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Mega-Slums:

the coming
sanitary crisis

A WaterAid
report written by
Maggie Black



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This is the first in a series of reports by WaterAid on global water and sanitation problems. Its publication coincides with the United Nations' World Day for Water.

WaterAid is a UK-based charity working with some of the world's poorest communities throughout Africa and Asia to improve drinking water supplies and sanitation through low cost, practical and self-help schemes.

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“After a generation or more of excessive water use and reckless discharge of municipal and industrial wastes, the situation of the world’s major cities is appalling and getting worse.”

The Dublin Statement, Conference on Water and the Environment, 1992.

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Introduction

Throughout most of history, cities have been epicentres not only of power, wealth and civilisation, but of plagues and pestilence. Only around 100 years ago, due to advances in medical science and sanitary engineering, did cities in the industrialised world become fully sewered and hygienic. As a result, death and disease rates rapidly declined and town living became less risky health-wise than country life.

In the developing world, by far the majority of people up to now have lived in the countryside and high death and disease rates have been chiefly associated with poverty-stricken rural life. Today, that is changing. By 2000, almost half the 6.1 billion population of the planet will be urban¹. Although the industrialised world at present still leads the urban field, the important shift is taking place in the Third World where urban populations are growing at fantastic speed - much faster than the parallel shift in the industrial world.

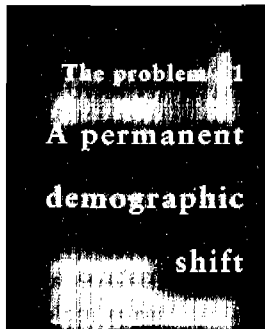
Much of this growth is in huge cities. By the year 2000, there will be 23 cities in the world with over 10 million people and 18 of them will be in developing countries². On present trends, at least one-third and in some, more than half of their inhabitants will live in crowded tenements, shantytowns and slums without basic amenities³. Once again, overcrowdedness, filth and squalor will pose massive threats to urban health - and on a far larger scale. These burgeoning mega-cities are exerting immense pressures on freshwater supplies and threatening a new sanitary crisis, which - given modern travel and communications - has global implications. How will the modern apparatus of public health engineering cope?

This WaterAid Report examines the impact of urban growth on freshwater supplies, on managerial regimes for water supply and waste disposal services, and on the swelling numbers of city residents who need water and waste disposal to provide for their daily bodily needs. The case it presents is that different types of biases in development policy - biases which favour the urban elite or, where they favour the poor, focus exclusively on rural areas - have left the rapidly growing numbers of the urban poor languishing in squalor. Is modern urban growth set to bring back the historical spectacle of the disease-ridden city from which the uninfected are forced to take flight?

WaterAid believes that the incipient sanitary crisis in the urbanising developing world is avoidable. But that this will require not only extra resources, but - more importantly - fundamental attitudinal and policy change towards the provision of civic amenities. With vision, appropriate technology and political commitment, it is possible to bring about a global urban sanitary revolution similar to that fought for, and eventually won, by the sanitary reformers of 19th century Europe. On World Day for Water, March 22 1994, WaterAid calls on governments, aid donors, the public health engineering industry, and activists in voluntary and non-governmental organisations to set this sanitary revolution in motion.

Unless such a revolution occurs, the international goal of "Water and Sanitation for All" will remain a rhetorical slogan and an unrealisable dream. And there is a real threat that the spectre of plague and pestilence will re-emerge to stalk the Third World cities of the future.

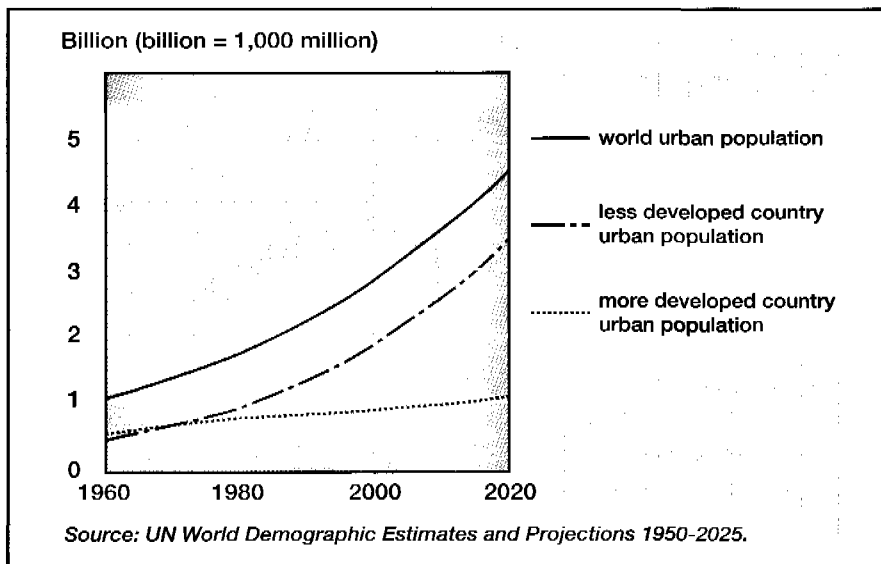
Part One - The Problem



The growth of urban populations

The number of people living in the urban developing world are growing at a much faster rate than in the urban industrialised world.

Behind today's urban sanitary crisis in the developing world are twin phenomena - rapid population growth and rapid urbanisation - occurring simultaneously in countries which are poor. Rapid population growth is, ironically, the result of improvements in public health and disease control. Rapid urbanisation is the outcome of deteriorating livelihoods on the land and the magnet of urban jobs and economic opportunity - a magnet drawing in all classes of people but especially the poor. Together, these phenomena have ignited an urban demographic explosion. Since it takes time for people to adapt their intimate behaviour to the constrictions of urban life, typical rural newcomers to the slums and shantytowns of the Third World initially tend to maintain their prevailing high birth rates. This accelerates urban population growth, of which 61% is among existing inhabitants⁴.



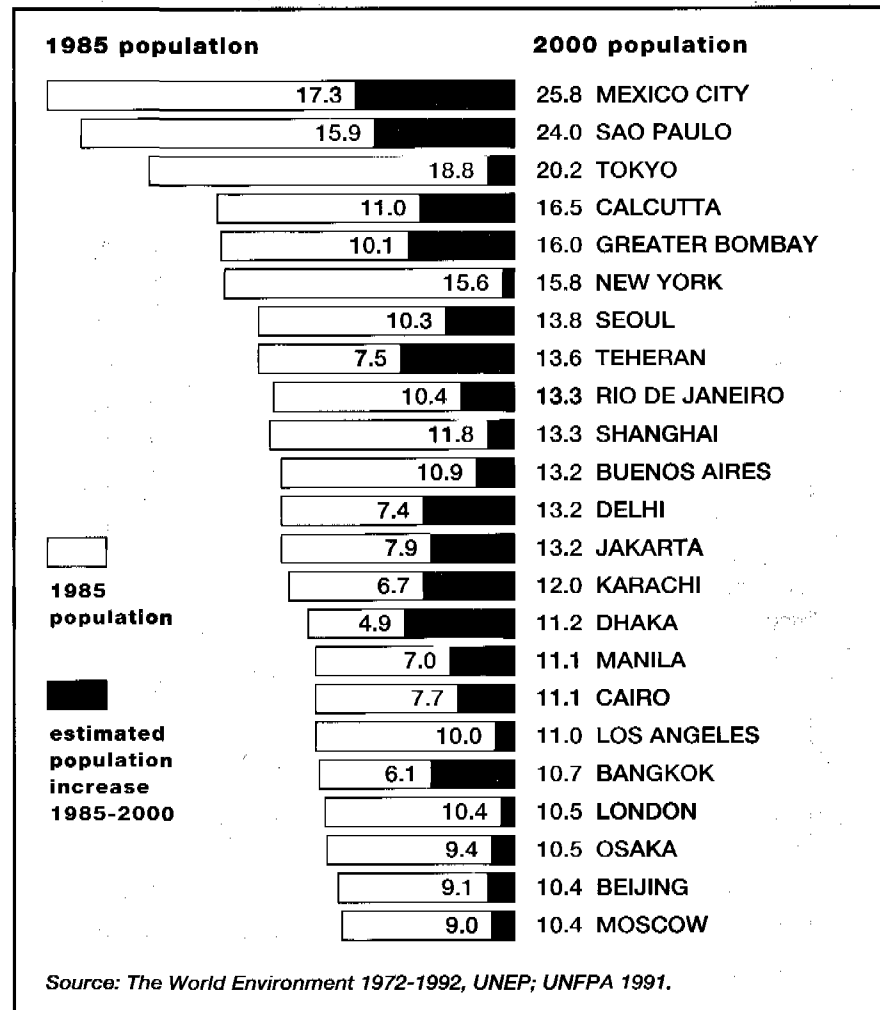
The pace of urban expansion in the developing world sharply distinguishes the process from its historical precursor in Europe. It took London from 1800 to 1910 to multiply its population by seven, from 1.1 million to 7.3 million⁵; this growth rate has been achieved by some African cities within a generation; many Asian cities have increased fourfold in the same period⁶. In 1950, there were just two cities in the world with more than eight million population: London and New York. By 1990, there were six such cities in industrialised countries, a number not expected to change before the end of the century. In the Third World there were 14 such cities, and by 2000 there will be 23⁷. The largest are already huge: Mexico City has over 20 million people.

