards, panels, roofing sheets
<i>Domestic waste</i>	
Used paper, cartons, plastic bags	Fence posts, roofing sheets

The GOI is attempting to stimulate production of low-cost building materials by exempting the Building Centres' production of materials and components from excise duty. It also offers a 25 per cent exemption in the organised industrial sector, a reduction in the customs duty on imports of equipment, machinery, and capital goods required to produce building materials that require fly ash (a by-product of coal) and phosphogypsum, and a total exemption of excise duty on doors, windows, etc. made from aluminium, steel, plastics, and other materials that will reduce the exploitation of India's forest resources.

Much research has also gone into the development of small machines for producing building materials on a small scale. An autonomous organisation called the Building Materials and Technology Promotion Council (BMTPC) was set up with the responsibility for coordinating research efforts in this area. The Council has developed a number of machines that have become quite popular. The machines make reinforced concrete construction doors and window frames, stabilised mud-blocks, sand-lime fly ash bricks, clay fly ash bricks, red-mud jute polymer door shutters, a coal stoker system for conventional brick kilns, a finger-jointing and shaping machine for plantation timber, a machine for making corrugated roofing sheets based on bamboo, and so on (BMTPC 1996).

Innovative building designs, such as interlocked cluster housing, organised common spaces, and incremental house design, have been introduced to minimise ground coverage, and reduce construction costs, while at the same time enhancing the aesthetic qualities of low-income housing.

Recognising that the propagation and extension of new cost-effective and energy-efficient building technologies at the grassroots requires innovative approaches, the GOI began setting up a national network of Building Centres in 1988–1989. So far, 400 such centres in district towns promote new cost-effective building materials by providing a variety of services to prospective producers and users. These include: disseminating and demonstrating cost-effective technologies; training artisans, entrepreneurs, and small contractors; advising householders; and producing low-cost materials and components to meet local housing needs. A number of centres are also producing new building materials and components. Encouraged by the results of these efforts, the GOI has now decided to establish similar centres in rural areas in every district of the country. Many of the newly trained artisans have set up production units to cater for local needs.

Despite these initiatives, low-cost housing technology has not replaced the conventional construction technology for poor households. An Expert Group set up to study the working of the Building Centres estimated in 1992 that of the total housing stock of economically weaker sections, not even 10 per cent had adopted the new technology and materials (MUD 1992). Things have not changed much since then.

Rainwater harvesting

Excessive extraction of groundwater and the limited open space for recharge in some of the cities have resulted in a sharp decline in the water table. This is manifested by the failure of tube wells, deterioration in groundwater quality, and saline water ingress. The problem has become acute in some cities, especially during summer, when drinking water has to be carried from distant sources, resulting in high costs and strict water rationing. Water strife and riots have become regular features in some of the towns of western and southern India during the summer months, and in Rajkot, for example, the police have been asked to supervise the distribution of the water to avoid violence and clashes among residents.

In the National Capital Territory of Delhi only 2.8 million m³ of water can be supplied per day for domestic use while the daily demand

is for 4.88 million m³. The available surface water from the Yamuna River is grossly insufficient and must be made up from groundwater. Unplanned withdrawal of groundwater has resulted in a drop in the water level and a deterioration in the quality of groundwater in many places. Ironically, the 600mm of rainfall Delhi receives during monsoons drains mostly into the river. Recharge to the subsurface is minimal because most of the surface is occupied by buildings or roads.

The Central Ground Water Board (CGWB), in collaboration with the Indian Institute of Technology Delhi, has been conducting Experimental Artificial Recharge Studies (EARS). Based on the results of its experiments, a viable and sustainable technology for recharging groundwater is now available in deficit areas. This technology is ready to be applied, and a few water-deficit cities have already begun doing so (CGWB 1998).

