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Civil Society

ARE WE READY?

FUTURE CITY

5th Anniversary

DOUBLE ISSUE

GO BEYOND FACELIFTS
Rita & Umesh Anand

EQUALITY & PUBLIC SPACES
Enrique Penalosa

THE ORGANIC BUILDING
Chandrasekhar Hariharan

INDIA'S URBAN EDGE
Dinesh Mohan

CUT THE COMMUTE
David Banister

BICYCLE BOOM
Riaz Quadir

LOOK AT GURGAON
Anupam Mishra

MIXED USE IS COOL
Ajith Vyas

THE DUBAI DREAM
H Masud Taj

CRUDE DELHI
Lansinglu Rongmei

BOTTOM UP HOUSING
Monitor Group

BEST OF CIVIL SOCIETY
Pages 50?66

Bicycles in a Velib parking station on a Paris street

5th Anniversary

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ANNUAL DOUBLE ISSUE

This September-October issue of *Civil Society* marks completion of five years of the magazine. The next issue will be in November.

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Civil Society

READ US. WE READ YOU.

Five years are up

It seems just like yesterday, but all of five years have passed since we launched *Civil Society*. The first issue appeared in September 2003. Our friend, Anupam Mishra, jokingly describes it as a magazine born in the anonymity of a general ward: no fanfare, no celebrities kissing the baby, no gurus blessing it -- just an anxious extended family in distant attendance. It has been consistently so over these years and we are comfortable with the low profile.

Civil Society was created to prove that journalists can refresh the values of their profession by setting up small businesses in the media. An emerging economy needs many voices. The big media has an important role. However, the kind of dominance that we see of a few publications and TV channels is not only unhealthy, but terribly boring. Internet does provide some diversity, but the offerings are random, lack in quality and don't capture mind space. The Internet thrives on being a digital Hyde Park. As yet, it seems only small print products have the shelf life to set new standards and make a difference.

What holds journalists back from taking such a plunge? There are several valid concerns, not the least among them being insecurity. Entrepreneurship is not for everyone because the possibility of failure stares you in the face every day.

The business challenge in a small print media business should not be underestimated. It can't draw on any of the systems of the big organised media. It has to have its own, almost guerrilla-like efforts in building distribution and getting advertising. We have had to measure up to these realities.

Civil Society's reach and penetration have surprised us. Our research shows us that a single printed copy of Civil Society is at times read by as many as 20 people in an organisation. There are those among our subscribers who photocopy stories and pass them around. Our website has begun attracting on an average 150,000 readers.

We are subscribed to by activists, CEOs, doctors, lawyers, consultants, judges, government departments, companies, NGOs, schools and colleges. Many of our subscribers are middle class folk who are happy to have us in their homes.

In five years we have put in place systems that deliver (barring the odd hiccup) the magazine to subscribers across the country from Arunachal on the border with China to deep inside Tamil Nadu. We reach select retail stores across the country every month.

We have also gone into publishing books under the NIMBY imprint and have a distribution arrangement with Cambridge University Press in India and South Asia. NIMBY, for those who don't know, stands for "Not in my backyard". Our first title: "Transforming Capitalism: Business Leadership to Make the World Better for Everyone" by Arun Maira is a field guide for business managers and has been well received.

I am told by people who should know that if we have done five years the worst is behind us. I must confess that I'm not quite so sure. As is typical of a growing business, money is always short. We function on a very tight budget, but costs keep rising.

What is the road ahead? Naturally, we would like to see *Civil Society* do better for itself and flourish as a business. We would also like to do other products in different spaces. But we don't want *Civil Society* to have to prosper by surrendering any of the core values with which we set out. If the Mission and Vision were to change it would not be worth doing.

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LETTERS

Reva electric car

The Reva is a great solution to high petrol prices. I highly recommend this vehicle to anyone who is interested in using it. It is lots of fun to drive. Besides, the car is friendlier to your wallet and the environment, much more than a motorcycle. ***Ruchi***

With reference to your cover story on the Reva electric car, I would like to say that at one point of time I wanted to buy it but in Delhi all distances end up 35 to 40 km one way. I can't take the risk of not having a spot to charge the car every time I take it out on the road. But it is a good solution for those who travel from home to office. They can charge it in both places. ***Mahesh***

I have seen just one charging point for the Reva at Forum Mall in Bangalore. It's a pity about the range problem but I am not surprised. The same disconnect between claim and reality exists for all vehicles. I wish the government would get its act together and aggressively give incentives to manufacturers of such vehicles instead of taxing them to death. In Karnataka, especially, roads are pathetic and the road tax is probably the highest in India.
Sarath Babu

Your cover story on the Reva electric car was great. It was very informative. ***Varun***

Anil Rana

Anil Rana's untimely demise is a big loss for Uttar Pradesh. He was working for an area critical to life-water. Thanks to his visionary leadership, Janhit Foundation became well known and respected among farmers and the middle class in Meerut district. Although he passed away at a young age, he achieved a lot in a very short while. ***Deepika***

Anilji was a great man who will be missed but not forgotten. I am honoured that I spent some time with him. ***Ashok***

I am completely shell shocked at the news of Anilji's death. His energy, vision, passion and commitment will inspire us to continue his mission.
Abhishek

India's embassy

I feel really proud of our embassy in Kabul, especially after reading Aunohita Mojumdar's story, 'India's brave Kabul embassy.' There have been newspaper reports on and off about the good work Indians are doing in Afghanistan but I was not aware of the role being played by our embassy. Their commitment and courage is a lesson for others.
Subhash Mukherji

Amarnath yatra

What has been happening in Kashmir is most unfortunate. For years the Amarnath yatra went on peacefully even during the worst years of militancy in the Valley. There was absolutely no need for things to have escalated beyond control. Even if a wrong decision was made, politicians could have risen to the occasion and calmed tempers. One must remember taking away land is a highly sensitive issue. People do not just watch helplessly any more. They protest. All over India, farmers are protesting taking over of their land for SEZs. ***Hamid Pandit***

The protests over the Amarnath yatra land transfer mask deep seated anger. I think Kashmiris just want to lead normal, ordinary lives without the police and army hanging around them. They also want to share the benefits of India's economic growth. But decisions are made very slowly in Delhi. People get impatient. We should opt for inclusive growth. ***Phiroza***

Niyamgiri

The NGOs and the people of Orissa have lost the struggle against mining and big industry. The state will face a huge environmental disaster caused by rising sea levels and destruction of flora and fauna. Orissa will find itself without fresh water. Land will be steeped in salt. Agriculture will decline. Orissa will be like Bangladesh. ***Ritha***

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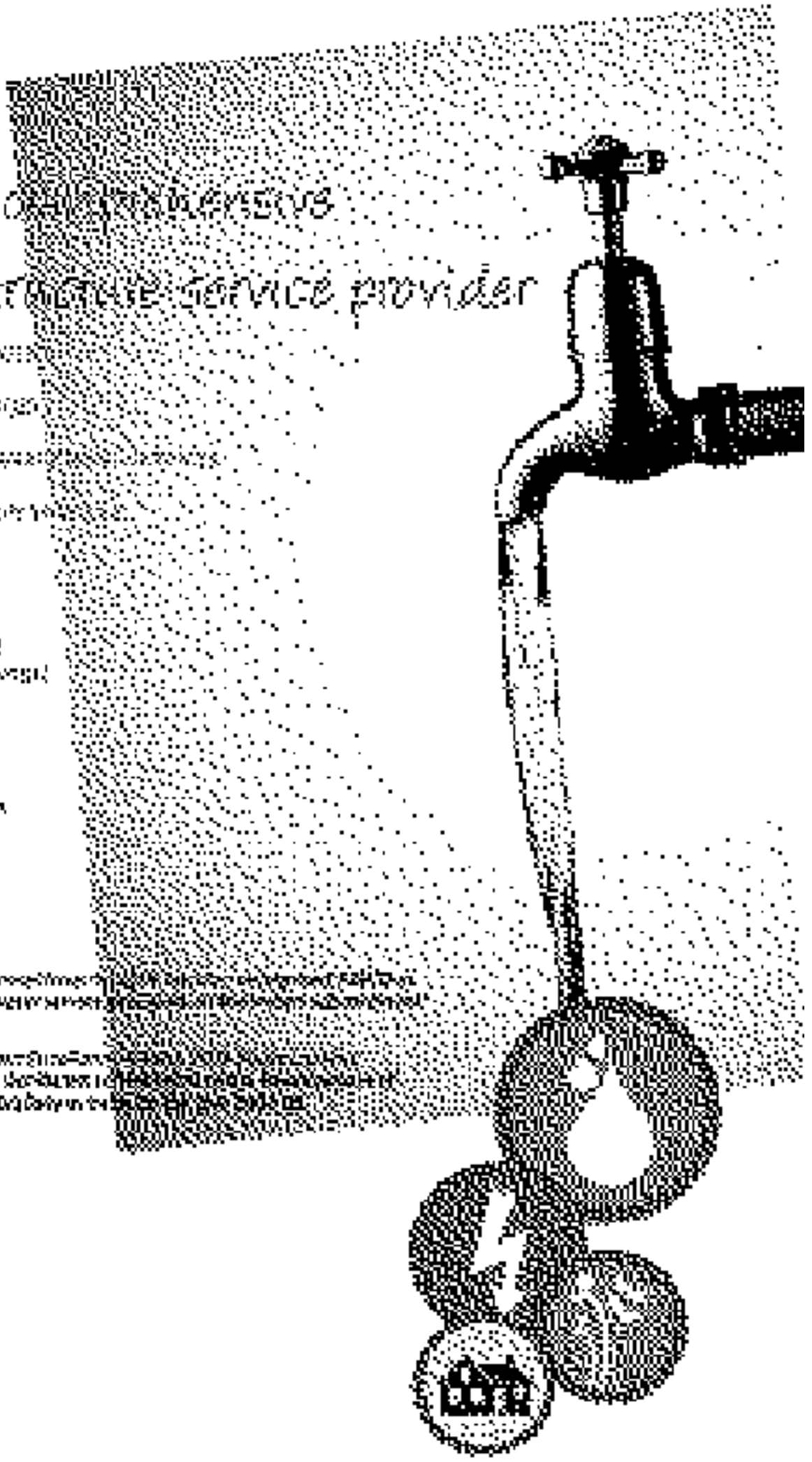

LET'S GO BEYOND THE FACE

The city of the future will be judged by its carbon emissions and its egalitarian character. These are the challenges before urban India.
RITA AND UMESH ANAND

India's future is being scripted in its cities. People have been moving to urban areas in increasing numbers to escape a stressed out rural economy. The quality of life Indian cities offer has acquired a new importance. Not only do they have to be sustainable for their own viability, but also for the sake of rural areas on which they have a deleterious effect. How Indian cities perform will define not just the country's economic progress, but its social and political stability as well. A great challenge and opportunity presents itself in choosing technologies and systems that accelerate growth, but are at the same time inclusive and environmentally sound.

The model for urban India has so far come from the energy-intensive American way of life. Though faced with serious problems of poverty, we have designed our cities primarily for those who are well off. Growth through motorisation has been the goal as is evident from efforts to have broad roads and suburban living and promote cars as personal transport. The way Indian cities have been shaped has influenced real estate markets and made housing mostly unaffordable for the vast majority.

A chance now presents itself to look elsewhere for more sustainable solutions such as those available in Latin America, Asia and Europe where cities are making contemporary journeys to their points of origin and redefining urban equations.

An honest look within could be hugely beneficial. It is true that India lives in its villages. But it has always historically also lived in great cities like Delhi, Kanauj, Pataliputra and so many others which evoked admiration among travellers. The grid system, drainage, water, stylish architecture all existed. Cities were what modern planners recommend today: dense, mixed-use and easy to walk through.

It is also worth considering that by default we have perhaps escaped the American dilemma. In certain aspects Indian cities are already half way to solving their problems. Because the number of poor here is greater, there are more people on bicycles and two-wheelers than in cars. That is precisely what the developed world is trying to achieve. So, if we were to see our weaknesses as our strength and stop trying to push the poor out of cities, we could actually be in tune with global best practice.

We will have to get the better of the contradictions in our urban landscape. Looking for the future Indian city has to be a complex exercise. Can one hope to find it in south Delhi or Gurgaon, Bangalore or Hyderabad, Mumbai or Pune? Is the future city in the slums or in the gated colonies? Is it in the organic mixed-use of an old quarter or in the planned glitter of arcades and shopping malls? Is it a city within a city or a sanitised new entity at a safe distance like the special economic zone?

The city we have been looking for would have to be one that can accommodate with dignity large numbers of poor people. It would have to control pollution, conserve water, make housing affordable, be safe for children, women and older people, create school access, dispose of growing amounts of garbage and have an affordable public transport system. It should have forests, parks and wide pavements for people to walk.

Huge responsibilities rest with the Indian city. It has to be the face of the country's competitiveness. It has to showcase technologies that improve the quality of life and project Indians as responsible global citizens. In the city, democracy must work, for if social justice can't be delivered here, where will it?

Defining a city is always a political initiative. The future Indian city is therefore a challenge for our leaders. Cities that have caught the world's imagination have had administrators who have dared to do things differently.

Seoul took its waste water, purified it and turned it into a beautiful stream running through the city. The bicycle revolution in Paris was the idea of its mayor. In London, efforts to cut inner-city congestion and pollution were also led by its mayor who went ahead with promoting electric vehicles in a big way. Among them was the Reva electric car from India.

Enrique Penalosa, the former mayor of Bogota, whose article we carry in this issue, took up public spaces and a bus system as a political challenge and saw them through. He redefined his city in the face of serious opposition.

To be competitive, Indian cities will have to seek to address the current concerns of humankind and not be a mere dustbin for leftover ideas and technologies from other markets, which, unfortunately, is the case at present.

In architecture, design and urban planning Indian cities will have to be in a new global league. A city today will be judged on its carbon emissions. It will matter what we do with our rivers and water bodies. Our disposal of our waste will be noted. These are no longer mere fringe concerns of environmentalists but core issues of governance the world over.

The Indian city will have to worry about inclusiveness because there is a growing impatience with the kind of elitism that is particularly visible in the Indian experience. A society that counts out the majority, condemns them to menial tasks, excludes them from education, health and housing, can't hope to be admired.

If our cities are to serve as magnets for the best minds in the world and be the emblems of a vibrant and modern India, they will have to be more egalitarian. Globally people aren't comfortable with the kind of inequalities that exist in India.

Indian cities will have to seek to address the current concerns of humankind and not be a mere dustbin for leftover ideas and technologies.

An indication of the poverty in our cities can be got from microfinance institutions (MFIs). One-third of all microfinance is now going to urban areas. Millions of people are not served by the banking system even though they are credit worthy and entrepreneurial in spirit. MFIs now reach them in growing numbers because banks don't know how to: so deep is the divide.

It is widely felt that Indian politicians and bureaucrats either don't care, have all the wrong training or have run out of ideas. We went beyond the usual players in urban governance in our search for answers. Happily, there were many to be found, confirming our belief that the complex

LIFT IN INDIAN CITIES

LAKSHMAN ANAND

problems of urban management can only be solved through a wider process of consultation and a willingness to experiment.

In India we found Chandrasekhar Hariharan and his initiatives in environmentally sound construction. Hariharan, founder of BCIL, a green construction company, has championed modern application of traditional technologies for housing colonies, making them energy efficient and water and waste neutral.

Anupam Mishra, who works with the Gandhi Peace Foundation and is an authority on traditional water systems, could tell us about what modern cities can learn from the past. Finally, the best urban governance solutions are getting rooted in community action and awareness of common property resources. This is the privatisation of the future. In water the old systems of harvesting rain and nurturing water sources remain relevant today.

We also zeroed in on the Monitor Group's team working on a financial model which will allow households with an income below Rs 12,000 a month to take loans and invest in housing. The Monitor Group is supporting a new breed of builders in Mumbai, Pune and Ahmedabad who find it challenging to create businesses that break the price barrier in housing.

Indian planners, politicians and urban managers seem seriously influenced by the Americans, opting for wasteful and antiquated models of urban growth involving motorisation, suburban living and so on.

But the innovative ideas in urban governance that India could be picking up really come from the developing world. Penalosa's ideas of an inclusive city seem well suited to Indian realities.

Penalosa has been an influence on Dinesh Mohan at the IIT in Delhi. Mohan and his colleague Geetam Tiwari have designed the bus rapid transit system for Delhi. The BRT has run into lots of problems as any major effort in transportation well might. But the Delhi government's inability to implement the BRT is an example of how weak and unimaginative governance is oriented only to the middle and upper classes and can crumble in the face of the slightest resistance to a new idea. It also shows how entrenched the positions of the elite are.

Like Penalosa, Mohan is interested in issues of equality and safety. But Mohan is an academic, a man of ideas and theories. In the battlefield of the city where urban interests wrestle free-style with each other, you need a political tactician and a combatant with administrative skills. It won't do to float in the realm of ideas alone. An evolving city therefore needs a Mohan-Penalosa kind of combination. Unfortunately, we haven't been blessed with one.

The day before Independence Day, as we drove back from work to our home 30 km out of Delhi, we found a highway jammed with traffic. This is an eight-lane highway built just recently to link the Indian capital with its southern fringes and beyond.

The people in their cars you could see, engines idling, ACs on because of the hot and humid August weather. But what about all those thousands of other commuters for whom there is no meaningful public transport system in Delhi or its suburbs and who pile into trucks and vans and just about any vehicle that will allow them on board so that they can get from one point to the next?

If a newly built highway, which was intended to be a national showpiece, can degenerate almost immediately into a mass of polluting automobiles, surely there is something wrong with the way in which we create urban systems?

Now, Gurgaon is on Delhi's periphery and is meant to be a world class city. It has the corporate offices of an array of international companies. If you tried to buy a flat here, you would pay as much as you would for a property anywhere in the world. Gurgaon also has shopping malls jammed one next to the other and office buildings just about anywhere they can be fitted in.

Not surprisingly, Gurgaon has made property developers fabulously rich. They compete to be in lists of the super wealthy. They flaunt their control over policy. Recently, the head of DLF, the largest Indian developer, told a business paper that all Indian cities should be put in the hands of real estate companies much like SEZs have been given to them.

But what have these companies delivered in Gurgaon? The city is almost entirely dependent on groundwater and could run out of supplies in the next five to 10 years. There are no landfill sites so garbage lands just about anywhere. The sewer system is inadequate and poorly connected. There has never been any public transport system with some buses only recently being introduced. Public toilets do not exist. There is no system for redressing civic complaints.

Gurgaon is the perfect example of what has gone wrong with urbanisation in India. Old and tired ideas, mostly mimicking American lifestyles, which even America is now trying to get out of, have been implemented here at the behest of certain business interests.

At a time when the world is going in for dense, integrated cities that are energy efficient, less polluting and socially inclusive, all over India experiments are being made in unsustainable suburban developments.

For India the challenge is to shape its cities by learning from others. On the flip side, we could wait for everything to get so bad that perhaps one day it will get a lot better. But by then, of course, the future would have left us behind.

CREATE PUBLIC SPACES TO

Asia has a great opportunity to make the cities of tomorrow by learning from the mistakes of other countries and designing them for people, not cars. ENRIQUE PENALOSA

The way cities are created determines our quality of life and forges our behaviour, our values for centuries. If land is saved for a great park it will provide joy to millions for hundreds of years. If park land is not saved but built upon, there will be much less joy in society.

Latin American urbanisation is the most recent the world has seen. And it holds lessons for Asia, mostly lessons about what should not be done. But demographics will not be too different. In the transition period the percentage of people living in Latin American cities grew from 40 per cent to 80 per cent and the urban population increased by more than 500 per cent.

If anything similar happens in Asia, the population of most large cities will increase by at least 300 per cent over the next few decades. The number of people living in Asian cities is projected to rise by 45 million inhabitants annually during the next three decades.

More than 70 per cent of the built area in most 2050 Asian cities does not exist today; there is only agriculture where great cities will soon rise. It is a huge opportunity to create different and better cities than those of the most advanced countries, to imagine new designs and organisational schemes and avoid the mistakes made by advanced Western cities. Unfortunately nothing as yet suggests that Asian cities will be better than their counterparts in advanced nations – and many might be much worse.

If the inhabitants of New York, Paris or London were given a magic wand and told they could make half their cities disappear and recreate them as they wished, they would rebuild their cities very differently. What is certain is that they would make cities much more for children and less for cars than cities built in the 20th Century. The last century was disastrous in the evolution of human habitat because it was built more for car mobility than for human well being and happiness. The historic opportunity and responsibility that Asian cities have today is to find once again a way towards a more humane and happier human environment.

Quality of life is an important end in itself. But it might also be the most crucial element of economic competitiveness. To attract and retain highly creative and educated people is the biggest challenge for future economic development, particularly for smaller cities. Otherwise, the largest cities will attract the brightest and most creative of youth.

But there will also be international competition amongst cities to draw the best and brightest. In an integrated world, such people can choose where they would like to live. Daniel Bell in his formidable book, *The Coming of the Post-Industrial Society*[1], ibes how advanced societies were entering a new stage, where the service sector would absorb most of the labour force and be crucial for economic growth. Initially it was land that generated wealth and power in society. Later, with the Industrial Revolution, capital became the defining factor of economic development. But now in the most advanced economies, knowledge and creativity have become the source of wealth and influence. Unlike land or capital which could be detached from their owners, knowledge goes attached to human beings who want to live happily. Cities most likely to provide that happiness will attract creativity and intelligence and thus economic development.

Technology can be learned, copied, imitated. It does not provide a sustained advantage. A quality city provides an inimitable advantage that lasts for centuries.

MAKE YOUR CITY UNIQUE

We need audacity to create a new urban vision. Latin American urbanisation over the last 50 years was marked by the influence of the United States and its urban deformation around car requirements. Latin American cities have little to make them notable and are certainly not better, for example, than London. Dozens or hundreds of New York Central Park look-alikes should have dotted those cities, thousands of kilometres of Toronto-like greenways should have crisscrossed them. But little of that was done.

Less developed countries have naturally looked for examples to the more advanced countries, particularly to the United States. For many of the new upper middle classes in developing countries it is difficult to understand that when it comes to urban development the United States model is what is to be avoided, not followed. Not just to save oil and avoid global warming, but to have a better quality of life and more competitive cities. Americans themselves are working hard and effectively to turn their cities into more compact, friendlier to pedestrians and bicycles, less car-dependent environments. It is clearer every day that what makes a city great are great pedestrian spaces and these could be different, better and more abundant in new cities.

There are two types of equality we can strive for: quality of life equality and implementation of that basic democratic principle which says public good prevails over private interest.

Most high income citizens in developing cities do not use the city much. They live in private spaces and they sort of jump between them in capsules called cars. They drive everywhere. They drive out of their parking at home to their parking space at work, then to the parking at a shopping mall, perhaps to the parking at a supermarket and then to the country club parking lot. Months can go by without them walking a few blocks of their city

BRING EQUALITY AND JOY

AFP

streets. They do not use public transport, public schools, public libraries, public parks. They perceive the city as a threatening or at least uncomfortable space they traverse while going from one private space to another. Therefore what they want from their city are well paved, high velocity, traffic-free roads and streets. It is a challenge to get them to go out and enjoy their city and not to let public investment decisions be determined solely by them.

BRIDGE THE CLASS DIVIDE

After the collapse of communism in the Soviet Union and China, many assumed that equality as a social ideal was a thing of the past. Yet it is the principle on which much of civilisation was built, from the Greeks, Romans to Judeo-Christian ethics. Over the last 300 years the yen for equality has been the cause for most revolutions and social conflicts.

Many Asian societies have been among the most willing to make sacrifices to achieve social justice. Once we adopt a market economy we cannot have income equality. But there are at least two types of equality we can still strive for: quality of life equality and the implementation of that basic democratic principle which says that public good prevails over private interest. This is not just a poetic wish. For example if we accept these objectives of equality, then waterfronts should never be private and exclusive and road space should be allocated first to public transport and only if there is enough space left, to private cars.

The equality that matters most is that which matters to children: access to green spaces without having to be members of a country club; sports facilities, quality schools, music lessons, public waterfronts. It is difficult to get citizens to accept a social order and obey laws if social organisation does not have legitimacy. And for legitimacy to exist there must be a significant degree of equality.

The way we build cities and organise city life has profound impact on a society's equity and social integration. A city in which rich and poor meet as equals in public spaces and in public transport is a socially advanced city.

SPACES FOR CHILDREN

Today children all over the urban world jump in fright when told: "Watch out, a car!" And they have good reasons to fear cars: hundreds of thousands of children the world over are killed by cars every year. Why not conceive of a city where children can walk out of their houses into pedestrian streets? In the DNA of Asian cities and Asian life there is a pedestrian life which still lingers. Until recently and often even today, Asian cities had a pedestrians-only street network hundreds of kilometres long where human life and community relations thrived. Neighbours met, the elderly talked or played cards, children played, others shopped for vegetables.

For 5,000 years cities have existed and until just 100 years ago all streets were pedestrian. People shared them with horses and carriages without risk. A child could safely go on an errand several blocks away from home. Until the beginning of the 20th Century this was the case even in the world's largest cities, like New York, Tokyo, or Paris. Then motorcars appeared in growing numbers and pushed pedestrians out of streets to the sidewalks. But in many class conscious cities without quality sidewalks, motor vehicles pushed people progressively away from public space.

When cars appeared, a parallel road network should have been created: one for cars and the other exclusively for pedestrians. Towards the end of the 20th Century it was finally realised that a severe error had been made. An effort was made to revive cities for people. Cars were then removed from the pavements they had taken over and many central areas were turned into exclusively pedestrian spaces. There are more than 1,000 urban localities in Europe that have created pedestrians-only networks in their historic city centres and many Asian cities have done likewise with a few streets. But growing Asian cities could do something much more radical in cities yet to be built. Magnificent networks of tree lined promenades exclusively for pedestrians and cyclists could change the nature of cities and city living.

Among our happiness needs are walking, being with people and not feeling inferior. Public spaces attend to these three needs. We humans are pedestrians, walking animals. Just as fish need to swim, birds to fly, zebras to run, we need to walk. We do not need to walk in order to survive, but in order to be happy. We also like to see people, to be with people. It has been found that people prefer park benches where more people walk by and not the most beautiful spot in the park. When people walk they are with people in public spaces. And in public spaces people meet as equals, regardless of wealth or position. High quality public pedestrian space is not a luxury or a frivolity in developing country cities. It demonstrates respect for human dignity. It is important for the quality of life. And it constructs social justice.

It is during leisure time that income differences are felt acutely. During working hours, high and low income citizens are equally satisfied or dissatisfied. Once they leave work, higher income people have access to large homes, gardens, country houses, clubs, restaurants, vacation trips. Lower income citizens and their children live in very small homes and their only leisure facility, apart from television, is public pedestrian space. The least a democracy can offer its citizens are good pavements and parks. Parks, plazas and sports fields are as important to a city as hospitals and schools.

AFP

A cycle rally in Bogota

Most goods and services the government provides are a means to well being. Police are a means to security, roads are a means to productivity and hospitals are a means to cure illnesses. Public space is a peculiar good because it is an end by itself. It provides joy. Unlike joy derived from a product we buy at a store which fades after some time, the joy provided by a quality pedestrian promenade, park or plaza never diminishes, month after month, year after year, century after century.

YOUR FOOTPRINT MATTERS

There is a conflict between a city friendly to cars and a city friendly to people. As a city becomes friendlier to motor vehicles, with bigger, faster roads, it inevitably becomes less humane. High velocity roads are like fences in a cow pasture. They enclose us. Moreover, they are noisy. If the

road is elevated, it darkens public space, usually lowers the value of buildings around it and often creates problems of crime. The slower traffic is and the wider a pavement, the better for human life. And a pedestrians-only street is the most human friendly scheme.

Cars parked on pavements or parking bays where there should be pavements symbolise a lack of respect for human dignity. This also reflects lack of democracy in unequal societies where higher income car-owning citizens are more important than poorer ones who walk or ride bicycles. The width and quality of pavements is a good indicator of how advanced and democratic a society really is. Higher income citizens in developing country cities argue that there is enough space on pavements to carve out parking bays as well as for people to walk by. There is a flaw in that argument. Pavements are not relatives of streets. They are not for getting from one place to another. They are relatives of parks. Pavements are for walking aimlessly, playing, talking, kissing and enjoying the city. To say that a pavement has enough space to carve out parking bays and to walk, is equivalent to saying that the main park or plaza of a city can be turned into an open air parking lot, just as long as enough space is left between the cars for people to walk by.

What gives character to and is memorable about a city is its pedestrian space. Nobody returns from Paris talking about French highways. Childhood memories of a city are usually about a public pedestrian space.

Tourism is an increasingly important source of employment and economic growth. And tourism is a pedestrian activity. When someone arrives in a city for the first time, he or she will very likely ask the concierge at the hotel for a nice place to go to, meaning a place to walk and see people. Tourists like to walk, preferably with few cars around. They crowd the pedestrian streets of world cities.

Even Disneyworld in the nation of cars, is basically a pedestrian city where people walk. If a child let's go of his or her mother's hand there is no danger from cars. Duany, Plater-Zyberk and Speck in their book *Suburban Nation*[2] mention that the average visitor to Disney World only spends three per cent of his or her time on rides and shows. The rest of the time is spent simply enjoying a pedestrians-only environment.

If the concierge in a hotel recommends a shopping mall to a visitor, he or she will prefer not to return to that city. Inside, all malls are the same regardless of which city in the world they are located. Globalisation has led to stores in malls being the same everywhere. Even the temperature is the same. Inside the mall one cannot see mountains, water, trees, birds or the architecture. The foremost ingredient of a flourishing tourist industry are wide, quality pavements and hopefully an extensive pedestrians-and-bicycles-only promenade network.

From Delhi to Accra roads have more pedestrians and bicyclists than cars. But the roads have neither pavements nor a bicycle path. Such disregard reflects a society's inequality. Today environmental impact studies are required for most infrastructure projects to minimise or eliminate negative impacts upon plants or animals. But human impact studies should be required as well. How do we make all infrastructure projects more child-friendly? A drainage canal or a road should have pedestrian spaces alongside. We can create a city for children's happiness rather than for car mobility.

Although most land on Earth has become private, some unique God-given soil must remain public for every child's enjoyment. To do otherwise would be practically immoral and public good would not prevail over private interest. This is the case with waterfronts. Waterfronts have been crucial to the charm of many cities throughout history. Over the last 25 years the revival of many cities has centred on its waterfronts. Barcelona, Capetown, Shanghai, London, New York, Paris, Buenos Aires, Chicago, Boston, Copenhagen are only some of the cities that have made good use of their waterfronts and have been improving them recently.

Waterfronts should have public pedestrian spaces alongside, preferably isolated from road traffic by buildings or parks. Asia has potentially very beautiful waterfronts. Shanghai's Bund is famous. Tokyo has begun to create some quality pedestrian waterfronts. Singapore has marvellous parks next to a waterfront and is creating a whole new urban development around its river waterfront. Bangkok's Chao Phraya river has marvellous temples but could become much more pedestrian friendly. Hanoi's Red River could become one of the most charming waterfronts in the world.

At any rate, waterfronts should always be public and have abundant comfortable public access. Roads for motor vehicles should be avoided next to waterfronts. It is always tempting to place them there as there are no intersections except where there are bridges. But advanced western cities that have done so regret it today. Boston, Seoul and Madrid invested billions to demolish highways next to their waterfronts and replace them with underground roads. Paris is closing the highway next to the Seine River increasingly often, even turning it into a 'beach' every summer.

HOMES FOR EVERYONE

Slums, 'tugurios', 'bidonvilles', 'favelas' are found in most developing country cities. Millions of children grow up without clean water or parks, in landslide prone or flood prone areas or high up in the mountains surrounding cities, where it will always be energy intensive and costly to bring water or transport and bicycle use will be difficult.

Slums are so common throughout cities in the developing world that their presence cannot be attributed to the failure of any particular government. It is a systemic failure. Clearly the present system based on private ownership of land around cities is not working. The market economy works when price increases bring about supply increases which result in lower prices. If tomato prices increase, tomato supply increases and prices go down. Such is not the case with land around cities. Prices can increase indefinitely but the supply of land accessible to water supply, transportation, education, jobs will stay fixed. In other words, private property and the market do not work well in the case of land around fast growing cities, particularly if our goal is to have compact, energy-efficient cities. Housing subsidies, lower interest rates, or even higher wages, would only increase land prices even more and keep land inaccessible to the poor. If slums are one face of a coin, the other face is the unearned enrichment of a few landowners.

Improving existing slums comes first. Some Indian cities are demolishing slum buildings and replacing them with condominiums around six stories high with mixed success. In Latin America improving slums has been the preferred option. Beyond basic infrastructure like water and sewage, great iconic infrastructure can be built in the middle of slums – great schools, libraries, nurseries, quality public spaces like streets with ample sidewalks, protected bicycle-ways, parks, plazas and sports facilities. Private homes will be improved by their occupants around such public spaces.

The objective, however, is not only to improve existing slums, but to avoid future ones. Diverse tax systems and other regulatory mechanisms to solve the problem are always blocked or dodged by landowners. Urban land reform is more important than rural land reform ever was. Once the land issue is solved there are many ways of solving housing needs, from corporate to self-built solutions.

Governments should acquire, through voluntary sales or the use of eminent domain, large tracts of land adjacent to existing urban areas to provide housing solutions for the poor in high quality urban environments. Ideally, low income housing should be centrally located. But high quality developments located in the borders of the city can work well if linked by low cost, quality public transport.

Land should also be acquired for large parks in the borders of cities which in the near future will be in the midst of urban areas. Access to green may become the main source of exclusion and inequality. The poor will in time acquire most consumer goods and gadgets which today are only accessible to higher income citizens. The same will not happen with access to large green spaces unless governments act today. Parks are not a frivolity. They are necessary for a physically and emotionally healthy life. In cities in the developing world today, much more land is devoted to golf country clubs than to parks.

Every day that goes by without radical government intervention in urban and suburban land, only increases slums. An opportunity to create a wonderful city for many generations of happy children is lost. When slums grow it is not because of lack of government funds or insufficient technology. It is due to lack of political clarity and will.

BEATING BACK THE TRAFFIC

It does not matter what is done, traffic jams will become worse unless a radically new model is adopted. Transport is different from other challenges like health or education because it does not improve with economic development. On the contrary, traffic and transport problems tend to worsen as per capita income increases. The solution is public transport and restrictions on private automobile use. But this requires a different vision of the city. It is an ideological and political issue, rather than an engineering one.

Use of public transport by higher income citizens is a good measure of how democratic and advanced a city is. A majority of higher income citizens in the best cities in the world use public transport. They do not do so out of love for public transport or the environment, but because they have to. Severe restrictions on car use such as traffic jams, parking scarcity or cost motivate them to use public transport. Generally people use public transport when it gets them to their destination faster than their own cars.

There is no such thing as a 'natural level' of car use in a city. If you invest more and more on new and bigger roads, you will not wake up one morning and find that traffic jams have finally disappeared. How many cars are used in a city is not a technical but a political decision. If there was more

space for cars in New York, there would be more cars in New York. If there was less space for cars, there would be fewer cars in New York. What we have to decide then is how much of our city's extremely scarce public space we want to give to the car. Moreover, how do we want to distribute road space between pedestrians, bicycles, public transport and private cars?

It is difficult for developing country elites to accept that advanced and successful cities like London, New York, Paris or Zurich decided long ago they would not build more roads in response to increasing traffic. They would only create ever better public transport. Today 'transport policy' in any advanced city really translates into seeking ways to reduce car use. In underdeveloped cities it still means exactly the opposite: how to facilitate it.