Such a rate of growth would stretch urban planners, architects, engineers and civic administrations to the very limit even if resources were plentiful. But in many countries, particularly in Africa and South Asia, resources are very few. They are often constrained by the same forces - low agricultural prices, debt, economic recession, flood or drought disasters - driving people off the land. Towns and cities are finding it very difficult to cope.

MEGA-SLUMS : THE PROBLEM

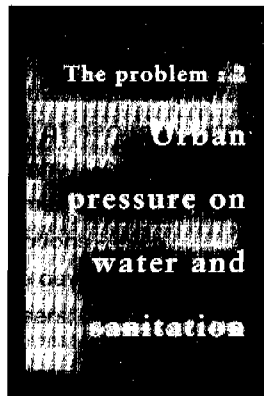
The mega-cities

By 2000, 23 cities in the world will contain over 10 million people, and 18 of these mega-cities will be in the developing world.



Many of the newcomers fetch up in settlements where municipal investment in services - roads, water supplies, drainage - is negligible or non-existent. The proportion of "urban poor" in many cities is between 30% and 60%⁸, and in some is spectacular: in Addis Ababa, 79%; in Luanda, 70%; in Calcutta, 67%⁹. And the population growth rate in slums is higher than in virtually any other environment in the world; it may be - as in Bangladesh - four times the rate of a country's population as a whole¹⁰. By 2000, the numbers of those living in what are variously described as *favelas*, *barrios*, *bastis* and *bidonvilles* will be well over one billion worldwide¹¹.

The transition of humankind from rural to city dwellers represents a major, and permanent, demographic shift. By 2010, the total rural population in the world will - according to the United Nations - reach its peak at 3.1 billion and thereafter begin to decline. By 2030, global urban populations will be twice the size of rural populations, and cities will have grown by 160% over the period¹². The huge numbers of people living in towns and cities, and the increasing proportion living in slums, will present the 21st century with its most important environmental health challenge.



Some cities in the developing world are already facing critical environmental degradation. This is the result of overload on water sources, improper waste disposal, contamination of rivers and streams, the reckless extraction of water from depleted aquifers, and a long list of service management deficiencies¹³. Water boards and public utilities fight a losing battle to provide a functioning service in the face of increasing demand; as the quantity of available water dwindles and the quality declines, disruptions - even sabotage - of existing systems become more acute. A vicious circle develops in which the service is so poor that it cannot recover its costs from users; and the income generated so low that the service cannot be improved.

Outright shortage of water is the first of many problems. History tells of ancient and not-so-ancient cities which drank up their surrounding water and perished - Babylon and Persepolis in the Middle East, Fatehpur Sikri in Northern India¹⁴. It is not too fanciful to imagine that, in the 21st century, water shortage could cause similar damage. In China, at least 50 cities face acute shortages as the water table drops by one to two metres a year¹⁵. Having over-drawn traditional surface and underground sources, cities such as Amman, Delhi, Santiago and Mexico City are pumping water from increasing distances and up increasing heights (*see box below*). In both Jakarta and Bangkok, excessive pumping of groundwater has led to intrusion of seawater into the aquifers and to land subsidence¹⁶.

According to a review of schemes financed by the World Bank, every time a new engineering scheme replenishes a typical urban supply from further away, the unit cost of raw water doubles¹⁷. Water from the sky is free; but the mounting cost of transporting it long distances to a household tap and preserving its quality is turning it to liquid gold. Water is a commodity like any other, and its price is soaring. But in developing countries there is a marked

CITIES RUNNING DRY

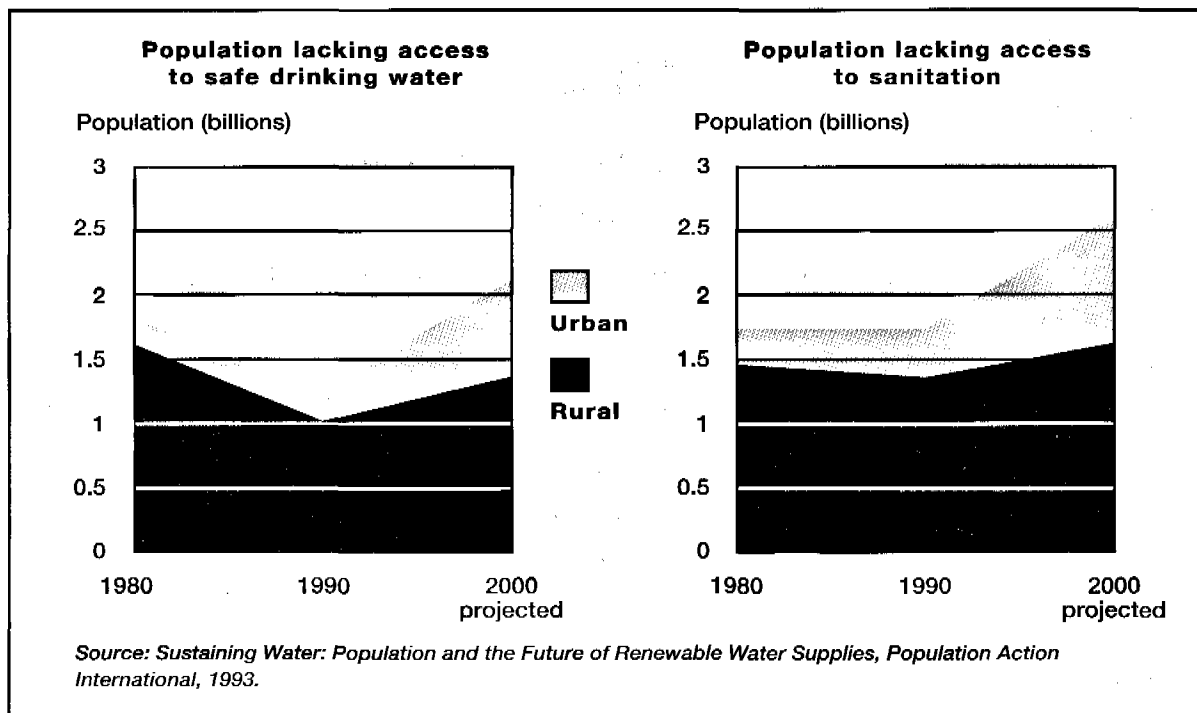
CHINA: Between 1983 and 1990, the number of cities in China that were short of water rose from 100 to 300; those with a serious water problem, from 40 to 100. By the year 2000, Beijing Municipality will suffer a daily water shortfall of 500,000 cubic metres.

MEXICO: Mexico City, having over-pumped the Mexico Valley aquifer, is now forced to pump its water supply a distance of 180 kilometres and up 1,000 metres from the Cutzamala River at much higher cost. The city faces the prospect of exhausting its supply by the year 2000.

INDONESIA: Jakarta has so depleted its underground aquifers that sea water has seeped 15 kilometres inland making the supply saline. Investments in pipelines to bring water from other sources are eventually expected to top \$1 billion.

IWSA, Managing the Global Environment; National Report from Beijing Municipal Waterworks Company, 1993. McIntyre, Peter; Protecting the Well, Noordwijk Conference, The Netherlands, March 1994.

MEGA-SLUMS : THE PROBLEM



Developing country populations lacking water and sanitation

Although the number of people with access to safe water and sanitation grew between 1980 and 1990, population growth erased any substantial gain, especially in urban areas. Between 1990 and 2000, an extra 900 million people will be born in places without water and sanitation.

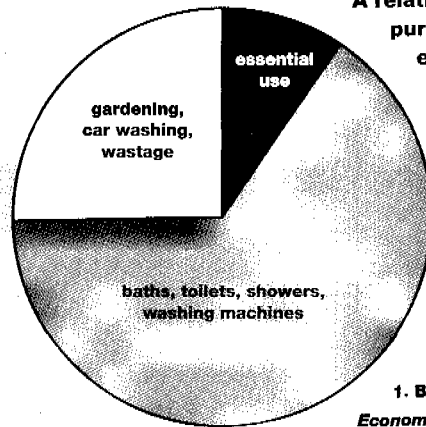
reluctance to come to terms with water costs. Urban consumers in most industrialised countries pay all the recurrent costs for their water supplies and sewerage connections. In developing countries, however, those provided with services pay far less: only on average 35% of the costs, according to the World Bank¹⁸. The proportion of investment generated internally by utilities and water boards is also dropping, and their financial situation is therefore consistently worsening.