The Madras Metropolitan Development Authority has made rooftop rainwater harvesting (RTRWH) mandatory for all institutional and public buildings, in order to augment subsurface storage. More and more private building owners in deficit pockets are also adopting this technology which is simple, affordable, and can be adopted at the neighbourhood or even the building level. The rooftop rainwater can be channelled into abandoned wells or abandoned or working hand pumps. Alternatively, a recharge pit, shaft, or trench with appropriate specifications can be dug at a corner of the house or a group of houses. It has been found that groundwater recharge from houses of 100m² of rooftop in average monsoon condition will be 55,000 litres per year, which is sufficient for a period of four months for a five-person family. This is a simple and innovative technology, and appropriate to the context of cities in developing countries which lack the adequate resources for mega-schemes or an assured water supply. This technology has yet to be adopted on a large scale in Indian cities, however, and there is to date no central scheme or incentive to propagate it.

Summary and conclusion

This paper has attempted to describe the rapidly deepening and urgent nature of the urban crisis in India. The failure to provide adequate livelihoods in rural areas is pushing larger numbers of people into the cities than ever before. Informal work and desperately unhealthy living situations in slums await most of the new entrants into the city.

Perhaps as much as a third of India's urban population of 300 million share this fate.

Urban infrastructure and services are abysmally bad and getting worse. Their long neglect and mismanagement by state-level institutions, development authorities, and parastatal bodies was supposed to have come to an end from the early 1990s with the implementation of the 74th Constitutional Amendment. This Amendment created the legal basis for expanding the authority of urban local bodies (city governments) in planning, managing, and funding the development and maintenance of their cities. The Amendment was also intended to encourage and empower civil society organisations to participate more fully in the governance of the city.

In the eight years since the Amendment came into force, the urban local bodies remain constrained in their ability to improve conditions through investments to upgrade infrastructure and services. Even very low-cost, highly efficient technologies for handling human waste, producing building components for housing from recycled materials, and replenishing groundwater supplies are not being widely taken up by the urban communities which so desperately need them.

This situation is a result of the continuing inability and incapacity of urban local bodies effectively to promote investments on the use of these and other appropriate technologies for improving living conditions in the cities. However, a deeper look into the matter shows that state-level institutions, development authorities, and parastatals are still too deeply involved in governance at the local level, and have little incentive and capacity to promote the kinds of initiatives that are needed. Hence, any fundamental change for the urban poor awaits a reform of the reform process begun with the 74th Amendment: that is, to implement more speedily and thoroughly the transfer of authority, initiative, and resources to urban local bodies and local civil society.

Notes

- 1 Disability Adjusted Life Years (DALYs) are a composite measure of the burden of each major health problem. The DALYs for a given condition are the sum of years of life lost due to premature mortality and the number of years of life lived with disability, adjusted for the severity of the disability. DALYs for different conditions can be aggregated into a single measure of the impacts of all conditions detracting from full health. They therefore provide a means for policy makers to prioritise health threats and challenges, though the concept has many critics (Anand and Hanson 1995).

- 2 A city government can be dissolved by the state government for a number of reasons: for example, when no party or group of parties command majority support in the municipal council, or when the council itself has passed a resolution recommending dissolution and early election.
- 3 The term 'civic bodies' has been used as a synonym for 'city governments'. It includes various forms of city governments such as notified area committees in small towns, municipal councils in medium towns, and municipal corporations in metropolitan towns.
- 4 Most of the parastatal bodies have been constituted by the laws enacted by the state legislatures, giving them an autonomous character. These are accountable to the state governments, and not to the city governments.
- 5 The state of urban governance in the post-1992 reform phase has yet to be studied in depth, but is reflected in the reports of the many SFCs. Mismanagement of many of the parastatal bodies is reflected in the huge subsidies they receive from the state governments and the poor level of satisfaction of the citizens. Very few state governments have the courage to withdraw the subsidy from the supply of water and power from urban consumers or to privatise the distribution systems. The political considerations of potential voter dissatisfaction that could follow such measures in the short term have prevailed over considerations of sound financial management. Similar considerations have prevented any significant reforms of the property tax systems in the urban areas. The classic example is the Delhi Rent Control Act which was passed in parliament and had received presidential assent, but was not notified in the official gazette owing to opposition from traders who successfully stalled the Act and forced the GOI to introduce legislation which significantly compromised the original idea of reforming urban rent laws by encouraging private investment.
- 6 This phrase has been coined to describe the post-1992 urban reform in the country. Those who are responsible for pushing urban reforms are themselves extremely cautious about such reforms. The fear of antagonising the urban middle class and the poor who may be affected in the short run by such measures have stood in the way of introducing these reforms.
- 7 Many such citizen initiatives are reported from various parts of the country. One such citizen's group has recently approached the Supreme Court of India for directions on improving the management of solid waste in the cities. This important Public Interest Litigation is expected to open a new chapter on solid waste management in the large cities of India.