Traffic jams and travel time are increasing in all American urban areas, despite giant highways. The reason is that traffic stems not only from the number of cars but also from the distances cars travel. For traffic it is the same to have two cars travelling one kilometre each, as it is to have one car travelling two kilometres. Bigger roads stimulate longer trips and thus traffic. No city has ever solved its traffic jams with more or bigger roads.

More than whether trains, tramways, buses, monorails are chosen, public transport success depends upon density. High population density, a relatively high number of inhabitants per hectare, is the most important transport policy. High density makes possible low cost, high frequency public transport. It also facilitates walking, bicycle use and relatively low cost taxis.

A low density suburban structure makes for long and therefore costly trips. And a train or bus through a sparsely populated area cannot make frequent runs because it would go mostly empty. Higher densities are thus necessary in order to have low cost high frequency public transport.

Very high-rise buildings are not necessary for high densities. It is possible to achieve high densities with four storey buildings. Most cities in developing country have relatively high population densities, not as a result of planning but simply due to low motorisation rates and lack of highways. Around 1900 the United States also had rather compact cities and people moved mainly by street car or tramway. Most Asian cities are still dense, citizens move on small motorcycles, bicycles or buses, which are generally not very well organised, but still a form of mass public transport. These cities can and should avoid urban sprawl.

STEP OUT OF YOUR CAR

It is not possible to design a transport system unless we know what kind of city we want. But in order to know that, we have to know how we want to live because a city is only a means to a way of life. And that better city we want, which is respectful of human dignity, will require significant decision making in mobility issues, decisions that largely shape and foster a more humane way of life.

There is a conflict of interest between the car owning middle and upper classes and the lower income majorities. It is a conflict for road space and public funds. It is more complex than the class conflict portrayed by Marx between a handful of plutocrats and the labouring masses. It is a conflict between millions of middle and upper class citizens, mostly salaried, and the lower income majorities who do not have cars and are often extremely poor. Such conflict has not been openly acknowledged, which makes it all the more difficult for the poor to effectively participate in defending their interests.

When resources are taken away from the needs of the poor, such as schools, housing and parks, and poured into urban high velocity roads, they are supposed to understand this is progress and that in time they will benefit from such roads as well. It seems simplistic but car infrastructure is by far the main competitor for funds which could otherwise be invested in solving the needs of the poor.

Although more road infrastructure will not solve traffic problems as it stimulates more and longer trips, upper income citizens demand more and more roads. Bigger, high velocity roads not only use funds which could have been invested elsewhere, they become like fences in a pasture which enclose people. Such roads darken the city when they are built as flyovers or elevated highways and often by demolishing a path through lower income neighbourhoods which are thus severely damaged.

Many cities have demolished their elevated highways as they destroyed quality of life. Denver, Boston, Madrid and Seoul are a few cities which have demolished highways either to get rid of them altogether or to place them underground. Unheeded, many Asian cities, probably under the influence of Tokyo, continue to build elevated highways which damage a city's quality of life and are jammed soon after they are built. Of course, some new roads are needed in cities in a developing country. They should always include exclusive bus lanes, wide pavements and protected bicycle lanes.

Great cities are those where it is a pleasure walking in public spaces. Great cities are loving and protective to their most vulnerable citizens like children, the elderly, the poor.

What is clear today is that the only urban mobility solution is public transport. Getting those who can afford a car to use public transport requires good public transport and restrictions on car use. Such restrictions can come in many forms: traffic and long trip times, parking limitations, congestion charging. Traffic should not be seen as a problem governments have the obligation to solve. It is a useful tool if our goal is to achieve density and public transport use. Traffic is an indication that a given corridor is ripe for transit.

A bicycle is the only individual form of transport accessible to most people in developing country cities. And bicycle use can save up to 30 per cent of a poor citizen's income. In cities as rich as Utrecht or Copenhagen nearly 40 per cent of the population uses bicycles for their daily mobility. Protected bicycle lanes in every street are not just a nice architectural feature but the right one, unless one believes only those with access to a motorcar have the right to safe mobility. Yet, human rights organisations have never concerned themselves with the right to walk or bicycle safely. Pedestrians and bicyclists hurt by cars on roads and without quality pedestrian and bicycle infrastructure should be able to sue their governments.

BUS VERSUS RAIL

Higher income citizens in developing countries prod their governments to build subways, preferably underground ones. They simply do not want buses taking away road space from their cars. Yet buses are the only possible transport solution in developing country cities.

A few rail lines can be built to please upper income citizens and those directly interested in the sale of such wares. But high investment and operating costs make it impossible to build more than a few lines. Rail systems do not move more than 10 per cent of the population in any developing country city.

Bus Rapid Transport (BRT) systems invented in Curitiba, Brazil, and applied in cities such as Bogota are moving more passengers per kilometre hour than 95 per cent of rail systems, at comparable speeds and at a fraction of the cost. They require, of course, the use of exclusive lanes, a given in a democracy where public good prevails over private interest. But not so obvious in unequal societies in developing countries where often rail systems are chosen disregarding their enormous opportunity costs in terms of solving the needs of the poor. Of course, rail transit systems are wonderful. But why invest 10 times more in a rail system than in a BRT which would be equally effective as a mobility solution?

Taking all other vehicles out of a few lanes, any city's road network can be used to put in place bus based transit with capacities and speeds very similar to those of rail systems at a fraction of the cost. While this is technically and economically viable, it is indeed a political challenge with many conflicting interests. Traditional bus owners and car owners who see their space reduced have to be mollified.

Avoiding, or minimizing conflicts is one reason why many developing country cities prefer to invest in expensive rail systems than put bus based transit in place. Another reason to choose rail is its larger capacity, though BRTs can move more passengers per kilometre than most rail systems.

Asia cannot waste the formidable opportunity it has to create different, better cities than existing ones. Radically different cities can be invented. Great cities are not those with highways and subways, but those where it is a pleasure walking in public spaces. Great cities are loving and protective to their most vulnerable citizens like children, the elderly, the poor, the handicapped.

Why not seek the roots of Asian cities in their DNA, in pedestrian and bicycle networks such as those found in traditional Indian cities? Features which would greatly improve the quality of life and mobility would cost very little if conceived and created from the beginning. They would not only make a city better, but also different, with a different identity and self- esteem. It just needs imagination and political will.

All this would be easily possible if a government had as its priority the needs of the majority rather than the pressures of the higher income groups. What is certain is that urbanisation cannot be left simply to the market. It has to respond to a society's dream of its future. But we must dare to dream as a first step.

Enrique Penalosa is former Mayor of Bogota.

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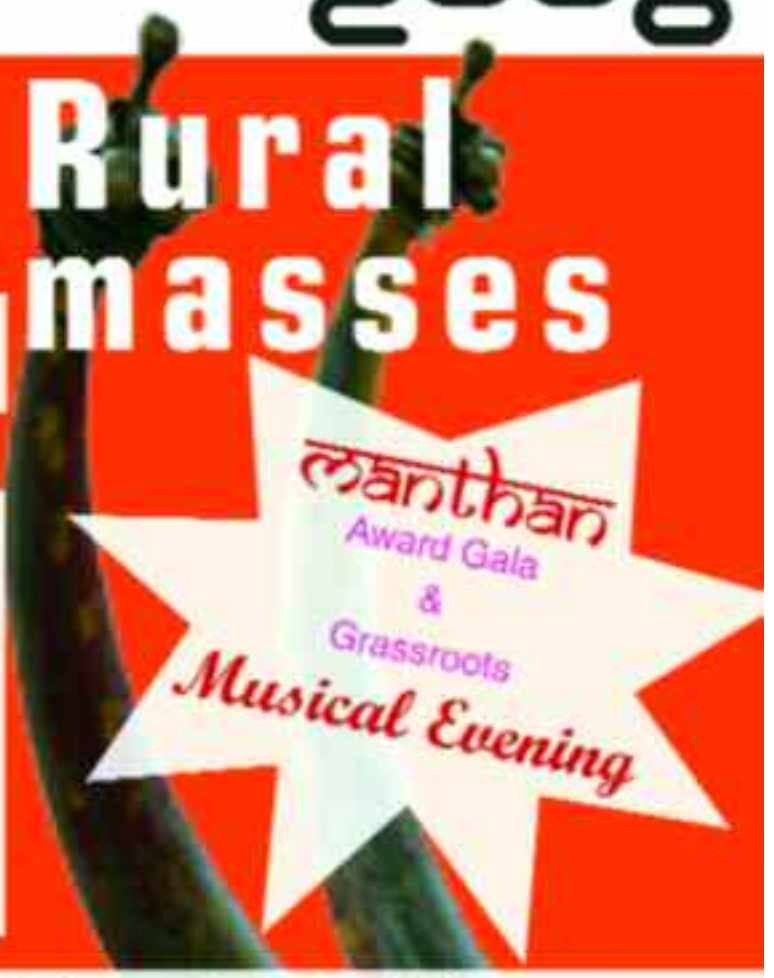

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SPEAKERS & GUESTS OF HONOUR

ORGANIC BUILDINGS ARE

Architects are altering the lexicon of construction worldwide. Eco-cells and natural air-conditioning are no longer science fiction. India's current building boom will have a huge impact on the environment unless more sustainable practices are made the norm. **CHANDRASEKHAR HARIHARAN**

"When we build, let us think that we build forever. Let it not be known for present delight nor for present use alone. Let it be such work as our descendants will thank us for; and let us think as we lay stone on stone that a time is to come when those stones will be held sacred because our hands have touched them, and that men will say, as they look upon the labor, See! This our father did for us."

— John Ruskin

So what is the reality before us in an India that is moving rapidly and has ambitious aspirations? Let us ponder two grim facts. The Union Tourism Secretary, Silabhadra Banerjee, says that about 100,000 hotel rooms are likely to be constructed in India within the next 10 years. Consider this: the number of hotel rooms we have today, built over the past 50 years, is about the same number! Consider another fact: in the next 10 years, India is set to construct roughly the same quantum of residential and commercial buildings it has built in all of post-Independent India.

The maths of building is on the threshold of big change. The way we look at numbers that make up the sum total of the building scenario in India will undergo a transformation that will be beyond our current recognition. Energy figures will be crunched so differently in the future that we will have no precedents from the past that we can seek to learn from.

What is, or what should be, the future of construction? Do we see huge shortages of basic building materials? Are we likely to, for instance, run out of limestone for cement? At the current rate of extraction, limestone will be exhausted in about 40 years. What are the options for achieving bonding dimensional stability for all building materials if cement is not a viable option in future? Do we see ourselves securing as much steel as we did in the past 50 to 60 years, and as comfortably in price and supply terms?

A morning's ride to the edge of any city in India will yield the ugly sight of rows of trucks laden with sand imported from riverbeds in the outflanks. Builders don't have a choice because sand is intrinsic to 'gluing' building materials together to make the boxes we live in. But those rivers are dying a quick death after coursing through the once healthier veins of our ecosystems for several centuries.

There is authentic data to indicate that about 50 per cent of all energy generated in India (or on Earth) goes towards construction of buildings, bridges, roads and other infrastructure. Apart from sand, you could draw up a list of over a dozen items you need to build your home, apartment block, workplace, mall or mega store, and fret over the shortages and inevitable price spirals that you will be faced with.

Building debris constitutes 26 per cent of the waste generated by cities. Buildings use up to 48 per cent of all non-renewable energy generated in the world. To produce the cement, steel, glass, building blocks, wood, floors and metal fabrications that make a home or an office, tons of energy and materials are used. The production process discharges huge amounts of energy, apart from polluting waste materials into the natural environment.

With the quantum of buildings already on earth, and the need for twice as much in the next 50 years, the earth's natural system can take only this much. Beyond this there will be irreparable damage to natural systems – unless we wake up to bringing some fundamental and radical changes in the way we build.

The natural environment consists of abiotic and biotic components which act together to form complex eco-systems. Yet, most of our shelters are essentially inorganic. By building more shelters to accommodate our increasing population we are, in effect, making the world more inorganic and synthetic.

Can we bear the massive loss of biodiversity that all this entails?

How do we address other concerns that go beyond materials but are increasingly desired by an affluent world for comfort and convenience? From air-conditioning to special lighting needs? From essentials like water and electricity which are outstripping supply? How do we handle the enormous amount of waste that our houses, or smokestacks, or offices belch every hour, every day?

THINK AFRESH

It seems defeating. One is forced to admit that at the end of 25 years of devotion to such concerns, that this writer and other concerned planners shrug their helplessness, at times, at handling such formidable challenges. Some of us have been condemned to see all sides of each problem. When you are damned like that, questions multiply until it is all questions and no answers.

The emphasis is on ecological cells and biodiversity corridors across city sprawls. Take, for example, Seoul's conversion of its sewage water into pretty freshwater canals.

What does one do in the face of such a stark future? Like most engineers, policy-makers, planners, architects and consultants in the building industry who work on the essential services that plug in or plug out of every building constructed, we can wear blinkers like a horse and see only what is straight in front of us. We can see things in black and white. Or we can look beyond.

When the celebrated idea of a Blue Ocean Strategy hit the market, a new crop of managers saw wisdom in the proposition that its inventors had made. They had said the only way to beat the competition is to stop trying to beat the competition.

Proponents of the Blue Ocean Strategy are pushing a new dimension which sees social legitimacy as a must for business. The strategy means, simply, that any business will lose its ability to succeed and its effectiveness if it ceases to be socially responsible. If profits come at great cost to society, the business will eventually die. One could say that of the building industry, too. If it continues to bury its head in the sand, if it does not go beyond the belief that the responsibility of a business is to merely increase profit, the building industry will begin to fade away. If you flout social responsibility and then see your business dying, you will not yawn.

FORGACH'S MODEL

There is a seamless blend that the language of architecture has begun to assume in recent times with some seminal design work by architects across the world. A new expression is manifest in buildings with the emphasis on 'ecological cells' and 'biodiversity corridors' across city sprawls. Take, for example, Seoul's conversion of its sewage water into pretty freshwater canals that course through the city. Or 'green jackets' that sheathe buildings in a way that there is greater shaping of the destinies of micro-regions that house home or work settlements. One of New Delhi's own architects has drawn up one such master plan for cleaning up the city's dirty waters.

There are other ingenuous business initiatives across the world that blend green and greenbacks. One notable example is ForestRE, a London based forestry insurance business in Panama, started four years ago.

John Forgach, ForestRE's chairman and an entrepreneur-banker headquartered in Paris, saw the huge business deficit that producers of consumer goods like China, Japan and Korea, or Walmart on the west coast of the US would face in the long term if the Panama Canal was forced to close due to massive silting caused by deforestation.

These ships would have to make a two to three week detour around South America. That would

THE CHIC, NEW TREND

AFP

Former Seoul mayor Lee Myung- Bak transformed one of Asia's grimmest urban centres by opening up a clean waterway through the heart of the city.

have a significant effect on the price of goods around much of the world.

Forgach talked to these companies about what it could mean to them over 50 years if the canal were to close. Companies quickly saw reason to invest in the forest bonds that Forgach offered them.

He lost no time in going to the Smithsonian Institute's biodiversity research wing to get an environment impact assessment of the entire region flanking the canal carried out by their researchers.

He found that a project for afforesting the entire region and for desilting the canal in phases would cost him anything upward a quarter billion dollars. The forest bonds were meant to ensure that these costs were recovered and his company would profit from the economic value he was offering these companies on the Pacific which wanted to get their commodities across to the eastern seaboard.

Business into the future will be much the same as they have been in the past, with this one quality shift that will spell sensitivity to the planet's impending threats. As Kofi Annan said, "Do the same businesses, but do them differently." Such change will be far more discernible in the building sector in future.

The important thing to recognise in such models – as this one of Forgach – is that the entire business stems out of concern for Earth, and secures a business model that bankers will love to work on.

DOING IT RIGHT

Building management systems (BMS) have seen a sea-change at the turn of the century with companies quickly seeing the importance and need in the marketplace for systems, services, techniques, and tools that can bring operational efficiencies in a broad spectrum of utilities ranging from energy to water, from air-conditioning to waste water, to efficient sanitation systems, and water-efficient toilets. Companies have gone ahead with research and invented commercial applications which bring cost savings to businesses into buildings and building management.

More than ever, this shift in BMS has got planners, architects and builders to think of what the Japanese learnt to do so well in the 1970s: do it right the first time.

This has meant that construction businesses are changing the quality and content of their design briefs to building professionals the world over. Design today has become so much more demanding of life-cycle cost and maintenance of the building or the envelope- which will lead to great sensitivity on natural resources while cutting running costs of buildings.

The compelling drives of economic growth excite leaders, but the dangers of mass-scale destruction that creation of projects entail, are not being recognised, not as yet. Developers are still rushing headlong into the Manhattan mode forgetting that the science of building has to seek change in the very way we think.

Skyscrapers will now turn to ground-scrapers and sub-scrapers. These will allow light, air and plant growth deep inside the developments. One architect calls these 'eco-cells' which are developed as a means of integrating the inorganic mass of the built components with the organic ecoscaping.

We will soon see algae sewage treatment water tanks that offer you 100 per cent fresh water. Nuwater in Singapore heralds another dimension that the future of building will necessarily integrate. A city like Mumbai which requires 4,500 million litres of fresh water every day can comfortably manage with 50 per cent of that volume, if every real

estate development responds to water treatment needs proactively - this will drop fresh water needs to just 2,000 million litres, or about the level that Mumbai needed in 1980!

It is hard to judge urban lifestyles. Do you battle consumption? Or do you promote sustainability? And where is the line that blurs the two challenges?

The world is showcasing answers to such questions. Kowloon in Hong Kong now sports a building that offers links to key green spaces in the district with a biodiversity corridor that winds through the island, and is home for many endemic species.

Architects are today designing green jackets with buildings placed on top, below or sandwiched between such jackets that cut into the building and slice down through all floors from the uppermost to the basement.

Design solutions will soon seek to provide environmentally sustainable urban eco-systems. This seems very do-able, especially if builders and users join hands to ensure – either by legislation or voluntarily – implementation of new building technologies for water and energy.

Cities will then become far more habitable: sewage water canals will become fresh water parks while also generating energy, landfills will morph into parks, consumers will become prosumers with consumption being a problem that the consumer will himself resolve with his own production.

Mumbai, which consumes about 2,000 megawatts, can slash its energy use by half if it implemented some very basic principles at end-use level, with greater consumer understanding, and with energy schemes that allow home-owners to 'sell' energy to the grid when they are 'energy-positive'. To get a perspective on what such a saving on energy in one Mumbai means, remember that India produces just about 1,25,000 megawatts today.

THEY COST LESS TO RUN

The future of these new buildings clearly shows that there will be greater sensitivity to what comes after people have moved into these buildings. A simple set of installations, for example, for wastewater can bring about post-occupancy cost reduction of as much as 20 per cent on maintenance. These new buildings of the next generation will cost less to run, regardless of whether they are residential, commercial or any other kind.

If one extended many of the old principles of air management and responded to them in terms of construction design with appropriate building blocks that either retain heat or reduce heat gain, depending on the latitude you belong to, such technologies can bring about a saving of a high 30 per cent on air-conditioning bills alone, let alone lighting and pumps.

You may want to take a pause on this one: a typical 20,000 sq ft envelope that is centrally air-conditioned can cost you as much as 200 kWh of power in a regular building. This can cost you as much as Rs 1,000 an hour of its functioning. At 12 hours a day, this will mean about Rs 3.5 million a month on just the AC cost! What's more, the carbon emissions per annum on just one such building will run into thousands of tons.

Are there ways of creating the building so that the total tonnage of designed air-conditioning is brought down by about a third of the regular tonnage needed? The impact on financial cost alone is so dramatically positive that there is today more than hope, in fact near certainty, that the world has reached some kind of tipping point when it comes to such buildings or construction of the future, not because these technology directions are sensitive to the planet – that indeed they are – but because these technologies are enabling and facilitating huge financial savings for businesses.

There is a new surge of interest in green buildings: India will have in the next three years nearly 100 million square feet of such certified green residential buildings. There are, of course, challenges in execution and in securing certification for builders who want to take to these options but don't know the how-to's.

Builders, the world over, are quickly seeing the savings and added business value that such green buildings or buildings of the future bring. That is enough incentive for the construction business to take to these values.

ABHINANDITA MATHUR

Kowloon in Hong Kong has community spaces which work for the aged

In a feature that discusses the future of construction we cannot omit the reality that there is dismaying damage to many ecosystems across India, and to the world beyond cities. In the urban world, our cities occupy less than two per cent of the world's landmass, have 55 per cent of us living in this small sliver of land, with 75 per cent of the world's natural resources being consumed by us. The real bad news is that this tiny landmass of urban India and its population produces over 60 per cent of the country's GDP.

WILL WE CHANGE?

Our city-dweller needs air-conditioned home spaces, offices and shelters. He wants to drive SUVs that emit greenhouse gases, fly around the world in ozone-depleting planes, consume power that comes from dams that submerge forests, and build houses of materials that originate in strip mines in distant and fragile ecosystems.

We mine soils, gut our forests, misplace our industry priorities, waste vast sums in needless transportation, congest our population in settlements that don't reckon with damages and implications of the future, and lower the physical vitality of poorer communities in our villages without immediately feeling the consequences of our actions.

In January 1937 after a visit to Birbhum in West Bengal, Gandhiji defined his ideal village settlement. He wrote in Harijan: "It will have cottages with sufficient light and ventilation, built of a material obtainable within a radius of five miles. The cottages will have courtyards enabling householders to plant vegetables for domestic use and to house their cattle. The village lanes and streets will be free of all avoidable dust. It will have wells according to its needs and accessible to all. It will have a house of worship for all, also a common meeting place, a village common for grazing its cattle, a cooperative dairy, primary and secondary schools in which vocational education will be the central fact, and it will have panchayats for settling disputes. It will produce its own grains, vegetables and fruit, and its own khadi. This is roughly my idea of a model village."

Is there a return to the past that we should reflect on, while bracing ourselves for the future?

The way we have built so far is doubly ruinous: we have steadily impoverished the earth by hastily removing resources that are millions of years old for the benefit of a few generations. Those common resources can never be restored once spent.

There has been a turn in the tide of such consciousness in the last decade which offers a happy augury for the future. Architects are beginning to see that in each geographic area a certain balance of natural resources and human settlements is possible for the land and the people.

There is a more challenging task that architects and builders have before them: their relationship has so far been fundamentally exploitative of the rest of the world. The Indian consuming world, for instance, has taken for granted the continued supply of teakwood from our own dwindling forests and from countries like Malaysia; limestone and ores from Africa, laminate floors from Australia and Europe, tiles from Italy which imports its raw materials from Africa … All this without being in the slightest degree responsible for the environmental implications of their lifestyles.

Chandrasekhar Hariharan heads Bangalore-based BCIL, a pioneer in green buildings. The company was recently conferred the distinguished Ryutaro Hashimoto Asia-Pacific Award for 'mainstreaming sustainability'.

MICROSOFT AD

CHAOTIC INDIA DOES HAVE AN URBAN EDGE

Indian cities are in an enviable position of having the potential to evolve into the most sustainable habitats in the world. ***DINESH MOHAN***

"I regard the growth of cities as an evil thing, unfortunate for mankind and the world, unfortunate for England and certainly unfortunate for India...It is only when cities realize the duty of making an adequate return to the villages for the strength and sustenance which they derive from them, instead of selfishly exploiting them, that a healthy and moral relationship between the two will spring up."

MK Gandhi

"The unprecedented urban growth taking place in developing countries reflects the hopes and aspirations of millions of new urbanites. Cities have enormous potential for improving people's lives but inadequate urban management often based on inaccurate perceptions and information, can turn opportunity into disaster."

State of World Population 2007, UNFPA

Here we have two views about cities, almost reconcilable. The first by a humane visionary and the second a consensus view of some professionals in the early 21st century including me. It is difficult to say who will be right in the 'long run' especially in the light of the assertions of the Intergovernmental Panel on Climate Change (IPCC) and their predictions about global warming. But cities are here to stay and I guess Gandhi's concern will have to be taken seriously if IPCC's assessment is correct.

I believe that Indian cities are in an enviable position of having the potential to evolve into the most sustainable habitats in the world if we change our mindset and start looking at their positive attributes along with their shortcomings. A soft state and frequent elections have ensured that Western inspired master plans could not be implemented in totality. This has made it possible for our cities to have mixed land use and for the poor to live interspersed with the rich (though 'illegally') –a development in line with the prescriptions of modern urban planners.

Our cities have grown somewhat organically due to the pressure of people's needs in spite of the short-term vision of bureaucrats and businessmen. The result is most people tend to live close to their places of work except the rich, and those poor families evicted by the whims of city planners and the land mafia. Data from all cities indicate that a majority of trips are less than five to six kilometres in length even in large cities. A sprawling Delhi is not like Los Angeles in the USA. In Los Angeles everyone goes long distances from everywhere to everywhere. Delhi, on the other hand, functions as a conglomeration of several 'cities' within a city. Most people work, live and socialise within their 'city'. This is an ideal situation to work towards a very sustainable future by embracing policies that do not force people to travel long distances.

Most Indian cities have expanded after 1960 and all have planned for multiple business districts. In the second half of the 20th century most families in Indian cities did not own a personal vehicle and so all leisure activity revolved within short distances around their homes. In the past two decades, vehicle ownership has increased substantially. Delhi has by far the highest ownership levels with 15 to 20 per cent of families owning a car and about 30 per cent a motorcycle at a very low average per capita income level of about Rs 50,000 per year. Such high levels of private vehicle ownership (including motorcycles) did not happen until incomes were much higher in western cities. Car ownership in all other cities of India is less than half of that in Delhi.

Car use as a proportion of all trips is so low in India that only very innovative thinking and practices might reduce its growth. In Mumbai and Delhi, recent estimates suggest that car trips constitute less than 10 per cent of all trips. European and American cities have car use in excess of 30 per cent. The share of public transport in Mumbai and Delhi is certainly higher than most cities in Europe or America. Therefore, it is difficult to imagine how car and motorcycle use can be contained as we get richer, if the international experience is anything to go by. Obviously, business as usual and copy-cat emulation of rich cities is not going to help.

Our cities have grown somewhat organically due to the pressure of people's needs in spite of the short term vision of bureaucrats and businessmen.

The high ownership of motorcycles, non-availability of funds to build expensive grade separated metro systems and official plans encouraging multi-nodal business activity in a city has resulted in the absence of dense, high population central business districts. Our cities have developed urban forms which encourage 'sprawl' in the form of relatively dense cities within cities.

Except for Mumbai and Kolkata no other city in India has a central business district of any consequence. The central old part of the city is really not that important in Delhi, Bangalore, Ahmedabad, Pune or Hyderabad. All large Indian cities are growing around the periphery and will not have dense centres in future either. So, our public transport policies would have to be different from the 19th century European cities which developed very important central business districts and required people to come to the centre. European cities were cities of empires and colonisers where magnificent buildings, theatres, opera houses and parks could be built with income from the periphery. We can't indulge in this luxury as the only periphery we have are our villages!

The magnificence of the central European city evoked a great deal of pride among its citizens and they ensured it's pre-eminence to the current times. There is no such social pressure on Indian cities and most upper class citizens have already abandoned the centre city. This is one of the factors that do not favour very high capacity radial transit systems bringing people to the centre.

In Europe before 1970, most middle class families did not own air-conditioned cars with stereo systems. The cars were noisy and occupants were exposed to traffic fumes as windows had to be kept open. Under such conditions, the train was much more comfortable. This created a situation in which there would be a political demand for metro systems that came from the middle class and could not be ignored.

In Indian cities, on the other hand, low ownership of cars along with high motorcycle use provides the preconditions for public transport that is comfortable, easy to access and affordable. Buses which have proved to be the environmentally preferred choice in cities all over the world meet these requirements.

Photographs: LAKSHMAN ANAND

A stretch of the BRT in Delhi. Indians use a wide variety of private-public transport.

Middle class Indians have become accustomed to air-conditioned cars equipped with stereo for as little as Rs 2.5 lakhs and used ones for even less. They know comfort levels that Europeans had not experienced till late 20th century.

If public transport has to be made more appealing, it has to come closer to home, reduce walking distances and be very predictable. These conditions would favour high density networks, lower capacity, surface transport systems (to reduce walking distances) with predictable arrival and departure times aided by computers and modern information systems.

Wide ownership of motorcycles has never been experienced by Western cities. This is a new phenomenon, especially in Asia. The efficiency of motorcycles – ease of parking, high manoeuvrability, ease of overtaking in congested traffic, same speeds as cars and low operating costs – make them very popular in spite of motorcycle travel being very hazardous.

Availability of motorcycles has further reduced the middle class demand for public transport. But simultaneously it has pegged fare levels that can be charged by public transport operators. Public transport cannot attract road users who can afford motorcycles unless the fare is less than the marginal cost of using a motorcycle. At current prices this works out to less than one rupee per kilometre. The only option is to design very cost efficient public transport systems that come close to matching this price.

US AND THEM

Indian cities in the 21st century are growing under very different conditions from European and American cities in the first half of the 20th century. Politics, ideology and changes in technology will make it difficult to provide efficient transport systems in the old manner. It will also be very difficult to move away from multi-nodal city structures with future job opportunities developing on the periphery.

Higher education and trade obviously have a reasonable amount to do with the size of cities and form of urbanisation. The more 'educated' we are, the larger the pool of resources we need both for work and human contact. Therefore, a large city becomes essential for a reasonable section of the population for finding 'optimal' employment and friends. Inversely, trade and industry need a large pool from which to select employees. This forces Indian cities to become larger than Western cities.

One reason is that for each rich person there are a larger number of poor people to serve her as compared to that in the West. So, the same number of professionals in an Indian city will coexist with a much larger number of poorer residents than in rich countries. For the foreseeable future, this will make Indian cities much larger than the 'mature' cities of Europe. The existence of a large number of low-income people pursuing informal trade and income generating activities places different political pressures on the government and increases demand for low-cost mobility and short distance access to jobs and trade.

This is offset by the middle and upper classes wanting to live away from the poor and form gated communities at the periphery of the city. These developments set up a powerful political demand, aided and abetted by contractors and consultants to provide infrastructure. The upper middle class of post colonial nations mainly have the USA as a model for the good life. All Asian, African, and South American cities are more influenced by the USA than any other society. For example, American town planners were sitting in Delhi helping us plan our cities in the 1950s. So, all these cities have tried hard zoning and broad avenues and highways running through them. If it hasn't happened it is due to our 'inefficiency' and shortage of finances! In the face of all these changes and constraints, the Indian upper class and policy makers still seem to think that flyovers, elevated roads and a few lines of a metro will solve all our problems.

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Indian cities at present have a very high proportion of people walking, bicycling and using public transport. If we include those who use company provided buses and vans and others who travel by tempos, Vikrams, autos, rickshaws and other modes of private 'public' transport, then the share of public transport would be higher in all Indian cities than almost all of European or American cities. This is an ideal situation to plan for a sustainable future. The problem is that most Indian citizens adopt these modes out of economic compulsion and not out of choice because it is not a pleasant or safe experience doing so. The challenge before us is to understand the needs and desires of the Indian city dweller, the options available, and then chart a new path for our future.

HOW WE TRAVEL

What modes of travel people use in cities is decided by a balance of economic compulsions, comfort and safety. Studies of travel behaviour around the world suggest that people don't necessarily minimise time spent on trips. Most seem to have a personal travel time budget preference and utilise it fully except when circumstances don't permit them to do so. If provided faster modes of travel they live further away from work! Public transit is used mainly by those who don't have a vehicle for personal use or when car use is very inconvenient, time wasting, impossible (no parking at destination) or very unsafe.

At the very least public transport should not take more time than car travel. This means that buses on main routes cannot be mixed with car traffic as that will always make them slower than cars.

Door-to-door trip time by public transit is always more than that by car if there is no congestion. It is therefore not surprising that it is so difficult to move people from cars to public transit. It is even more surprising that all public transit projects justify the expense by claiming reductions in congestion. If you reduce congestion and make traffic smooth, there is absolutely no reason why a car driver would leave an air-conditioned space to spend more time travelling!

For short trips up to three kilometres, door-to-door time walking is about the same as by metro and up to six kilometres a bicycle trip compares favourably with a metro trip. You are better off travelling by BRT than a metro for trips up to 12 kilometres. This is because any transit system operating underground or on elevated corridors requires you to climb or go down stairs/escalators and walk around inside the station. This extra time is about three to five minutes in such systems around the world including the Delhi Metro. In one round trip there are four such events and so the time lost in underground or elevated systems of any kind amounts to 12 to 20 minutes. This is one reason why many transit experts now favour surface transit to elevated systems.

This analysis shows that even one change in a transit system makes it much more difficult to save time compared to a car trip even with congestion except over a very long trip. This is why feeder buses (that add significantly to trip time) to metro systems do not generally add too many customers except when people have no choices. Additionally, a significant number of people can't handle stairs and escalators – small children, the disabled, people with arthritis, high blood pressure, or carrying packages. This is why in European cities one sees more elderly persons in buses than in metros. The simple conclusions are that public transport should be faster than car travel, come as close to origins and destinations and avoid going underground or over. This can only happen if every single major road in a city provides efficient and safe surface transit.

Access to bus or metro stations has an important bearing on whether people opt to use it or not. European and American studies show that transit use starts dropping sharply if the distance from home to the station is more than 400 to 500 metres. At average walking speeds of about 80 m per minute this amounts to access time of about five to seven minutes. These studies have been done in temperate and cold climates and no such estimates are available from hot regions.

It is possible to walk when very cold by donning warm clothes and boots, but no respite is available when temperatures are in the high 30s and 40s. So, tolerance levels for people with choices in India are likely to be the same or lower, making it very important that walking distances are small and transit trips do not require many changes or long waiting times. To keep these walking distances manageable it becomes necessary that all arterial roads are not more than 800 to 1,000 metres apart, requiring all colonies and communities to be small. If a community has to be large in size, then a public transport corridor must be allowed to go through it.

Safety on access trips also emerges as an important issue, especially for women and children. Unless the walking trip is safe from accidents, harassment and crime, people avoid using public transport. No urban rail project or bus transport authority in any city has made a special effort to ensure provision of safe walking and bicycling facilities in the vicinity of every station. Unless

there are wide pavements with a tree line, dedicated bicycle facilities and safe road crossing facilities on the surface on every arterial road, we are unlikely to attract more transit users easily.

In addition, safety from crime and harassment is a major concern for parents, children and women. Forty-seven years ago, in her book *The Death and Life of Great American Cities*, author Jane Jacobs suggested that crime could be reduced by having 'eyes on the street'. This book is quite possibly the most influential American book on urban planning to this day. By 'eyes on the street' Jacobs meant shops on ground floors abutting the pavement, abundance of kiosks and cafes and a vibrant walking atmosphere. She was quite clear it could not be done by policing alone.

In India we are again fortunate to have these 'eyes' on all our streets, except in very rich neighbourhoods, in the form of hawkers and vendors. Without them our streets would not provide the relatively crime-free atmosphere we have. These vendors become an essential part of our transportation planning process. It is not very difficult to plan for them as every road needs a tree line which occupies a corridor of 1 to 1.5 metres of space on the pedestrian path. Vendors only need 1 to 1.5 metres and they can occupy spaces between trees without bothering pedestrian traffic.

People cannot depend on public transport unless such facilities are available on low density routes also and they cannot depend on transit alone to satisfy all their needs unless point-to-point transport is available for special occasions. Low density routes cannot be served if the profit motive is the only criterion for establishing a bus service. Well-integrated plans with some elements of cross subsidy have to be put in place so that bus services operate both on high and low density routes.