During the 1980s, the United Nations International Drinking Water Supply and Sanitation Decade, 80% more townspeople are reported to have gained access to an adequate supply of water and 50% more to a system of waste disposal¹⁹. But because of the huge rise in urban populations, the number of those without water remained the same, and the number of those without sanitation rose by 70 million²⁰. The task of responding to the backlog of demand *and* to the expanding settlements of

new urban dwellers becomes more difficult every year, especially as the extra strain on many existing systems leaves them in constant need of repair.

Other dynamics are at work. Where incomes and standards of living rise, per capita water consumption similarly shoots up (see box above). This places more pressure both on the water supply and on the system delivering it. Increased usage also generates a larger volume of waste. The growing outflow of dirty water has major environmental implications; but drainage and water treatment are frequently ignored by urban development planners, as is solid waste disposal. In Latin America, no more than 2% of human waste is treated - it is simply washed into waterways²¹. Increased pollution exacerbates the pressure on supplies, and raises their cost. Shanghai has been forced to spend \$330 million moving its water intakes 40 kilometres further away. In Lima, Peru, upstream pollution has increased treatment costs by 30%²².

THE PROFLIGATE URBAN CONSUMER



A relatively small proportion of domestic water is used on the essential purposes needed for life and health. Daily per capita consumption on essentials in a typical modern household with a piped supply providing 150 - 200 litres per head is as follows:

DRINKING AND COOKING = 3-6 LITRES,
WASHING AND PERSONAL HYGIENE = 15-20 LITRES,
 (excluding use of flush toilets, baths and showers).
CLEANING THE HOUSE = 3-10 LITRES.
TOTAL = 21-36 LITRES¹.

In Britain, 83 litres a head daily are used on toilets, baths, showers, washing machines and dishwashers. Garden use, car washing, dripping taps and leakage consume 49 litres per head².

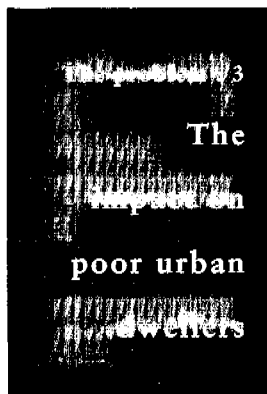
1. Bhutia, R, Cestti, R. and Winpenny, J.; World Bank, 1993; in *Managing Water as an Economic Resource*, ODI, 1994. 2. Water Companies Association, 1993.

Many cities which refuse to see water as a precious resource squander their supplies. In Manila, 58% of the water expensively channelled into city pipes is unaccounted for: it just disappears. The record in Cairo, Jakarta, Lima, and Mexico City is not much better; in Latin America generally, 40% of the urban water supply vanishes unaccounted and unpaid for by customers²³.

Explanations include cracked and leaking pipes; the unreliability of the service, which causes people to tamper with it; lack of functioning water meters; and managerial inefficiency and corruption in the public bodies responsible. These may be demoralised by lack of resources and an unhelpful climate of bureaucracy and inappropriate regulation, rendering their Augean task of keeping the city clean and healthy all but impossible.

The impact of water shortage, pollution, wastefulness and mismanagement falls most heavily on the poor. However inadequate the mains services, those in Third World cities with household connections typically receive a supply sufficient for healthy living and one that is heavily subsidised. But in the slums and shantytowns there are frequently no services at all.

People in many cities buy their water from vendors. These are private service suppliers: licensees of standpipes owned by businessmen, as in Nairobi, Kenya, or traditional water carriers. Between 20% and 30% of Third World urban dwellers are thought to be dependent on the water-by-the-bucketful they provide²⁴. According to one study carried out in 16 cities, the cost of water from a vendor is between four and 100 times more expensive than the cost of water from a piped supply²⁵. In Lima, for example, a poor family pays a vendor \$3 per cubic metre, 20 times the amount paid by a middle-class family with a household connection²⁶.



Not only can the cost of water be a major household item for a poor and struggling family - 20% of a slumdweller's income in Port-au-Prince, for example²⁷ - but its costs do not end there. It is very likely to be unsafe and fuel will be needed to boil it. After the 1991 cholera outbreak in Peru, residents were advised to boil their drinking water. The cost of doing so would, according to one estimate, amount to 29% of the income of a family in a squatter compound²⁸. The cost of a sanitary latrine - one that confines human waste so that it does not pollute either surface or groundwater - is often too high for a single household to manage; and proper sanitation, however desirable, is not essential to human life in the same way as drinking water, so slum families may regard it as an unaffordable luxury.

Domestic water shortages in slums, especially in tropical cities, and unsafe drinking water, carry serious public health risks. The historical record is graphic: typhoid and cholera epidemics plagued 19th century European cities, and are today reappearing in Latin America and elsewhere. In 1852, the average age of death in the boom town of Dudley in England was 17 years, a state of affairs attributed to a complete absence of piped water in the town and the presence of human excrement in all "back streets, courts and other eligible places"²⁹. Sanitary reform was the major influence in raising life expectancy in 19th century Britain, which rose by four to five years nationally in the 50 years preceding 1890 and by more among the "labouring classes"³⁰. In French cities, life expectancy rose from 32 to 45 between 1850 and 1900³¹.

Better public health undoubtedly requires sound public health engineering. The problem today is that public health engineering solutions based on 19th century precepts of centralised systems built and maintained by subsidised public agencies are inappropriate to the extraordinary pace and character of the contemporary urbanisation process in the developing world.

In the Third World, the situation of the urban poor has been obscured by the bias that attributes poverty to rural areas and describes cities as well-off because the well-off live in them. Data from urban areas - where virtually all the middle and upper classes of most Third World countries permanently reside - show that city dwellers are healthier and have better services than villagers. This distorts reality. It is applicable only to those inhabitants - the one-half to two-thirds - not living in the slums. Some governments leave conditions in the slums out of all their calculations. Certain countries report that 100% of their urban residents have access to safe water; yet cursory inspection of the poorer quarters of their capital cities reveals that this is palpably untrue³².

There are few accurate statistics about life chances and health risks in Third World slums (see box over). But those that do exist show that the urban poor can be much worse off than the rural poor. Thus the infant mortality rate (IMR) in the slums of Dhaka, Bangladesh, is higher than that in the countryside: 142 per 1,000 live births compared to the national rate of 90 or the rural rate of 93³³.

The problem : 4

The urban
poor have
been
neglected

Many of the deaths are associated with diarrhoeal disease and infections stemming from poor hygiene. In Manila, diarrhoea among the urban poor is twice as common as in the rest of the city³⁴; in Port au Prince, mortality among slum infants is three times that among rural infants³⁵.

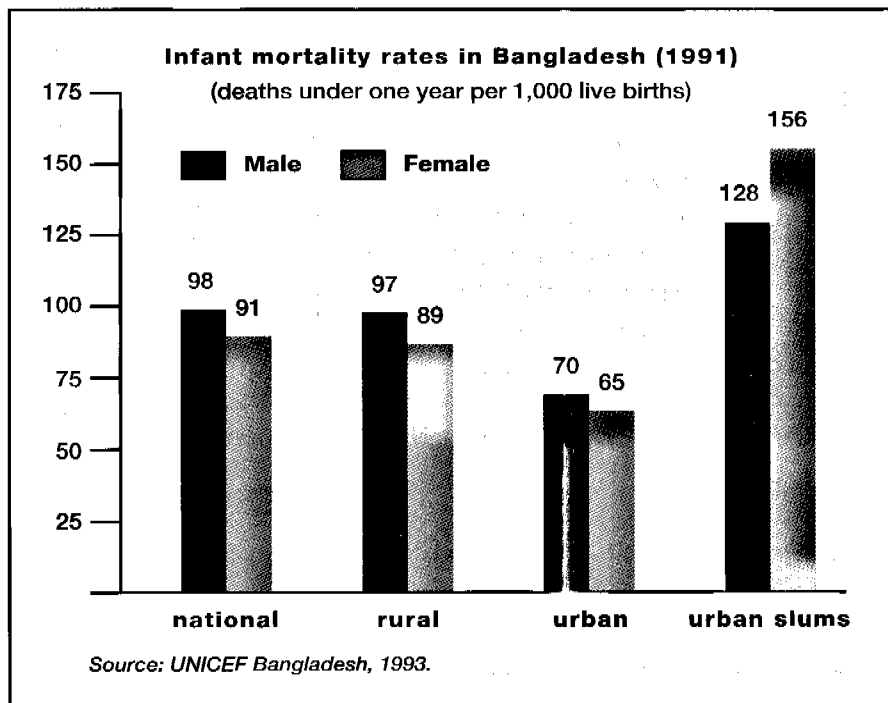
The lack of information from most cities about the state of those living in the most squalid environments is strange because the health advantages of water and sanitation tend to dominate arguments for service extension. A health rationale was the underpinning for the UN Water and Sanitation Decade, and the case put forward by the World Health Organisation (WHO) seems compelling: the annual saving of two million child deaths from diarrhoeal infection; the saving of 200 million bouts of diarrhoea and 300 million intestinal parasite infections; the eradication of guinea worm and river blindness; reductions in malaria, trachoma and schistosomiasis³⁶.