References

- Anand, S. and K. Hanson (1995) 'Disability-Adjusted Life Years: A Critical Review', Working Paper 95.06, Cambridge, MA: Harvard Center for Population and Development Studies
- Asian Development Bank (ADB) (1997) *Urban Infrastructure in Asian Countries*, Manila: ADB
- Building Materials and Technology Promotion Council (1996) *Low Cost Building Materials and Technology*, New Delhi: Government of India

- Central Ground Water Board (CGWB) (1988) *Rooftop Rainwater Harvesting for Augmenting Ground Water Storage*, New Delhi: CGWB
- Central Public Health Environmental Engineering Organisation (CPHEEO) (1996) *Meeting the Needs of Drinking Water in Urban India*, New Delhi: CPHEEO
- Centre for Science and Environment (CSE) (2000) *State of India's Environment*, Citizen's Fifth Report, Chapter 5, New Delhi: CSE
- Central Statistical Organisation (CSO) (1997) *Compendium of Environment Statistics*, New Delhi: CSO
- Department of Economic Affairs (DEA) (1986) *India Infrastructure Report*, report of the Committee constituted under the Chairmanship of Rakesh Mohan, Ministry of Finance, New Delhi: Government of India
- Housing and Urban Development Corporation (1988) *Guidelines for Sanitation Schemes*, Technical Circular No. 177, New Delhi: HUDC
- Ministry of Urban Development (MUD) (1992) *Report of the Expert Group to Undertake a Study of the Working of the Building Centres*, New Delhi: Government of India
- Ministry of Urban Development (MUD) (1999) *Solid Waste Management in Class I Cities in India*, report of the Committee constituted by the Supreme Court of India, New Delhi: Government of India
- Ministry of Urban Development (MUD) (2000a) *Policy Paper on Urban Infrastructure*, New Delhi: Government of India
- Ministry of Urban Development (MUD) (2000b) *Annual Report: 1999–2000*, New Delhi: Government of India
- National Commission of Urbanisation (NCU) (1988) *Report of National Commission of Urbanisation*, New Delhi: NCU
- National Institute of Urban Affairs (NIUA) (1988) *State of India's Urbanisation*, New Delhi: NIUA
- National Institute of Urban Affairs (NIUA) (2000) *Urban Statistics Handbook*, New Delhi: NIUA
- Planning Commission (1998) *Report of the Working Group of the Ninth Plan on Urban Development*, New Delhi: Government of India
- Rail India Technical and Economic Services (1997) *Financing India's Urban Transport*, New Delhi: RITES
- Registrar General of India (1991) *Census of India*, New Delhi: Government of India
- Singh, Kulwant and Florian Steinberg (eds) (1996) *Urban India in Crisis*, New Delhi
- UNCHS (1998) *Sustainable Cities Programme*, Nairobi: UNCHS
- UNDP (1992) *Technical Guidance on Twin Pit Pour-Flush Latrines*, New Delhi: UNDP