Such transit services must be complemented by a well-organised and affordable taxi service otherwise public transit becomes less attractive. Again, we are very lucky to have three-wheeler scooter rickshaws (TSRs) that make affordable taxis possible. A vehicle the size of a TSR with low engine capacity is an ideal urban taxi. We only need to make it a bit more comfortable and run it on efficient engines.

Children living on wide noisy roads tend to do less well in school than those who live in quieter neighbourhoods all else being equal.

With an efficient small engine a TSR pollutes much less than a car, takes less parking space, occupies half the road space while running and causes much less damage to the road because of its low height. Since it cannot go above 50 km/h it keeps within legal speed limits and has a very low accident rate. We also need more comfortable taxis that would appeal to car owners if they were available on demand and costs brought down by efficient management. All these taxis could be managed by computer optimising routines to minimise kilometres per passenger trip and maximise occupancy. In such a system all trips would be logged on the computer and so become safe for all users.

BIG ROADS AND HEALTH

Enough has been written on the deleterious effects of vehicle emissions on the health of urban citizens. Action has been taken on these issues through public interest litigation (PIL), regulation and fuel and emission standards. These are important avenues of action as the vehicle fleet is bound to grow for some time to come. It is also important that the most stringent standards must be placed on new models since those vehicles will be around for 15 to 20 years. To ensure cleaner air quality we will have to place much more emphasis on changes, modal shares of travel than we have up to now.

A small shift from cars and motorcycles to walking and cycling has a much greater impact than change in engine quality because you go from a polluting mode to a zero polluting mode. A *thelawalla* (vendor) coming to your home to sell vegetables does more to prevent global warming then an individual driving a less polluting car to a supermarket. Some of these issues have to be understood in greater detail by all city residents to allow healthier policies to be put in place.

For example, very few people know that children living on wide noisy roads tend to do less well in school than those who live in quieter neighbourhoods all else being equal. In addition, children living on wide busy roads tend to have much fewer friends than those living on streets with less traffic. The effect on the elderly is similar. Senior citizens are reported to live lonelier lives on wide, busy and noisy streets and suffer greater health problems with high blood pressure, etc. This is partly because they cannot cross the street easily and lose half the population for socialisation, shopping and other human needs. This is why we should avoid any main road from being more than 45 metres wide, of which not more than 25 metres should be available for motorised traffic and the rest devoted to bicycle and pedestrian paths and the tree line. This is because pedestrians cannot walk more than 25 metres in one pedestrian phase of the traffic signal cycle. Cities with wider roads, in general, have a high pedestrian fatality rate.

Elimination of wide and elevated transportation corridors reduces noise and pollution and make a city more liveable. Statistical data from many cities show that rental prices for residential accommodation have a distinct relationship with noise levels. Noisier streets have lower rentals than noisier ones.

This why many residents who live in prestigious plots in cities shift out when the road in front of their homes is widened. Their residences end up as commercial establishments, legally or illegally. The evidence is clear. But the question is what to do when traffic volumes increase? The answer is that we have to decide what kind of city do we want? If we want liveable, quieter and healthier cities then we can decide what is the widest road we can tolerate? Having done that, we optimise it for carrying the maximum number of people by giving a safe choice for all modes – walking, cycling, cars/two-wheelers and BRT. After that if it starts getting crowded, we don't widen it and thereby invite more people in, but wait for market forces to operate and depend on less people opting to come there eventually.

Finally, what does sustainable transport mean for us? At a fundamental level it requires less energy consumption. The choices available are: low emission vehicles, alternative fuels, fewer trips, shorter trips, more use of public transport instead of private vehicles and maximising the number of walking and bicycle trips. Obviously, all options will have to be pursued for maximum gain. But we will have to establish priorities in our political agenda as the shift is not going to be easy or painless, socially and technologically.

Our cities are ready for sustainable transport systems. Many of these options are present 'illegally' already. We have to recognise them as solutions and not problems. Unless we rethink our plans for flyovers, wider roads, gated communities, 'slum' removal, and elevated transport corridors, our cities will turn out to be 'warmer' than we can tolerate.

Dinesh Mohan is Volvo Chair Professor and Coordinator Transport Research and Injury Prevention Programme at IIT Delhi

5th Anniversary

CUT THE COMMUTE AND FLY

People are travelling more and further than they ever used to. This has enormous benefits but how can we reduce greenhouse gas emissions and yet retain the quality of communication? While there are ways and means to cut road travel, reducing travel by air will be a real challenge. DAVID BANISTER

Many scientists and politicians are now saying that climate change is the biggest long term threat to the planet and the greatest challenge facing mankind. Transport is a major and increasing contributor to climate change as it now accounts for over 25 per cent of all greenhouse gas (GHG) emissions. This increase is reflected in the huge growth in travel over the last 50 years. For example, in Great Britain passenger kilometres have risen by 3.7 times and vehicle kilometres by 6.3 times from 1956 to 2006, according to UK's Department for Transport.

There are enormous benefits from travel as economies have become more globalised and as the new communications infrastructure allows international networking at low cost. People's aspirations have increased due to media coverage of world events, more educational and leisure opportunities and increasing wealth.

Events like the World Cup football in 2006 and World Cup rugby in 2007 are good examples of what is possible. Thousands of fans visited Germany and France and millions watched matches live in all parts of the world. Similarly, the Beijing Olympics were watched by millions around the world. There is a true internationalisation of all activities. Travel forms an essential part of that process.

To counter that optimism is the evidence that we are now in the carbon society. Carbon emissions are affecting the global climate with potentially irreversible long term consequences. Since the Industrial Revolution, carbon concentrations in the atmosphere have increased from 280 to 380 ppm (1750-2005), close to the 450 ppm maximum levels (without feedback effects) that allow climate stability. The most recent evidence suggests that current levels might already be over 400 ppm.

All carbon dependent sectors have a responsibility to lower levels of emissions by reducing demand and seeking alternative sources of renewable energy. Transport is the one sector where such change is proving to be extraordinarily difficult to achieve.

Where can substantial alterations take place? The scale and complexity of the issues are considerable. Major challenges need to be addressed if transport is to make a real contribution to reducing emissions of GHG. Evidence suggests we need to make some key decisions in cities. These include the need to promote sustainable land use patterns, clear leadership, commitment to change and courage in making difficult choices.

PROGRESS MADE SO FAR

In urban areas there are many good examples of reductions in energy use in transport, principally through demand management (pricing, parking and access control, congestion charging), investment in public transport, priority for walking and cycling, and a range of soft measures designed primarily to reduce the use of single occupancy cars.

In addition, planners have been active in creating high quality local neighbourhoods, innovative designs for housing and mixed use developments, and the concentration of development around public transport accessible locations. In all cases, the intention is to reduce the need to travel (particularly by car), to encourage greater use of public transport (and walking and cycling), and to reduce travel distances through land use and development strategies. The key here is to provide quality, with access to local services and facilities, so that people do not need to travel long distances. There are positive signs that city living is becoming 'fashionable' and that sustainable lifestyles are being adopted by many people.

Substantial behavioural change needs to be reinforced by technological innovation as transport itself becomes more efficient and as the best use is made of available space. This includes high load factors in all forms of freight and passenger transport. Streets provide open space and form the arteries of cities, but we do not think very imaginatively about their use. Technology and physical measures allow for a flexible use of such valuable space. At some times streets could be open only for people and used for street parties and markets. At other times only slow traffic could be permitted, for example near schools and homes. Similar schemes are now being developed for suburbs, where distances are greater and dependence on the car is higher.

The new mega cities of the world are emerging, not as models of sustainable development, but as replicas of the car dependent cities of the West.

Even in rural areas, there are strong signs that people are becoming aware of the environmental costs of car dependence. Here, innovative public transport schemes (shared taxis, demand responsive services and community bus services) provide mobility for non car drivers. There is also a greater sense of community so that creative use is made of available cars. Alternatives to the car in rural areas are less obvious, so it is important to think of the means to encourage sharing and pooling of cars, lift-giving and even joint ownership.

In most European Union (EU) countries, there are some indications that a modest change in behaviour has taken place. The real challenge is not the acceptance of the strong links between transport, mobility and climate change, but the need for substantial behavioural change. The scale of the problem has been totally underestimated, and the actions being taken by governments at all levels are not addressing the seriousness of the issues. Even the actions taken by the most environmentally aware individuals are not sufficient to stabilise the level of carbon emissions from transport, let alone reduce them

People are travelling more and further. Car technology has not kept pace with the growth in travel. Even a substantial shift to more efficient vehicles and alternative fuels will not address the problem fully. Over the next 25 years, it has been estimated that the maximum contribution of technological innovation to reducing CO2 emissions in the transport sector in the UK would be about 21MtC (to 2030). This is about half the levels required to achieve a 60 per cent reduction, equivalent to the targets set by the IPCC over the longer period to 2050. Such a change would require the 'average' cars to have a CO2 emissions profile of 90 g/km, which is less than the current benchmark level of 104 g/km with half the fuel that is still needed by these vehicles being sourced from bioethanol or biodiesel. The current average level of emissions of new cars in the UK (2005) is 169 g CO2/km. Similar changes would be required in all EU countries.

Current purchasing patterns for cars seem to favour larger vehicles with many additional features that increase energy use (air-conditioning, DVD players, music systems). The car stock turns over every 12 to 15 years, and there is considerable lead time required to switch to lower carbon vehicles, even if those vehicles are available in sufficient numbers and at a competitive price. It would not be until 2020 at the earliest that the average car fleet profile could reach 130 g CO2/km, even if all cars bought now were within the industry low benchmark level (100-110 g CO2/km). The necessary carbon reductions required in transport cannot be achieved by technological innovation alone, even if the best available technology is used. Massive investment would be required in changing production processes for the new super efficient cars, in sourcing substantial quantities of alternative fuels, and in giving incen-

AROUND LESS TOO

SIMRAT GHUMAN

tives to industry and individuals to use these new vehicles.

THE CHALLENGE OF CHANGE

Substantial reductions of CO2 emissions in transport in the EU can only be achieved through substantial behavioural change. There is little sign that people are aware of or prepared to make such a change. Globally, carbon emissions per capita are about 1tC (2000), but the UK figure is about 2.5tC and the US figure is 5.5tC. The stabilisation targets mean that the average should be about 0.5tC (2050), given the expected increase in global population. This is much less than the current EU or US levels. It is also lower than the current level for China (0.6tC - IPCC, 2007). This means that those countries producing more than the average levels of carbon emissions should be making an even greater contribution to the overall reduction target. The EU and the US should be leading the move towards contraction and convergence on this 'stabilisation' target. Transport can and should play a major part in achieving the target.

In addition to the denial of the scale of change required, there are three major difficulties in achieving sustainable transport. The US produces about 22 per cent (2004) of the carbon emissions from energy (including transport), yet it is not part of any international agreement to reduce its emissions. From 1994-2004 it increased its CO2 emissions by 14 per cent. Although only 5 per cent of the world's population live in the US, it has 30 per cent of the cars and produces 45 per cent of global car based CO2 emissions. It is crucially important that the US fully engages in all international debates about reducing levels of carbon emissions.

The second difficulty is the huge growth in mobility currently taking place in the newly industrialising countries, as they become more affluent and acquire cars. Cities that currently have low levels of motorisation are changing out of all recognition. About half of the world's population now lives in urban areas, and this is increasing as migration takes place and more wealth is created. Many of these cities were not designed for the car and so there is little space available. This means that other forms of transport (principally the bike) are squeezed out, as are the multiple uses of street space for markets, small industry and social spaces, so that the car can dominate. Car based mobility requires mass redevelopment of the city or expansion so that the necessary capacity can be created. Such 'solutions' are costly

and have substantial implications for environmental quality and health. The new mega cities of the world are emerging, not as the models of sustainable development, but as replicas of the car dependent cities of the West. An opportunity has been missed.

The third difficulty is the growth in long distance travel, including air. It is much harder to think through the alternatives here as the options for sustainable travel are limited. In some cases long distance car journeys can be replaced by rail or bus, but overseas journeys by air present a real problem. Although the airlines have improved their efficiency in terms of carbon emissions per seat kilometre[1], the growth in air travel has swamped these gains, as it is doubling every 10 to 15 years. One long distance return air journey (say London to Delhi) produces as much carbon per passenger as the annual use of the car by the average driver.

It is in the long distance travel markets that the growth is taking place. The urban and short distance travel is relatively stable, but it is long distance road travel by car and rail, and by truck that is increasing, along with the desire to travel by air. Figures for the UK (2005) illustrate the scale of this problem. City travel accounts for 98 per cent of land based trips, but 65 per cent of distance, with long distance travel making up 35 per cent of distance, and only 2 per cent of trips.

Growth in travel is taking place in the long distance, the freight and the air markets. But it is in these non urban travel markets that low carbon alternatives are much harder to envisage, let alone implement. We have to travel less, but even this alternative is not a solution, as others will travel more to compensate for any reduction. Perhaps it is here that the debate needs to take place on the role that transport should play in any carbon reduction strategy.

PLANNING FOR TOMORROW'S CITIES

Substantial research has tried to establish the links between travel, land use and urban form. This ranges from simple analyses of trip generation and attraction characteristics of particular land uses (e.g. residential and shopping) to more detailed analyses of travel (and energy use) in locations with distinctly different characteristics.

The verdict on this empirical work is mixed. Underlying all the debates, three main elements need to be examined:

Density of development has an important effect on the distances travelled, the modes used and the energy profiles. Newman and Kenworthy in their comparison of the transport energy profiles of 84 cities concluded that when urban density in the 58 wealthier cities was correlated with car passenger kms, urban density explained 84 per cent of the variance. When energy use was correlated with activity intensity (persons and jobs per hectare), 77 per cent of the variance was explained. Despite concerns over the methods used and the quality of the data, clear relationships have been established at the city level. A general conclusion is that an increase of 10 per cent in local density results in a 0.5 per cent decrease in vehicle trips and vehicle miles travelled.

In Hong Kong, the role of land use in mode choice is clear due to the densely built environment. Empirical modelling confirmed that the role of land use in influencing travel was independent from travel time and monetary costs. Elasticity estimates show that the composite effect of land use on driving could be comparable in magnitude to that of driving cost. Land use strategies influence travel more effectively when complemented by pricing policies.

Vehicles wait at the DND toll plaza on Delhi's border

Settlement size is also important in influencing both modal shares and the distance travelled as use of public transport and walking increases with population size. Diseconomies of scale may feed in with the largest cities, which have a complexity of movement that is substantially greater than the smaller monocentric cities – circumferential trips are as important as radial trips.

A general conclusion is that an increase of 10 per cent in local density results in a 0.5 per cent decrease in vehicle trips and vehicle miles travelled.

The US literature is also variable in its findings. Ewing estimated that a doubling of density resulted in a 25 to 30 per cent lower level of vehicle miles travelled (VMT), whilst Holtzclaw concluded that the difference between 20 dwellings/acre (urban densities) and 5 dwellings/acre (suburban densities) was a 40 per cent increase in travel. Overall, the US evidence seems empirically powerful, suggesting that higher density developments can reduce VMT by at least 10 to 20 per cent as compared with urban sprawl.

Proximity and quality: Land use patterns in post industrial cities are changing as greater mixed use is the dominant feature. This means that journey lengths can be reduced through the use of local facilities and services. Considerable effort is now being placed in transport development areas where high quality public transport accessibility can be combined with office development, residential, leisure and retail activities, all in close proximity to each other. The importance of quality is paramount as these accessible locations become the centre of activity giving possible implications for public transport use. This is a concentration of activity that has beneficial impacts on modal split and the use of local facilities, but it needs to be balanced against the counter trend of dispersal (and sprawl) that has an opposite effect on trip lengths and a greater level of car dependence.

Cervero and Duncan (2006) examined the degree to which job accessibility is associated with reduced work travel and how closely retail and service accessibility is correlated with miles and hours logged getting to shopping destinations. Based on data from the San Francisco Bay Area, they found that jobs-housing balance reduces travel more, by a substantial margin, than accessibility to shopping. But they also concluded that it is important to look at access to

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public transport at both ends of the journey. By concentrating "housing near rail stops will do little to lure commuters to trains and buses unless the other end of the trip - the workplace - is similarly convenient to and conducive to using transit."

Local neighbourhood and design: The new urbanism debate encourages more local activity through more walking, direct routing for slow modes of transport, and quieter and narrower streets. People travel shorter distances when they move into neighbourhoods with higher accessibility, with median distance increasing from 3.2 km in the more accessible neighbourhoods to 8.1km in less accessible neighbourhoods. Street connectivity is also important here as it can reduce distances for slow modes, but cul de sacs are also popular with residents, even though they tend to extend travel distances.

Main Street programmes in the US (and more recently in the UK) are intended to revitalise town centres by restricting access at certain times and to create vibrant communities day and night. Other initiatives to encourage urban living include extensive pedestrianisation, the closure of residential streets, gated communities, and even the removal of freeways. The issue of parking management is central here.

Cumulative effects: Land use effects on travel behaviour tend to be cumulative and mutually reinforcing. This effect can be illustrated in two ways. Ewing and Cervero (2002) calculated the elasticity of vehicle trips and travel per capita with respect to four land use variables. Their estimates suggest that a doubling of local density reduces car trips by 5 per cent per capita and travel by about the same amount. Although the elasticities are low, Ewing and Cervero (2002) concluded that they were cumulative, thus giving the potential for 13 per cent and 33 per cent decreases in trips and trip distance respectively.

The second study was by Lawton (2001) using data from Portland Oregon to examine the impact of land use density, mix, and road network connectivity on personal travel. As urbanisation increases, per capita vehicle travel declines significantly from about 20 average daily travel miles per adult (32 kms) to just over 6 miles (10 kms).

LAND USE AND TRAVEL

The main conclusions with respect to the impacts of the land use factors on travel distance are six fold: At the regional level, the location of new development particularly housing should be of a substantial size and located near to or within existing settlements so that the total population is at least 25,000 and probably nearer to 50,000. The provision of local facilities and services should be phased so as to encourage the development of local travel patterns.

Secondly, density is important and average journey lengths by car are relatively constant (around 12 km) at densities over 15 persons per hectare, but at lower densities car journey lengths increase by up to 35 per cent. Similarly, as density increases, the number of trips by car decreases from 72 per cent of all journeys to 51 per cent. Car use in the high density locations is half that in the lowest density locations.

Thirdly, mixed use developments should reduce trip lengths and car dependence. Although research here is limited and concentrates on the work journey, there is considerable potential for enhancing the proximity of housing to all types of facilities and services.

Fourthly, as settlement size increases, the trips become shorter and the proportion of trips by public transport increases. Diseconomies of size appear for the largest conurbations as trip lengths increase to accommodate the complex structures of these cities.

Fifthly, development should be located near to public transport interchanges and corridors so that high levels of accessibility for all can be provided. But this may also encourage long distance public transport commuting. Free flowing strategic highway networks are likely to encourage the dispersal and sprawl of development and stretch commuting.

Finally, the availability of parking is a key determinant of whether a car is used or not and further research is required to determine appropriate standards linked to accessibility levels.

Within the debate about sustainable communities, decisions need to be taken at all levels. The EU is giving greater guidance on the principles of sustainable development through their recent statement on urban mobility (CEC, 2007), and the national governments in the member states are responsible for overall planning policy. The key issue here is the location of new housing and other development, as this will have substantial implications for the levels of demand on the transport system, journey distances and the use of different modes of transport.

At the regional and city levels, there are questions about density of development, the availability of land for infill or reuse, the extent of mixed use development, the shape and size of different settlements and concentration and distribution of services and facilities. Local issues include neighbourhood design and quality decisions, including the layout of developments and the role for slow modes of transport.

In all cases, there is a need for all actors at all levels to work together across different sectors so that sustainable development becomes a reality. Too often in the past decisions have been made in isolation, and it is often the transport system that has had to accommodate the additional demand for movement. There may be an increasing realisation of this in decisions that people are now making in terms of where they choose to live. New lifestyle decisions mean that an urban location with shorter distances, good public transport and good accessibility to services and facilities become much more attractive. People do not like spending large amounts of time stuck in traffic.

This is the basic dilemma facing society in terms of climate change and transport. We all like travelling and we are doing much more of it. Yet we are also aware of the environmental costs of travelling and our responsibilities, both locally and globally. Our social networks are increasingly international and the global economy is also dependent on long supply chains. To some extent individual behaviour can be modified and we can substitute travel with technological communication. But in many cases there is no substitute for face-to-face communication, and we want to see the world. It presents a classic case of the conflict between individual preferences and choices, as opposed to the wider needs of society to protect the environment and future generations.

At present, the scale and nature of the changes necessary in the transport sector to address climate change have not been seriously debated. Pricing for the external costs of transport would help, as would regulations on emissions and heavy investment in clean technology. But even here, the price rises necessary to create real change are not politically acceptable, as both industry and the electorate are powerful pro travel lobbies.

How can individual preferences be matched to societal responsibilities? Travel is a major and increasing contributor to climate change, yet there are few signs that we are prepared to make substantial behavioural change. The real challenge confronting society is greater than this, namely the expected growth in travel from all countries and the desire for long distance travel. Serious debate and action on these issues has not even started, and all the time the climate change clock is ticking.

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[1] Note that this measure assumes that all planes are full and so there are considerable gains to be made by using larger planes.

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SEE GURGAON, THINK OF FATEHPUR SIKRI

New cities must learn from the old cities. ***ANUPAM MISHRA***

It is difficult to predict what the cities of the future will be like. But we can predict the future of our cities big and small because we live in them and know from one day to the next the direction in which they are headed. In a sense we are co-travellers with these cities on a journey in which we are as responsible for what happens to them as we are victims of their decay.

Cities are all about people. Not so long ago all our big cities were not so big. Even if they had a geographical spread much the same as today's, they were really small and well defined, with people connecting and interconnecting as members of a community do. It is the story of Kolkata, Mumbai, Delhi or Bangalore. But in the explosive growth that the past two decades have witnessed, not only have populations gone up, but cities have gone through a personality change. The small big city where once everyone knew everyone has become the impersonal urban engine with parts working in unison but oblivious of each other.

Gone from these cities is the sense of being manageable, the bonding and spirit of community. The transition from village to town and town to city is both internal and external. In the absence of social leadership, it comes with several aberrations and wayward manifestations. People thrash around as they seek equilibrium. In the absence of an overarching vision for our urban centres and the destruction of their emotional core, the equilibrium is mostly never found.

Take the example of Gurgaon. Five thousand years ago, it was Gurugram or the village of the guru. It was very much a satellite of the capital, Indraprastha, similarly as it today sits on the border of Delhi. But then it was the village of Guru Dronacharya, who taught the art of war to the Kauravas and Pandavas in the Mahabharata. Even as a satellite, the Gurgaon of yore could hold its own and was not to be trifled with.

But now Gurgaon, in its modern manifestation, has neither guru nor gaon (village).

As a bustling centre for corporations and markets it has a modern identity. But below its veneer of skyscrapers and shopping malls, is the tattered social fabric of a people who have been sucked into a kind of urban change they cannot understand. The new urbanisation is exploitative and beats Gurgaon into submission.

Earlier Gurgaon had a dynamic self-reliance. It had a resplendent agrarian economy. It had elaborate water harvesting and waste disposal systems. Even today the ruins of these systems are in evidence. They are easy to identify. But the tanks have long gone into disuse. The drainage systems have been constructed over.

Has all the development into a so-called modern city improved the quality of life? Unfortunately it hasn't. Gurgaon has gone from self-reliance to the edge of collapse. It is estimated that all those highrises have been drawing groundwater at three times the rate aquifers are recharged and chances are that in the next decade Gurgaon could run out of water altogether. Sewer systems do not exist and where they do they are either inadequate or do not work. There is growing crime because the social order has collapsed. Much is made of the vast sums paid to farmers for their land. But look what easy money has done to their lives and that of their children. Builders and developers with their political connections have had a free reign with no guru to control them in Gurgaon.

The absence of equilibrium has a profound effect on the quality of life that we experience. As the community breaks down and together with it the collective sense of well being is diminished, many of the ills that we associate with our collapsing cities come to dominate. Whether it is water or clean air it is finally the way we connect as human beings that makes the difference. Big cities that cope with these problems are really relearning to function as the village communities from which they once evolved. They are learning to conserve and be caring.

It is estimated that Gurgaon's highrises have been drawing groundwater at three times the rate aquifers are recharged. In the next decade Gurgaon could run out of water altogether.

Gurgaon's story is the story of most emerging cities. The process of urbanisation could have been more wholesome had it been an organic and genuine transformation. But since the new cities are driven by a model of consumption that is delinked from the reality of resources, the new urbanisation is inherently dependent on what it must get from elsewhere. People, skills, technologies and services all pour in. That in itself is not bad, but there should also be the capacity to absorb the inflow. Our new cities are unfortunately defined entirely from the outside. Their growth is measured through externalities. Invariably their growth has no correlation with their sustainability.

Take something as basic as water. Delhi at one time had an intricate network of water bodies

Photographs: LAKSHMAN ANAND

One of Gurgaon's famous shopping malls. And alongside: Delhi's Yamuna river.

linked to its river, the Yamuna. These systems made it secure. Now Delhi cannot do without drawing water from 300 km away. Some time ago there was the spectacle of the then Chief Minister himself going on a public fast to have water released from a neighbouring state. To have the nuclear deal passed in Parliament recently, the ruling Congress had to negotiate for every MP's vote. The time is not far off when similar transactions will have to take place to ensure that water is available.

Resource management finally comes from within. The overdrawing of groundwater has left some of Delhi's most posh residential areas dry. Attempts at water harvesting have followed. Every other bus stand has slogans asking people to harvest water when it rains. There are bylaws that forbid construction without water harvesting channels. But bylaws are easily bypassed. For all the shortages, the residents of Delhi do not practice water harvesting with any seriousness. Like the quality of politics in Delhi, its groundwater levels are plunging.

Previously, it didn't matter how many people lived in an area. It would be asked, how many water bodies are there? It was the tradition that a medium-sized settlement should have 126 water bodies so as to be prosperous and secure. The hallmark of sustainability was summed up with the expression: 6 agar and 6 kori or 6 x 20 + 6. When Delhi had just 500,000 residents at the turn of the century it had more than this number of water bodies. It had small rivulets in every neighbourhood. There was one behind the India International Centre where a stone bridge still exists. These rivulets brought water from the Aravalli catchment, enriched the Yamuna and simultaneously carried away surplus water. Today's Delhi has 12 million people and no water security. The Yamuna has been reduced to the status of a drain. The flooding of streets we witness is the result of the destruction of the natural channels and water bodies.

Present and future cities have a lot to learn from the cities of the past. Delhi can and should learn from its own history. In the past how we looked at land was different. There was space for water and green cover. These days Delhi wants to be water secure but does not set aside the land which will give it this security. Land in the current perception has to be monetised. But what about its value to the community? No one is ready to put a figure to that. So, while the price of land has gone sky high, the rain that falls from the sky and can make such a difference to the quality of life in the city is no longer retained because open spaces have been built over.

It is important to learn from the past cities that there have to be limitations to greed. Balance is the key. Urbanisation's benefits can only be reaped when resources are generated and shared. Land is one such vital resource and when it goes into a few hands or is not made the subject of rigorous governance for the general good, the result is that a few get rich, but the kind of collapse that follows affects everyone.

So, what is it that the future city should learn from the past city? It should take its most serious lesson from Fatehpur Sikri, built near Agra as a new capital, by no less a visionary that Emperor Akbar. Fatehpur Sikri had to be abandoned in 15 years because it ran out of water. When Fatehpur Sikri was planned there were 50 water bodies that were included in it. But there was a mismatch between consumption and retention and the city failed.

No urban story from the past can perhaps be more modern in its implications! It is not uncommon to hear people in Gurgaon say that with so much investment there, surely a solution will be found to its water shortages. No doubt the same thing was said in Fatehpur Sikri, for surely Emperor Akbar would have planned for his new capital?

The new city must remember the mistakes of the past. So Fatehpur Sikri should never be forgotten. More importantly the new city should emulate the spirit which made past lifestyles sustainable. The chances of making that spirit work even better today are higher with the availability of new technologies for recycling and collection.

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TRY MIXED USE, IT IS THE

Why live in one area, work in the next and entertain in the third? Mixed use can bring vibrancy into our suburbs and ignored heritage areas. ***AJITH VYAS***

Cities are about us and the way we conduct our lives. What we do for work or leisure, the air we breathe, the noise we tolerate, the time we spend with our families, the places where we shop, meet people, socialise, hang around is what the city is all about. It is also about how we connect to our history, the legacy of our times, and the future we behold! The city is that continuum.

In recent history, we have embraced conditions that have led to unbridled expansion of our cities. We have diluted the notion of distances. The relationship between distance and time has been reinvented in our age. And as a result, we have alienated ourselves from our setting. We've lost some connect with our place!

Let us consider our neighbourhood as our base camp. It has an important role in our lives, defining our identity, establishing our networks; it functions as a setting for our children to grow up in too. Commuter distances have intervened in the quality of time we spend in this neighbourhood, our social forum, even to the extent of destabilising family bonding time.

So the need to save commuter time is very fundamental to our lives. Let us see how we really landed up spending so much time commuting in the first place and then see the possible remedial measures.

Distance, which started off as an opportunity first, has now grown into a major liability. Cars led the city away from itself. Urban sprawl is now served with a notice for being ecologically unsustainable. Now, we do not leave footprints behind, we leave soot prints.

HOW WE GOT HERE

Post independence, India adopted many planning norms from the British. One of the earlier notions of urban planning was to see the city as a functional entity. The planning process was structured based on mono-functional land use zones. There were exclusive functional zones, akin to the layout of a factory doing one specific task efficiently.

Thus came about zones like residential, commercial, industrial. The concept sold easily because 'industry' was central to 'development'. So industrial land use was easily understood as a legible mono-function that needed to be located and serviced efficiently.

Residential areas were required more for providing a captive workforce for industry and were thus incidental in the process. The absence of inputs from ecology, history and cultural anthropology were deficiencies that took time to be noticed. The space for such questioning was created when the nature of 'industry' started getting redefined in the post-modern age. The strain on ecology also gave space for questioning this development model.

As a result of such planning intervention, the city went through major changes. It got compartmentalised. Such functional exclusivity proved to be the undoing. Instead of holistic cities, we got a fractured, compartmentalized public space network.

Jobs in one part of the city, recreation elsewhere, home far away from all that, the kids' school in a different part of the city and some very awful connectivity between them. Now that's a serious failure by city planners.

OPPORTUNITIES

Ecology and environmental sustainability are centre-stage now. Civil administration is now a people's task. Industry has been redefined.

Urban funding is no more rooted; it floats in the economic wind above ground!

In India, we have seen two major institutions impact the urban phenomenon – Panchayati Raj (based on the 74th Amendment to the Constitution) and Central initiatives like JNNURM/IDSMT (Jawaharlal Nehru Urban Renewal Mission and Integrated Development of Small and Medium Towns).

The city gains a lot from mixed use. From reduced traffic, checking urban sprawl, checking crime, infusing places with more people at various times of the day etc.

It goes without saying that any shift in attitude to urban development must get entrenched in either or both these institutions to have any impact on the Indian City.

Parallel to these institutions, a third node called the 'market' or the Real Estate Market has been redefined to complete the defining trio.

Each of these 'schools' has their own principles and machinations. Invariably, they may converge on the city with a variety of impacts. Getting this trio to deliver a good city would be the challenge for the planning professional.

The government has to reinvent itself in the way it intervenes in urbanisation. It now has a multi-faceted role to play — as a player in the urban land market, as planner, policy maker, financier, initiator, as a system of governance etc.

Mixed use housing is essentially a design stand point, an attitude to living. As the term implies, it is about allowing various functions/activities to co-exist in the city. This is guided by the need for a compact city with minimum commuter distances.

Mixing a residential function into the core of the city infuses the place with life. Allowing various job opportunities to function within residential zones also dramatically alters the nature of suburbia. These are the two variants of the concept of mixed use housing.

At an urban level, the city gains a lot. From reduced traffic, checking urban sprawl, checking crime, infusing places with more people at various times of the day etc. At the architectural level, interesting building typologies get created in the process.

In case one, where the residential component is thrown into the urban core, we would have high- rise apartment buildings with lower levels of the building actively immersed in the street scene.

In the suburban context, we would see newer residential typologies opening up from their introverted form and meeting each other in a social street pattern. The application of mixed use housing throws up many challenges and they need to be understood in various contexts of use.

Inner city urban renewal and mixed use housing have dramatic potential in the Indian context. The city needs to be understood in socio-cultural terms before arriving at solutions. The typology, density and nature of the mixture would vary from city to city and from place to place within each city.

In the Indian context, most inner city areas would qualify as heritage districts. They have a homegrown wisdom in their content and organisation. The spaces are networked inseparably from the use pattern. Invariably, they are low-rise high density multi-functional cores of the city. What we are actually aiming for in our cities is a 'now' version of such city form. True to self and situation.

Mixed use housing in such a context would mean moving in high-end employment into such traditional urban fabric. Good services management within these areas can turn these spaces around from urban decay to being the throbbing heart of the city, effectively working as a counterweight to senseless sprawl. Inherently, the built fabric is climatologically quite a delight. It is in their alienation from contemporary life that these city cores lag behind. Life can be infused into the city core by allowing mixed use housing to happen. This needs to be done by showing sensitivity to the community.

Socially inclusive mixed use housing policy: We are a proud democracy. Yet, the masses make us squirm. We seek out the 'best' elitist schools for our children, and warn them not to play with the maids' children at a tender age. After the stage is thus set, we are ready to discuss socially inclusive housing.

This has to be a way of life. It's a reflection of who we are. It is for our voices to reflect in ward-level meetings, and our opinion to be heard by the city

COOLER WAY TO LIVE

Photographs: LAKSHMAN ANAND

councillor. When implemented, it allows us and our children to face the reality of our city inclusive of the rich, the poor and the very, very poor.

The spin off is more than social harmony, economic redistribution or mutually beneficial co-existence, it is a celebration of being humane. Since we are a proud democracy, we'd better learn to be socially inclusive!

The policy can be embedded in many ways depending on the degree of success we seek. Mixed use in this context is very topical. The other uses which can move into the residential zone are to be sourced from local culture and created by local demands. Grocery shops, small workshops, services like tailoring, mechanical maintenance, garbage recycling, home offices, small/medium IT firms, local vegetable farming and so on. It is an endless list and it should spring from socio-political soil.

Embedding mixed use housing in planning: Planning's delivery process is a hierarchical system. From the State Planning Policy, it filters down to the City Master Plans, wherein exist the Detailed Town Planning (DTP) schemes.

It is generally the City Master Plans that are in denial mode for such concepts. They usually lack a vision beyond the mundane functional city structure model long disowned by academia.

The City Master Plan preparation and delivery mechanism is now a task of the Municipal/Urban Local Body (ULB). Earlier this task was undertaken by the state's planning department.

The ULBs are empowered to create city development plans and to arrange finances for their implementation and sustenance. The state policy must insist on a statutory minimum inclusion of mixed-use housing. The DTP schemes would then use the concept and customise the idea to local application.

This is the difficult part that calls for a learned approach to urban design within the DTP schemes. There would be stakeholder meetings including local merchants' unions, residents' associations, power corporations, municipal councillors, district administration et al.

Building rules need to be flexible to accommodate the local building typology solution. Tools like transfer of development rights, land pooling incentives, public funding of projects would be needed to accomplish the task.

The point is that if we need to have mixed use housing, it needs to be through detailed urban design at the DTP scheme level involving user groups and stakeholders.