“Much ill-health among the poor, and especially among illegals, is under-reported and available data are seldom disaggregated by socio-economic status; thus, the full extent of health problems and important differences between groups within city populations must often remain conjectural. Nor are there dependable data on how poor health among the impoverished affects the health of the rest of the population.”

Environmental Health In Urban Development: Report of a WHO Expert Committee, 1993.

Ill-health in the slums

Data from cities often obscures the state of ill-health and high death rates in the poorest urban areas, which may be worse than in any other environment in the country - as in Bangladesh.



In fact, in recent years, UNICEF and others have put more emphasis on pills, powders and injections to prevent and cure this caseload of disease than on the need for clean water and sanitation. This is partly because the *direct* impact on disease and death rates of water and sanitation services has been hard to prove - although their relationship with health is unquestionable (see *box right*). Unhygienic human behaviour may get in the way of maximising benefit. And the health argument for services is rarely put by the intended users but only by those delivering services on their behalf. Most people living in Third World villages and slums know little of the germ theory of disease. They usually want water and sanitation services not to control infection but because of more fundamental needs: simply put, they must drink and defecate daily. Women, who always have to shoulder the task of fetching domestic water where there is no household tap and are its main users, feel the need most acutely.

The health risks of inadequate services in congested, dirt-strewn and poverty-stricken urban areas are far more acute than in the countryside - in fact, the perception of water-borne health risk is an urban perception. But the health argument has mainly been used to support the extension of services to poor rural people. The urban poor have largely been forgotten. And in the space and fresh air of the countryside, except in places prone to guinea-worm or specific water-related infection, the health argument is both less applicable and less persuasive. Because many rural populations have greeted health arguments with disinterest or scepticism, the assumption has developed that poor people do not want services and must be cajoled into receiving them³⁷. In urban slums this is far from the case: else how could water vendors and stand-pipe licensees successfully charge such high prices?

The rural bias of anti-poverty programmes in the developing world means that too little is known about slum dwellers generally. Not only are there few studies on death and disease rates in the slums; unproven assumptions are also often made that they have easy access to amenities such as

THE EFFECTS OF IMPROVED WATER AND SANITATION ON DIARRHOEAL DISEASE

WHO has examined the extent to which water and sanitation services reduce the incidence of diarrhoeal infections. The benefits of sanitation were found to be greatest where there is a real demand, as in high-density urban areas.

Condition	% age reduction
Improved water quality	16
Improved water availability	25
Both the above	37
Improved excreta disposal	22

WHO Bulletin, vol 63, no 4, 1985.

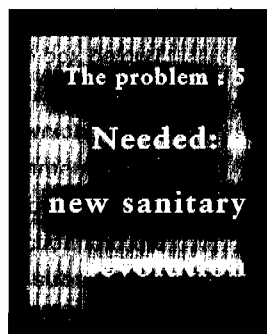
schools and health care. Slum and squatter populations are often left out of urban planning altogether - because they are occupying land illegally; because they are too poor to pay for conventional housing; or in the vain hope that if they are ignored they might conveniently go away.

The Victorians watched the proliferation of their own industrial slums with horror: they believed that such a great concentration of the poor, without roots in the land or society, must threaten to overwhelm the propertied minority³⁸. This horror has been paralleled by reactions to the modern influx into Third World cities. The newcomers are treated as transients from rural areas who have strayed temporarily into town. They are described as "marginal" - belonging properly neither to the urban economy, nor to the place where they live. Their housing is "temporary" - made out of waste materials and erected on vacant land. This land is often low-lying, precipitous or hazardous in some way and its undesirability as a habitat is the reason its residents are allowed to stay - for a while. This imposed culture of impermanence is an excuse not to provide slum dwellers with services. Arguments that amenities in slum areas would attract ever more rural indigents have long justified deplorable neglect of slum populations. Extreme measures - bulldozers and mass evictions - have frequently been used against them³⁹.

Urban development has been designed largely for the better-off. Most slum and squatter settlements fall outside the realm of urban infrastructural projects: roads, electricity, drainage and water supply are usually extended only to newly planned or "improved" areas which exclude the poor by definition⁴⁰. Where services are provided, security of tenure at manageable rents may not be guaranteed. Land prices rise and the slum-dwellers are forced out, only to make new "impermanent" settlements elsewhere.

The high costs of most urban services have led critics to accuse cities of feather-bedding feckless humanity and devouring more than their fair share of national resources⁴¹. But these services and resources are not being put at the disposal of the urban poor, against whom both urban and rural biases in development policy manage to conspire.

The celebratory accounts of the 19th century sanitary revolution in Britain and elsewhere tend to gloss over the many obstacles and delays (see box below), and its dependence on the fruits of industrial progress and civic wealth. But its success over time left a legacy of assumptions about right solutions which, today, are inhibiting alternatives from emerging in very different environments. The sanitary reformers so elevated the role of engineering that issues of public health and disease control were removed from the province of individual action into the realm of public administration⁴². This triumph characterised the subsequent history of water supply, sewerage and drainage not only in the industrialised countries but all over the world. The slogan of the Water Decade - "Water and Sanitation for All" - echoes the idea of a social right, justified on grounds of health and equity, to be provided principally at the public expense.



HISTORICAL RESISTANCE TO SANITARY REFORM IN BRITAIN

Edwin Chadwick's seminal Report on the "Sanitary Condition of the Labouring Classes" was published in 1842 and the earliest public health legislation to revolutionise town drainage and water supplies was passed in 1848. Resistance to its implementation was immense. It took a major cholera epidemic in 1853 to prompt investment in sanitary engineering, and by 1870 sanitary progress was still only holding its own against a static mortality rate. Much of the delay was to do with lack of will to increase expenditures, and inadequate machinery of implementation; this reluctance is mirrored by national and municipal attitudes in developing countries today.

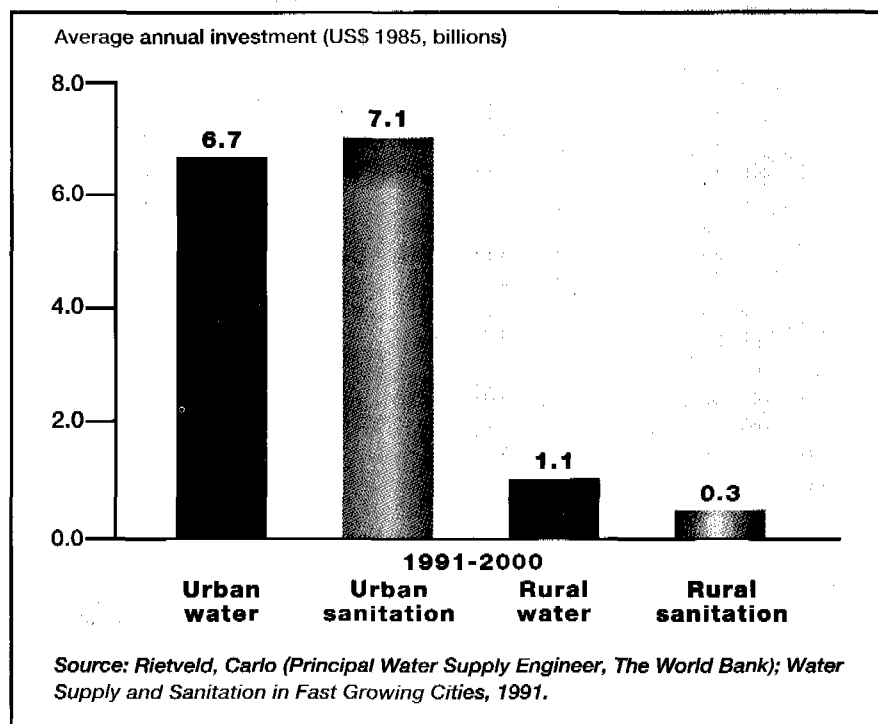
Mortality rates had fallen continuously in Britain until the 1830s, as have mortality rates in the Third World during the 20th century. In Britain, they began to rise thereafter due to deteriorating conditions in the towns. In spite of cholera epidemics and intense reforming activity, it took until 1890 for life expectancy in England and Wales to show marked improvement.

F. B. Smith, *The People's Health 1830-1910*, Croom Helm, London, 1979.

MEGA-SLUMS : THE PROBLEM

Investments needed for urban water supply and sanitation in developing countries

The scale of investments needed to provide underserved populations with water and sanitation are variously estimated, depending on the cost of technology to be used and other variables. This 1991 World Bank estimate is based on the cost per person of \$120 for water supply, and \$150 for sewerage (1985 dollars).



For the mega-city challenge of the developing world, particularly for their slum populations, the supremacy of public engineering works and the removal of responsible action from individuals and households is simply not going to work. In the social and economic context of most poor countries, this approach is suited only to city centres, industrial areas, and suburbs where urban life is moneyed and well-ordered. And even providing and maintaining highly engineered systems to these parts of town often extends the capacities of municipal utilities beyond their managerial limits. A World Bank review of 120 projects in the developing world found the water authorities performing well in only four countries⁴³. Examples of incompetence were legion. In Accra, Ghana, only 130 connections had been made to a system designed for 2,000. In Caracas, Venezuela, and in Mexico City, 30% of connections were unregistered.

Many of the problems faced by these bodies stem from the fact that water supply, drainage and sewerage has been vested in the hands of a public bureaucracy which is neither motivated nor empowered to function cost-effectively. Customers are inadequately billed and inadequately charged. Technology is usually imported and difficult and expensive to maintain. Both those from abroad who promote high-technology engineering schemes, and those who "purchase" them with foreign "aid" or subsidised loans, belong to establishments schooled to think in certain ways and dependent for personal or business reasons on large and remunerative contracts⁴⁴. In spite of widespread international recognition that poor countries' sanitary needs cannot be met in this way - financially, technologically, or managerially - 80% of investments in the sector are still allocated to high-cost systems⁴⁵.

From the perspective of the expanding urban slums, the provision of water supplies and sanitation by this type of technology and institution is not "Water and Sanitation for All" but "Water and Sanitation for an Elite Minority". If their technological and management regimes remain unaltered, the prospect that most existing municipal utilities can advance the urban water and sanitation frontier either conceptually or physically is dim. The same activist and argumentative vision which transformed sanitary fortunes in the past now needs to be harnessed to the demands of the Third World mega-city for the 21st century. The case for reform rests not only on the desirability of a healthy urban environment for city populations, but on the sustainability of supplies, and on human need and dignity. The reforms needed would benefit not only urban but rural populations, whose needs remain acute and should not in their turn be allowed to languish.

In the 19th century, serious effort to design appropriate systems, pass regulations, implement them, and find the resources locally and nationally for public health and sanitary care, only occurred in the wake of cholera. Will we again have to wait until cholera epidemics in Latin America and elsewhere strike terror into cities and continents? In many rapidly urbanising countries where life-threatening diarrhoeal disease is still endemic and erupts in periodic outbreaks, the urban sanitary crisis is a crisis simply waiting to happen.

The question is: can the crisis be avoided, and if so, how?

Part Two - The Response

The response : 1
Demystifying
the urban
"threat"

After decades of trying in vain to stem the urban tide, attitudes towards the "threat" of runaway urban growth in the Third World are finally beginning to change. This is partly a capitulation to *force majeure*: the trend towards urbanisation has proved unstoppable.

But there has also been some re-thinking about the demon character of the mega-city. After all, throughout history advances in science and civilisation have emerged from cities; population density creates not only problems, but opportunities; it challenges planners, architects and engineers; it speeds the exchange of ideas⁴⁶. Cities are the heartland of manufacture, and of communications: railheads, airports, satellite connections; roads always lead to Rome. Economies of scale demand that this will continue.

Urban economists have begun to point out that, far from living off the rural hinterland, many cities are dynamic sources of economic development and savings. The World Bank estimates that 60% of the value of developing countries' output, and 80% of the growth in its value, is generated in urban areas⁴⁷. Instead of deploring city growth and dismissing the new urbanites as rural people in the wrong place, policy-makers are beginning to look afresh at how to manage urban space.

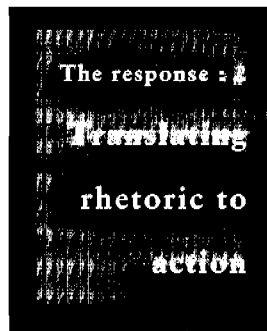
Slum populations - who they are, why they are there, how they live, what they want - have also won reconsideration. The image of helpless human flotsam washed onto the urban shore has been replaced by that of the determined and upwardly mobile pioneer⁴⁸. In spite of the squalor slum-dwellers endure, their lack of adequate employment and civic amenities, and their separation from rural roots and kin from which women especially suffer, they have stuck to life in town. And not only to their own but to others' benefit.

The new citizens of Dhaka, Nairobi, Manila and Sao Paulo play an important role as traders, manufacturers and service providers in the irregular - but extensive - urban economy⁴⁹. Many are small-scale entrepreneurs, including water vendors and dust-cart pushers. That they meet their own needs for jobs, housing and utilities is an indication of resourcefulness, not a black mark against them. Many slum and squatter settlements, when researched, turn out not to be random agglomerations of misplaced drifters but stable and homogenous communities.

It is true that, in many Third World cities, the paucity of economic opportunity in the modern sector exacerbates existing social stratification. Extreme diversities of income between rich and poor mean that people in the same city may live in what amount to different urban economies; but nonetheless, these are layered and overlapping. The better-off depend on the poor for transport; domestic labour; some manufactured items, food purchases and entertainment; and the provision of many services, including some associated with water and sanitation: laundry and the collection of nightsoil. The people living in the slums are not indigent residents of a vast, open air poorhouse who make no contribution to the city as producers or customers. If they were, then the challenge of meeting their environmental needs would be too overwhelming even to contemplate.

A more positive view both of cities' potential and of the capacity of their entire populations is key to the redefinition of the urban water and sanitation problem. Where the urban poor continue to be seen as passive recipients of water and sanitation services as if of some form of welfare, the most determined efforts to move ahead can only succeed in standing still. If, on the other hand, the capacities of slum dwellers to provide their own amenities - capacities which they are already demonstrating in the context of housing and jobs - are acknowledged, they can be recast as active partners in service delivery and management.

The change needed in official and public attitudes is fundamental. It does not simply mean enlisting the poor as cheap labour for the laying of paved pathways, pipes and drains - although that may be an element. It also requires acknowledging the right of the poor to belong to the city, to become permanent residents in every meaning of the term. That means land use regularisation, tenancy and rent control. It means accommodating more modest types of urban settlement and amenity within the scope of building and other municipal regulations. And it means recognising that appropriate service delivery systems need to belong to their own consumer context, not to standards of technological excellence set in a European boardroom with a corresponding price-tag.



Recent changes in the international policy climate regarding water and sanitation have opened up tantalising glimpses of the new sanitary revolution. Certain projects and "urban basic services" programmes - a few of which have been supported by WaterAid - offer proof that up-to-date, workable and affordable approaches to the ancient problem of urban squalor exist. There is a surprising degree of unanimity about the direction in which policy should go; but so far, governments in both developing and donor countries have been freer with rhetoric than with action.

At least the pre-condition for change exists: there is international consensus that "more of the same" in water and sanitation is definitely not the way forward. This was the most important lesson of the International Drinking Water Supply and Sanitation Decade (IDWSSD) 1981-90. The Decade's achievement was less to be reckoned in boreholes drilled, pumps installed, and waste disposal systems constructed - though these were considerable, than in the transformation of thinking and practice that accompanied them⁵⁰. It focussed the best minds in the sector and prompted a new wave of worldwide concern - of which WaterAid is itself a product. The new thinking found global expression in various international fora during the Decade, and in a special chapter of Agenda 21 to which governments committed themselves at the Earth Summit in Rio in June 1992 (see box over).

The slogan "Water and Sanitation for All", whatever it did not achieve, forced policy-makers to think in terms of mass coverage for unserved

populations. This in turn forced them to re-think conventional methods of public health engineering and their economics. The reduction of unit costs and the wider spread of services in the Third World environment clearly demanded different technological and operational criteria and new forms of service provision and management.

It is now regarded as axiomatic that water and sanitation technology must be no more complex than strictly necessary, sturdy, and cheap to install and to maintain; that water must be seen as a commodity with a realistic price-tag; and that users' own energies and resources must be deployed in system choice and operation. Affordable and appropriate systems for low-income communities mean installations which are within their own comprehension, technological participation and consumer reach. And the womenfolk in the communities - the principal water-haulers and water-users - should be consulted about household service schemes and involved in their management.

If people become partners in service delivery instead of passive recipients, they will bring their own resources - financial and organisational - into play. In this scenario, the authorities become advisors, facilitators and overseers; but they are not the omnipotent providers upon whom communities depend - and who are unable to meet their needs.

A century and a half ago, sanitary reformers claimed water supplies and sanitation for a new set of public and professional institutions, and allocated to engineers the role of high priests and guardians. Today, in settings which cannot replicate the European experience, a different institutional pattern is needed which redistributes certain powers and responsibilities back to individuals, households and communities.

In spite of unanimous formal agreement to low-cost, people-centred approaches, 80% of investments in the water and sanitation sector are still allocated to high-cost technology. Even more significantly, less than 5% of donor aid is spent on low-cost solutions⁵¹: their money does not follow donor governments' stated policy commitment. The

INTERNATIONAL WATER PRESSURE

The emergence of water and sanitation on the international agenda began at the 1977 UN Water Conference at Mar del Plata, Argentina. The Conference led to the launching of the 1981-1990 International Drinking Water Supply and Sanitation Decade (IDWSSD), based on the premise that "all peoples, whatever their stage of development and social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs".