DENSIFYING SUBURBIA WITH MIXED-USE

Cities across the country are expanding at a brusque pace. The sprawl is triggered mostly by privately promoted housing layout schemes of various densities. Mixed use housing in low density housing zones would need to invent a typology of residential design that allows multi-functional adaptation of the home premise.

It calls for a little inventiveness in the way projects are conceived and marketed by the real estate industry. The ideal scene would be for the DTP scheme preparation process to have a healthy conversation with builders. Such discussions might now be happening under totally dubious circumstances. However, a legitimate engagement with clean intentions could deliver unimaginably quick results in our city.

Homes with additional space for a small office/shop/workshop, a cottage industry, rentable attic spaces for mini gatherings, guest suites for 'couch surfers', rentable dormitories, working women's hostels, mini eateries are all functional possibilities that can to be incorporated. Adding all these public front aspects to homes would stimulate a spontaneous street scene's emergence. This could bring the place alive.

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THE DUBAI DREAM HAS ITS UNDERBELLY

Dubai tries to outdo the biggest and the best in the world. It is an amazing display of urban eye candy. But there is a dark side as well. ***H MASUD TAJ***

Anyone who does not attempt to change the future will stay a captive of the past.

—Sheikh Mohammed al-Maktoum, Ruler of Dubai.

The president of the International Advertising Association, Joseph Ghossoub, missed the point when he recently said that the real estate advertisements in Dubai are mediocre because images of the project dominate the company's brand. In Dubai, the project is the brand. In SimCity as in Google Earth you fly in from aerial views of the city you build. Dubai is playing clicks with bricks, their spectacular projects that brand Dubai can only be read while flying into the city – giant Palm Trees, Map of the World, Falcons. By 2010 they are slated to attract 15 million visitors to the city. And Emirates Airlines has accordingly become the biggest purchaser of aircrafts in the world – $37 billion worth of Boeings and Airbuses.

If developers could envisage a dream city it would be Dubai (native population 1.5 million), the second largest construction site in the world after Shanghai (population 15 million). When developers turn into planners, the market (whether existing or envisaged) determines the scale of operations and profit becomes the prime motive. But what developers primarily sell is not buildings but planning itself. They sell dreams of a good life, the stuff of their advertisements. Thus Dubai's Constitution is the Guinness Book of World Records as it builds the largest theme park in the world double the size of Disneyland, throwing in the Pyramids of Egypt, an Eiffel Tower that is taller than the original tower, a Taj Mahal that is one and a half times bigger, and the Leaning Tower of Pisa that duplicates the defect. Also the biggest mall in the world containing the largest aquarium in the world, the tallest building in the world, the tallest hotel in the world, the largest international airport in the world, the biggest artificial island in the world with the longest artificial beachfront in the world (1,500 kms as against its natural 45 kms beach), the first underwater hotel in the world. One in every five cranes in the world is swinging in Dubai, dubbed by the BBC as the world's fastest growing urban area.

When I first visited Dubai as a student in 1978 its downtown was Bur Dubai. The discussion then was that Dubai was foolhardy in making the largest man-made port in the world. But Jebel Ali opened as a free trade zone that proved all the sceptics wrong and became a precursor to its present urban strategy. Dubai now owns over 50 terminals in Africa, the Americas, Asia, Europe and Australia apart from the UAE. Thus the city is a node of a far-flung trade empire in the making. For instance, it is poised to rule the Indian container industry owning three major container terminals: Nhava Sheva in Mumbai; Chennai Container Terminal and Mundra International Container Terminal in Gujarat. Along with this is the development of Vallarpadam Container Terminal in Kochi and a share in the Vishaka Container Terminal at Vishakapatnam. Dubai is also the US Navy's busiest foreign port of call but UAE's Minister of Information, Sheikh Abdullah bin Zayid Al Nahyan, does not shy away from asserting: "The United States, which issues an annual list of states it labels as supporters of terrorism, must not forget to classify itself at the forefront of these states along with Israel".

In 1988 I visited Dubai as an architect and saw its first office high-rise Dubai World Trade Centre. Since 1998 that lone tower has been engulfed by a spate of tall buildings on the new downtown along Sheikh Zayed Road (named after the late Shaikh Zayed bin Sultan Al Nahyan, recognized nabati poet and the founder president of UAE). This summer I saw Dubai's Arc de Triomphe framing the World Trade Centre, the inhabited gate serving as a portal to Dubai International Financial Centre (DIFC), a stock market headquarters meant to match those in Hong Kong, London and New York. The other two sprawling industrial parks that followed Jebel Ali's success are the Internet City to make Dubai the Arab world's IT hub and Media City that seeks to replace Cairo as the Middle East's media capital. In a gated community space is political. The spatial distribution of Dubai's enclaves is strategic: each catering to thematic needs of its expatriate population and expatriate capital. Thus Media City has minimal press censorship, unlike elsewhere in Dubai, and Internet access is unregulated in Internet City. DIFC with its Swiss-like financial secrecy and efficiency attracts money laundering by militants which paradoxically insures Dubai from becoming a target of terrorism. (Little wonder that the doyen of Indian gangsters, Dawood Ibrahim, shifted his D-Company to Dubai, to operate from and not on, before himself moving to Karachi).

The financial centre asserts its centrality with the tallest building in the world – the Burg Dubai, making history at the rate of one floor in three days, racing to double the height of its iconic structural predecessor: Sears Towers. The tallest building in the world shows no signs of halting. You cannot miss it arriving by an early morning flight, but you will miss it during the day as the city gets engulfed in a haze of sand. The lean tower reappears as a fluorescent apparition reaching impossibly high into the night sky. In pre-sales its apartments command the highest price in the world at $3,540 per square foot. When the developer dreams up the city, irrational exuberance is the norm.

Swirling around this act of will on a former mili-

AFP

Dubai has gone from camels to skyscrapers. But is it a role model?

tary base is the rest of the 20 billion dollar project of its developer, Emaar. The new Burj Dubai Downtown seeks to single-handedly shift the action away from Sheikh Zayed Road and anchor it to the downtown of the globe with an artificial island in an artificial lake and an artificial old town, the biggest mall in the world (12 million square feet) with underground parking for 16,000 cars, 30,000 homes, 55 residential towers, nine hotels and six acres of parkland. Mohamed Ali Alabbar is both the Chairman of Emaar properties as well as the Director General of Dubai Economic Development. The state controls 51 per cent of Emaar shares and the private-public collaboration is reflected in Alabbar's close relationship with Sheikh al-Maktoum, the ruler of Dubai. There is no conflict of interest because all land belongs to the Maktoum dynasty.

The only interest that prevails is that of al-Maktoum, CEO of Dubai Inc. In this state of breath-taking feudalism, with a single landlord, taxes can be minimal as the single beneficiary is the ultimate recipient of all rents and leases. The Sheikh owns the sand. In Dubai, it is the body of the land, and not what is beneath it that is traded.

The trade impulse extends to bodies as well. If on the macro scale Dubai works on the body of the land, selling and manipulating infrastructure, then at a micro level it sells the body of the prostitute. It is

In the game of fabricating fantasies only Dubai can beat Dubai. Nakheel Properties has announced a 4,000-foot high-rise, called The Burj, to out-burj Burj Dubai.

now an established centre of sex tourism with a choice of all manner of sex workers, Chinese, Russian, Armenian, Indian and Iranian including gay bars and nightclubs. And with hookers come the attendant hawkers and the hawks, the transnational gangs of the red-light industry. If sex sells then you rope in sex-symbols for tough sales.

Dubai's inhabitants generate one of the world's highest amounts of waste, and the city is among the toppers in energy consumption. Hence to counteract, neighbouring Abu Dhabi has roped in celebrity sex symbol Pamela Anderson to be the hotelier of an eco-friendly hotel: "It's built with no fossil fuel at all in Abu Dhabi where they have all that oil," she said. It was emulating Dubai in which Pam's counterpart the male sex symbol, Brad Pitt ("…architecture is my passion") was appointed 'design consultant' by Zabeel Properties for a multi-million dollar environmentally friendly hotel development. Reality is as real as the publicity. Hence the tallest building in the world Burj Dubai was not based on a six-pointed desert flower that its website claims and the tallest hotel in the world Burj Al-Arab does not have a seven-star rating. They were only convincingly marketed as such.

Little wonder in the game of fabricating fantasies only Dubai can beat Dubai. Nakheel Properties has announced a 4,000-foot high-rise, The Burj, to out-burj Burj Dubai. Is that an empty boast? Not really. A hoarding on one of their current projects (designed by Rem Koolhaas, cool surfer of capitalist enterprises) asserts that it is, quite simply, twice the size of Hong Kong. Having gone horizontal with the largest man-made islands in the world, they aspire for the mother-of-all verticals.

Trade has always been Dubai's forte. Though bolstered by federal oil, Dubai's growth is founded on its historical ties with South Asia. Little wonder that half the UAE population is South Asian. The South Asian presence predates oil, and even during the colonial era the Gulf region was administered by the British Raj from Bombay. It is this legacy of trade (and gold smuggling) that is the predecessor of Dubai sans-oil-success in the global market (the non-oil share of GDP is over 94 per cent). Post-Khomeini, it attracted Iranian investors and expertise and post-9/11, Saudi money flowed into Dubai and away from the USA.

The Makhtoum dynasty is aware that Dubai Inc.'s success is premised on cheap oil, cheap sand and cheap labour. But chiefly it is premised on investor confidence that the gated city is indeed the capitalist safe haven. But while oil and sand are mute, labour's muteness has to be enforced. Thus the exotic orient has an unattractive underbelly of unjust labour laws that apply to temporary labourers from India, Pakistan and Bangladesh who do all the heavy work –12 hours a day and a six-day week in blistering heat. Recruitment agents confiscate their passports and their rights disappear. Although Article 63 of the 1980 UAE labour law explicitly requires the Ministry of Labour to institute a minimum wage, it has never been put into practice.

The same law also does not recognise the right of workers to organise and form trade unions. It also forbids strikes. But labour has begun to strike. Several thousands in 2004, seven thousand for three hours in 2005 (the largest protest in Dubai's history) and in 2006 two and half thousand went on rampage at the Burj Dubai over pay and conditions.

Ironically for all the frenetic activity, celebrity designers and star architects, Dubai is the culmination of a dated city model of the 20th century and not the emerging prototype of the 21st. Its car-dependent form of urban sprawl belongs to the 70's America (though it is introducing the monorail) and scale of spectacle and energy consumption is of 90's Las Vegas, which it has long since surpassed.

For all its faith in consumerism and tourism and its single minded synthesis of entertainment, shopping and architectural spectacle, for all its frenetic construction activity, it has yet to break fresh ground.

Meanwhile the tallest building in the world, declaration of Dubai's arrival on the global arena, continues to grow. Burj Dubai's website boasts that the tower weighs as much as 100,000 elephants. Whether they are white elephants, only time will tell.

Architect and poet H Masud Taj lives in India and Canada.

CRUDE DELHI: 'CHINKY, SEXY, HOW MUCH?'

New Delhi should be India's melting pot, but is rife with discrimination and has a long way to go before it can be called a plural and modern capital city. **LANSINGLU RONGMEI**

As India celebrates 61 years of independence, it would be quite telling to ask people from its northeastern states who are residents of New Delhi what freedom means to them. As someone with different physical traits, a different language, culture and food habits, I would say I am struggling for acceptance of my identity.

At this point, let it be known that I am a Naga woman from Nagaland. And I complete 14 years in Delhi this summer, trying to convince this city that I, too, am a member of this society, possessing equal rights and privileges as any citizen under the Constitution of India.

Maybe it's too harsh to say that Delhi is a hostile city for outsiders and its attitude racist unless, of course, the outsider is rich, well-heeled, White or accidentally happens to be among the social sector set. But the point is that the city is generally guilty of discrimination. It stereotypes people on the basis of their physical traits, colour, language and culture.

Many times, my well-wishers have told me that people from the northeast should get over being 'victimised' and take sportingly to being called 'chinky'. It's almost like telling us to accept that we are different, so we will be treated differently.

Every day is a battle against racial discrimination and abuse. Auto drivers will charge extra or in the worst case scenario beat up and verbally abuse people from the northeast, calling them, 'Nepali, Bahadur'. Complete strangers walking on the street will call out 'chinky' as if it's a matter of right. Both boys and girls are grabbed from behind and asked : 'Chinky, sexy, how much?' These incidents happen in the best of colonies.

There are reports of students, sales executives and BPO employees being subjected to racial abuse and sexual harassment, youngsters being thrown out by the landlord or landlady without notice and without refund of the security amount. There is the callous attitude of the police who refuse to register complaints. It is the alarming rise of such incidents and the helpless situation these youngsters find themselves in, without any support system, that gave birth to the Northeast Support Centre & Helpline in October 2007. This is just a small group of social activists, lawyers, journalists and students, offering counselling and legal assistance, holding workshops in legal and rights awareness and at times opening up homes for victims of sexual assault for inner healing.

The night we officially launched the Helpline, a complaint of attempted sexual assault of a 16-year-old girl by the landlord was received. It took three days to register the complaint and a couple of weeks to recover the victim's belongings from the landlord.

Another shocking incident was when two sisters were being physically assaulted for resisting eve-teasing and sexual advances by a mob of 20 men shouting racial abuses. None of the residents came to their rescue till a few northeast students dialled 100. The police patrol car simply dispersed the mob without registering the complaint. Then the police at the chowki noted in their diary that the incident was a fight among the attackers and the girls were just slapped a couple of times. Frustrated, the girls went to the main police station when they were shooed away and told that the police may be contacted only after the girls can give personal details of the assailants.

In nine months, the Northeast Support Centre has received nearly 100 complaints of racial discrimination and harassment from Delhi and the National Capital Region (NCR). The actual figure would be higher as many would not have heard of the Helpline and even if they have, it takes a lot of courage to come forward.

The secretary of the Support Centre, Madhuchandra, was livid that the whole nation, particularly Delhi, cried hoarse when actor Shilpa Shetty was subjected to racial remarks in a reality show in England. But the same city was a mute spectator when a lady photographer from Nagaland was turned away by a restaurant, Urban Pind in Greater Kailash because she did not meet the 'right profile'. In fact, during the protest, many Delhites walked up and mocked the concern of the protestors saying that they could arrange for the entry. It is sad that people have such a short memory. Only six decades ago, under the British, Indians and dogs were not allowed entry in restaurants for not meeting the 'right profile'.

So for those who wonder why people from the

northeast feel victimised, it is because they are victims.

Many northeast people have found a niche in the fields of fashion and music in Delhi. There are over a hundred doctors, lawyers, etc here. However, certain stereotypes still plague them. Speaking to these successful people revealed that it is not an easy journey because discrimination exists in their professions, albeit subtly. However subtle, intelligent people can feel it.

In such a scenario, imagine the plight of those northeast youngsters who work as sales executives, waiting staff and in the BPO sector without proper contracts and family support away from home. They take up these jobs to support themselves through college or some vocational course instead of living off rich parents. However, in this city of pretensions, they are looked down upon as menial workers. Dignity of labour is an alien concept in this city.

Every second northeast person has been approached and asked as he or she walks out of the railway station or the airport if their destination is *Majnu ka tilla* (there is a Tibetan colony in that area). Nothing wrong in living at *Majnu ka tilla.* It's a great place for stylish clothes and good food and very safe. What is unacceptable is the preconception.

As the world deliberates on the International Convention on Elimination of All Forms of Racial Discriminations, the Delhi Police have come out with a Security Handbook for northeast students and visitors in Delhi. It says the dress code should be according to local sensitivity. Under food habits, the handbook says all smelly dishes should be prepared without creating ruckus in the neighbourhood. Are Delhi Police officials so thick that it escaped them that dress and food habits are personal choices? Would they dare to bring out such a handbook for any other community? These questions are better left for them to answer.

Some feel that the reason behind this hostility is

Delhi is generally guilty of discrimination. It stereotypes people on the basis of their physical traits, colour, language and culture.

the result of jealousy. People from the northeast are mostly well turned out, musically inclined and cool. Another stereotype is that people from the northeast are not serious about studies and are only into fashion and music. Someone has even gone and done a study on the dropout rates of students from the northeast in the University of Delhi.

Why come to Delhi if there is so much discrimination? Because every citizen of India has the right to reside anywhere in the country and the Constitution of India guarantees every citizen equal rights and equal opportunity.

Many have reasoned that it is because of ignorance that people behave the way they behave. So it falls on the people from the northeast to educate them about the cultures, traditions of the northeast and also to inform them that though they have different physical traits, they are human and hence deserve respect. To me this is just racism.

In a butcher's shop, a smart aleck nudged my non-northeast friend and enlightened him that 'these people only buy liver, trotters etc.' Come to think of it, it is fashionable to order pate in a French restaurant, snails and foie gras, too.

Sample this remark during the heated debate on why a Naga student was not put behind bars for killing a dog in a JNU hostel room: "These people are of a very wild and barbaric nature, I saw it on Discovery Channel."

Last winter, at the Delhi Christmas Choir night when a northeastern choir took the stage, someone from the pew remarked that all the momo stalls in Delhi would be closed that night.

It is common knowledge that racism has destroyed cultures, language, human potential and future relations with others who only know the other people through this stereotyping.

It would be wrong to label Delhi as a racist city as long as there are friends who understand, stand by us and fight against discrimination. I only wish that the rest of Delhi too would allow people to live with dignity.

Lansinglu Rongmei is a woman lawyer from Nagaland who practises in New Delhi

BOTTOM UP HOUSING WORKS

Market based solutions can spark interest in the low cost housing sector. The MONITOR GROUP has models for households earning less than Rs 12,000 a month

Urban India has a vibrant housing market. It is well illustrated by the more than 30 per cent rate of growth in housing finance over the past decade. Yet, the majority of Indians in cities can't find shelter they can afford to own. Eighty per cent of urban households in India earn less than Rs 12,000 a month, some as little as Rs 2,500 and a good 14 per cent of households even less. This means they do not qualify for loans for even the smallest properties in the market – typically 400-500 square feet flats priced at between Rs 450,000 and Rs 600,000.

The current deficit in urban housing is estimated at 24.7 million units (mostly the poorest segments of society).Given the continued migration into urban areas, it is unlikely that the government with its limited resources will be able to both bridge the deficit and provide the housing that people with lower incomes need. However, market mechanisms may be a way to provide housing to those who require it the most.

The Monitor Group, which has identified market based solutions as a powerful route to social progress in India, is currently collaborating on multiple initiatives to facilitate this. Low income urban housing is one of these initiatives.

We are a management consulting and merchant banking group started by Michael Porter and a group of his colleagues at Harvard Business School. We have over 1,200 professionals in 30 offices across the globe and have been in India since 1996. Recognizing that India's biggest challenges are in the area of social inequity (a large group of low income people are not benefiting proportionately from the overall economic growth in the country) and given our commitment to India and our global experience in social change, we have made this a strategic focus area.

A project by Monitor Group for National Housing Bank (NHB) with active support from the World Bank explored the commercial opportunity to serve low income households: Inadequate housing for low income households is a key priority for the National Housing Bank (NHB) and it is actively working in multiple ways to address this issue. One potential solution is through market mechanisms and this led to a project by us (the Monitor Group), funded by FIRST Initiative with active support from the World Bank. The project recognised that current models are not working for low income households and hence conducted extensive field research across urban India and involved international and local experts to develop innovative solutions. The fieldwork included investigation of property prices, interviews with over 1,000 customers, 50 developers, 20 financial institutions, 10 microfinance and specialised lending organisations and a broad range of over 100 stakeholders.

Even with current land prices and construction rates, it is possible to build housing that lower middle urban customers can afford: Private sector developers are currently building housing at Rs 900-1,200 per sq. ft. in vibrant neighbourhoods within one hour of the city centre in most metros, Tier I and Tier II towns. The smallest units they are currently building are 450-500 sq. ft. flats costing Rs 450,000 to Rs 600,000. However, many developers in cities like Ahmedabad, Jaipur, Mumbai, Hyderabad, Kolkata, Kolhapur and Vizag confirmed that they could build smaller flats, e.g., 250-350 sq.ft. apartments at Rs 250,000 to Rs 320,000 which lower middle income customers could afford provided financing was available.

Lower middle income customers can afford, and are very interested in, purchasing the type of housing described above: A majority of such families live in poor quality rental housing (typically a single room of 100-250 sq. ft. with a shared toilet and bath, often poorly ventilated and lit, and in "bad" neighbourhoods). They pay 20- 25 per cent of their income as rent, but face constantly rising rents, unreasonable demands from landlords and pressure to move every two or three years. While some of these households prefer to stay in the same neighbourhoods, many are very interested in moving to more distant suburbs if they can buy the 250-350 sq. ft. flats described above – flats that will have safe common spaces and will be in neighbourhoods that have schools, shops, access to health care and most importantly are well connected by public transport. The customers see this as an economic opportunity to convert rent to ownership and as a chance to significantly improve their quality of life. They can afford such housing if they get financing at current mortgage rates.

The choke point is finance: While conceptually financial institutions like banks and housing finance companies recognise the potential of this segment, most of them are concerned about giving housing loans to such customers. First of all, they feel that since each individual transaction is small, the cost of serving them will be too high. Second, they are worried about higher credit risk, especially for the customers in the informal sector (both salaried informal and self-employed). Many non-banking finance companies (NBFCs) were interested in serving this market, but they were concerned as the law that was passed in 2002 to allow one to recover a mortgaged property without going to court does not apply to them. Microfinance institutions (MFIs) are very interested, but they do not have the long tenure funds that are required for such loans and most of them did not have the capital base required (most said that given their own high growth trajectories, they needed all the money they could access for their core business).

Many developers in cities across India confirm that they could build smaller flats for between Rs 250,000 and Rs 320,000 for low income people if finance was available

The current business model was sub-optimal for the customer: We recognised that while finance was the key issue to serving low income customers, even the current lower end of the market had issues. The developer – typically a small developer – would buy a

IF STRATEGY IS RIGHT

LAKSHMAN ANAND

plot of land, get his clearances and start constructing. Unlike the top end of the market where the developer could 'pre-sell' some of his flats even before construction had started – thereby providing some finance for starting construction – customers were hesitant to book these flats in advance as such developers have a reputation for being less reliable. Also, typically, the developer would not be able to get construction finance (as there were concerns about delays) and so the developer would use his own finances to quickly put up a building and complete a sample flat to attract customers. Customers in the Rs 12,000 and above income group would see the sample flat and if they liked it, would try to get a loan. Due to the concerns of banks and housing finance companies described above, typically only customers working in larger organisations (formal sector employees) would get a loan and hence by default this market was focused on the formal sector in this income group. The funds from these early customers would provide the developer with finance to continue construction and he would continue selling flats (at higher and higher prices, in keeping with land appreciation) to fund ongoing construction. At times the flow of new customers would not keep up with the construction and there would be delays while the developer arranged for financing (or just waited to get more customers). Also, given the unorganised nature of the developers, the quality of the finished product could vary significantly. In other words, a market fraught with delays and poor quality – the consequence of which was borne by the customer.

An innovative business model to serve formal sector customers: We developed a set of new business models to address the concerns of different stakeholders. The first model is aimed at organised sector employees and uses the employer as a nodal point to aggregate customers and facilitate processing including payroll deduction. Employers have shown a strong interest in doing this as it helps with retention and performance improvement. Financial institutions like banks and housing finance companies are very interested in such groups of customers because (a) they feel these customers are inherently low risk and (b) it lowers their cost to serve as the employer is facilitating the loan application process and providing payroll deduction. Developers are very keen on providing housing to these agglomerated pre-financed customers as it reduces their marketing cost, and selling risk. In fact, due to the pre-financed customers, it also enables them to get construction finance. This access to funds in turn enables the developer to keep to schedules and reduces the chances of delays. In fact, the aggregated buying power can also be used to negotiate better terms with the developer including good quality construction. In other words, it's a business model that addresses the key issues of the different stakeholders and is a win-win for all concerned.

An alternate set of innovative business models to serve informal sector customers: The second model is analogous, except that it targets the informal sector and uses an MFI to do the aggregation, qualification and collection, thereby achieving the required lower cost. The actual loan is provided by the bank as it has the appropriate funds (magnitude and tenure) and the bank is also responsible for repossessing the house in case of default – a task most MFIs are not interested in performing. The second model also uses an external credit guarantee to reduce risk and make the customers attractive to the financial institution. Quite a few banks / traditional housing finance companies (HFCs) we spoke to were interested in participating in such a model but they wanted to align the MFI's incentives with theirs (i.e., ensure the MFI did not bring in customers who were poor credit risk). All the urban MFIs we interacted with could understand the FIs perspective and agreed to align incentives – they said that if any customer defaulted, for that customer they would payback all the fees and a bit more!

The third model is for financial institutions that have customers in this target segment (or which specifically focus on new customers in this segment), and again uses an external guarantee to reduce risk for the lender. This model has inherent potential as it combines the advantages of the bank / traditional housing finance company and the MFI in one entity. This 'targeted' lender, typically set up legally as a housing finance company, can get appropriate funds – both in magnitude and tenure – obviating the need for the bank / traditional HFC, and can adopt (with modification) approaches used by MFIs to lower cost. A number of smaller financial institutions / entrepreneurs have recognised the potential opportunity in this space and have or are in the process of starting companies that will focus on this segment .

Pilots: To prove the feasibility of these models, we are facilitating a series of pilots having 300 to 800

flats each in Ahmedabad, Mumbai and Hyderabad. In each case, Monitor is identifying a developer interested in this opportunity and supporting him through the actual process – getting him customers, getting the customers financed, helping the developer secure construction finance, facilitating development of cost- efficient unit designs and overall complex layouts, etc. One of the developers has constructed a 229 square foot mock flat and the general reaction to the unit has been that (a) "this is much bigger than 229 square feet" and (b) "this is too good to be low income housing". The reason for these reactions is that the unit has been carefully designed (e.g., effective utilisation of space, visually attractive proportions, high ceilings, good ventilation) with a few key amenities leading to a feeling of space and quality while managing costs.

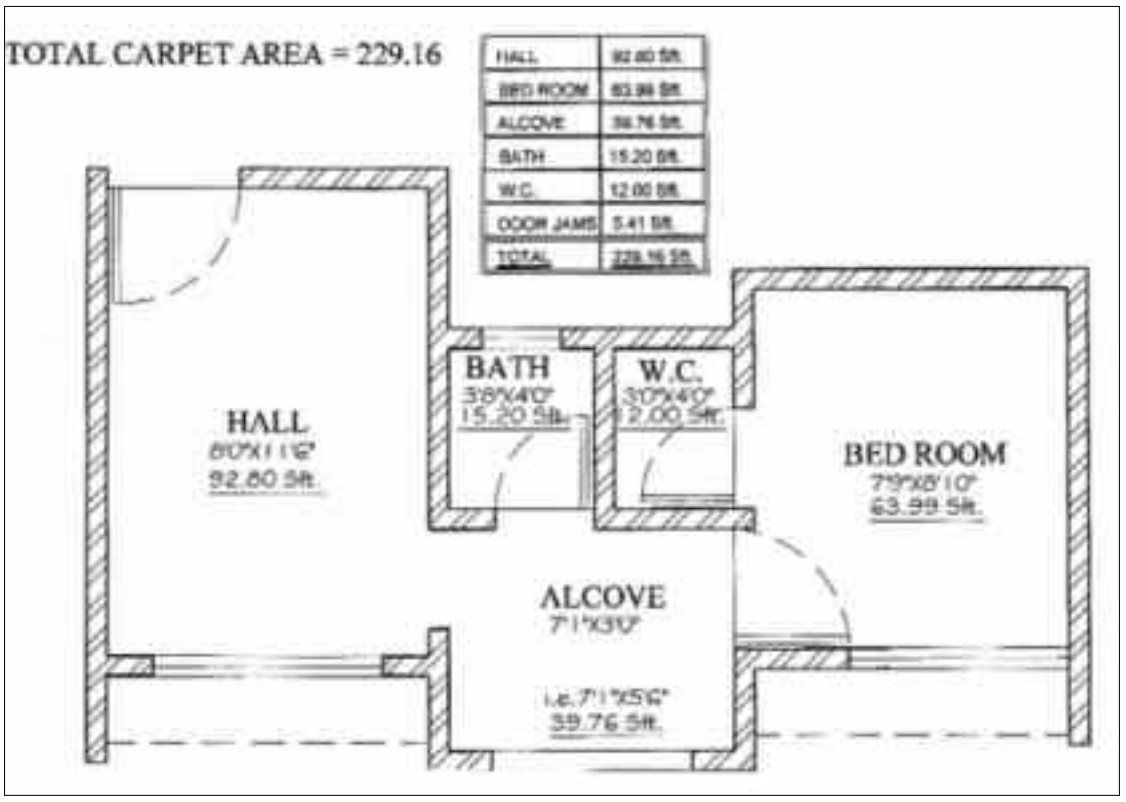
Prashant Choksey exemplifies a forward thinking modern developer. An engineering graduate from the University of Southern California, his entry into the construction business was driven by a combination of economic opportunity and a need for better quality construction, especially in the middle income market. "We have a chemical's business and we know the improvement in quality with just marginal more cost through materials like waterproofing and good site supervision, but this is woefully inadequate today." he says. Choksey Construction is currently building high quality middle income housing and is actively expanding into low income housing.

Taral Bakeri exemplifies a developer who can identify market potential. Hailing from a family that has been synonymous with good quality construction for over 40 years in Ahmedabad, Taral has been running his own unit over the last 12 years. He has been one of the few developers across India who has built and sold close to 2,000 flats of varied sizes with carpet areas as small as 320 sq ft. "Families in the lower income segments in India live in rented houses and see marginal increase in their household incomes. This segment is always looking to own houses that are affordable and there are very few developers who serve this segment," he says. Taral Bakeri is currently executing a project of – 800 flats as small as 210 sq ft carpet area in Ahmedabad and has plans to build – 5,000 flats for the lower income segment over the next three years in and around Ahmedabad.

Economic returns for developers: In addition to demonstrating the overall feasibility of using market based solutions to meet the housing needs of low income households, the pilots are also highlighting the commercial value of the opportunity to developers. The return on investment is in the 50 per cent to 120 per cent range (pre-tax IRR) based on factors like time to get clearances, selling price escalations, etc. The reason the returns are so attractive is because (1) the land cost is low and hence the customers down payment covers all or a large part of it, (2) there is no other large outgo for the developer as construction finance has been arranged and (3) the timeframes are short (as the customers are arranged and financed before the project is even started).

Phased development of the overall business opportunity: About 40 per cent of households earning Rs 5,000 to Rs11,000 per month work with large employers . It is estimated that 70 per cent to 90 per cent of these households live in rented housing or in multi-family units. Given the willingness of employers to facilitate housing and the financial institutions' comfort with this segment, these will

BEST USE OF SPACE



Taral Bakeri has been one of the few developers across India who has built and sold close to 2,000 flats of varied sizes with carpet areas as small as 320 sq ft.

be the easiest customers to start with. Even with a 20 per cent market share in the formal salaried segment of this income band, the business opportunity is Rs 60,000 crore. Serving this segment will lead to a significant supply of appropriately priced and located housing. It is expected that in parallel, given the fact that this is a collateralised loan, financial institutions will get more comfortable lending to the informal sector and this combined with increasing supply could lead to the market serving the entire space of households (organised and unorganised) earning Rs 5,000 to 11,000 per month – an opportunity of over Rs 720,000 crores.

Pure market based solutions may not be able to serve households earning less than Rs 5,000 per month, but it may be possible to facilitate delivery to these segments through a combination of market based solutions, policy initiatives and subsidies – a market of over Rs 320,000 crore.

Government can help facilitate market based housing for lower income households and many such interventions may not have a financial cost: 'Affordable housing for all' is a priority for the Government and market based solutions can help make this a reality. A key long term facilitator is increasing the supply of affordable land. The government may be able to institute policy changes that provide this without any subsidies or financial support (e.g., higher FSI for lower income housing). Financing is also critical and the Reserve Bank of India (RBI) and government can introduce guidelines / incentives – which may be bereft of subsidies / financial support – to get financial institutions to serve this market and compensate for the related entry cost. In the longer term, given the depth of the market and using customised business models such as those tested by Monitor, the profitability of providing scores of small mortgages seems ensured

Opportunity to shape the market: The creation of a new market offers an interesting opportunity to introduce a new set of norms which become the de-facto standard as the market develops. Currently middle income housing in India often has poor quality construction, mediocre living spaces, high long term maintenance costs, etc. Our pilots can address these issues and since new entrants are likely to copy these designs in their entirety, we could influence the market as it develops. Therefore we at Monitor are working on architectural designs, sustainable elements, lowering maintenance costs, etc and are working with developers to include these "good housing" elements in the pilots. We are also working on a consumer education module and we will include all these aspects in our broader dissemination campaign.

Potential to create immense economic and social impact: The financial impact of such market based solutions can be enormous both at the aggregate level (as mentioned earlier, it is a Rs 600,000 crore opportunity for just households earning Rs 5,000 to Rs 11,000) and at the individual level. It will not only financially transform the lives of the customers but also have huge social implications – enhancing quality of life, emotional security of a home and a safety net, etc. It could also have a systemic impact on urban development by providing a potential benchmark for slum rehabilitation and options for housing that in the long term may help in slum prevention

Ashish Karamchandani, Madhavi Soman, Smarinita Shetty, Bala Venkatachalam & Mayank Jain wrote this article on the basis of their research for the Monitor Group.

FOLLOW UN NORMS FOR EVICTIONS

It is the working class which runs the city. Yet the urban poor are being forcibly pushed out to fulfill middle class aspirations of world class cities. ***MILOON KOTHARI AND SHIVANI CHAUDHRY***

LAKSHMAN ANAND

City – a conglomeration of spaces – imagined and real, central and peripheral, friendly and hostile, permanent and transient… And into this web of stratified realities of existence, emerges a dominating power play of misplaced priorities, an ideology of profit that disregards human rights and the basic needs of the majority.

No longer perceived as inclusionary, cities are increasingly being envisioned as 'world class' spaces characterised by glitz, glamour and gentrification. Urban planners focus on the perpetuation of elitist models of urbanisation in which the poor and working class, on whose blood, sweat and toil runs the machinery of the city, are denied their human right to an adequate standard of living, including the right to adequate housing, work, health, water and food.

Large infrastructure projects, mining, dams, natural resource exploitation, rural unemployment, collapse of agriculture, declining wages and loss of means of subsistence, displace millions from rural areas forcing them to move to cities in hope of livelihood and survival. But the hostile city environment and the lack of affordable housing and basic services forces many into slums and highly inadequate and perilous living conditions, often at grave risk to their health and security. The struggle for construction of identity and a life of dignity for the working poor is further imperiled by the systematic destruction of their homes and working spaces.

Forced evictions and displacement from homes and lands is now a global phenomenon which has led to dispossession at an unprecedented level. Forced evictions constitute a gross violation of human rights and indicate a systematic disregard of recognised human rights standards on the part of states. Forced evictions and displacement occur due to different reasons. Many are so-called 'development-based' evictions, which include evictions often planned or conducted with the justification or under the pretext of serving the 'public good,' such as those linked to slum-clearance drives, large-scale infrastructure projects, and land-acquisition measures associated with urban renewal, housing renovation, city beautification, sporting events, highways, shopping malls, forced land acquisition, natural resource exploitation, and most recently, Special Economic Zones (SEZs). Evictions are also on the rise due to the reluctance of states to control speculation in housing and property.

The impact on those affected can often be characterised as a human tragedy. In the wake of forced evictions, people are often left homeless and destitute, without means of earning a livelihood and, in practice, with no effective access to legal or other remedies. Generally, forced evictions affect the poorest, the socially and economically most marginalised sectors of society, and intensify inequality and social conflict, contributing to segregation and the creation of 'apartheid cities'.

Most of these 'development-based' evictions have one or several common features that contravene recognised human rights standards. Lack of prior notice, inadequate or no consultation, absence of information-sharing, no possibility of participation in the decision-making process for those affected, lack of housing alternatives and the use of excessive force to carry out evictions, are disturbing trends.

The eviction of individuals and communities from their homes and habitat, often accompanied by violence, is a phenomenon that has reached an unprecedented scale and continues to accelerate across India. Urban land is increasingly being coveted for profitable ventures at the cost of the lives and livelihoods of the working poor. In many instances these evictions are initiated by state agencies (often in collusion with landowners, land mafia, the corporate sector, and other direct beneficiaries)

Over the last two decades, discrimination and violence against the urban poor has intensified, and disturbingly, even gained legal sanction from the judiciary. Recent judgements of both the Supreme Court and High Courts have overturned a decade of progressive judgements of the eighties by blatantly going against people and denying the

urban poor their basic human rights to adequate housing, freedom of choice of residence, work, health, water, electricity and food.

The failure to ensure the creation of mixed income neighbourhoods and implement reservation of housing for economically weaker sections and low income groups has further exacerbated the affordability crisis. In the absence of public housing, cities are truly becoming exclusive spaces for the rich. In Hyderabad, reservation of five per cent housing for low income groups in the recent Master Plan was challenged by the builders' lobby resulting in the government dismantling the provision entirely, reflecting a clear pro-rich model of city planning.

Evictions have also increased as a consequence of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), that makes aid to state governments for urban development conditional on implementation of measures for opening up and privatising land and housing markets. The total number of families affected by evictions in the 64 cities where JNNURM is currently being implemented, is estimated to be well over one million.

In Delhi, between 2000 and 2006, over 100,000 families were forcibly evicted, the majority without any resettlement provisions. Between January and May 2004, Delhi government authorities displaced 27,000 families from Yamuna Pushta. Mumbai witnessed a massive eviction drive between November 2004 and March 2005, in which the state government destroyed an estimated 92,000 homes in 44 areas. Of the 92,000 families forcefully evicted, the Government of Maharashtra declared only 612 families eligible for rehabilitation, of which only 412 have been actually rehabilitated. A government report prepared by academics at Delhi University has recommended that Delhi's 'beggars' be rounded up by a special police squad and placed in detention centres to make the streets 'cleaner.' Many street vendors, rickshaw pullers and small shopkeepers have also faced eviction from work by way of ceiling orders, new planning norms and zoning laws.

In several cities across India, people living in slums and other informal settlements have been evicted without any due process and relocated to city outskirts. In the majority of cases, evictions generally result in loss of livelihood, especially since most relocation sites are situated on the outskirts of cities and do not provide adequate housing or basic services such as water, transport, electricity, and healthcare. A recent study of the resettlement site of Bawana, located 50 kilometres away from Delhi, found that unemployment rates for women in Bawana are double the figures for Delhi. The location of the resettlement colony on the outermost periphery of the city emerges as a major cause of the new poverty that has been created by the evictions.

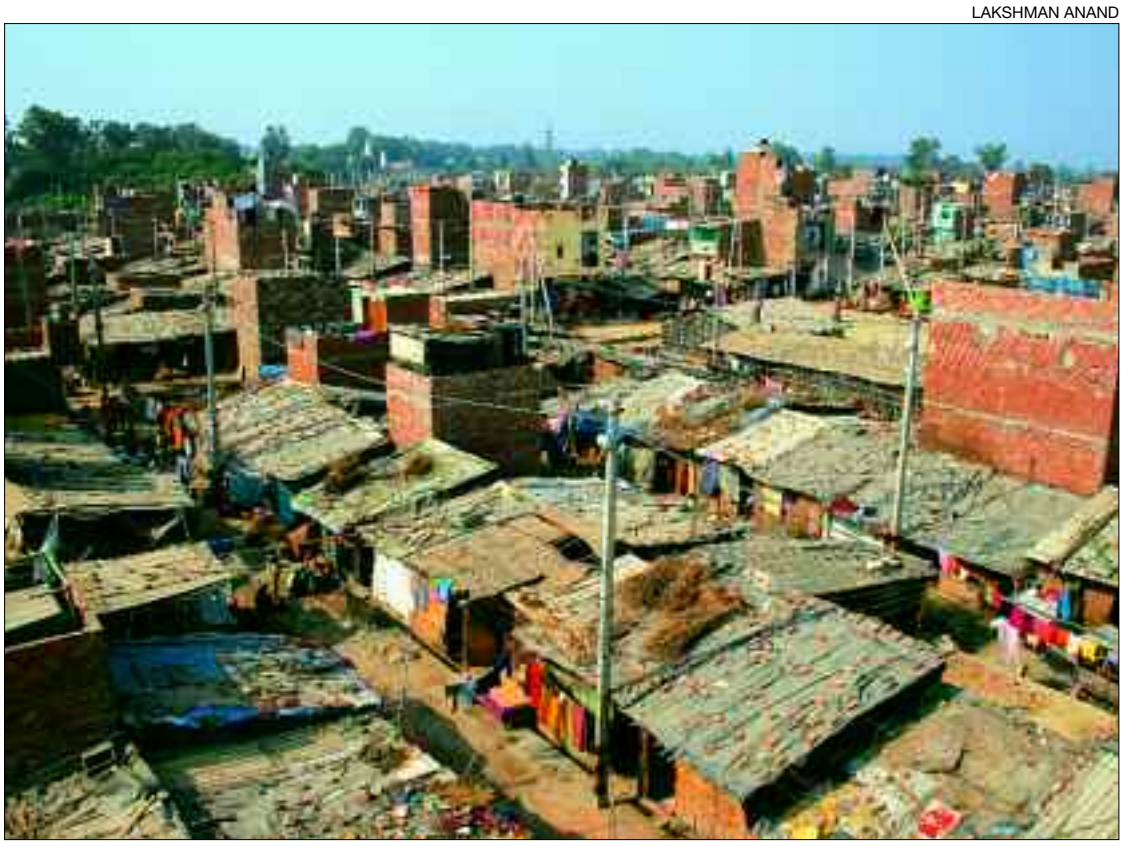
Women are adversely affected by forced evictions and as a consequence not just from loss of home, but also livelihoods, relationships and support systems, breakdown of kinship ties, physical and psychological trauma and even increased morbidity and mortality. Women suffer particularly when forced evictions are accompanied by violence. Evictions also tend to increase the vulnerability of women to further acts of violence. The practice of forced evictions also severely impacts children as it erodes family security, and destroys communities and cultural identities, and often results in loss of education. Reports indicate that dropout rates increase, and the child's means to security and access to food, water and clothing are severed.

Evictions also directly increase homelessness, as the absence of rehabilitation and feasible alternate options for housing, forces many to live on the streets. Street children, in particular, face extreme conditions of violence, abuse, harsh weather conditions, injury, malnutrition, exploitation, and lack of security. Despite the fact that homelessness across India is on the rise, the government has made no official attempt to document the number of homeless people in India. In the capital city of New Delhi alone, at any given point, civil society estimates place the number of homeless at around 100,000, of which 10,000 are women. In spite of this, the city government evicted homeless women from the Palika Hostel women's night shelter in 2004, and in June 2007, closed the only existing women's shelter in the city. Currently, there is no shelter for homeless women in Delhi.

The crisis of inadequate and insecure housing and living conditions reveals an abrogation of the government's national and international obligations to promote and protect human rights.

Faced with this grave situation, the United Nations has attempted to draw the attention of governments worldwide to the scale and severity of the problem. In 1993, the UN Commission on Human Rights declared in a unanimously adopted resolution that forced evictions constitute a 'gross violation of human rights, in particular of the right to adequate housing.'

LAKSHMAN ANAND



UN GUIDELINES

- **To improve practices and policies of all actors responsible for displacement and rehabilitation - local government officials, municipal authorities, corporate sector representatives, law enforcement agencies, including police officials - and to ensure that their operations do not violate any human rights but instead incorporate human rights standards.**
- **To generate awareness among the displaced and those facing threats of displacement as well as civil society groups working on their behalf. When affected people are aware of their human rights and of the responsibilities of governing agencies, they are better equipped to demand their human rights and ensure their implementation.**
- **To monitor governance as well as practices of all involved parties (including the corporate sector, public sector, and government) with the aim of ensuring compliance with national and international law.**
- **To influence law and policy reform - the Guidelines could be incorporated into national laws, policies and administrative decisions related to development, displacement and rehabilitation, to ensure the operationalisation of just practices that uphold human rights of affected people.**
- **To provide guidance to planners - in order to ensure that both urban and rural planning is balanced and based on human rights standards, and incorporates the needs of marginalised sections of society.**

The grave situation of evictions in India is also being continuously monitored by UN bodies. The UN Committee on Economic, Social and Cultural Rights, for example, in its most recent review (2008) of India's human rights record recommended that India "address the acute shortage of affordable housing by adopting a national strategy and a plan of action on adequate housing and by building or providing low-cost rental housing units, especially for the disadvantaged and low income groups, including those living in slums" and to "take immediate measures to effectively enforce laws and regulations prohibiting displacement and forced evictions, and ensure that persons evicted from their homes and lands be provided with adequate compensation and/or offered alternative accommodation,…".

Following the appointment, by the UN Commission on Human Rights, of a Special Rapporteur on adequate housing in 2000, the issue of forced evictions received renewed attention in the form of public statements highlighting specific eviction cases and a rigorous process of standard-setting that culminated in 2007 with the presentation of UN Basic Principles and Guidelines on Development-based Evictions and Displacement.

The Guidelines define forced evictions "as acts and/or omissions involving the coerced or involuntary displacement of individuals, groups and communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating or limiting the ability of an individual, group or community to reside or work in a particular dwelling, residence or location, without the provision of, and access to, appropriate forms of legal or other protection……Evictions must be carried out lawfully, only in exceptional circumstances, and in full accordance with relevant provisions of international human rights and humanitarian law."

These Guidelines attempt to interpret provisions that already exist in international human rights instruments. This interpretation was also inspired by new developments drawn from the work of civil society movements on the right to adequate housing across the world. In particular, the Guidelines:

- Define the practice of forced evictions;
- Lay down stringent criteria under which displacement can occur in "exceptional circumstances", with "full justification" and procedural guarantees;
- Enumerate detailed steps to be taken by States to protect human rights prior to, during, and after evictions;
- Call for comprehensive "eviction-impact assessments" to be carried out prior to displacement;
- Call for provision of compensation, restitution and adequate rehabilitation consistent with human rights standards;
- Provide useful guidance on other phenomena that lead to displacement such as disasters;
- Establish a "right to resettle" consistent with the right to adequate housing for displaced communities living in adverse conditions;
- Call on states, in pursuance of an "immediate obligation" to guarantee security of tenure to all those currently lacking titles to home and land;
- Provide a strong gender perspective, including protection and entitlements to women;
- Protect children's right to adequate housing;
- Emphasise the differential nature of impacts of evictions on marginalised groups and communities, including persons with disabilities, minorities, historically discriminated groups and older persons, and call for the protection of their human rights;
- Call for protection of related human rights to livelihood, land, food, health, and education;
- Stress the obligations of non-State actors; and,
- Call for States to take intervening measures to ensure that market forces do not increase the vulnerability of low income and marginalised groups to forced eviction.

The Guidelines aim to minimise displacement and call for sustainable alternatives, wherever possible. In the event that displacement is inevitable, the Guidelines lay down certain non-negotiable human rights standards that must be respected and upheld in all circumstances. The guidelines could serve a range of purposes. (see box).

The government must undertake measures to minimise evictions and opt for non-displacing options, as far as possible. Development and urban planning processes need to be re-evaluated in order to prioritise the needs and rights of the working poor, especially in the context of housing, health, and livelihoods.

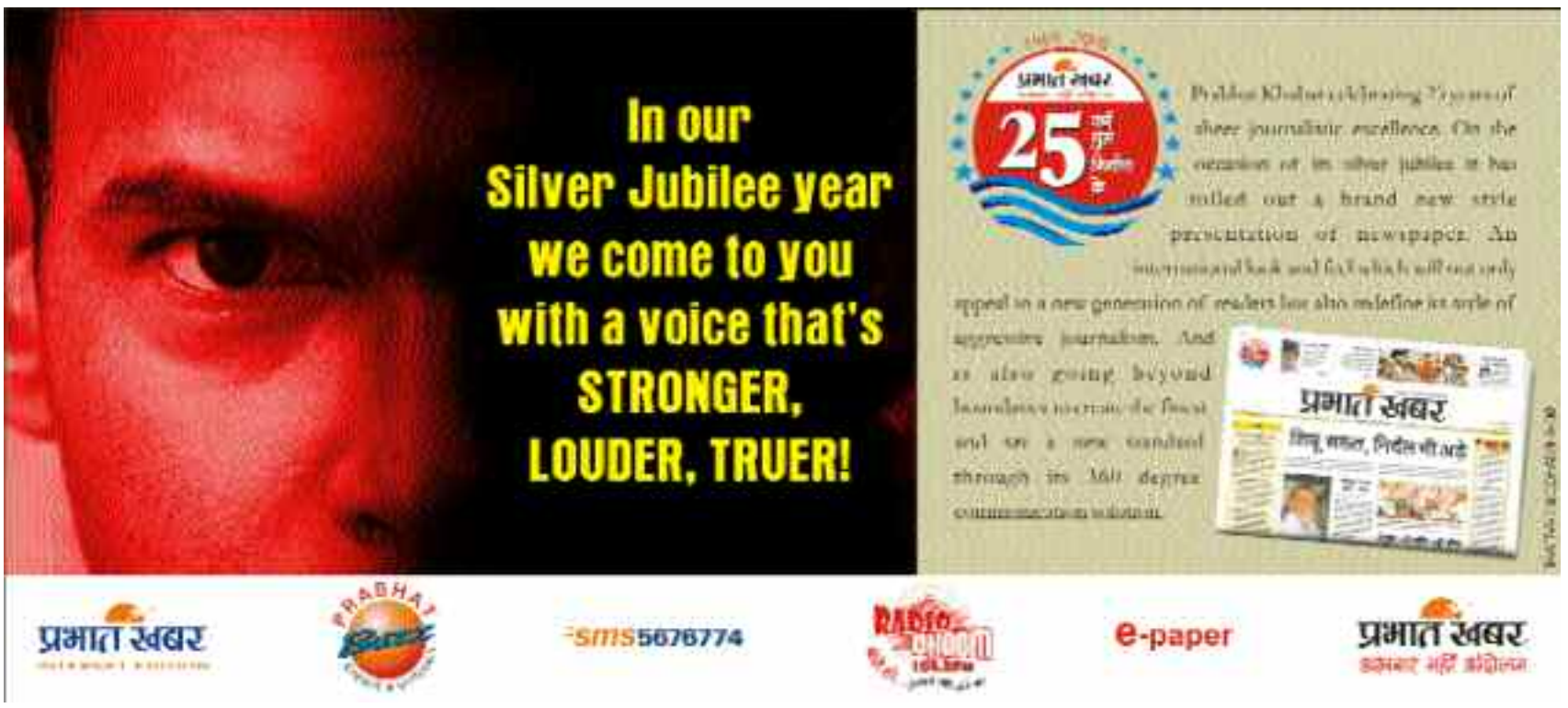
The rights to adequate housing, land, consultation and participation, and adequate rehabilitation, must be upheld as human rights in all national laws and policies. In particular, the National Rehabilitation and Resettlement Policy 2007 and the draft National Urban Housing and Habitat Policy 2007 must be based on and be consistent with both international human rights principles and constitutional obligations.

Adequate reservations for housing for low income groups must be mandatory in all master plans and other development plans and must be effectively implemented. The Land Acquisition (Amendment) Bill 2007 should be revised or dismissed. Instead, the Land Acquisition Act, 1894, should be replaced with a new comprehensive human rights based legislation, which must, among other things, clearly specify the definition of "public purpose," incorporate democratic processes and institutions, and aim to minimise displacement and takeover of people's land and resources.

All laws and policies must incorporate the non-negotiable principles of gender equality, non-discrimination, indivisibility of human rights and prior informed consent. India should adhere to its national and international legal obligations and ensure compliance with human rights.

It is only through diligent reflection and substantial overhaul of existing negative practices and norms that equitable, integrated and inclusive cities can be created.

Miloon Kothari is the former Special Rapporteur on adequate housing with the UN Human Rights Council and currently the Coordinator of Housing and Land Rights Network - South Asia Regional Programme. Shivani Chaudhry is the Associate Coordinator of Housing and Land Rights Network - South Asia Regional Programme (www.hic-sarp.org).



5th Anniversary

TECH LEAP: DIGITAL MANTRA

Technology has a role to play in improving urban lives. The problems are similar in developing countries and the list of technological solutions is also similar. ***KARAN BAJWA***

Workplaces make us forget where we are. Be it India, Europe or the US, they all look the same inside equipped with the latest technology, broadband connectivity and uninterrupted power supply facilitating a carefully controlled environment inside.

Our homes too are like oases running the latest gizmos backed with 24X7 power back up making us forget the problems outside.

But what about my city? It is reeling under problems of inadequate infrastructure, haphazard urban development and short-sighted design. The administration is strait-jacketed with legacy systems that are completely out of sync with the growing demands of urbanisation.

Given current trends and looking ahead some 10 years one can make some basic assumptions of infrastructure and technology to set the platform for envisioning a city of the future. These include:

- A ubiquitous communication pipe that serves high bandwidth Internet, telephony and other network-based services.
- Availability of reliable power and green energy sources.
- Availability of basic amenities such as clean water, food supply/processing/storage, roads, ports, etc.
- Efficient public transport and hybrid fuel systems for running our cities.
- Unlimited computing power (quantized, not continuous) at no cost (or negligible cost).
- Speech synthesis, speech recognition, gesture/face recognition.
- Specialised robots (used for a single purpose as opposed to general purpose robots) mainstream and general purpose robots are widely available in homes and offices for a variety of tasks.
- Availability of governmental policies and frameworks to enable and ensure the ubiquitous use of technology services.
- Availability of technologies such as biometric scanning, face and speech recognition systems

One of the key pillars of this city is timely information gathering and dissemination enabled by technology. This enables most problems to be solved before they escalate.

Information about infrastructural problems can be routed via dedicated channels (telephone, Internet, etc.) and the information can be sent to the right departments to act upon. A lot of information workflows can be automated. For instance, digital sensors can provide information when there is a power outage or there is a disturbance in basic needs such as water. This can then automatically trigger fault-response systems or can provide intimation to the right people for manual intervention. Information is also key in forecasting and facility planning, enabling preventive action rather than reaction. Therefore, the government is able to forecast growth in population in cities which helps in better planning for expansion and capacity planning while building public amenities.

Centralised and localised services would gather and contain all information pertaining to citizens providing access and interconnectivity whenever needed.

- Mundane tasks like tax filing, property transactions, government approvals, etc. can be automated because of centralised information repositories.
- Local information pertaining to scheduled outages, traffic information, etc. will be available through various information channels – reaching out to devices in people's homes, cars, workplaces – reducing public inconvenience
- Existing information channels will be greatly enhanced to be more ubiquitous and seamless.
- Scenarios here are how news can be orchestrated beyond the newspaper and television news channels and can reach people when and where they want it. Also, information can be personalised and made more relevant, hence helping people to see and hear exactly what they want as well.

A citizen identity system in a centralised and interlinked repository will enable smooth governance and linking multiple information systems. This would be the next level of digitised Social Security Number or Voter ID card system.

The government will be able to take effective, informed decisions because of the information flow at all levels.

The law enforcement agencies would work more on prevention and be ready for instant reaction where required. The judiciary will benefit from multiple sources of information, being able to process cases with great speed. Judicial laws and references can be automatically sifted through enabling faster decision-making. City mayors and ward representatives can interact with citizens through kiosks or through digital conferencing, being able to take in feedback at any time and work on the same. Any action on feedback will be propagated back to the citizens with complete transparency of information.

Governmental services will be available through digital interface systems, requiring very little manual intervention, hence speeding the process and increasing efficiency. For example: Passport digitisation and automation of processes around issuance, renewal, expiry, services, etc.

Schools can be virtual (or part-virtual) enabling a much more vibrant education system, educating children with skills and knowledge from other parts of the world, having interactions with various different people or cultures. Virtual classrooms can take over the need for special interests that children might have to hone their skills in a particular area of interest beyond regular education. More effective collaboration between students can enrich the experience of learning or doing homework. After a particular age, schooling (or more likely college) could be completely virtual — providing deep expertise in subjects which would otherwise require travel, staying away from home, etc.

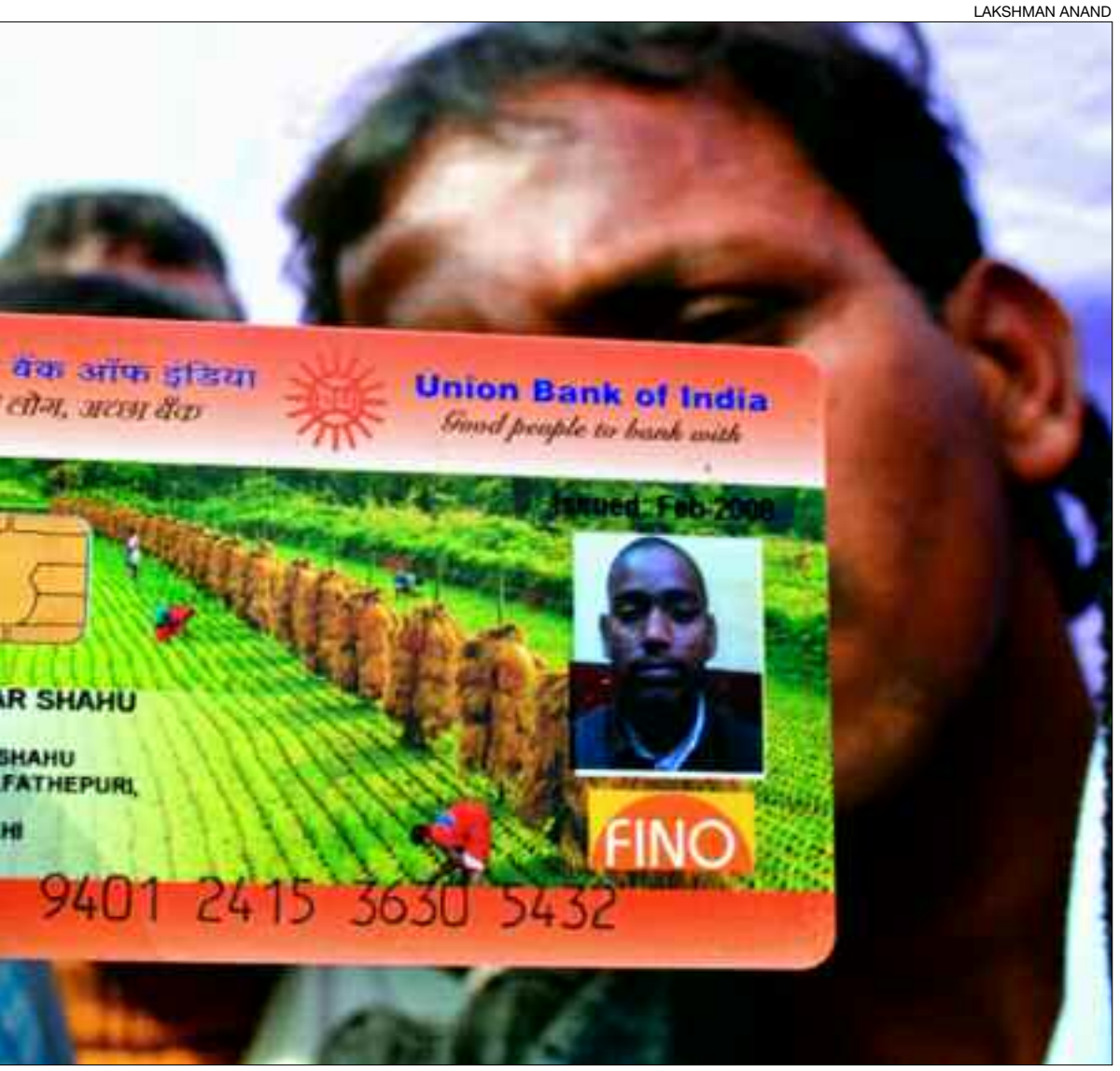
Virtual workplaces at home or at offices could help people collaborate better, have an environment that allows them to execute work much faster and more efficiently and reduce a lot of mundane travel.

Uplift of the bottom of the pyramid with technology is probably where the real value of technology in improving human life lies.

For instance, using robots to replace menial tasks such as sewage management, waste management, etc. can contribute to a better life and job for the people in cities that do these tasks today. The people at the bottom of the pyramid can be uplifted to a higher class of supervisory jobs. An example is fixing a leak in an underground pipe system. This can be efficiently done by a robot that can travel through the pipe system without having to dig up roads! But the robot will need manual help in actually detecting and doing the right remedy and these are the kind of

FOR URBAN KARMA

LAKSHMAN ANAND



tasks that people at the bottom of the pyramid can elevate themselves to.

Every technology enabled city of the future can help contribute to mitigating global warming. Also, disaster management during natural calamities is something cities can plan for and combat with technology.

City-wide systems for energy efficiency can be incorporated with a ubiquitous connected network where a large network of sensors provides inputs to computer systems that can either regulate (or alert) energy consumption.

Some architects have translated their imagination into blueprints. Let's take a look at some exciting dream projects that could soon see the light of day.

There is the Sky City 1000 concept consisting of a building about 3,280 feet tall and 1,312 feet wide at the base, with a total floor area of 1,976.8 acres. Proposed in 1989 by Takenaka, the design provides for 35,000 full-time residents and 100,000 workers in 14 concave dish-shaped 'Space Plateaus' stacked one upon the other, containing residences, offices, commercial facilities, schools, theatres and other modern amenities. The Tokyo Metropolitan Government and some of Japan's largest corporations are reportedly seeking to build this behemoth within a decade.

The X-Seed 4000 is the tallest building contemplated to date. Its proposed 13,123 feet height, 19,685 feet wide sea-base and 800 floor capacity could purportedly accommodate as many as one million inhabitants. Designed for Tokyo by the Taisei in 1995, the Mount Fuji-shaped structure would actively protect its occupants from considerable air pressure gradations and weather fluctuations along its massive elevation and use solar power to maintain internal environmental conditions. In comparison, the real Mount Fuji is 12,467-feet high, nearly 700 feet shorter than X-Seed 4000. The projected cost of this structure is between $300 billion and $900 billion.

Some of these dreams are beginning to flirt with reality. One such case in point is Dongtan, which had caught the eye of the United Nations World Urban Forum. Touted as a gleaming example of an eco-city, it is scheduled to open in 2010 on the island of Chongming near Shanghai, China. It will eventually house a population of 500,000 and will only allow vehicles powered by electricity or hydrogen. It is the first of four planned cities to be built in China and has been met with mixed hopes. Some herald its completely green approach while others say it will make little impact on the huge city population in China.

Dongtan is located on the third largest island in China at the mouth of the Yangtze River. The 8,600 hectare site is adjacent to a wetland of global importance. The urban area will occupy just one-third of the site with the remaining land retained for agriculture and used to create a buffer zone of 'managed' wetland between the city and the 'natural' wetland.

Dongtan will produce its own energy from wind, solar, bio-fuel and recycled city waste. Clean technologies such as hydrogen fuel cells will power public transport. A network of cycle lanes and footpaths will help the city achieve close to zero vehicle emissions. Farmland within the Dongtan site will use organic farming methods to grow food. Dongtan will be a city of three villages, with the demonstrator phase for up to 10,000 people completed by 2010.

Arcosanti, in the high desert of central Arizona near Cordes Junction and Phoenix, is designed according to the concept of arcology (architecture + ecology), developed by Italian architect Paolo Soleri. In arcology, the built and the living interact as organisms would in a highly evolved being. This means many systems work together, with efficient circulation of people and resources, multi-use buildings, and solar orientation for lighting, heating and cooling.

Arcosanti is a prototype that will house 5,000 people when complete. In this complex environment, apartments of which no two are alike, businesses, production, technology, open space, studios, educational and cultural events are all accessible, even while privacy is paramount in the overall design. Its large, compact structures and large-scale solar greenhouses will occupy only 25 acres of a 4,060-acre land preserve, keeping the natural countryside near urbanites.

At its present stage of construction, Arcosanti consists of a dozen mixed-use buildings that house 60 to 80 residents, who are workshop alumni, and work in planning, construction, landscaping, maintenance, cooking, carpentry, metal work, ceramics, gardening, communications and administration. They produce the world-famous Soleri Bells, and are visited by 50,000 tourists every year.

The city of the future may seem like an elusive dream to many. Microsoft began with the dream of a PC on every desk and in every home. Thirty years ago, this seemed impossible. Today, for the more than one billion people we've reached, life has changed profoundly. Information is more readily available, connections are more easily made, commerce is more quickly achieved, and success is closer than ever.

And yet there are miles to go…for more than five billion people, the opportunity to learn, connect, create, and succeed remains elusive. With Microsoft Unlimited Potential™, we are committed to helping all people benefit from information and communications technology (ICT) that is accessible, affordable, and relevant to their needs.

By partnering with governments, partners, and nongovernmental organisations (NGOs), educators, and academics, we're taking an innovative approach to enabling new avenues of social and economic empowerment for the underserved populations of the world.

It is believed that where there is an optimist there is hope. And where there is hope there will always be a way. It is necessary to first believe in the city of the future for then we will surely find our way to it.

Karan Bajwa is Director, Public Sector, Microsoft India.

GET READY TO FOOT THE BILL

Governance is proceeding at breakneck speed to commercialise all facets of the city. If this trend continues even the middle class will start feeling the pinch. ***DUNU ROY***

Cities were once regarded as the 'engines of growth' that drove the national economy. They were the great centres of manufacturing and trade where goods were produced large scale and exchanged for other commodities, where export and import found a focus, and where labour was transformed into value. This, therefore, entailed the migration of labourers into cities, the concomitant provisioning of water and electricity and sewerage, the development of mixed housing colonies where princes and paupers could live, and the organisation of transport and communications across the urban settlement. This is how all our great cities developed, be it Mumbai or Kolkata, Kanpur or Coimbatore, Batala or Jamshedpur. And there were corresponding mechanisms for governing these cities in the form of Presidencies and Agencies, Municipalities and Town Planning Authorities, Boards and Councils.

There appear to have been three remarkable changes in most Indian cities, post 1990s. First, the older manufacturing areas of textile mills, chemicals, heavy industry, leather goods, spare parts, or handicrafts have either been closed down or become derelict, as have the hubs of wholesale trade and commerce. Their place has been taken by enterprises dealing with electronics and information technology, design centres and assembly units, showrooms and banquet halls. In other words, manufacturing units have been steadily replaced by service enterprises. This has resulted in the substitution of organised labour by a range of unorganised, informal, and contractual forms of work, which are more insecure both in terms of availability as well as regularity of work. Thirdly, activities which once required large labour pools have become mechanised on such a large scale that employment has dramatically fallen in those sectors.

This has also given birth to a new imagery for city administrations. Now they want to create 'world-class' cities – whatever that means. Hyderabad's plans say it wants to move from traditional manufacturing to an information-based economy. Chennai, dissatisfied with heavy industry, looks forward eagerly to 'new-economy' units. In Ahmedabad, the tertiary sector of business, commerce, transportation, and communication is rapidly gaining share. Pune sees itself encouraging new investment in the auto as well as the IT sectors. Iconic Chandigarh wants to promote the 'knowledge sector and tourism', as does Jaipur. Lucknow, Indore and Raipur. Even little Guwahati perceives the IT sector as occupying 'a key position in our modern age'. City administrators, enraptured with Shanghai and Singapore, are now further dazzled with the Olympics in Beijing.

But all this demands a change in the manner in which cities are planned, governed, and regulated. A good example of the nature of this change comes from the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), which covers 63 million-plus cities for seven years with a purported budget of over Rs150,000 crores. But, since core funding of $6.4 billion (about Rs 30,000 crores) comes from the Asian Development Bank, there is a requirement that there be a set of 'reforms' before the money can be doled out. The Urban Land Ceiling Act has to be repealed, the Rent Control Act and property taxes have to be reformed, ownership records computerised, and the process of converting land from one use to another made simpler. There have to be corresponding changes in governance with double entry accounting systems and e-governance, user charges to be levied for every service, and private-public partnerships.

What all this gobbledygook really means is that city administrations will increasingly be controlled by large owners of property, including builders, construction companies, real estate developers and utility corporations, with fairly steep increases in the prices of all services to be paid by the consumer. Not only will housing become costlier, but so will electricity and water, transportation and education, health and food – as already seen in all cities where basic services have been privatised. The citizen too will no longer have any real rights unless he or she can prove to be an owner of property or a payer of taxes – which would leave out more than half the population in most cities. A corollary is that such a citizen can participate in e-governance or obtain information only if he or she has access to the infrastructure associated with information technology, including computers, telephone lines, credit cards, and the ability to pay for all of them.

Is all this possible? The structure of the JNNURM – which, incidentally, has not been discussed in Parliament – is that there is a National Steering Group for formulating policy, while there are two Sanctioning and Monitoring Committees and two Mission Directorates in two separate Ministries, with similar bodies at the State level. Each of these bodies is packed with senior bureaucrats and technocrats, with the exception of two Ministers of State in the National Steering Group. The Technical Advisory Group that provides key inputs into policy-making is composed of five individuals from 'NGOs', carefully chosen for being sympathetic to market-friendly policies pushed by the World Bank and International Monetary Fund. And all city plans have to be rapidly made by a consultant selected from a given list of 36 empanelled firms, most of whom have a background in leasing and finance. Few have done urban planning before, but all are firmly in favour of privatisation of land, property, and services.

In this manner, governance has already been transferred from elected representatives to non-accountable consultants and specially set up authorities and institutions. Most municipalities do not even know about city plans until they are prepared and approved. Elected councillors are often told about large amounts of funds coming from the Centre but not about the debt and financial implications for the city under the legal agreement that is signed between the Centre, State, and the Municipality.

Even here, they don't realise that only about half the money is contributed by the Union Government, the remainder has to be raised from the market – meaning once again, those very same corporations that have diversified from finance into infrastructure and construction and who thus, in various guises, not only provide the loans, but also make the plans,

FOR MAKEOVERS

Photograph: LAKSHMAN ANAND

Resettlement colonies have not worked

bid for the contracts, and then benefit from the return of the loans with interest!

The JNNURM does not stand alone. It is firmly knit into the overall structure of the Tenth Five Year Plan which orchestrates housing, transport, slum development, environment improvement, structural reforms, and public-private partnerships into commercial profits. Thus, when slums along a river are removed or factories in mid-town regions are closed down, or the metro rail pierces through the heart of prime downtown regions in the name of 'cleanliness' and 'efficiency', it actually conceals a massive transfer of public land to builders and real estate agencies and construction companies.

Around 85 per cent of funds sanctioned under JNNURM are for water supply, sewerage, roads, flyovers, and drainage to be built by private companies in Maharashtra, Andhra, and Gujarat alone. The admission that leveraging of "market funds did not materialise", reveals that the private agencies have cut an even more profitable deal than was expected and ordinary citizens will have to bear the losses!

The citizen will no longer have any real rights unless he or she can prove to be an owner of property or a payer of taxes, which would leave out more than half the urban population.