The Decade ended with a Global Consultation on Safe Water and Sanitation for the 1990s, (Delhi, 1991), which emphasised the principle of "some for all rather than more for some". In 1992 came an International Conference on Water and the Environment in Dublin; followed by the UN Conference on Environment and Development (UNCED) in Rio de Janeiro. A new conference: Implementing UNCED Agenda 21: Drinking Water and Environmental Sanitation in Noordwijk, Netherlands takes place in March 1994.

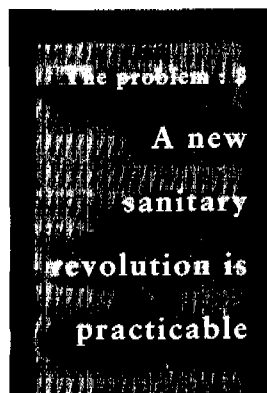
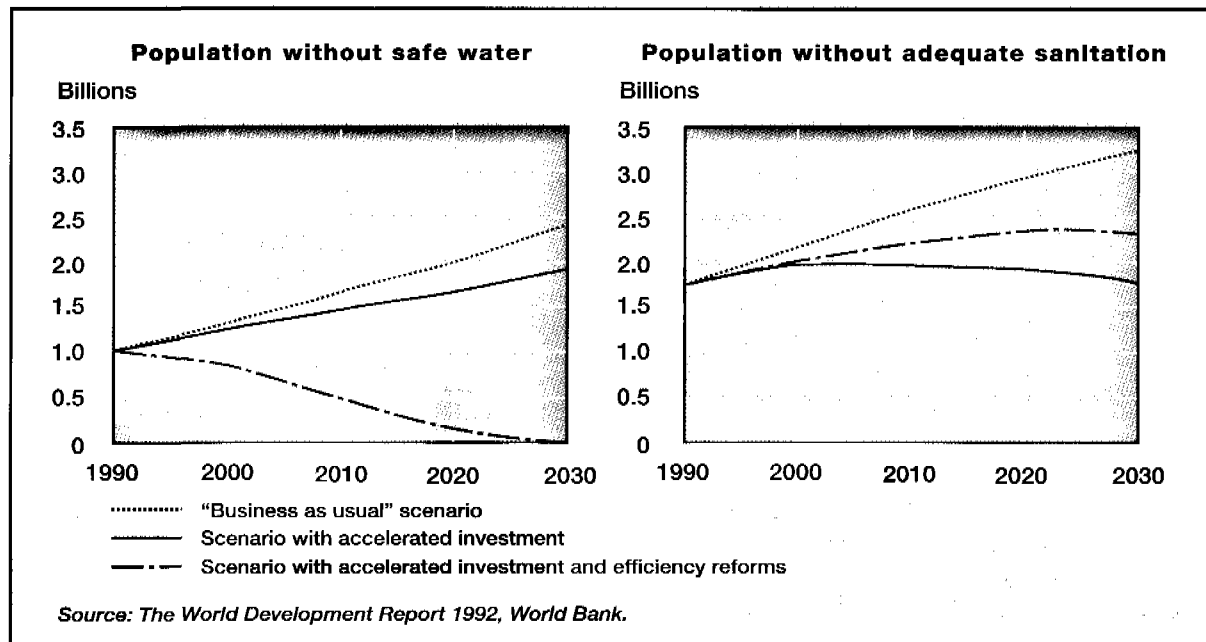
way existing resources are spent in the sector is as important as the generation of new resources, for according to UNICEF, if the unserved poor were the focus of water and sanitation schemes, the current level of investment would allow 80% of the world's population to be reached by 2000⁵². On the other hand, to continue "business as usual" will result in greater inequities and a wider gap between served and unserved populations, especially in urban areas. To narrow this gap will require, first, to narrow the gap between rhetoric and action.

Here, then, is one important role for the new generation of sanitary reformers: to challenge the international community - governments, international organisations, and their partners in the private water industry - to deliver on commitments made at the international level. Governments of both industrialised and developing nations signed the World Declaration on the Survival, Protection and Development of Children in New York, 1990, which included a commitment to clean water for all and

universal access to sanitation. They followed this with their 1992 commitment at Rio to Agenda 21, which adds the notion that water resource management should take into account the vulnerability of freshwater supplies. By inference, they have agreed that showcase engineering projects are not affordable for most Third World economies and do nothing for the poor. But "business as usual" continues.

The cost-effectiveness of sanitary reform

If "business as usual" continues, increasing numbers of people in both urban and rural areas, but especially in urban areas, will be without safe water and adequate sanitation as the years go by. If investment can be accelerated, the numbers will increase less rapidly. But if there are reforms as well, marked improvements can be achieved. The following three scenarios have been worked out by the World Bank.



During the past decade, certain urban communities in major cities in the Third World have proved that a new sanitary revolution is practicable. In most cases, local motivation to improve the living environment has been captured and channelled by a home-grown voluntary organisation, or by "urban basic service" projects deploying strategies based on community organisation. In some, far-sighted local engineering authorities have played a pivotal role. Sanitary problems in slums are not identical and no one formula will fix them. But these landmark schemes have certain common features: simple and cheap technology, and assumption of sanitary responsibility by individuals, households and communities instead of its wholesale relinquishment to a distant and unsympathetic city hall.

Unlike inhabitants of rural areas, residents of cramped warren-like quarters in flood-prone urban areas place a high priority on environmental sanitation as well as on water supply⁵⁸. Women especially need places in which

to bathe children and wash clothes; they want paved pathways and wastewater drains; they need somewhere hygienic to defecate; and they are prepared to contribute financially towards the cost and upkeep of these amenities. "Urban basic services" programmes in the Philippines, in Bangladesh, in Ghana and elsewhere have shown that even the very poorest slum communities are willing to organise themselves not only to provide labour for construction, but to raise subscriptions towards the cost of drains, pumps and sanitary latrines. Their investment may well be repaid: in Tegucigalpa, Honduras, a programme based on the creation of *barrio* water boards to install and run slum services has reduced the community's water expenditures from 40% to 4% of household income⁵⁴.

A landmark project on the new sanitation trail is the Orangi Pilot Project (OPP) in Karachi, Pakistan. In the early 1980s, a well-known community organiser, Akhter Hameed Khan, asked the people of Orangi squatter settlement what problem he could help them resolve. He was told that "the streets were filled with excreta and waste water, making movement difficult and creating health hazards." The residents wanted a conventional sewerage system - nothing less - and asked Khan to persuade the Karachi Development Authority to provide it to them free, as they assumed it did to richer areas of the city. He spent months with representatives from Orangi petitioning the authorities to no avail. Only when it became clear that they would never accede did the residents begin to seek alternatives. Khan regarded this process of frustrated negotiation as vital in liberating the people from "the demobilising myths of government promises"⁵⁵.

By innovative engineering and community involvement, the Orangi Pilot Project developed a technique for providing in-house sanitary latrines, household sewers, and connections to underground sewers in adjoining lanes and streets. Instead of costing \$1,000 per household as does conventional sewerage in Karachi, the system cost \$100 per household excluding trunk connections (see *box over*). OPP administration amounted to less than 15%

of the amount invested by the community. The tanks and sewers are paid for and managed by groups of households organised by "lane community". Progress enabled pressure to be successfully placed on the municipality to construct the main trunk drains into which the community-managed drains discharge. Within a few years, the joint efforts of slum communities and city authorities, with the OPP administrators functioning as intermediaries, has brought sewerage to 600,000 poor people in Karachi.

As a result of OPP's success, development organisations and progressive municipalities elsewhere in Pakistan are attempting to replicate its strategy: WaterAid is funding visits and training missions by OPP staff to other slum locations. But the most important lesson of Orangi is not to have created a new formula solution for urban sanitation: not every slum in Third World cities is laid out in the same way as Orangi or on identical terrain, nor will each demand a fully sewered system. It is, rather, to have proved that the right blend of technological and scientific knowledge, decentralised managerial responsibility, and system costings that match community willingness and ability to pay, can - with vision and will - be found.

By simplifying designs and eliminating middlemen and contractors in the construction process, the total costs of the drainage system engineered by OPP cost one quarter of a conventional installation. A compelling case was thereby made - which the Karachi municipality found unable to resist - for a policy of partnership whereby residents undertook "internal" development and the authorities undertook "external" development, including the construction of trunk sewers and treatment facilities.