Such dismantling of the essential democratic fabric could not have been possible without the complicity of other institutions of governance — the judiciary and the media. Over 20 years ago, the Supreme Court had opined in the famous Bombay Pavement Dweller's case that the citizen, particularly the working poor, had a Right to Life under the Constitution and that this included the Right to Livelihood. But since the 1990s the Courts have beat a hasty retreat from notions of justice and equality. In case after case judges have observed that settlements of the urban poor are the 'breeding ground of so many ills'; they 'create hindrance to the smooth flow of commuters'; they are 'encroachers' and 'unscrupulous elements in the society', 'land grabbers' and 'pickpockets' and 'polluters'; and, most frighteningly, they could even 'come to the Supreme Court and settle here claiming a right'. In promoting this kind of disenfranchisement of the poorer citizen, the courts have bowed to the demands of the consumerist elite and listened to the flawed professional advice tendered by bureaucrats and technocrats.

The media, of course, has completely ignored or misrepresented this kind of authoritarianism. Most national newspapers are themselves promoting 'lifestyle' reporting. In one case, where a bus-based public transport was being put in place to provide relief to 82 per cent of road users, three newspapers ran a concerted campaign for three months with dedicated correspondents. As a citizen's complaint to the Press Council of India noted, 93 per cent of the headlines indicated a negative view of the project calling it a 'killer', a 'mess', a 'nightmare', and so on. While referring to 'popular anger', 'popular rage' and 'public flak', the stories actually interviewed only motorists and scooterists.

This despite the fact that a photograph clearly showed 32 per cent of the vehicles on the road were cars, 47 per cent were two wheelers, and 19 per cent were three-wheelers. The buses which were only two per cent, carried more passengers than the rest, and there were more cyclists and pedestrians than cars. Yet, the Council ignored the complaint by taking cover under Section 14(1) of the Act that gives the Chairman unbridled discretionary authority to do so.

Governance in cities is, therefore, clearly proceeding at breakneck speed in unashamedly commercialising all facets of the city for the purpose of benefiting large holders of land, property, and capital. Those at the lower end of the socio-economic scale are being thrown out not only from the meagre shelters they occupy, but also from their livelihoods and their identity as citizens.

The middle class is being sold the fable of 9 per cent growth and the multitude of riches waiting for them in malls, banks, television shows, multiplexes and corporate offices. But as time passes, it may begin to dawn on many of them that 'world class' goodies come with world class prices, and somebody eventually has to pay for them.

Reality has a curious way of asserting itself– 12 per cent inflation; at par with sub-Saharan Africa on the Human Development Index; as much as half the urban population in slums; crime and fear haunting every neighbourhood; and corruption and black money running rampant through the veins of society: is this the world we dream of?

Dunu Roy is with the Hazards Centre, New Delhi

BICYCLE IS THE NEW STYLE

More and more European cities are taking to the bicycle. The trend probably started in Paris when its Mayor launched the Velib bicycles with tracking devices and parking slots. ***RIAZ QUADIR***

Europeans have always been proud of their cities. There has never been any question of abandoning the urban life in favour of suburbia. Instead, suburbs became home to the human jettison: migrant workers and their families in countries like Germany, France and Italy. So the car, unlike in the US, was part of a totally different ethos here.

In the early 80's in Philadelphia when I saw the cleaning woman arrive in mile-long Chevrolet that wouldn't fit into an average Japanese street, I was surprised. I was equally surprised when I was driven in a tiny Peugeot 101 by its owner to spend the night in his fabulous Chateau in Lyon - also in the 80's. The Peugeot 101 is the French equivalent of a Fiat 500, a car which an American wouldn't want to be seen dead in. No less surprising was the sight of a senior company manager coming to work on his motorcycle in 2008 in France.

Globalisation, which in large part has been globalising the American Dream, has changed all that. For decades Europeans were subjected to the same assaults by car makers and pressures on their governments to ease whatever restrictions there were on them. Fortunately, the resistance has been strong and effective, helped largely by the fact that the car has been identified as the primary culprit for carbon emissions.

As inhabitants of Cairo, Delhi, Bangkok, Los Angeles, London, Sao Paulo and many other mega cities know, congestion and the sheer numbers of vehicles on the road can make a simple journey not only a nightmare but at times impossible. City planners have been at their wits end finding solutions to traffic snarls. Widening of roads, adding lanes, flyovers, multiple flyovers, tunnels and bridges have been unable to keep up with the increasing number of cars that each of the cities encounter every year. The optimum numbers have been crossed.

Some cities like London (and earlier, New York) decided to impose a toll to enter the city. This may prevent the salaried on a tight budget but not the business class who account for it as an added cost. Beijing, like several other cities, has chosen Monday for odd numbered licence plates and Tuesday for the even numbered solution. It instantly halves the number of vehicles in the city.

Paris' colourful Mayor, Betrand Delanoe, has chosen a typically creative French solution: Bicycles! Bicycles are provided by the city, since July 15, 2007. The bicycles named 'Velo Liberte' meaning Freedom and Bicycle, are endearingly called Velib. The French, as a people have to their own great surprise been voted the most 'sportif' of European nations. And the world knows of the French passion for cycling. So it was a no-brainer for Delanoe to find his solution by providing 'free' bikes for city-wide commuting.

The system is quite simple once you have understood it. The city ordered specially designed sturdy, three-speed, grey bikes used in Paris (costing around $2,000 each); safe, moulded against disassembling and theft. The bikes are embedded with electronic tracking devices, and a computerised system monitors the inventory at each station. Powerful halogen lights allow for night travel and a sizeable basket for your bags or shopping. Specially moulded parking stands in lots of 15 to 50 have been created all across the city.

The bikes are hooked into stands and can be withdrawn only by a validated card that is inserted into a slot. Each lot (called a station) has a validating meter. You need to register into the system which provides you with a card once it has all the requisite personal information. You may 'rent' a Velib from any one of these parking lots and once you are done, deposit it at any one of the parking lots with an available stand, making one way travel possible.

The bikes are hooked into stands and can be withdrawn only by a validated card that is inserted into a slot. Each lot (called a station) has a validating meter.

But the real beauty of the system is it is free for the first 30 minutes. So, you could in theory, take a bike, deposit it before the 30 minutes are up and take another one and deposit it again before the 30 minutes are up ad infinitum— or at least relay around the city. That's exactly what most young students and people on a budget do. Even if you keep it for over 30 minutes the rent is nominal for the first hour (one Euro). After which it increases exponentially. The idea being short duration, sharing....

The statistics so far are very impressive. The project was launched with 10,648 'bicyclettes' and 750 stations. By year-end they had 20,600 Velibs on the road and 1,451 stations. The target is 50,000 bikes and 200,000 regular users. Barcelona had 80,000 members in four months.

Even though Delanoe with his typical Parisian panache has made the Velib an instant celebrity, the concept was actually created by a French company called JC Decaux, following in the footsteps of an American, yes, you read correctly, American, company called Clear Channel. It was called Cyclocity and was first launched as a trial project in end 2002 in Vienna, Austria, where it was called 'CitybikeWien' after a pilot project in Clef de Saint-Pierre in June 2002. Previously, a similar concept was attempted in La Rochelle and Rennes in France and in Copenhagen in Denmark.

In May 2003 projects in Vienna, Cordoba and Gijon (in Spain) went live. In 2005, Lyon in France launched a similar project. Following its grand opening in Paris dozens of French towns like Marseille, Besancion, Mulhouse, Toulouse, Rouen, Nantes, Amiens, have followed suit. Internationally, Luxemburg, Seville and Barcelona

STATEMENT IN EUROPE, US

AFP

are on board to be followed this year by Dublin, Ireland and Melbourne, Australia. Similar projects (not run by JC Decaux) already exist in Denmark (Bycyklen) and Sweden (Smartbike).

In Germany they have 'Call a Bike' and 'Nextbike' covering most of the major cities like Berlin, Cologne, Dresden, Frankfurt and Munich. 'Bicing' run by Clear Channel covers Barcelona while 'HKL Citybike' covers Helsinki, Finland. In Italy, over 50 cities and towns are covered by 'Centroinbici' and 'Bicincitta'. Similarly, Norway is covered by 'Bysykkel' and the Netherlands has 'OV-fiets' with 120 stations. Portugal has 'BUGA'. Even the UK has 'OYBike' offering some kind of rent-a-bike service.

After doing the rounds of the European continent, Clear Channel with its 'Smartbikes' and its track record of success, has finally arrived in Washington. Since March this year one can actually become a member of the Smartbike system online for $40. Sure you have only 10 stations with a mere 100 bicycles in downtown DC but considering that less than one per cent of Americans make any kind of trip on a bike, compared to 30 per cent for Netherlands and 20 per cent for Denmark, this is a beginning. The media gave the launch enough coverage.

Hopefully, Americans will see the immense difference it could make to their lifestyles if they took to it. Around 40 per cent of people in Zurich use public transport as compared to the average of three per cent in American cities. San Francisco, with slightly larger numbers, is Clear Channel's next destination.

Across the border, Montreal has more ambitious goals of 300 stations and over 2,500 bikes. If green thinking is becoming fashionable then surely this could be the way to not just better ecological living but to better health for those who rent the bikes.

India and China, hosting a third of the planet's inhabitants, should not go copy the route taken by the developed world. Instead of proliferating cars on roads, encourage healthier, cheaper and safer solutions such as bicycles and other means of public transport.

IMPORTANT TO DRAW THE LINE WITH WASTE

Traditional norms are very relevant for waste management. Reduce, reuse and creatively include waste collectors instead of opting for capital intensive projects. ***RAVI AGARWAL***

Waste is exploding in India. As more and more people begin to live in cities and consumption increases, waste streams too grow exponentially. The big metros are expanding rapidly, while small towns are burgeoning into minor cities. What was two decades ago mostly food waste now contains electronic waste, construction waste, plastics, metals, medical waste and industrial waste all mixed like a toxic cocktail. Most of this waste lands up in dumps often situated in low-lying areas which were previously water bodies.

Pigs, cows and waste pickers rummage through mounds of garbage at street corners. Post monsoon, most of our green cities are subsumed by fallen leaves and cut grass which are then piled up and burnt, the sooty smoke ascending and descending all around.

Household hazardous waste also abounds. Batteries, old pesticide cans, mercury thermometers, used syringes, florescent lamps all find their way into the waste bin. At the other end, small and tiny recycling operations hidden behind high brick walls melt the plastic, rubber and metal, emitting noxious pollutants into the air. At other places old computers are broken down, their parts melted by strong acids or burnt to recover valuable materials. At best waste is 'dirty' business!

Simultaneously the powerful international waste industry is offering state of the art waste processing facilities on condition that it gets access to local and imported waste, even though all they have to show are a string of technology failures.

Municipalities have failed to implement even simple systems, leave alone complicated ones. While expert consultants and the promise of new funds are seducing city governments with high tech investments and sophisticated jargon, what this simple concoction of materials called waste probably needs is better planning, more public participation, sensible investments and common sense.

It is simply not enough to 'sweep' waste out of sight, to make some neighbourhoods appear deceptively clean. Waste management needs a systematic approach involving reduction, collection, safe treatment, recycling and disposal, something which has been beyond the scope of our municipalities.

Waste has a significant consequence especially on health. Waste becomes a concentrated repository of all that is undesirable. Festering waste breeds vectors. Old discarded tyres hide water which breeds mosquitoes. Waste can contain very toxic compounds and heavy metals. It can produce greenhouse gases like methane and highly toxic gases like dioxins when burnt. Mercury from broken thermometers evaporates into the air and then settles back on water and grass and comes back to us through milk and fish. In the US alone over 40 per cent of the lead in landfills is from electronic waste. Several hundred thousand waste pickers live off discarded waste in our cities. This is the only job they can find, mostly. They seriously compromise their health by injuries and exposures to hazardous materials. They are forced to choose between health and livelihood. Waste is a major contributor to the increasing toxicity of the environment and reducing this risk has to be the prime motive of any 'waste manager.'

Currently, we generate over 45 million tonnes (mt) of municipal waste each year which is expected to cross 65 mt by 2010. Of this over 15 per cent is plastic waste while a major portion is construction malba. E- waste is at 3.3 mt. while hazardous waste pegs at 7-8 million tonnes. All this at a per capita income of just around $ 400 per year.

The rich are responsible for the most generation of waste. A household which earns about Rs 3,000 per month typically generates less than 150 gm of kitchen waste per day, while one which earns over Rs 10,000 per month, could generate over 800 gms per day.

If you also consider that computer density of about 65 per thousand will be in the middle and rich classes and that over two billion plastic bottles are used by consumers of mineral water and soft drinks, the class character of waste generation becomes evident. Not only do those who earn more generate more waste, but the industrial activity which benefits this class the most, contributes to waste generation.

On the other hand, landfills are sited on the cheapest land available and so is the location of recycling and waste treatment facilities. The poor obviously generate the least amount of waste but feel its impacts the most.

Waste is now promoted as a business in internationally sponsored workshops and seminars, though such a business hides a host of public subsidies.

MURKY TRADE IN WASTE: It is not by chance that India is a major recipient of waste internationally. Labour is cheap and recovery of materials from waste, relatively inexpensive. Plastics, electronics, even medical waste has been found to be imported into India, legally or illegally. Customs documents are misclassified to hoodwink port authorities and their port of origin fabricated to make them impossible to track.

Several studies and court submissions have revealed the tip of the iceberg. In specific instances, waste oil, asbestos laden steel, lead waste have been stopped by court orders. In Export Promotion Zones (EPZ) waste is imported, reprocessed and the materials recovered sent back. However, what remains is the waste or hazard which no one wants and remains on our shores.

Recent conservative estimates peg e-waste imports to exceed 50,000 mt annually. The dynamics of cheap labour and easy entry also guide the logic of India being a major ship-breaking country. In fact these activities are justified internationally by the excuse that 'cheap' labour is available, even though at home little is done to protect labour conditions.

It is now history that India along with G- 77 countries was one of the key nations that demanded under the Basel Convention that developed countries stop dumping waste in developing countries. Today, the situation has reversed. India openly argues for waste imports and sees this as an opportunity to be a waste processing country globally even though locally produced waste is left uncollected and continues to pollute local environments.

THE BUSINESS OF WASTE: The language around 'waste' has changed radically in the recent past. Waste is now promoted as a business in internationally sponsored workshops and seminars, though such a business hides a host of public subsidies. Waste as wealth is considered not in the framework of dealing with waste as a public health hazard, but falsely as an economic good, though in developed countries public money subsidises waste systems.

The waste industry is a mammoth one globally. In the US alone it exceeds $ 6 billion. In Italy, the mafia controls waste. In India, too, the waste industry is on

Photographs: LAKSHMAN ANAND

E-waste is one of the fastest growing waste streams in India and abroad

the threshold of stepping in. Major investments have been made in e-waste recycling units, hazardous waste units, and medical waste disposal units.

While infrastructure development is key to proper waste management, there is also the danger of creating a powerful industry which needs waste to survive even as grassroots methodologies like local collection and segregation continue to fail or are insufficiently focused upon. For such an industry more waste is good news and the idea of waste minimisation, waste reduction, waste reuse and design for longevity are 'dirty' words.

Alongside, such industry is also rooting for the opening up of the international waste trade since large investments need continuous raw materials to be profitable. It is this danger which can and needs to be avoided. Sophisticated systems can only be built upon simple successes.

JUDICIARY'S VOCAL ROLE: The past decade has seen a flurry of legislation dealing with waste in India. Some laws have been more effective than others. Laws have dealt with different streams of waste. So we have the Hazardous Waste Rules in 1989 (last amended in 2003), the Bio Medical Waste Rules (1998), the Lead Acid Batteries Rules (2001), the Municipal Waste Rules (2000) and the more recent E-Waste Guidelines (2008).

Some like the Hazardous Waste Rules have triggered off public-private partnerships and currently 22 facilities to deal with industrial waste have been set up in the country. Similarly, the Bio Medical Rules have resulted in the setting up of 160 facilities for collection of medical waste from hospitals and clinics, based on user fee.

This particular legislation also mandates a ban on the incineration of PVC plastics which are globally recognised as a dioxin generator. However, across the board, the quality of these services is of great concern. Typically, despite the rules and guidelines, medical waste is burnt in illegal incinerators in centralised facilities, though this is severely restricted by law and the safer way of autoclaving is not adopted.

Similarly, a recent major fire at the Ankleshwar facility in Gujarat which is promoted as one of the best for dealing with hazardous waste, revealed that while the facility should have stored only 60 tonnes of waste more than 6,000 tonnes was on site. This, despite national standards on such operations which include landfill design and incinerator emission needs. Clearly, even though private actors are investing in infrastructure, regulation of operations and emissions is wanting and quality of disposal is dismal with attention to detail lacking.

The courts have played a major role in the past decade. The first ban on the import of hazardous waste into India was set up by the Delhi High Court (Srishti, April 1996) and later fortified by the Supreme Court (May 1997, RFTE vs. UOI). It still holds. The Supreme Court also set up the MGK Menon Committee which gave a far reaching report in 2001 on a plan to manage hazardous waste. The Bio Medical Rules were initiated after an NGO, Srishti, intervened in 1996 in an ongoing case (BL Wadhera vs. Union of India), and were promulgated in 1998. The Municipal Waste Rules came along with the prodding of the Supreme Court (Almitra Patel vs. UOI) though, under the same case where the petitioner was arguing for better landfills in each city, the court also passed strict orders to remove slums.

Similarly, there have been several cases in High Courts and local courts dealing with a range of issues like plastics, landfills, waste to energy etc. The judiciary has hardly been a silent spectator and has led from the front.

A general fear of being overrun by regulation is resulting in the government being reluctant to legislate even where it may be essential. The recently issued E-Waste Guidelines are a case in point. E-waste is one of the fastest growing waste streams in India and abroad. Most of this waste is dumped or recycled in backyard operations which attempt to recover precious materials like gold and copper from the waste, rather than recycle it as a whole. To avoid such cherry picking demands, regulation where the objectives are spelt out is required. Industry, too, is looking for a level playing field.

On the other hand, legislation to trigger producer responsibility and take back systems in lead acid batteries has not succeeded. The battery industry has not been able to develop adequate collection systems even though it had been mandated to do so. Hence a car battery exchanged with the dealer for a new one often lands up in highly polluting backyard operations. Of course, any such legislation also needs detailed working on the ground, and there can be no shortcut to do this.

Industry's reluctance to take real responsibility for waste has not helped matters. In the case of plastics, for example, a high level committee headed by Justice (retd) Ranganathan Mishra (2001) received an assurance from the Plastic Manufacturers' Association that they would set up plastic PET bottle collection centres throughout the country and also provide a refund of 25 paise per bottle for those bottles which are brought to such centres. Over a decade later, no (or hardly any) such facilities exist. Ironically, the association has been promoting school programmes to educate school children on why plastics are 'essential' to life!

Out of over four million tonnes of plastics packaging manufactures, more than 50 per cent ends up as waste soon after usage. There is widespread concern about them. Even the rural countryside is replete with plastic bags. Many states like Delhi and Haryana have attempted to ban plastic bags, only to be thwarted last moment by some unseen hand. Instead, a national law which bans coloured bags of 20 micron thickness has been promulgated. While this has ensured that only carry bags made of virgin plastic are available, it has not helped in reduction of litter.

CITIZENS CAN TACKLE WASTE: Over the past decade there has been a spontaneous response from citizens to improve cleanliness in cities. These are largely small scale local efforts but represent a desire to live in clean surroundings.

NGOs have helped with expertise and also attempted to link waste with livelihoods by involving waste pickers in door-to-door collection. Exnora in Chennai, Toxics Link and Vatavaran in Delhi, Stree Mukti Sangathan in Mumbai, NEEDs in Shillong, NBJK in Bihar, CDC in Rajasthan are some of the more organised efforts. Resident Welfare Associations (RWAs), housing cooperatives and institutions like the IITs have shown interest in setting up local systems. In many places city officials like municipal commissioners have played an exemplary role.

The problem of waste and sanitation in low-income colonies or in shanty towns is more severe although many NGOs have successfully intervened and created better systems on the ground. But the municipality extends partial or no services to these areas. There is little incentive for low-income colonies to create infrastructure since land use is disputed and displacement of such settlements has become common across cities since land prices have soared.

It is in such settlements that waste pickers reside. Hutments are packed with collected paper and plastic to be sorted and sold to the local dealer. Often in the heat of summer, entire shanty towns have caught fire. In a major fire in Jahangirpuri in Delhi in 1995, spirals of smoke were seen for miles around. It was believed that the smoke was very toxic. Such incidents do not lead to better conditions within these slums but become another rationale for shifting them to the city's margins. In this way the slogan of 'Clean and Green' has led to more injustice in the name of environmental betterment. It is thus no surprise that while the clean and green agenda is supported by the rising middle class, it is paid for by those marginalised by income and caste.

Unfortunately, even in places where there have been successful community based interventions, whether in affluent or in poor colonies, the government has made very little attempt to help upscale these efforts.

In a significant study carried out by Toxics Link to determine barriers to scaling up of successful community based projects nationally, it was clear that there was almost no real support available to help such initiatives. In fact, community projects are looked upon rather patronisingly as the efforts of good citizens rather than as viable models of city waste management.

In fact, even land for local composting is not provided. Typically, a local intervention would serve 4,000 to 5,000 households, though this could extend to 100,000 households, as in the case of Muskan Jyoti in Lucknow. These NGO and community led interventions involve waste pickers in door-to-door collection and local composting. These models also augment the waste pickers' income by safeguarding their access to recyclables. Such efforts have provided dignity and security to waste pickers by providing them recognition through ID cards and making them less vulnerable to constant harassment by the police. They are good examples of integrating livelihoods and environmental sustainability.

However large-scale privatisation of waste collection, as is currently the trend, is only leading to greater marginalisation. It seems the State is more comfortable dealing with a single private player rather than a range of community actors.

THE INGENUOUS WASTE PICKER: The informal sector has been collecting recyclable waste for decades in Indian cities. They are mostly low skilled operators who have developed the fine art of distinguishing between different types of plastics, metals and essentially what will fetch them a higher price with the local *kabadi* (waste trader). Some have fixed beats and protect their own waste bin, while others roam the streets scavenging what they can find. On a landfill site the hunt for materials becomes even more nuanced. Every nail is picked up using ingenuous methods like magnets on long poles. Dirty plastic bags, which no one else will touch, are cleaned and washed. Clearly such detailed rummaging is something no machine can hope to achieve.

However, this livelihood is fraught with risk. Injuries, cuts and bruises are common. Exposure to infectious waste, mercury, lead and other dangerous chemicals is unavoidable. Many waste pickers are women and children. For them, any livelihood is better than no livelihood.

Yet despite many policy averments to support waste pickers, including in the National Environmental Policy (2006) and earlier the Supreme Court's Burman Committee (1999) and the Planning Commission's Bajaj Committee (1995), there has been little investment by the State in their future. In fact, recent trends, especially under the urban renewal missions to subcontract waste collection to private operators by municipalities has worsened the situation. Many of these private operators deny waste pickers access to the bins they have been collecting from for decades. If there is money to be made, the private operators would rather make it themselves than allow the booty from recyclable waste to be shared. Hence some operators run an analogous business of collecting and selling recyclable waste, depriving the waste picker of his or her livelihood.

Such mindless centralisation is harmful, besides being more costly. Private parties are linked to other investors in recycling and waste processing or waste landfills, and all waste goes into centralised places. Spaces too are not provided. In fact, in the new Master Plan of Delhi 2021, waste dealers or waste separation activities are not recognised, even though they form part of colony infrastructure. While the city may seem cleaner it is not more sustainable since waste which could be recovered is dumped and local communities have no participation in such systems.

Many NGOs and their collectives have been raising this issue, trying to protect the waste picker from being excluded. NGOs and their collectives are proposing a new policy to protect livelihoods. What is needed is a mix of local and central systems which allow for optimum collection and recovery of materials and have strong ground level systems.

WASTE TO ENERGY: Waste to energy has been

promoted as the future of waste in India. As early as 1995, when the Ministry of Non-Conventional Energy Sources (MNES) announced a policy to subsidise any energy produced from waste, it has been packaged as a win-win situation.

However of the over 90 projects implemented or planned so far, hardly any has succeeded. Technologies like bio-methanation, incineration, RDF, even composting and vermi-composting have been tried, but none have much to show. The reasons for failure are many. The biggest could be inappropriate technologies and poor systemic linkages.

Take the case of incineration of waste to recover energy. The earliest plant was installed in Timarpur in Delhi in 1984 when a Danish incinerator was set up at a cost of over Rs 34 crore. It ran for less than a week. There had been severe miscalculations on the density of the waste and its calorific values, although top technologists did the equations.

As late as 2006, a well accepted technology based on bio-methanation (which converts waste to methane and then energy) was installed by a private company in Lucknow, with the blessings of the local MP and subsidised by the World Bank. Today it is closed, and has been subject to Supreme Court investigations about the reasons for its closure.

While 50 per cent of the waste in Europe contains materials like plastics and paper, Indian waste is wet, contains discarded kitchen waste and has little plastic or paper. Hence if incinerated more energy is put in than taken out!

Where bio-methanation has been used, municipalities have suddenly become very possessive about their waste, since they would rather sell it than just give it away. If there is money to be made, then why should they not make it, they think. Thirdly, the energy produced is more expensive than that sold by subsidised State Electricity Boards who are not willing to buy it.

The private sector has an important role to play since it brings in new efficiencies compared to municipalities, but it needs to dovetail with existing systems, not compete with them.

The question of safe technologies is an important one per se. Globally, incineration of waste has been severely regulated or banned outright (as in the Philippines) since the emissions of very toxic compounds like dioxins and heavy metals like lead and mercury push control technology costs up exponentially.

A 2000-ton per day incinerator in Europe can cost upwards of $ 500 million and is easily one of the most capital-intensive projects a city can undertake. Such high cost investments then hunt for more waste to feed the guzzlers and it is not unusual for international waste processing companies to scout for waste worldwide. The energy from incineration is not necessarily cheaper than from other sources and has to be juxtaposed with the comparative cost of recycling.

International civil society networks such as GAIA (Global Alliance for Incinerator Alternatives) resist such investments due to pollution and the detrimental impact that waste to energy incineration has on local systems of composting and recycling waste. In India, 30 such proposals for waste to energy processing plants have mushroomed after the recent access to carbon credits and JNNURM based funds.

Besides finding sites for such projects is a major challenge. Local protests recently greeted one waste project which was proposed as an integrated waste facility based on a contested technology called RDF (which converts waste into concentrated fuel pellets). The colony in East Delhi did not want the facility located there. Very little information is made available to local residents. Neither is their consent sought on the location of the facility. The community has serious concerns especially the burning of PVC based plastics which is illegal in India.

FUTURE OF WASTE: Wouldn't it be wonderful if everything we used was recyclable or reusable? That all garbage was non-toxic and did not harm people or the environment? Waste is a 'negative' good, an undesirable for which society bears the cost. Often the cost is hidden in terms of health and environmental impacts. Accounting for such costs helps in deciding who should bear responsibility for disposal.

This is not a dream but the pillar on which future waste management will be built.

There are two requirements. First, there should be adequate infrastructure to recycle whatever becomes waste and reintroduce these materials back into the economy as raw materials. For example, if the computers we use can be broken down to basic materials like plastic, glass and metal then these can be used to make new parts afresh.

Secondly, all hazardous components should be removed from the materials we use. Hence there should be no lead in displays, no mercury in switches, no lead in solders, no flame-retardants in plastics and no PVC in electrical wires. This would make recycling simpler and much safer.

Both these suggestions need fundamental changes, which are already happening through new laws like the WEEE (Waste Electronic and Electrical Equipment) and RoHS (Restricting the use of Hazardous Substances) in Europe and other countries. New systems need to recognise and support local waste management and resource recovery. Both upstream 'preventive' as well as downstream management and handling approaches are needed.

Indian waste is largely organic and, as per World Bank figures, is likely to remain so for the next three decades. In such a scenario, compost along with energy products makes eminent sense. With local composting comes job creation and an opportunity to involve waste pickers in door-to-door collection schemes.

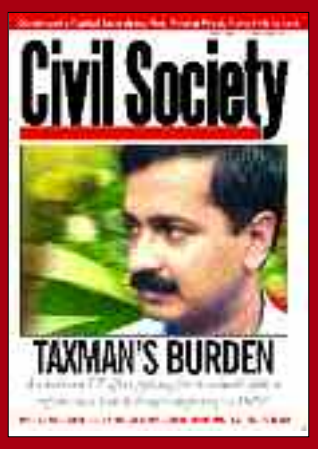
Even in hazardous waste streams like e-waste which need larger and more sophisticated facilities for processing, the informal sector can play the key role of being a collection agency. In this manner, waste pickers can still use their skills to earn a livelihood with the hazardous component of the work removed from their ambit. The private sector has an important role to play since it brings in new efficiencies compared to municipalities, but it needs to dovetail with existing systems, not compete with them. It needs to do more than use waste bins as advertisement posts!

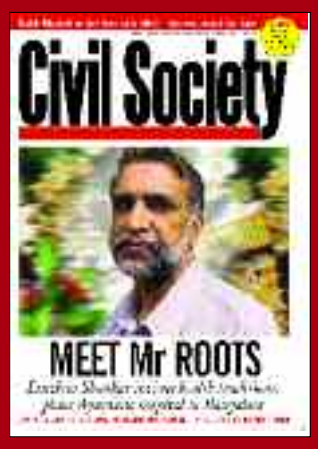
Like in many other sectors, India is opting for systems which are very capital intensive and centralised. This is because most of the dominant players in the waste business operate in countries not confronted by the challenges of combining livelihoods and environment. By blindly following the logic of the West, we will end up creating greater injustice, social tensions and exclusions.

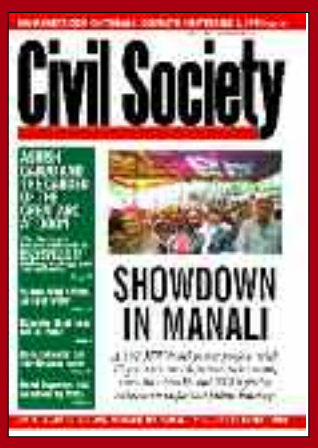
Our cities of the future cannot be islands of prosperity if the people living in them cannot participate in a just and equitable manner. How we think and deal with waste is a key test of sustainable development in a rapidly urbanising India. The way we do it will impact the world for a very long time.

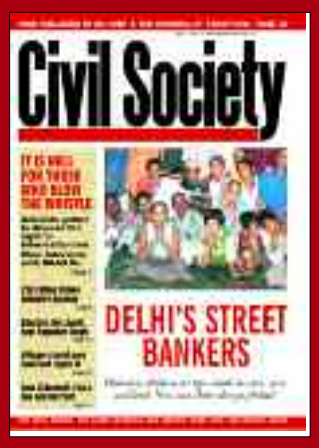
Ravi Agarwal is Director of Toxics Link, New Delhi.

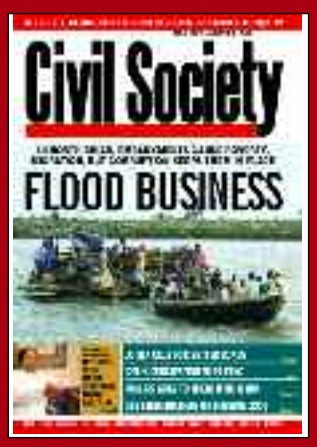
IN CIVIL SOCIETY EVERYONE IS

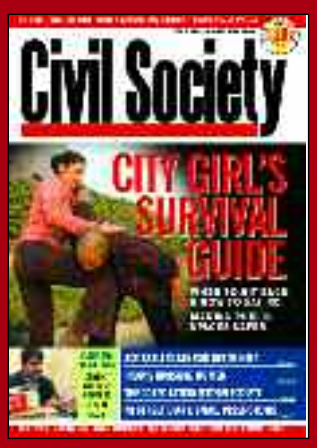


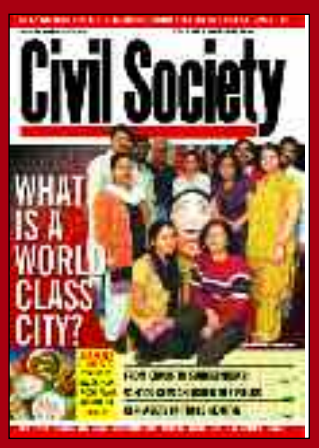












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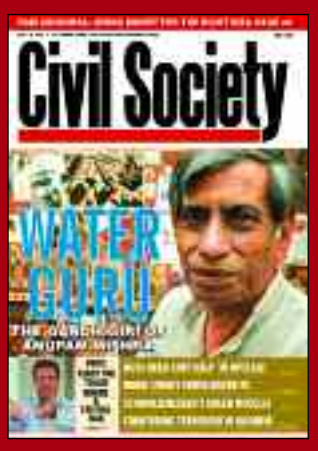

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Palakkad

The revived Kodungarapallam river

A river that has come to life in Palakkad district of Kerala offers more than one surprise in its unique rebirth. This is the first time in southern India that a river has been revived. Even more amazingly, its resuscitation has been made possible by a government organisation generally criticised for being sluggish and corrupt. Called Ahads (Attappady Hills Area Development Society) the government organisation worked with local tribals to achieve this miracle.

The reborn river, Kodungarapallam, has a 28 km course. It can now be seen flowing in Mannarkkad taluk, north of Palakkad town close to the Tamil Nadu border. Three rivers, the Bhavani, its main tributary Siruvani and Kodungarapallam originate from the Attapaddy hills. The three rivers join in Koodappatti. From there onwards, the river is known as Bhavani. It flows to Tamil Nadu and joins the Cauvery.

Attappady and Kasargod are punishment transfer destinations for government officers. In fact in some parts of the state, fools are referred to as Attappady! Sadly Attappady's name used to conjure images of a backward desert where poor tribals like the Kurumbas, Mudugas and the Irulas had to fight for survival.

Clement Selvaraj, assistant director of Ahads' soil and water conservation programme, recalls the first day he visited Vattulakki, an Adivasi hamlet here devastated by environmental degradation: "It was in 2003. There was only one Adivasi living on a hilltop. There were no birds, not even a dog. A goat was searching in vain for a blade of grass. An old woman with silver hair, Velliyamma, was climbing the hill with a vessel of water on her head. She had to walk two km to fetch it. How would we construct check dams when there wasn't even water to mix cement? That night I didn't sleep. If we don't do anything who else will? By next morning, I had taken it as a challenge."

Ahads was started in 1995 by a few good-hearted bureaucrats. They received financial assistance from JPIC (Japan Bank for International Cooperation) and the state government. Their main objective was watershed development of Attappady and improving the livelihood of local communities. The Rs 219.3 crore project had a JPIC loan component of Rs 176.9 crore. The rest has been borne by the state government. Ahads comes under the Local Self-Government Department of Kerala.

Nobody knows when the Kodungarapallam river disappeared. Its catchment in Tamil Nadu is still green. But the catchment in Kerala in eastern Attapaddy was completely dry and degraded.

Yet Kodungarapallam was once a lush river. Recalls 65-year-old Nariyan, an Adivasi: "Kodungarapallam had knee deep water in summer. There were huge trees on both sides. During the monsoon, the adventurous among us used to tie a rope between trees on either side to cross the river."

And then it gradually metamorphosed into a desert. Many factors contributed: colonial policies, government policies, road construction, charcoal production, over grazing, cropping patterns and finally soil erosion, the highest in Kerala.

Tribal families abandoned their land and turned to brick kilns for work.