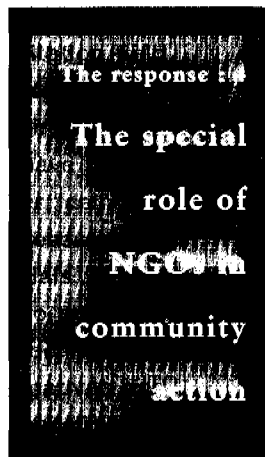
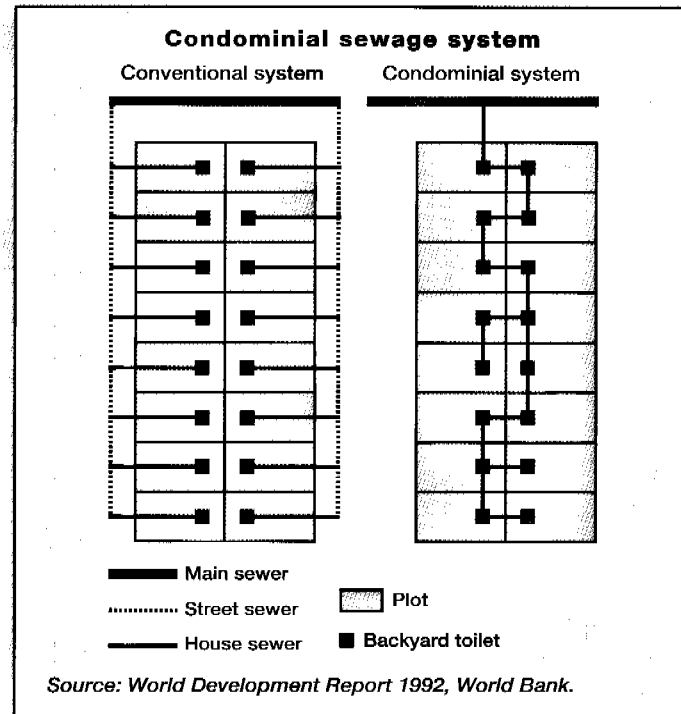
In poor countries, shortage of financial resources is usually regarded as the main brake on the spread of social and infrastructural amenities. In the context of water and sanitation, Orangi proves that ingrained official and public attitudes about what is right - socially, technologically, and in every way - can present even greater impediments to the cause of appropriate public health engineering in today's expanding cities.

SEWERAGE "DONKEYS"

The sewerage technique adopted by OPP cost a fraction of typical Karachi connections by being the engineering equivalent of a donkey rather than a racehorse. A tank located between the house sewer and the street sewer retains the solids. This allows smaller pipes at flatter gradients to be used in the streets because they only have to carry fluids. The householder empties the tank when it is full.

Other types of sewerage donkey are being developed and applied in a number of countries. In Northeast Brazil, a condominial system has been invented which treats a group of houses as if it was an apartment block, runs a smaller, flatter sewer between them, and thereby reduces the costs of conventional household connections by 70%.

Environment, May 1993.



It is no coincidence that much of the new orthodoxy about low-cost technology and "demand" management in the water and sanitation field originated in the private, voluntary, non-governmental laboratory. Because non-governmental organisations (NGOs) tend to take as their starting-point needs as they are felt and perceived within the community, they usually have a good record in responding to what people want. They understand user "demand" measured by people's willingness to contribute time, effort, and resources to a scheme rather better than elevated professionals and officials, whose orientation is to know what people should want and to respond to pressures from the moneyed and powerful. Also, because NGOs are too poor to go in for high-tech engineering, they usually rely on low-cost alternatives and community-level maintenance. Their first commitment is to their beneficiaries, not to government policy-makers, contractors, bankers and engineering consultants.

Thus, ironically, although the label they bear is "humanitarian", NGOs and voluntary agencies often function in a more business-like and cost-effective way as far as low-income communities are concerned than do professional authorities, which tend to look down on the poor. Orangi Pilot Project is a classic example of a mould-breaking NGO endeavour. Like the OPP designer drain, many prototypes of the new low-cost water and sanitation technology -

deep-well and shallow well handpumps, pour-flush and "ventilated improved" pit latrines - were first produced by NGOs in India, Malawi, Zimbabwe, Kenya, Bangladesh and elsewhere. These have subsequently been developed in various developing countries with a mix of public funds and private investment. They are strongly promoted by - among others - UNICEF, UNDP and the World Bank whose resources make research and development, scale production and manufacturing standard-setting feasible.

More recently, NGOs' human resource development experiences have begun to be copied and co-opted by government extension services. A generation ago, the "barefoot doctor" or "community health volunteer" was invented as a means of extending health services to the unserved. Today, the "barefoot sanitarian" - a cross between a public health technician and an artisanal entrepreneur - is helping do the same for water and sanitation. This local teacher, mason or bicycle-shop proprietor with a modicum of training, who manufactures squatting-plates, tests water supply quality or mends the pump when it breaks down, belongs to - and is ideally paid by - the community. He or she also acts as an intermediary with the authorities, and sometimes as a health educator. This development of local human resources for service maintenance and effective use was pioneered in many developing countries including India, Guatemala, and Kenya by NGOs - often depending heavily on women volunteers; it is now applied in many larger-scale community water supply and sanitation schemes by government departments.

As with human resource development for maintenance, so with community organisation techniques. Here, too, NGOs have been front-runners. Establishing "lane communities" to build drains and manage them was central to the OPP strategy in Karachi. In Bangladesh, "slum improvement projects" run by municipalities and the Local Government Engineering Board employ NGOs to train local community health and

**ALTERNATIVE WASTE DISPOSAL SYSTEMS
THE COSTS**

The range of capital costs per household of alternative sanitation systems is typically as follows (1990 prices) :

Type of system	US\$
Twin pit pour-flush latrine	75-150
Ventilated improved pit (VIP) latrine	68-175
Shallow sewerage	100-325
Small-bore sewerage	150-500
Conventional septic tanks	200-600
Conventional sewerage	600-1,200

Source: *The Poor Die Young*, Earthscan 1990.

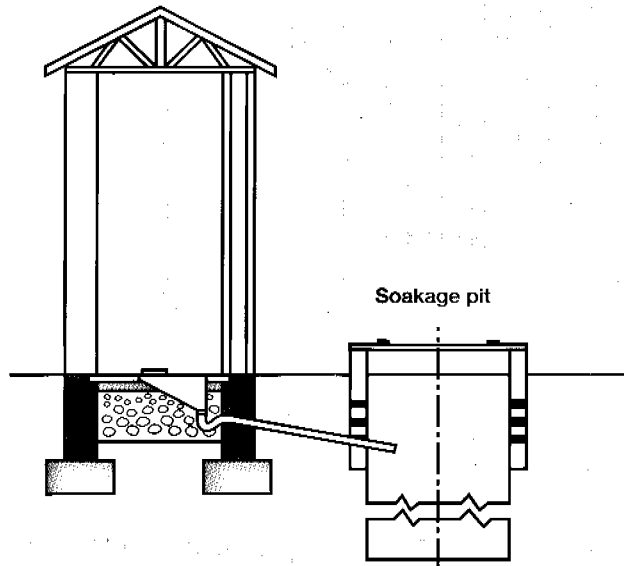
sanitary workers (usually women), and local masons (invariably men). Community Organisers work hard to establish local committees in the slums: community ownership of improvements is central to the programme strategy⁵⁶.

In Addis Ababa, an urban upgrading project in a number of poor *kabeles* - urban districts - has transformed their physical character by mobilising communities around improved housing, water points, sanitation and communal amenities (see box over). This project, which since 1990 has been supported by WaterAid, illustrates the importance of changing habits in order to ensure community motivation. An improved environment without a changed community outlook can quickly become unimproved again.

Evidence from many "urban basic services" programmes indicates that slum and shantytown populations are quick to appreciate health and economic benefits of infrastructural improvement - usually quicker than rural folk. The impulse to better their lot which took them to town in the first place needs only to be channelled and supported with technical advice and small levels of investment. In Khulna, Bangladesh, 80% of inhabitants in one

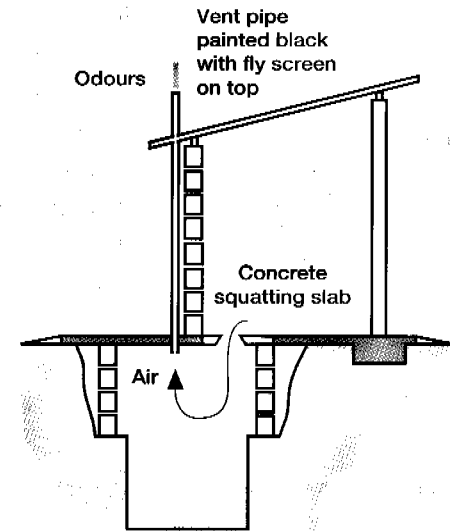
Low-cost sanitation technologies

The pour-flush latrine



The pour-flush latrine is widely used in Asia. It is flushed manually, using 2-3 litres, compared to the 8-20 litres used by cistern-flush toilet bowls.

The ventilated improved pit (VIP) latrine



The pit latrine is widely used in the developing world, especially in rural and water-short areas. The VIP latrine is solidly constructed, hygienic, odourless, and easy to clean.

Source: *The Poor Die Young*, Earthscan, 1990.

shanty settlement drank river water and used "no fixed place" for defecation before slum improvement; within three years, 90% drank clean tubewell water and used it for washing, and 60% used a sanitary latrine. Infant mortality rates have declined and community leaders comment enthusiastically on their release from childhood diarrhoeal deaths⁵⁷.