As the fertility of soil declined thin topsoil began to be used for brick making. The net result was that about 507 sq. km out of a total of 745 sq. km. turned into wasteland. In 1999, starvation deaths, uncommon in Kerala, were reported from Vellakulam hamlet.

THE STOP GAP FOREST: Like any other government project, Ahads had its share of teething problems. Low on staff, the group started trying to create awareness in 1997. However, it was only around 2000 that the project took off.

In the meantime rumours had begun doing the rounds. Vested interests sowed seeds of suspicion. "This is a conspiracy to take the land of poor tribals by the Japanese," whispered some devious people. "One more scheme to rob off remaining forest trees" was another. And "officials are here to make money" said others.

"In the beginning, when we visited the hamlets, the Adivasis would flee," recalls an employee of Ahads. An earlier study had categorically stated that development projects hadn't reached the target groups. "This made us very guarded. We went to the communities with three new approaches: participation, transparency and financial accountability," recalls VH Dirar, assistant director, training. "All the project details were discussed with the stakeholders."

Ooru Vikasana Samithis or Village Development Committees (VDCs) were formed. The office-bearers were elected. The implementation of the project was done by the VDCs. Money was paid to the respective office-bearers only by cheque.

People were hand picked for responsible posts. Most of Ahads staff is young and untainted by sloth. "We didn't demand 10 years' experience. The average age of our 120 plus staffers is around 30. Then there are 300 volunteers working as animators who are young locals," said Vinod Uniyal, project director.

This may be one reason why Ahads tempo didn't slacken though they had 11 directors in 12 years and many staff transfers.

The total area treated by Ahads in this river catchment is 60 square km. Soil and water conservation structures were built using only stones and soil. The next year itself they struck water barely three feet below the surface. Velliyamma was excited. She now had to walk only 300 metres to fetch water. The pond didn't dry till monsoon.

The project provided ample employment to locals

# of Kerala river

Photographs: SHREE PADRE

Kadali bananas going off for sale

as labourers. Instead of the occasional Rs 40 as wages, they started getting regular work at Rs 110-120. This melted suspicion and distrust. At a later stage it was the water available nearer their houses that reinforced their belief.

As the region has an undulating terrain, different soil and water conservation techniques were adopted. Efforts were made to slow down the water and make it seep into the ground starting from ridges and ending in valleys.

Six million plants in forest lands and private wastelands have been planted. "You can call this a stop-gap forest," said Radhakrishnan, assistant director, forestry. "After 15-20 years, the planted trees will develop good canopy and micro-climate. The process of natural forest formation starts from here. Birds and animals will take over. Till then, we have to ensure there are no gaps in canopy, no forest fires, no grazing and that local use of forest produce does not exceed a critical level."

The Ahads team took their mission seriously. Yet nobody thought the river would flow again. "Kodungarapallam hadn't registered in our minds as a river or even a dried river," confesses Sumesh Kumar, soil and water conservation officer. In 2005, the river flowed till February. Then its dry period started shrinking. Next summer it is likely to flow the year round. Other small streams like Uppungarapallam and Puliyapathi --- two tributaries of the Kodungara --- are also flowing.

But many locals are not ready to believe that the river has resumed its flow thanks to watershed development. "There have been good rains since the last few years," they point out.

Ground water levels in 25 observation wells at Vattulakki, Mattaththukad and Puliapathy, according to Clement Selvaraj, show a rise of seven to 40 feet. A study by Kerala University indicates that in dry and partially dry wells, water availability has increased from 7 to 37.8 cubic metres per day.

FRUITS OF LABOUR: Vellangiri, a settler from Tamil Nadu, says his 60-foot well used to go dry by March. A deep bore-well sunk five years ago failed. Losses in agriculture and the marriage of three sisters made Vellangiri a defaulter at the local bank for Rs 2 lakh.

Now his well is brimming with water. Apart from other crops, he has been growing banana on an acre for the past three years. He has now bought another three acres. Another bore-well sunk recently is a success. "Now I am hopeful of reducing my dues at the bank," he says showing off his chillies and bananas.

Attappady and Kasargod are punishment transfer destinations for government officers. Attappady's name used to conjure images of a backward desert.

At Muttaththukad, large scale banana cultivation is on. One acre of *kadali* banana - a much sought after table variety - fetches an income of Rs 80,000 to Rs 1 lakh. According to one estimate, farming has been extended to about 200 hectares in eastern Attappady. Half of this is banana. Vegetables like brinjals, chillies, ladies' finger, tomatoes and snake-gourd are also grown in a large area.

"The farmers are hard working. If they get a little water they raise one crop or the other. Though the topsoil is so degraded, it grows very good vegetables with proper farming techniques and, of course, water," points out Sumesh Kumar.

Five to ten years ago an acre was available for Rs 15,000 to 20,000. This has now increased to anything between Rs 60,000 to Rs 2 lakhs. Observes Venkatachalam, officer at Canara Bank, Anakatty, "Loan repayment has improved by 30 to 40 per cent. The villagers who didn't mind walking for 10 km earlier now shell out Rs 5 to 10 to travel in service jeeps. Bus services have increased. More children are going to school and the dropout rate is coming down."

Small towns like Anakatty, Agali and Kottaththara now have fancy shops, STD booths, lodges and even digital studios. Milk procurement in local cooperative societies has more than doubled. At Kottaththara, the main branch of the society, milk output has increased from 350 litres per day five years ago to 800 litres.

Farmer suicides that have become a regular feature in Wayanad, Idukki and other districts haven't occurred here.

STEPPING BACK: The downside is farmers from nearby districts are moving in attracted by water. The ground water aquifers so painstakingly built by local communities are now being carelessly used by 'visiting farmers' who have no sentimental attachment to the land, water and forest.

These farmers are using chemicals liberally. "Farming with groundwater is not suited to this area," warns a local youngster. "The groundwater is hard and has many dissolved salts. In the irrigated farms, flooding is common. A thin white layer forms on topsoil."

Ahads is the only large-scale employer. The project will wind up by March 2010 but nobody is prepared for that. "Yes, that is a big concern," admits Vinod Uniyal, "To retain the gains earned in this long process, community management is the only answer."

"Locals should start getting an income from the forests," says Radhakrishnan, "Apart from fodder and firewood there are medicinal plant products in this area. Many companies are commercially collecting them. If the local JFM (joint forest management) committees can be empowered to take it over, that would make the communities develop a deeper interest in forests."

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Photograph by LAKSHMAN ANAND

SA Azad, who has championed the cause of victims of silicosis

Silicosis crusader may have national model

Civil Society News
New Delhi

ONE man's crusade has resulted in what should be a national model for providing justice to people who fall prey to occupational diseases. In 2001, SA Azad, a school teacher, was shocked to discover that villagers of Lal Kuan, a derelict village in south-east Delhi, were dying of silicosis, an incurable lung disease caused by breathing dust containing free crystalline silica. Over exposure to silica reduces the ability of the lungs to absorb oxygen.

Villagers of Lal Kuan got this disease from working in stone quarries once located here. Subsequently, in 1992, the quarries were ordered closed by the Supreme Court in the famous MC Mehta vs Union of India case and they relocated to Pali in Haryana.

The workers left behind lost their livelihood and health. Azad found men and women bone thin and desperately poor. Some were taking medicines for TB, instead of silicosis. Without nutrition, they were on death row.

Azad and his small NGO, Prasar (People's Rights and Social Reseach) embarked on a mission to get them justice. It looked impossible. Physicians didn't know what silicosis was and confused it with TB. Government officials found Azad's many right to information applications a real pain in the neck.

Azad persisted, taking his fight to the Supreme Court and the National Human Rights Commission (NHRC). Finally, in October 25, 2005, the Delhi government agreed to rehabilitate the victims of silicosis and came up with a plan. Azad says it's a good one and he is keeping tabs.

"I have had a lot of quarrels with the Delhi government but these are just family fights," he says. "The truth is the Delhi government has a model rehabilitation package. Nationally, all states should implement a similar policy."

It isn't just people who work in stone quarries or mines who can get silicosis. Those who work in the stone cutting, glass, ceramic, gems, railroad and ship building industries are equally at risk.

"I never saw Lal Quan as a local issue," says Azad. He is determined to get other state governments to prevent silicosis and implement plans like the Delhi government's for victims.

With this in mind he approached the Delhi High Court in 2005 which advised him to take his petition to the Supreme Court. So he filed a PIL. On 27 March, 2006, the Supreme Court issued notices to the state governments of Rajasthan, Gujarat, Pondicherry, Haryana, the Union Ministry of Labour, the Ministry of Health and the Ministry for Law and Justice to formulate guidelines for the prevention of dust exposure in stone quarries and crushers all over India. "With these notices, silicosis became a national issue," says Azad.

"I never saw Lal Quan as a local issue," says Azad. He is determined to get other states to prevent silicosis and implement plans like the Delhi government's for victims.

In 2003, he had approached the NHRC but nothing had happened. Last January he retraced his steps. He was more aggressive this time. "I met five of their secretaries," he says. "Close down the NHRC, I told them. After so many years you did nothing. Justice delayed is justice denied."

The NHRC wrote to him saying it had formed a national task force to find out the status of silicosis from states, whether we have adequate laws and what should be done in the short term and long term. The NHRC said it would see to it that all states implement Section 85 of the Factories Act. This law makes those employers in the unorganised sector who employ less than 10 workers liable for inspection and brings them under legislation.

If Section 85 is put into effect then all workers, regardless of how many they are in a mining unit, would be eligible to provident fund (PF) and ESI benefits. So far, the law said only if a company employed more than 20 people, workers would be eligible for ESI and PF. The NHRC also said that India should ratify the ILO convention on occupational health.

Responses received by the NHRC from the states to its notices were forwarded to Azad. Madhya Pradesh had the largest number of victims with silicosis (198). Some states have notified Section 85 of the Factories Act or included similar provisions in related legislation. Strangely, Goa, where mining is a major issue, has not done so.

Meanwhile, the Union Ministry for Labour and Employment got bombarded with notices from the Supreme Court, the NHRC and Azad.

In December 2007, the labour ministry, the NHRC and the Director-General, Factory Advice Service & Labour Institutes, Mumbai, organised a national workshop to find out the extent of silicosis in India, whether control and preventive measures were being taken and strategies to combat it.

The meeting was attended by senior IAS officers from different states. For the first time it was decided that thorough surveys of all states should be done to collect accurate data on the number of people employed in the mining, quarrying and related sectors including the unorganised sector.

Three committees were formed. One will collect data on unorganised workers. Where do they find employment? Is it in mines, gems, glass or ceramics? The second committee will ascertain the number of people working in mines. The third will find out how many find employment in registered industries like glass, stone crushing etc.

The work of conducting the surveys is the responsibility of the union labour ministry and the department of labour in the states. Azad has suggested that 60 per cent of members in the committees should be NGOs, health experts, researchers and 40 per cent should be government officials.

He also says that the onus of prevention should rest on employers and not on hapless workers. "There are engineering solutions and several dust prevention measures, all of which are well know," he says.

Azad's quest for justice has uncovered the miserable conditions of workers in the mining and quarrying industries. This sector needs a strong state, an accessible justice system and redoubtable activists like Azad to set it right.

A school for brick kiln children

Rina Mukherji
Kolkata

NORTH 24-Parganas district in West Bengal is dotted with brick kilns. These have always provided seasonal employment to landless labour from the arid regions of Purulia, Bankura, Jharkhand and Bihar. But there are no amenities for the thousands of migrant families who throng to the kilns and child labour is rampant.

Finally, there is a ray of hope. Thanks to Prayasam's Progoti and Parivartan programmes in Icchapore and Manirampur in Barrackpore and Haroa, under the aegis of the local administration, many of these children can now dream of a better life.

Previously, on a visit to any of these kilns one could see hundreds of children lending a helping hand to their parents as they carried soil from the river banks, prepared the clay mixture with various chemicals for bricks and then moulded the bricks by hand. The going rate of Rs 100 for 1,000 bricks was no small temptation for their families.

In December 2005, realising that it would be difficult to wean children away from this kind of income for migrant families, the district administration invited Prayasam, an NGO working with underprivileged children, to chalk out a project. Prayasam decided to provide educational facilities to the children by reaching out to brick kiln-owners.

Parivartan, the Haroa project, was started with the support of Unicef in December 2005. The project in north Barrackpore was started under the aegis of the north Barrackpore municipality with the support of the DFID-backed Kolkata Urban Services for the Poor (KUSP).

Today, Prayasam's 20 non-formal schools that double up as multiple activity centres (MACs) reach out to 1,250 children in Haroa, and more than 900 children in north Barrackpore. As Prayasam founder-director Amlan Kusum Ganguly points out, the two projects cater to 26 brick kilns in Haroa and 10 in north Barrackpore.

How did they get brick kiln owners to agree? Some brick kiln owners found it difficult to retain labour since migrant families were getting a choice of jobs. They felt Prayasam's project would help labour to stay on. Progressive kiln owners like Sandhya Singh of BVS kiln were the first to respond to the NGO's request for cooperation for the betterment of their workers.

The restrooms of the overseers in such brick kilns were converted into classrooms. For the children, it was a novel experience and they grabbed it with both hands.

Take nine-year- old Pavan, whose family is from Wazirganj in Bihar. Constant migration denied him the opportunity to go to school until last year. A few months at the school in the Shankar brick kiln at Manirampur in North Barrackpore opened new vistas for him. "I love learning numbers, reciting poems and singing songs. I have also learnt to make monkey masks now," says an excited Pavan.

For fatherless Nandini Kahar and her siblings, whose mother works at the BVS brick kiln in Icchapore, school was a distant dream. But the opportunity to read and write proved a boon for her. For 10-year- old Pinky Mahato, one of three sisters and a brother belonging to a family that has migrated from Gaya in Bihar for the brick-making season, attending the non-formal school since the last three months has meant learning dance, songs and a few *angrezi* words. These children work at the kiln from 6 am to 10 am in the morning. After a bath and a quick brunch, they are at the school till 3 pm after which they return to the kiln and work until dusk.

Children play happily at Prayasam's school

The teaching pattern in both schools is similar. Children come in as they like. The younger ones, who do not assist their parents, are in by 11 am, while the older ones come in later. Learning is never by rote, as teachers Shibani Mukherjee and Shankari Das clarify. The children play football and learn to skip, make masks or draw. Songs, skits and dances are often learnt and staged. To encourage the children to express themselves, Prayasam has also been making use of comics. This has caught the imagination of children, especially girls. Through the medium, they open up on girl-child education and the importance of letting the girl-child blossom into an individual in her own right.

Besides, the children's theatre group, Dakabuko (Dare Devils), and dance troupe Ahladi (Loved Ones) teach them to stage plays and dance dramas on health and social issues from time to time. This has helped children learn the significance of hygiene and sanitation and pass this on to their parents and elders.

Once a year, a camp is organised at one of the multi-activity centres. "We let the children do whatever they like, depending on what they have learnt until then," explains Ganguly. They make kites, dolls and collages from waste material, play and in short, have a ball.

Interestingly, with all these activities, the number of families that return home after the peak November-May season is dropping drastically. According to KUSP project co-coordinator Udita Ghosh Sarkar: "Last year, very few families returned home. Parents have realised the advantage of staying back here, since it gives their children the opportunity of being mainstreamed into regular schools."

Now even the parents come forward expressing a desire to learn along with their children. As Ganguly and Sarkar say, "They would come and tell us- *aap hamme bhi kucchi sikhlaiye, hum bhi to angutha chaap hain.*" The parents don't confine learning to writing their names. They are as excited as their children to learn kite-making and *kantha* stitching. A lot of mothers love making dolls too. They have also imbibed the basics of hygiene, population control and nutrition.

A good beginning has been made. But the future of these centres is still uncertain. The district administration is expected to take over the MACs, once the initial donor funding is over. Assurances by the authorities concerned are yet to take effect.

Neither have any of the kiln owners taken over the MACs. Also, many kiln owners are yet to come forward and facilitate adoption of the scheme.

Gurgaon is built on donkey power

Civil Society News
Gurgaon

BEHIND those glitzy malls and soaring apartment blocks in Gurgaon on the border of Delhi lies the hard work of armies of donkeys. They have been out there in the heat and cold every day of the year, carrying bricks and ferrying mud.

You can see them crossing MG Road in single file as shoppers scatter to let them pass and traffic waits impatiently. If you manage to get inside a construction site, you will find them slaving away far below ground level in what will finally be the basement parking lots of the buildings.

Travel further south towards the Sona Road, past Gurgaon's residential colonies of South City and Greenwood City, and donkeys can be seen hard at work at every major site. They mostly do eight to 10 hour shifts and go without food and water. You will also find donkeys at brick kilns where their condition is especially bad.

Donkeys have no rights, no unions to speak for them. When they drop dead or become too feeble, they are easily replaced. Theirs is cheap labour because a donkey comes for as little as Rs 60 or Rs 70 a day. So, the next time you read about the wealth of Indian real estate barons, remember it was the humble and persistent donkey that helped build some of those flashy fortunes in Gurgaon and other parts of the National Capital Region.

The donkeys share their pitiable condition with construction labourers who live out in the open at sites. There are no toilets for the labour, no schools for their children, no housing and no clean drinking water. Medical facilities are non-existent.

The donkeys either belong to the construction labour or to contractors who hire them out. In an industry where human beings get so little and are forced to live in such squalor, a donkey can hardly have any expectations.

Donkeys aren't among the most expressive of creatures. They hang around and hang around and do what they are told to do. If the sombre demeanour of donkeys is anything to go by, then they are all always having a terrible time. But that is not it either. A donkey on duty will perk up at the whiff of a carrot. It will signal, with a tuneless bray, the arrival of a mate. It will also recognise human warmth and affection.

Donkeys have been known to commit suicide when they get very depressed. Newspaper reports recently said that donkeys driven to despair in Sudan jumped into the Nile to escape their lot.

So, donkeys aren't without feelings and deserve a better deal than what they are getting. It is precisely for this reason Jean and Bob Harrison, both British nationals in the mid sixties, set up the Asswin Project for Donkeys and other Animals in India in July 2006.

Bob used to work at the British High Commission here and Jean has always worked for the welfare of animals. Bob says the Asswin Project gets it name from the 'Asvins', divine physicians in mythology who healed pain and suffering and were always quick to respond.

Civil Society first noticed the Asswin Project's mobile ambulance pull out of the parking lot of the Galleria shopping centre in Sushant Lok. A few quick searches on the Internet revealed that "working donkeys" could get free treatment at Jeev Ashram thanks to its collaboration with the Asswin Project. Jeev Ashram is an NGO run by veterinary physicians at Rajokri on the border of Delhi and Gurgaon.

Jean and Bob are available round the clock for treating donkeys. They rush in their ambulance to attend on emergency cases. But more importantly, they have networked the people who provide donkey labour at construction sites. This makes it possible for them to systematically address the problems of donkeys.

What do working donkeys need? First of all, donkeys employed in construction constantly need their wounds to be healed. The gashes and sores that they get while carrying loads require treatment.

Donkeys in Gurgaon also have stomach problems. They need to be de-wormed. But they also must be fed correctly. They are often given grass that comes from mowing lawns. The donkeys quickly swallow the finely cut grass instead of chewing it and it sits in their stomachs. The grass is unhealthy because it comes with a cocktail of chemicals that go into the fertilisers and pesticides that are lavished on lawns.

People sometimes give donkeys food in plastic packets. The donkeys gobble down the entire pack-

The next time you read about the wealth of Indian real estate barons, remember it was the humble and persistent donkey that helped build some of those flashy fortunes.

et covering and all and as the plastic collects in the stomach it becomes life threatening. A twisted gut has been the cause of many a donkey death, say Jean and Bob. From one very sick donkey's stomach, doctors pulled out 35 plastic bags.

Donkeys also suffer from respiratory problems and throat infections that come from inhaling dust and cement at construction sites. The infections so inflame the throat and the respiratory system that donkeys are known to die of suffocation.

Jean and Bob live in a rented house at Greenwood City. The house is overrun by dogs because they are essentially animal lovers. But as animal activists they are only available for treating donkeys.

So, when an anxious brother and sister from a nearby village turn up at their home to seek help for their family's buffalo, Jean and Bob can at best help them find a vet. They don't go out to treat buffalos because their hands are full looking after donkeys.

The suppliers of donkeys know Jean and Bob and are grateful for all the help they get on a continuing basis. At one of the sites we are prevented from entering and taking pictures. But Vinod, who provides the donkeys here, is happy to come out from somewhere deep below, a hard hat on his head. He says: "I know them well and they do a lot for my donkeys. If you come back at 3 pm I'll be taking my donkeys out of the site and you can photograph them as much as you like and I will tell you about them and the work they do."

Jean and Bob Harrison with their fresh carrots

We can't return at 3 pm, but we meet many families who earn from their donkeys at other sites. They all know Jean and Bob and say they do a lot for the donkeys.

But how do you ask people living in such pathetic conditions as construction labour do about the welfare of their donkeys. There are pools of water, mud tracks and flimsy shanties. The children do the house work while the adults earn at the sites.

We find it difficult to distribute the carrots we have brought for the donkeys when there are hungry and undernourished children all around. So, we give the carrots to them as well and tell them to eat them raw or include them in the family meal.

We ask Jean why she has taken up the cause of donkeys. "It is because no one speaks for them. There are groups who speak for dogs and cats and other animals. But not donkeys," she says.

Bob says three or four simple things need to be done to improve the lot of donkeys in Gurgaon. They need a de-worming programme, the right nutrition and regulated hours of work.

Under the Prevention of Cruelty to Animals Act of 1960, a donkey is not meant to carry more than 35 kg. "But the loads that are put on them are so heavy that sometimes if you just put a little pressure on a donkey's spine it collapse because it has been made weak with overwork," says Bob.

A donkey is supposed to live for 40 years, but with the kind of work they do in Gurgaon they are lucky if they survive for 20 years.

Failing to provide animals with food and shelter or abandoning them when they grow old, as happens with donkeys, is punishable under the law with a fine of upto Rs 100 or jail for three months or both. The law has never been used in Gurgaon.

Fisherfolk left out in the cold

Rina Mukherji
Kolkata

Photograph by BHASKAR MULLICK

THE National Fishworkers' Forum (NFF) is most upset with the government's 2007 Coastal Zone Management (CZM) notification. The NFF sees the new notification as a sinister attempt to remove fishermen and bring in Special Economic Zones (SEZs), tourist resorts and ports all along India's golden coastline.

The CZM notification will replace the older 1991 Coastal Regulation Zone (CRZ) rules. The new CZM has been drafted on the basis of recommendations made by the MS Swaminathan Committee. Environmentalists and NFF feel the earlier CRZ rules, which restricted development close to the sea and recognised the rights of fisherfolk, made more sense. With sea levels rising, the coast needs protection.

The NFF says the Ministry of Environment and Forests (MoEF) did not bother to consult them. It did arrange a meeting in Mumbai but only it's chosen few were called and even the chairman of NFF, Harekrishna Debnath, was left out.

Since August, NFF has been leading a 'National Campaign against CZM Notification.' Protests were held on World Fisheries Day. *Civil Society* spoke to **Harekrishna Debnath**, who is also Convener of the National Coastal Protection Campaign.

Why are you agitating against the new Coastal Zone Management notification?

The new notification is most objectionable. Its provisions do not regulate, but aim at managing the coast. Of course, we have no problem with that. But then, when you read between the lines, you notice that it leaves room for all kinds of manipulation.

The CRZ had recognised the customary rights of fishermen but the CZM has no mention of these rights. Rather, it says that fishermen's homes will be shifted beyond the setback line (a line demarcated along the coast, based on its vulnerability to natural hazards).

The regulatory aspect of the 1991 notification has been totally diluted in the CZM. Under the CRZ, 200 metres from the high tide was demarcated as a no-development zone and the next 200-500 metres was a zone where development could be undertaken with permission. The only establishments allowed were those that needed a waterfront, like harbours, fish processing plants and defence establishments. Drawing of groundwater was disallowed. In short, it protected the coastline against any unplanned development.

But now under the new CZM notification, groundwater can be drawn, while areas of special economic interest can justify development along the coast. This clause can easily be used to make way for hotels, resorts and SEZs.

A major shift is that of allowing local panchayats the power to give permission for such development. We all know how vulnerable these local bodies are. Actually, the CMZ notification brings in everything that the fishing community has opposed.

Fishermen had always supported the 1991 CRZ notification since it sought to regulate all development and protect the fragile ecosystem which nurtures our catch. But everyone else, especially the builders' lobby, the hospitality industry and sundry business groups rallied to violate the CRZ rules, since they saw it as a stumbling block. Now the CZM has overturned the CRZ, and let us down.

Harekrishna Debnath

You did have some representatives at the MoEF meet in Mumbai to discuss such issues.

There was just token representation from Gujarat, Bengal and Orissa. Judge for yourself, how representative the group was if there was no one from Kerala and Andhra Pradesh.

According to a Ministry of Fisheries survey in 2005, there are 3,200 recognised fishing villages all along the coastline. But were they all invited? Definitely not. Out of 86 individuals, just 78 came from fishing villages. And out of the 78 fishermen invited, 69 came from Tamil Nadu.

Kalpavriksh was not invited. Neither was Equations, an NGO. In spite of being the chairman of the National Fishworkers Forum, I was not invited. Even from Tamil Nadu, the South Indian Federation of Fishermens' Societies and International Collective in Support of Fishworkers (ICSF) were left out.

In fact, there are allegations that all the invitees from Tamil Nadu are beneficiaries of the MS Swamination Research Foundation (MSSRF). Since the CZM notification is in keeping with the controversial recommendations made by the Swaminathan Committee, you know where the connection lies.

Besides, even as the MoEF put up a pretense on consultations, the government had gone ahead and applied for a World Bank loan on the basis of this notification. The loan is to fund a pilot project on integrated coastal zone management from March 2008 in West Bengal, Gujarat and Orissa. This is highly irregular, to say the least.

But there were some representatives from West Bengal and Orissa.

Yes, there were. But the invitations were posted only a few days before the meet. Travel arrangements were to be made by the invitees. No travel allowance was given. This would deter many from participating, right?

Besides, the questionnaire circulated was in English. If you are serious about knowing the fisherman's point of view, why don't you print it in the local language? How can you expect an average fisherman to read it? If the MoEF was earnest about the issue, it should have convened meetings in each of the coastal states and had discussions at the local level.

The government is bringing in SEZs all along the coast. It is saying these will bring employment, boost exports, increase the GDP…you can't deny that, can you?

They will also flout labour laws and be a law unto themselves. As for jobs, let me tell you, fishing employs a crore of people all over the country, and generates exports worth Rs 8,000 crore annually. And this when only 10 per cent of the three million tonnes of fish netted in the sea is exported.

Mine is a zero investment industry, and yet we feed the most essential protein to the Indian population. It is our solemn duty to nurture and protect this wealth that nature has bestowed on us. Yet, there is every move afoot to destroy this advantage.

You talk of SEZs. Let me tell you, Bengal was a historical SEZ that exported muslin since time immemorial. Once the British arrived, 20,000 weavers had to lose their thumbs to make way for the cheap cotton from Manchester. Our cottage industry collapsed, and our muslin survives in museums today. To me, the SEZ dream is nothing but an illusion best kept away from. It will only render one crore people jobless.

Fishermen have been making use of beaches on the basis of customary rights. Have you thought of this?

You are right. We are demanding legal titles to land being used by fishermen in the 3,200 fishing villages that the Ministry of Fisheries has recognised in its survey. This is the official figure. The real figure may be even higher. After all, we need a waterfront for our livelihood. Traditional fishermen leave in their fishing craft from the coast and then return with their catch to the coast. You cannot impose the trawler-based western model on us.

After the tsunami, fishing communities are being moved away from the coast…

Yes, I know. Seawalls are being mooted to prevent erosion. But wherever this has been done, it has never lasted beyond 20-25 years. If erosion is prevented in one place, it moves to another location. Preventing erosion, of course, gives way to accretion causing the beach to move further away. This is dangerous and bodes ill for the ecosystem. This is short-term planning and can never work.

Moving communities away is also designed to help resorts and SEZs come up along the waterfront. There are vested interests at work here.

Are you against an integrated coastal zone management regime?

Please do not get me wrong. We do want an integrated coastal zone management system.

But it has to be on the basis of a participatory approach where every decision taken is in keeping with the needs of the stakeholders.

We demand proper representation in the decision-making committees. We also demand legislation that recognises and imparts protection to the customary rights of fishermen and, most importantly, one single comprehensive legislation that will take care of the sea and coastal areas as one ecosystem. As of now, there are several separate legislations to take care of each of the various issues involved.

Orissa kids get the hard facts out

Ranjan K Panda
Koraput (Orissa)

SUBHASANKET Das, a tribal boy from Dhenkanal district, spends a lot of his free time walking around his village. He does the rounds of the local health centre. He pops into the village school to ask teachers how more girls can be sent to school. He also tries to figure out what infrastructure his village really needs.

Subhasanket then writes down all his observations on postcards and sends them to the Koraput Farmer's Association (KFA) office. There an editorial board publishes his views in a magazine called *Ankurodgam*. When copies of this magazine reach decision- makers in the district, this child reporter has already made an impact.

"People take note of our problems," says 14-year-old Nila Chalan, a tribal girl who like Subhasanket is a child reporter.

Altogether some 1,500 children in Koraput and Dhenkanal districts, some of India's poorest regions, have become child reporters under a unique programme called the Child Reporter Initiative, supported by UNICEF.

"It's a question of questions," says Santakar, a local journalist who heads the programme which is also being supported by the Koraput Farmers' Association (KFA), the People's Group for Children's Development (PGCD) and the district administration.

The project aims at tapping the immense abilities of children to identify local development problems and opportunities. Village children observe, document, and disseminate local problems and issues. In doing so, children not only contribute to local development but to their own grooming as conscious and informed citizens.

This cadre of child reporters has been raised to advocate girls' education, school sanitation and child survival. Says the idealistic Nila: "Our thoughts become our words. Words turn into actions since people listen to us. Action becomes habit. And we want to acquire the habit of being part of local development."

"Development can be useful to society only when children are involved in its planning and implementation," says Subhasanket. "Unless we are heard by adults, it will be difficult for them to plan programmes for us."

India's large youthful population needs to be listened to. "Though children are the focus of most of the development programmes, they hardly participate in the process of formulating development programmes,"says Santakar. "Development schemes are designed and implemented for children without involving them directly or taking their inputs. As a result many development initiatives have turned out to be out of sync with children's needs and rights."

Child reporters have been writing about sanitation in school, animal-human conflicts in local areas and girl child attendance in school. Serious problems are being brought to light by the most innocent observations.

The district administration, political leaders, teachers and almost all officials now recognize the child reporters. "Their postcards have done wonders," says veteran educationist and tribal researcher Krushna Chandra Panigrahi. "They have corrected the midday meal distribution system, alerted health authorities and made their teachers attend classes regularly. "

Flaunting her badge of child reporter, Nila says things have changed for her village thanks to this project. "We too have changed. From being typical village children we have become change agents. I want more children to be a part of this child reporter initiative. We are now directly contributing to local development."

Child reporters noting down what their village needs

Child reporters say it's their constant questioning which is spurring change.

"My parents say I ask lots of questions," says Subhasanket. "My elders say that children are meant to ask questions. In my district, which is known for bad things like poverty and underdevelopment, I feel like asking more questions. For children like me, it is better to know some questions than all the answers. We children ask innocent questions to bring out critical problems."

The child reporters are proud of their work in local development but they are not complacent about their success. In these under- developed districts, children are showing how accurate information and perceptive observations can lead to the right path of growth.

When Pusa Sugandha outshone GM

Rakesh Agarwal
Dehradun

WHEN government officials turned up at Bhanaj Gad village in Uttarakhand's Rudraprayag district to hardsell genetically modified (GM) seeds, they were waved away by farmers. No one was interested.

Villagers had already doubled their yield of paddy with a local rice variety called Pusa Sugandha. The seeds had needed less water. And the rice had grown double quick.

"Previously I could grow a little paddy to feed my family. Now, I've got rice to sell in the market," said Ami Chand, a small farmer with only 0.4 hectares.

This wondrous paddy boom was achieved by farmers with help from the Peoples' Science Institute (PSI), Dehradun. Scientists from PSI introduced a technique called System of Rice Intensification (SRI), originally developed by Father Henri de Laulanié, a French priest in Madagascar in the early 1980s.

"Water availability will be the limiting factor for all development goals in India. The biggest demand for water is from agriculture. Paddy is a water intensive crop. We wanted to do something in this regard," said Ravi Chopra, Director, PSI.

PSI adapted SRI technology to the ecology of Uttarakhand and Himachal Pradesh and now 15,000 farmers in both states are reaping a golden harvest.

It was hard to trudge up to Meghadhar village in Tehri Garhwal district with the sun blazing down. Even at an altitude of 1550m, it was hot. Sulochana Devi 39, a marginal farmer with only 0.25 ha was full of enthusiasm as she excitedly talked about her harvest.

Her small field had just yielded 2,200 kg wheat, double of what she used to get earlier. She was all set to sow paddy, optimistic of good returns. "Earlier, it was difficult for us to get one square meal. Now we have enough to eat and sell in the market," said Sulochana, a mother of three.

"This technique is basically about following proper plant management and maintaining the right balance of nutrition, water, air and time," explained SP Chaturvedi of PSI who has helped fine tune SRI.

The method works like this: first, at the start of summer a nursery of rice plants is set up. Timing depends on altitude. For fields located between 1500 and 1800 m, the nursery is prepared between 25 May and 5 June. For fields located below 1200 m, the nursery is put in place between 25 June and 5 July.

Then, the plants are transplanted into the fields. At this stage, the crop intensification process starts formally. "Plants are sowed at a distance of 25 cm, while in traditional methods, they are sowed much nearer, around 5-7 cm. This way, there is less competition for nutrients between plants," explains Chaturvedi.

Then, three rounds of de-weeding by machine take place, after intervals of 10-12 days. Between every de-weeding, liquid organic manures are applied. Farmers can make these with kitchen waste, milk and other bovine produce and agricultural waste.

Fields are yielding double the crop

Afterwards, moisture controlling of paddy fields starts. Every alternate day, the field with its standing crop is showered with water one day and left to dry the next day. When the plants flower, the field is filled with one inch water. Twenty- five days later, the crop is harvested. The ready crop can be harvested between 140 and 150 days at higher altitudes and 10 days earlier at lower altitudes.

PSI began its crop intensification technique with paddy. Now it has expanded to wheat. As both are major crops in the rabi and kharif seasons, farmers welcomed the new technique with open arms.

"Initially, farmers were evasive and not convinced that their crops can produce double the yield using less than half the water and manure," said Debashish Sen, Director, Centre for Participatory Watershed Development, an autonomous unit of PSI that has developed and promoted this technique.

So, PSI decided to approach farmers in the field areas of its partner organisations. It selected 25 villages, 13 in Uttarakhand and 12 in Himachal. In each selected village, scientists from PSI initially organised meetings with paddy farmers to motivate them to take up SRI cultivation. A series of meetings were conducted where the benefits and procedures of SRI were explained to villagers. Video shows were used as tools of communication on SRI cultivation. Then, farmers and resource persons of the partners were trained on bed preparation and transplantation.

Communication materials on SRI cultivation and preparation of organic solutions were also distributed to the NGO's partners. "This convinced our partners about the usefulness of the technique and they in turn convinced farmers in these villages. Then, there was no turning back," says Sen. He has reason to feel elated.

They began with 40 farmers in 2006. That number multiplied to 597 farmers and has now swelled to 15,000 farmers this year.