The increasing use of NGOs as partners to officialdom in the extension of amenities and the management of space occupied by the poor in both rural and urban environments is widely welcomed. But NGOs are not a panacea nor a substitute for municipal action. Water authorities have to establish policies for the urban sector, set tariffs and collect dues, provide a managerial and

technological framework for networks of systems, and oversee the construction and maintenance of major pipelines and treatment plants.

As far as poor communities are concerned, the primary role of the authorities may be to facilitate rather than to provide - a strategy strongly supported by leading policy specialists in the sector⁵⁸. This role is not a minor role requiring less work and fewer resources; it needs as much effort and investment, differently applied.

The response : 5

**Mobilising
partnerships
for a
sanitary
revolution**

In the face of rapid urban evolution and mounting human pressure on freshwater resources, nothing short of a new sanitary revolution is needed. Water authorities, NGOs, public health scientists, engineers, commercial companies, and leaders in public life need to combine forces behind such a goal if the 20th century's progress in public health is not to be dramatically stalled on the threshold of the 21st.

The abandonment of "business as usual" in the water and sanitation sector will require concerted action by all the players, rather than competitive and isolated approaches. The water generated by the earth's hydrogeological cycle is a finite resource on which our lives, our health, our food supply, and the nature of modern civilisation depends. Its sound and cost-effective management is a pre-condition of the sustainability of a healthy and liveable environment in the cities, towns, villages and hamlets which comprise our evolving habitat now and in the future.

As this report has shown, humanitarian ventures undertaken on behalf of poor urban dwellers have helped new approaches towards meeting sanitary needs and eradicating diseases of squalor to emerge. A consensus, to which governments have given their imprimature, already exists around the principles to be applied and the direction in which reforms need to go in order better to serve the unserved populations of both town and countryside. Now what is needed is a mobilisation of energy and will for concerted action at international, national, and municipal and local level.

The lead needs to be taken by the responsible political authorities, including Ministers and Mayors; it needs to be accepted by donors and investors in engineering schemes and by salaried officials in local government bodies. Their immediate allies - water construction and management companies - need to respond to the new sanitary challenge in the *pro bono publico* tradition established by their 19th century forbears. NGOs active on behalf of the poor need to consider the needs of urban communities as well as rural; and adopt collaborative as well as adversarial roles *vis a vis* municipal authorities and the private sector.

More funds need to be generated to extend services in poor urban communities. This means, on the one hand, allocating a higher priority to the urban poor within those funding and operational organisations which identify poverty as principally a rural phenomenon (but does not mean switching resources from the rural poor in such a way as to introduce new inequities). It means finding out much more about the real state of people's health and their access to services in reportedly well-served, but unquestionably ill-served, urban areas. It also means changing the way existing resources are allocated in the sector from high-cost, sophisticated technology to low-cost systems; and it means an end to the subsidisation of services for the urban elite. Pricing regimes should be introduced which charge industrial users and middle- and upper-class urban residents the full costs of supply delivery and maintenance, especially for water applied to non-essential uses.

**THE INTEGRATED HOLISTIC APPROACH
URBAN DEVELOPMENT PROJECT,
ADDIS ABABA**

The IHA-UDP in Addis Ababa grew out of an earlier urban upgrading project in *kebele* 41, supported by Red Barna (Norwegian Save the Children) and staffed by Ethiopian development workers. Between 1981-85, a community identified as "the poorest of the poor" had not only cleaned and tidied itself, but had improved its families' nutritional status, eradicated diarrhoea, changed its waste disposal habits, and reached 75% family planning coverage.

Since 1988, the project area has been extended to three more of the most congested and marginalised *kabeles* in the city. Between half and three-quarters of households are headed by women with incomes of less than \$1.00 a day; 60% of households are below subsistence with all the nutritional and disease shortcomings attendant on acute poverty.

Key IHA activities are physical upgrading (houses, drainage, paving, communal buildings); primary health care, especially for mothers and children; community programmes including education for the elderly, youth, women, and pre-school children; and income-generation via petty manufacturing and food-processing. All activities dovetail, a fundamental aspect of the "integrated holistic approach".

Ownership and management of all project activities is in the process of being transferred from IHA-UDP to the current beneficiaries. This requires a special kind of institutional development process and human resources training. An Advisory Committee, including representatives of the communities and of local and central government, is being set up to provide links between all parties and to enable communities to draw on managerial and technical expertise.

WaterAid has provided £25,000 p.a. for three years to support activities in water and sanitation, and is the co-ordinating agency for a consortium of UK donors including ODA, which provides a further £175,000 to general activities.

Mid-term Evaluation of the IHA-UDP, Addis Ababa, March 1993 and IHA-UDP Progress Report, April-June 1993.

The type and scale of reform needed will require political determination. For too long, the urban elite has been allowed special privileges in respect of water supply and sanitation - privileges which they have come to take for granted, and which may have become an economic and political liability for the administrations concerned. Increased commoditisation of water and realistic pricing is not going to please the better-off - some of whom may point out that "better-off" is a distinctly relative term.

The World Bank and other commentators argue strongly for the commercialisation of the sector in order to foster cost-effective water management⁵⁹. Reforms which will disaffect influential social groups will be easier to carry out if removed from the public domain. Meanwhile, what poor slum communities need is something different: freedom from the extreme commercialisation generated by water scarcity in their neglected and underserved localities. And they still need help - business-like but humanitarian help - in overcoming the many disadvantages they experience as a result of their relative lack of social, economic and political clout.

NGOs have a special role to play in smoothing the path to change. Those involved in slum improvement and urban basic services programmes are operating at the interface between the poor and the not-so-poor, between the formal and the informal economy, between local community associations and establishments in city hall. They can act as moderators and interpreters between slum communities on the one hand, and officials and bureaucrats on the other. Some solutions emerge from the community and filter upwards; some emerge from the professional engineers and administrators, and filter downwards. NGOs are uniquely placed at the crossroads and are in a position to bridge the gap. They can promote a climate of partnership and help reduce the mutual antagonisms which tend to typify relationships between slum communities and the authorities.

The response : 6
In conclusion

And NGOs have a tendency to demonstrate crusading zeal. If a new sanitary revolution is to be set in motion for the 21st century, the same energy and dedication which powered civic reformation in the past will need to be harnessed on behalf of the new inhabitants of mega-cities and mega-slums.

On March 22nd 1994, declared "World Day for Water" by the United Nations, WaterAid calls upon friends, supporters, water industry colleagues and partner organisations in Britain and throughout the world to promote in whatever way possible the ideas and actions presented in this report. If the necessary changes in water and sanitation policy do not occur before the turn of the century, the planet faces a serious prospect of containing on its surface vast lacunae of urbanised squalor in which over one billion people live in the permanent shadow of life-threatening epidemic disease. In the light of modern travel and communications, and concern about increasing pressures on the natural environment, the ramifications of the impending sanitary crisis cannot help but affect humankind everywhere on earth.

Instead of regarding the rapidly growing populations of slums and shantytowns as a menace, policy-makers must recognise that the energies of the poor are a resource to be tapped in the drive to find solutions to the problem of squalor. Too often in the past, development policies have failed because those whose lives development is supposed to transform have not been consulted, their views and wishes have not been heard, and their subsequent lack of interest and involvement have doomed investments made on their behalf. This has been true in the water and sanitation sector as it has been true in other policy areas. It is for this reason that this report has placed so much emphasis on the need for public health engineers to challenge their received wisdoms, re-think the role of centralised know-all and do-all utilities bodies for mega-cities and mega-slums, and find ways - partly through NGOs - of developing partnerships with the populations whose needs they must reach out to serve.

In the short-term, certain actions are needed at the international level. This report is being issued at the very moment that the Ministerial Conference Implementing UNCED Agenda 21: Drinking Water and Environmental Sanitation is meeting in Noordwijk, The Netherlands (19-23 March 1994). The Conference provides an excellent opportunity for governments which have committed themselves to resolutions concerning water supply and sanitation at UNCED in 1992 and in other international fora to identify how implementation can move ahead energetically.

WaterAid earnestly hopes that a mechanism will shortly be established by an existing international body (the UN Commission on Sustainable Development or the Water and Sanitation Collaborative Council) to monitor international investments in the sector and review Country Plans for "Water and Sanitation for All". Such a mechanism would help to promote accountability and

transparency, and close the gap between stated public policy commitments and governmental actions.

In addition, a suitable international body, such as the Water and Sanitation Collaborative Council, should establish a systematic inter-agency programme to collect and disseminate information from organisations, researchers and public health professionals about urban (and rural) water and sanitation schemes which have given proof of workability, cost-effectiveness, and customer satisfaction in low-income environments. This will help to build an international knowledge base about "best practice" - technological, financial, and managerial - consistent with the new policy directions.

Finally, WaterAid calls on the water industry and international development NGOs in other European countries to engage in active partnership, leading to the creation of other organisations such as itself in Britain and a similar NGO, Water for People, in the USA. Such partnerships can help to generate new sources of funds for appropriate, low-cost water and sanitation schemes, facilitate the sharing of knowledge and expertise, and provide valuable opportunities for mobilising political will behind the new sanitary revolution.

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