After paddy, PSI decided to try this technique on wheat in the 2006 rabi season on its research farm at Dehradun. Two varieties, PBW 396 and HD 2329 were grown in rows. In the field trials only organic compost was applied. The performances of the SRI plants in the research plots were monitored against that of wheat grown by broadcasting method.

As most farmers in Uttarakhand are small and marginal with only 0.4ha per household, food insecurity looms large. Many people migrate to the plains and their fields become fallow over a period of time. Now, farmers, who have used this technique, are tilling their fields once again. "I never thought I would come back from Delhi and start farming again. I'm getting enough paddy and wheat yields and I am earning well," said Mahavir Prasad, a small farmer in Bajira village, Tehri Garhwal district.

The stalk volume in the SRI method is much higher, providing more fodder for cattle. "Earlier, I was worried about what to feed my two cows and buffalo. Now, we've enough fodder to feed them," said a Ranjana Devi, a small farmer from village Machkandi, district Rudraprayag.

Higher stalk has also resulted in higher amount of farmyard manure for fertilizing fields and may increase milk yields. Little wonder, many farmers are overjoyed. "Thanks to better feed we get almost double the amount of milk from our two cows," said a happy Rikeshwar Prasad, Meghadhar village, Tehri Garhwal district

PSI is going to extend this technique to crops like rajmah, lobia, manduva, a coarse grain, and soyabean. Maize is being experimented with. Field trials are on. Paddy plants do not lodge despite being much longer than traditional varieties. "The higher yield of food grains is because of this ability that we mastered in our labs," said Chaturvedi.

The government is responding. "Our aim was to help 10,000 farmers in three years adopt this method. Then, in the fourth year, we expected the government to respond. But, as we crossed this threshold earlier, the government has already reacted positively," said Chopra.

In all 13 districts of the state, District Agriculture Officers and their extension staff have approached PSI for training. The state government has released a grant of Rs 30 lakhs for 2008-09 to cover 3,000 farmers under the programme.

Tasty, fat-free jungle food

Anitha Pailoor
Malnad (Karnataka)

BHAVYA, Sharada, Kiran, Kavya and Ganesh listened intently as PS Venkatarama Daithota, a traditional Ayurvedic physician, guided them through a forest explaining the medicinal properties of plants. The children, who study in Class 6 at Kalave School near Sirsi in Uttara Kannada, were pleased to know that their favourite wild fruits were very nutritious. Daithota, fondly called 'the walking encyclopedia on herbs' identified 110 edible varieties in half an acre of forest.

But it was the sumptuous lunch which bowled the children over. Leaves, roots and shoots they had seen in the forest had been turned magically into a mouth watering meal. There were traditional dishes like tambli, katne, mandana appehuli, appehuli, gojju, palya, kadubu and chutney, which had been cooked using coconut as a base.

Delicious food doesn't grow only on farms but in natural forests too. There is nutrition hidden in the jungle but you have to know how to identify it.

A two-day workshop explaining it all was organised by Sirsi's Suvarna Sahyadri's Environment Education Programme and Amma Prathisthana. Venkatarama Daithota and Jayalakshmi Daithota guided about 100 participants.

Uttara Kannada has a rich tradition of cooking food from the forest. The three districts of Dakshina Kannada, Uttara Kannada and Shimoga have similar food habits. In Malnad, people are blessed with natural kitchen gardens in the form of the forest. This love for 'forest food' is not just for its medicinal properties but for its distinctly delicious taste and appearance.

"Since generations women here have been able to obtain food from the forest," said Shivananda Kalave, a development journalist who had arranged the workshop. "We knew the entire flora in our vicinity and its application. But as the purpose of food got limited to just 'filling the stomach', this knowledge of forest based food degenerated. The objective of the workshop is to share the knowledge we have about native food habits and revive it."

As natural forests gave way to mono-cultivation of acacia and teak in the last century, food habits changed. Tomatoes and potatoes began to appear on the plate with rice. But tambli, the health drink of Malnad, retained its importance. Tambli can be made with leaves and forest species ranging from kokum to drumstick flower and brahmi.

Jayalakshmi Daithota has not cooked vegetables sold in the market since the last 15 years. She has made the nearby forest her vegetable garden. Jayalakshmi has inherited traditional knowledge about such foods. She helps people keep disease at bay by telling them how to practice healthy eating habits. "Proper knowledge of using these natural vitamin tablets in our food will keep us healthy and happy," she says.

As participants discussed edible varieties available in the forest, tasty herbal drinks and forest-based food were passed around. As many as 60 dishes were prepared, including the highly nutritious bamboo rice. This rare dish becomes available once in 40 years when the bamboo flowers. The story goes that people in drought prone regions of North Karnataka came to Malnad to fetch this rice and survived on it when rain was scarce and crops had failed.

Leaves , roots and shoots from the jungle

Participants listed around 40 types of tambli and fifty panakas (juices) which they have used. The list didn't include cultivated forest species. Children were astonished to find out that the varieties they consider as useless wild plants play a greater role in keeping them healthy.

Krishna Hegde, a pioneering hotelier in Bangalore, interacted with participants and felt that rich natural forest food could attract tourists without ruining our natural and cultural heritage. "Health conscious city dwellers are searching for nutritious food low on calories. This is the time to build the 'slow food' movement in the state with native diversities," he said.

A morning walk with Venkatrama Daithota shed new light on our surroundings. He identified at least one plant per step and explained its properties. He said there should be a favourable environment for wild species to prosper naturally. He feared that if forest plants were cultivated as crops they might lose their original properties.

Veda Hegde, a resident of Neernalli village, said the workshop had taught her to use her surroundings as a vegetable garden. People still know how to make tambli, but the knowledge behind it was fading away. Food preparations also changed as taste began to acquire more importance than health.

Modernisation has changed the way we cook. A tender leaf at our doorstep becomes acceptable only when it is converted into a packaged product with a label saying it is nutritious. It is the fresh leaf that retains nutrition, not its cardboard version.

Government officials, forest officials and political leaders who had joined the workshop felt the immediate necessity is to preserve bio-diversity and human health. Traditional knowledge, hidden in the rural kitchen, was shared and documented. Women eagerly noted down long forgotten recipes to experiment with at home.

Investing in the sun

Vidya Viswanathan
New Delhi

LAKSHMAN ANAND

Harish Hande

Fontana, the Taj Palace hotel's coffee shop, has an array of frosted lamp shades on its ceiling lit by filament bulbs. Harish Hande looks at it with irritation. He's just been declared 'social entrepreneur of the year' by the Schwab Foundation for spreading solar energy to villages in India. His company, Selco Solar Light Pvt Ltd, is worth some $ 4 million.

"Why produce filament lamps? Why produce cars for one lakh? You have to be serious when you talk about climate change. If one of the most respected groups in the country does not get it how will anyone else?" he frets.

Fortunately, all of Hande's 85,000 customers in rural Karnataka 'get it'. They have installed solar lighting systems. His clients include rural households, vegetable vendors, babas in caves, silkworm rearers, road-side restaurants, churches, temples, mosques, a residential school, the SOS village and a Tibetan settlement.

"We promise service and finance at your doorstep," he says. No matter the terrain, his technicians go on a motorbike, examine the house and install a solar solution. Selco has 27 offices in rural Karnataka, each manned by technicians and people who collect payments. They are hired locally and trained. They offer a guarantee on panels and the battery.

A four light system (with 7 watt CFL bulbs) costs Rs 14,000, while a system with three lights costs Rs 12,000. A single light costs Rs 5,000. About 48 per cent of his customers have a one-light system. "We look at a house and see what they want. In one case a villager wanted bulbs installed in three rooms. We removed some bricks from the ceiling and installed a one-light system. We also asked him to white-wash his walls," explains Hande.

When Hande, a PhD from the Univerity of Masachussets, started Selco in 1994 with Neville Williams who ran a Washington DC-based non-profit organisation, he installed the first 200-250 systems himself with some help from a TV technician who still works for him. "That earns respect and no technician can tell me this can't be done," says Hande.

Hande spent three years convincing a banker that solar systems could generate income. He realised that regional rural banks like the Karnataka Vikas Bank and the Pragati Grameen Bank were rich, and that bankers were a powerhouse of knowledge.

To take a loan from the bank, a person has to show a 10 to 15 per cent margin. So Selco provides the guarantee on the loan seeker's behalf. If the person takes Rs 10,000, the monthly instalment works out to Rs 150. Selco would put in Rs 1000 and in the first few instalments the company would take its money out. "This is income-generating. If a basket weaver makes five to eight baskets a day, he could make an extra three. But we had to find a market linkage for the other three. The banks put them in touch with the wholesaler who had taken a loan from them," points out Hande, who decided to expand along the banking network.

Selco soon figured out the financing technique. "You have to match the consumer's income cycle. A paddy farmer gets paid once, a peanut farmer twice, a sugarcane farmer thrice, and a teacher, monthly," Hande explains. "A street vendor cannot pay Rs 300 a month but she can pay Rs 10 a day. Our financial mechanisms don't match her cash flow, so the idea is to piggybank a mechanism like the Sewa bank or an SHG that can." Selco is now partnering Sewa in Gujarat. An SHG can finance a lamp to a basket weaver who pays back Rs 3 everyday.

The poor pay more for lighting. Hande points out that a *pani puri* vendor uses kerosene lamps which costs him Rs 15 to 20 a day. Solar lamps could reduce that to Rs 8. To address this need, Selco has created entrepreneurs who lease out battery-operated solar lamps to street vendors. Selco installs solar panels on the ceiling of the entrepreneur's house or shop to charge the solar lamps during the day. These are lent to vendors in the evening. There are 25 entrepreneurs in Mangalore with 3,000 solar lamps.

To ensure that Selco keeps coming up with new solutions the 150-employee company has an innovations department which Hande heads. This group met a bunch of midwives who deliver babies in the darkest corner of the room. The midwives would cut a hole in the wall and use candles and kerosene. Selco designed a solar cap for them. These same caps could be used by rose pluckers who usually pluck roses between 1am to 3am.

So how does he hire employees who can think innovatively? "We certainly don't hire from the IITs or IRMA. We hire anyone who can think differently and then they have a lot of unlearning to do," says Hande. His target is to expand to an additional 200,000 customers in the next four years. Selco also wants to expand their range of products. "We want to market three stove cookers. But we have to create a supply chain," he says.

Hande is a shrewd businessman with a neat understanding of what works at the grassroots. He grew up in Rourkela and took up energy engineering in IIT-Kharagpur. His seniors often tried to persuade him to change his subject. He would retort that if he did not get a job, he would start his own company. "IIT-Kharagpur closed down their energy division last year. Ironical isn't it? Now is the time when renewable energy expertise is needed most," he quips.

From IIT Kharagpur he went overseas to study. He was pursuing his PhD, and the topic was related to generating electricity from solar thermal, an extremely high-tech area; an idea which has now been revived and is getting funding from mainstream Silicon Valley VCs like Kleiner Perkins.

In 1990, during his PhD he visited a solar project in the Dominican Republic where the poor paid for solar panels. That opened his eyes to the potential of solar energy and financing. He realised that it was time to stop looking at equations and changed his PhD topic from a cutting-edge technical subject to a social theme. "My mentor was very amenable but I was in a technical school and it drew flak from a lot of quarters" he says. He ended up finishing his PhD much later.

To understand how the poor actually lived, he stayed with a family in Sri Lanka where a friend had started a solar project. "I even questioned myself on whether electricity was really necessary for sustainable living," explains Hande. He spent the next 15 to 18 months in Indian villages. "I had a bet going with a friend on who could live with the least money," Hande says.

In 1996, two years after the company was founded, Selco got a conditional loan of Rs 50 lakh from Winrock and succeeded in paying it back. They raised a $1million loan from IFC and paid that back, too. "We have had ethical investors invest in us. This includes a $200,000 investment by Philip LaRacco who started E+Co," he says.

For disabled, see the opportunity

Civil Society News
New Delhi

IT is tough finding employment for the disabled. Ask Absalom David of the Blind Relief Association in Delhi. A decade of trying to persuade employers has provided just about 300 jobs for people with defective vision. But on the other hand a little unconventional thinking can deliver just the right results. Once again, ask David.

A suggestion four years ago that blind people could earn from massage led to the setting up of a training facility in 2003 at the premises of the association where 187 men and women have been taught how to pummel and knead muscles and 100 of them are actually earning a living for themselves.

Shyam Kishore, 28 and visually impaired since an early age, now has clients across Delhi to whose homes he goes. Learning massage has made it possible for him to look after his two sisters and meet his own expenses. He has also teamed up with Asha, a fellow student, and what they earn together will perhaps be enough for them to set up home.

Sunita, a blind woman from Manipur, did her training in Delhi and went back to Imphal. She has set up a massage parlour of her own. She identified three blind boys and sent them to Delhi for training. She now employs them.

There are other such success stories, some of them difficult to track. But the massage skills of these people are prominently on display at the Diwali fair the association holds each year. It is here that they meet up with clients who then call them to their homes.

When it comes to jobs for people coping with disabilities, industry, for all its stated intentions, mostly prefers to pass. The proposition of a blind worker on a machine invariably invites a flat no. Rare is the organisation that has the imagination to create space for the physically challenged.

The number of disabled people in India is however huge and is put at between 40 million to 80 million. The number of blind and visually impaired people is also anyone's guess but without doubt it is significant. The disabled need to be absorbed into the workforce both quickly (to make up for past omissions) and systematically (to prepare for the future).

After several years of doing the rounds to canvass for jobs, David turned up at the door of a medical physician in the hope that he could put together a programme in physiotherapy. The physician had been on the board of consultants of Vandana Luthra Curls and Curves (VLCC), a beauty and fitness company.

David was told that physiotherapy was perhaps not such a good idea because it had medical implications and involved a four-year course. Getting the right qualifications for people who had already been dropouts would be dicey. Chances were that they would be daunted by the course and give up.

But why not massage instead of physiotherapy? The physician had just been to Thailand where he had found blind people making a living out of massage. Surely the blind in Delhi could be similarly taught massage, the physician suggested to David. He made the connection with VLCC, which readily agreed to help with training and certificates.

Photographs by LAKSHMAN ANAND

Shyam Kishore, 28 and visually impaired since an early age, has clients across Delhi to whose homes he goes. Learning massage has made it possible for him to look after his two sisters and meet his own expenses.

A massage session taking place

"The whole idea behind the massage is for blind people to get self-employment since getting employment is difficult," says David. "In Thailand blind people have been traditionally earning from massage. So, we had a brainstorming session with NGOs, people working for providing employment to the disabled, VLCC, doctors and people in the field and came to the conclusion that this would be a beneficial professional course."

"We did a tie-up with VLCC because they have been long in the business. The tie-up was that we would do the training and VLCC would give us specialised support and at the end of the training they would give a certificate to those who come up to the mark."

David explains that there are two kinds of massage: for relaxation and treatment. The blind school chose relaxation because it felt that visually impaired persons may not be initially suited to targeted treatment. "So our people use oils and at most a vibrator, which is a simple machine," he says.

Close on the heels of VLCC, herbal queen Shahnaz Hussain decided to chip in with training in beauty treatments. She offered one of her assistants as a trainer free of cost and provided a generous supply of ointments and creams.

Now the blind school has its own training centre. Rampal Singh, who spent 22 years at the Oberoi as a masseur, runs the course, which has some theory but emphasises the practical because of the heightened sense of touch and feel that the blind seem to develop in compensation for their lack of vision as it were.

Rampal Singh is assisted twice a week by a trainer from VLCC. A trainer from Shahnaz Hussain helps create a higher level of competencies : in facials and other beauty treatments.

The training centre has a classroom with rows of chairs where Rampal and the other trainers can lecture. But the real action takes place in two rooms alongside that have two beds each. Here they learn massage skills in practice, mostly working on each other's limbs or by calling students and staff of the blind school on the premises for a session. The course takes three months during which they are taught the contours of various muscles and pressure points.

Once the training is complete getting into business means an investment of Rs 5,000 or so which mostly goes towards a mobile phone and some creams and oils. Clients come through well-wishers or contacts made at the association's popular Diwali fair. Some of these customers then ask for a massage at home. A blind person may charge as little as Rs 200 for a full hour's massage at home, which is nothing in comparison to the thousands of rupees that clinics ask for.

Shyam Kishore wears a white coat and looks rather professional. He tells us that he was a high school dropout with little hope of making a living because of his disability. When he first heard of the massage course he joined and then dropped out preferring to try his hand at other things. But he was soon back and not only managed to complete the course but is seen as one of the star performers.

Shyam's clients are all over Delhi. He is available on mobile phone and travels to his clients by bus or autorickshaw. His charges vary depending on how far he has to go but at Rs 250 a session his service comes cheap in a city as expensive as Delhi is.

It is much the story for the others as well. For all of them the ultimate dream is to have a massage parlour like Sunita's in Imphal. And their problems are those of small entrepreneurs: where will the seed capital come from? Where does one find real estate in the expensive big city?

Grow a herbal garden

Civil Society News
Bangalore

Photograph by LAKSHMAN ANAND

WHY NOT grow your own medicine instead of buying pills and potions from some chemist? Your terrace, verandah or that tiny patch in your backyard will do just fine. All you need is a bunch of the right plants and some sage advice. You can get both on the verdant campus of the Foundation for the Revitalisation of Local Health Traditions (FRLHT) in the outskirts of Bangalore.

A leaf from history will tell you Indians have always used plants for ailments. Much of this knowledge is fast fading. The best way to revive it is to start using plants for health once again. It's easy and inexpensive. Also plants add colour to your home, improving décor. Long before Bangalore sank into urban chaos it was known as India's garden city and you could help revive the city's sullied green reputation.

FRLHT has an exotic ethno-medicinal garden, the Amruth Vana, with 800 species of tropical Indian medicinal plants. The garden has been pieced together with great care by Dr K Haridasan, one of India's leading botanists, assisted by Ganesh Babu. Haridasan is an expert on the northeast and there are plants here from places as far away as Arunachal Pradesh. Botanists from FRLHT trudge through mountains and inhospitable terrain to find such rare plants.

The Amruth Vana has 30 species for hair and skin care, 27 species that work as antidotes against poisonous bites, 40 species for primary health care, 56 species that are on the Red List and highly endangered.

"We would like to make this a national garden with medicinal plants from every region of India," says Dr Haridasan. There are aromatic plants and an aquatic garden with plants floating around. Dr Haridasan is now growing a Kerala sacred grove.

FRLHT has identified 7,500 plants that were always used to treat illnesses. Its Amruth Herbal Garden programme has selected 10 to 40 herbs in several packages that can be used for primary health needs- from coughs and cold to cuts and burns.

"Grow herbs so that when they grow up they will take care of you" is the mantra of the Amruth Herbal Garden. Says Pushpa, who oversees the programme: "We have been encouraging schools, colleges and self-help groups (SHGs) to grow herbal gardens for primary health care. We have done about 4,200 herbal gardens. Our group has been talking to local clubs to provide awareness of plants. We give training to teachers. Schools in Bangalore are finding the herbal garden an excellent method of teaching botany and environment to their students."

There is even an FRLHT helpline for growing a herbal garden. The plants can be picked up directly from the Amruth nursery. You also get a special Users' Guide which informs you about how to identify, maintain and use the plants for different ailments. Self- help remedies are available and you can log on to FRLHT's website to discover your body constitution or 'prakruthi', consult a vaidya or ask a question.

The Amruth Vana

"Grow herbs so that when they grow up they will take care of you" is the mantra of the Amruth Herbal Garden.

Some plants like tulsi (ocimum sanctum) are already household names. Each plant solves myriad health problems. For instance, aloe vera, is good for cuts, wounds, burns and eye problems. Piper longum alleviates cough, headache, hoarse throat, indigestion and stomach ache. Tinospora cordifolia is good for fever, acidity, liver and diabetes. Vitex negundo helps you tide over joint pains, earache and fever.

You will get advice on where to grow the plant, its features and the parts that can be used for medicine. Most plants don't need much space and can be grown nicely in attractive pots. The plants are shrubs, herbs and trees.

There are plant packages for skin, hair, child care, stress relievers, metabolism, digestion, cough and cold. A package of four species (10 plants) costs Rs 150. Or you can buy a complete package of 21 species (30 plants) for Rs 300, an advanced package of 14 species (20 plants) for Rs 225 or a basic package of 7 species (10 plants) for Rs 150.

The Amruth Herbal Garden has plant deals for institutions and for companies who would like to grow a more expansive garden. You get 350 plants or 40 species for Rs 3,500, an advanced package of 30 species (300 plants) for Rs 3000 and a basic package of 25 species (250 plants) for Rs 2,500.

FRLHT also helps women in rural areas to grow homestead herbal gardens. A little plant serves better than a dubious doctor. Time and money are saved. Women are encouraged to grow plants that can tackle cold, cough, diarrhea, menstrual problems and skin ailments. To add nutrition to their diet, papaya, guava, pomegranate, drumstick and curry leaves are included in the homestead herbal garden package. Anaemia is a major illness among rural women. FRLHT identifies green leafy vegetables and medicines that can be made at home to tackle this debilitating condition.

Animals aren't left out either. FRLHT has identified 190 plants that can treat 20 animal ailments which cattle suffer from. Expert pashu vaidyas were consulted. It has made herbal medicines that treat mastitis, repeated breeding, breakage of horn, cuts and wounds. District milk unions of Dakshina Kannada, Kolar, Shimoga, Hassan and Tumkur are following these practices for their cows.

Address: FRLHT, 74/2 Jarakabande Kaval, Post Attur, Via Yelahanka, Bangalore-560064. E-mail: mpcn@frlht.org, Website: www.frlht.org, www.homeremedy.in, Phone: 28568000, 28568001, 28565760

Rare rice attracts farm tourist

Susheela Nair
Palakkad (Kerala)

AS the train crossed the Tamil Nadu border and trudged into neighbouring Kerala, the change in scenic charm was discernible. The awesome mountains of the Sahya range which stood sentinel-like guarding the region heralded a welcome to Palakkad, the gateway of Kerala. We saw swaying palmyras and vast expanses of paddy fields.

Palakkad is hailed as the 'granary of Kerala' thanks to its endless vistas of paddy fields. As we approached our destination, we saw wide swathes of green paddy fields in valleys straddling the exotic Navara crop. Marigold plants luxuriant with vibrant coloured flowers herald a welcome to the ancestral home of Narayanan Unny, an enterprising agriculturist, who specialises in the cultivation of the rare variety of Navara rice.

This 75-year-old Navara Eco Farm is located on the banks of the picturesque Chittur river at Karukamani in Palakkad district. It claims to be the largest Navara farm in the world and the only certified organic medicinal farm. The ambling pathways in the sprawling 18-acre farm offer excellent exercise coupled with scenic views. The farm teems with medicinal herbs, coconuts and lovingly tended fruit trees droop with the weight of mangoes, jackfruit, lemons, papayas, and pomegranates. The dense foliage in the farm shelters a bewildering variety of birds and butterflies. An organic vegetable garden has several varieties of vegetables which keep the kitchen well supplied.

Walking around the farm we came across a resting place which was used as a surveillance post in olden days to keep vigil against pilferage of grain. We saw workers winnowing, thrashing paddy after the harvest and having a siesta under an enormous mango tree overlooking the ancestral home. The 75-year old tree has been a silent witness to the sweat, toil and success of three generations of traditional agriculturists. The prime focus here is the cultivation of the wonder rice, Navara. What makes it distinct are its medicinal properties and therapeutic qualities. The rice finds mention in ancient Ayurvedic texts like 'Ashtanga Hridaya' and 'Susruta Samhita' which refer to it as a 'pious grain' used on auspicious occasions.

Navara is cited as a special cereal with properties to remedy the basic ills affecting the circulatory, respiratory and digestive system. 'Ashtanga Hridaya' described two types of Navara, black and white, of which the latter is superior. But the yield and quality of Navara varies from location to location. As the cultivation of Navara was restricted to a limited area and did not multiply substantially, it is considered an endemic crop. It is hailed as the 'gold with fragrance' because if a farmer has a stock of the seeds with him he can earn a good price in any season.

Describing his experience of cultivating this singular strand of rice, Unny (as he is popularly called) said, "Grown from time immemorial, Navara is known as 'Shashtika rice' as it takes a short span of 60 days to grow and mature." Tracing the origin of this indigenous plant of Kerala, Unny said, "Navara has been used in Ayurveda treatment from the ancient times and prescribed as a health food for people of all ages."

Grown mainly in the northern districts of Kerala like Wayanad and Palakkad, Navara, is Kerala's indigenous medicinal cereal plant. Herbal healers have endorsed its rich medicinal properties. Traditionally Navara kizhi is used in Ayurveda for treatment of neurological disorders, polio, psoriasis, rheumatism, diabetes, snake bite, arthritis, anaemia, peptic ulcer, emaciation of limbs, lifestyle maladies while the porridge of navara grains in milk is prescribed as special food for invalids and infants.

Navara, the native genetic resource of Kerala, famed for its extensive use especially in Panchakarma treatment (traditional rejuvenation therapy) is popular among foreign tourists and stressed out executives. Scientists at the Kerala Agricultural University have identified an anti-cancer gene in the rice and say it is effective against breast cancer. According to a scientist of KAU research wing, once clinically developed it will be a great boon to cancer patients. It is a unique cereal having high content of free amino acids.

Unny bagged the maiden organic certification for Navara cultivation. He feels that efforts should be made to patent this indigenous plant of Kerala because Intellectual Property Rights apply to agriculture too. Researchers, students, scientists from the MS Swaminathan Research Foundation and other eminent research institutes make a beeline to the Navara Eco Farm for research and study of the Navara crop pattern.

To cater to the increasing number of visitors and growing breed of researchers and scientists to his farm, Unny has joined the bandwagon of agro tourism promoters, synergising both agriculture and tourism. He has ambitious plans to start the first rice museum in India showcasing different varieties of rice and traditional farming implements.

Walking around the farm and the paddy fields, we got a whiff of the countryside, learnt about traditional techniques of farming and watched workers toiling hard in the fields to transplant rice. It offered a back-to-nature experience, giving us a rustic flavour and a close look at village life. Another highlight of the place was the food prepared from fresh fruits and vegetables from the farm. The taste of the delicious Kerala fare dished out by Rema Unny lingered long after our visit.

This 75-year-old Navara Eco Farm claims to be the largest Navara rice farm in the world and the only certified organic medicinal farm. Its ambling pathways offer excellent exercise coupled with scenic view.

Photographs by SUSHEELA NAIR

Narayanan Unny at Navara Eco Farm

Kareem's dark and deep forest

Susheela Nair
Kasargode (Kerala)

Photograph by SUSHEELA NAIR

Abdul Kareem in his forest

IF one drives to the nondescript hamlet of Puliyamkulam, 30 km on the NH-7 between Kasargode and Payyanur, near Parappa in northern Kerala, one cannot miss Kareem's Forest Park. The genesis of the 32-acre botanical park can be traced to 1977. This oasis of greenery is the result of the solitary effort, patience, perseverance and grit of Abdul Kareem who spent three decades transforming a wasteland into a beautiful forest park of high botanical value. It has 300 varieties of trees, herbs, medicinal plants, creepers and rare fruits and also plays host to myriad insects, butterflies and birds fluttering around tufts of wild flowers blooming in a clearing.

After working in Mumbai dockyard and later at a travel and placement agency in the UAE, Kareem returned to Nileswaram, his native village in Kerala in the 70s. Recalling his earlier forays in afforestation, Kareem said: "During one of my meanderings around the area, I found this rocky terrain which pained me. I have always yearned to resurrect a *Kaavu*, a sacred grove that every village in Kerala had once upon a time. So, on an impulse, I bought five acres of barren wasteland in a desolate place, 16 km from Nileswaram at a throwaway price since the owners of the craggy terrain didn't have much use for the land. When I bought this arid land which used to be inhabited by tribals, I became the laughing stock of everybody. But what inspired me were the sacred groves. The greening of deserts in Gulf countries also ignited my desire to recreate an oasis of greenery."

Kareem began to plant saplings of wild trees in spaces between the laterite rocks. Though he nurtured them with water ferried from afar in containers slung on either side of his bike, the saplings dried up and withered in no time. The local villagers were baffled when he bought another 27 acres of arid land adjacent to the plot. Undeterred by his initial failure, he dug deeper into the rocky terrain and planted selected saplings, ferrying water from miles away. The impact of humus on the hard laterite rock was astounding. It accelerated the disintegration of hard laterite into small gravel and slowly to fine soil enriched by tons of decaying leaf litter, rich with humus. In the third year, his patience and persistence bore fruit. A few saplings showed signs of life. To his astonishment, he found water seeping into his derelict well. As the forest trees grew, the water source improved. The once parched wells in the surrounding environs also became bountiful and overflowed for weeks after the monsoon subsided.

Kareem embarked on a planting spree. A variety of plants -- herbal, medicinal, selected exotic varieties and rare botanical specimens were planted. A few years later, his plants grew to a certain height heralding the arrival of birds which dropped more seeds, initiating a cyclical process. "Nature took charge. Weeds, rare herbs and medicinal plants sprouted. Hare, jungle fowl and beehives started colonising the nascent man-made forest. I was a mute spectator watching nature at work," says Kareem.

After consulting experts about conservation, he dug rainwater catch pits, set up embankments to store rainwater and raised walls with rock pieces across the slopes to retain topsoil otherwise carried away by flowing rain water. Word spread about his grit, and his commendable achievement. The same villagers who laughed about his initial attempts at conservation flocked to Kareem's nascent 'forest'. Today, three decades later, the woods are lovely, dark and deep. Sunlight scarcely penetrates through the thick green canopy overhead. As one wends one's way through the painstakingly developed man-made forest, the drop in temperature is perceptible and the perennial chirping of birds and sounds of insects can be heard in the dimness of the forest. During the long, wet months of the Kerala monsoon, mushrooms and moss are a common sight.

Environmentalists, botanists and nature-lovers have flocked to the forest to understand how Kareem transformed a denuded, rocky terrain into a lush jungle.

Kareem's feat has few parallels in the country. Environmentalists, botanists and nature-lovers have flocked to the forest to understand how Kareem transformed a denuded, rocky terrain into a lush forest. Researchers working on wasteland management visit his forest to study the 'Kareem Model.' His saga of sweat, toil and struggle has been featured in school textbooks. As his story spread far and wide, rewards and accolades came pouring in. Environment awards came from NGOs and corporates. Forest research institutes and Panchayats conferred honours on him. When the father of India's Green Revolution, M S Swaminathan, once stopped by, he was bowled over by Kareem's work. Since then, he is a frequent visitor. In 2005, Indian Oil Corporation released a full page newspaper advertisement in its 'India Inspired' series extolling his efforts. Appreciated and adopted as the 'Kareem Model' by research organisations including the Indian Council of Agricultural Research, Kareem's man-made forest is also an eco-tourism destination. Kareem now lives in a cottage deep inside the forest, with his wife and children. To cater to increasing visitors who want to see the forest he has made, Kareem rents out a few cottages at reasonable rates.

Ambling through thickets and branches, under the canopy of cool, shady trees and amid the towering trees and the chirping of birds, one cannot but feel that "God is in His Heaven and all is well with the world". According to the green evangelist, "Greenery is the only venture that dares the law of depreciation. As years roll by, the value of this expanse of forest will only keep escalating." His 30-year old tryst with nature has taught him that there is a religious bond between man and nature. "Success cannot be measured in terms of materialistic wealth. My rewards are the highly mineralised, herbal water, the fresh, fragrant air, the daily rambles through the woods, a healthy life and peace of mind," explains a contented Kareem.

If you would like to visit Kareem's forest please contact him at:
P Abdul Kareem, Kareem's Forest Park
Puliyamkulam, Parappa PO, Kasargod
District – 671533, Kerala
Tel: 0467- 225 4233, 225 4283

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Babu, Middle School Student, Bommandapalli, Hosur.

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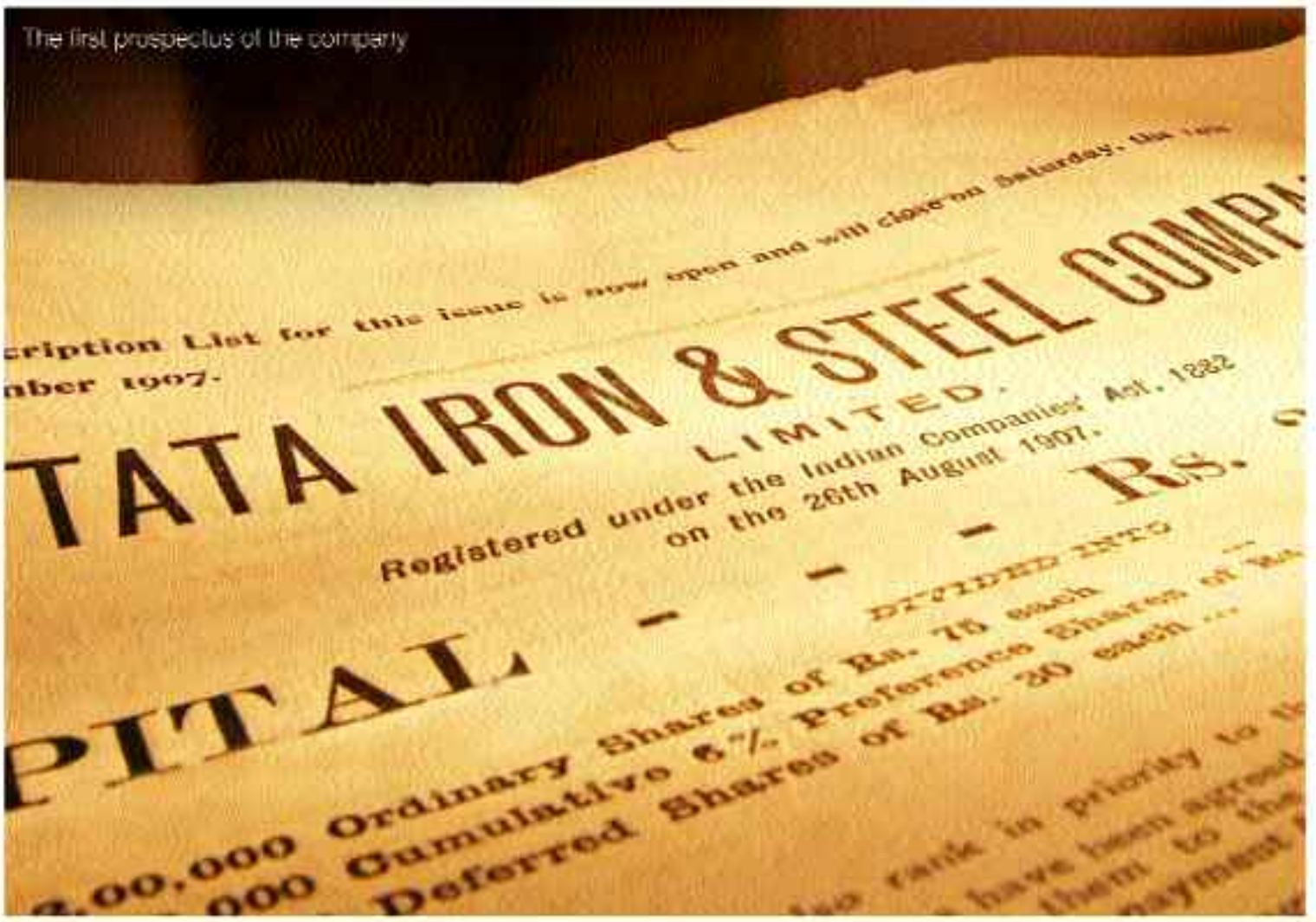

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