

## Ecocity Planning: Images and Ideas



Bangladesh University of Engineering and Technology (BUET)  
WBB Trust – HealthBridge

## Ecocity Planning: Images and Ideas

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## TABLE OF CONTENTS

Forward By Dr. Roxana Hafiz .....	03
Forward By Richard Register .....	05
Preface.....	10
Introduction .....	12
Why Ecocities.....	15
Ecocities ( Main Characteristics of an ecocity).....	18
Getting Around the City.....	34
Environment Waste and Sanitation) .....	48
BUET Student Designs .....	53
Editor's Comments on the Students Design.....	57
Design Highlights.....	61
Design One: A city of Zones.....	62
Design Two: Highlighting Recreation.....	70
Design Three: A Quest for Sustainability.....	77
Design Four: City of Air and Light.....	85
Design Five: Ecocity , A Dream for Future Living.....	89
Design Six: The Organic City.....	93
Design Seven: Lake Views, Fresh Breezes.....	100
Design Eight: Independent Mobility for Children.....	103
Photo and Comment Gallery.....	108
Conclusion.....	112
Source and Further Reading.....	113

## FOREWORD BY DR. ROXANA HAFIZ



The cities of the world have been growing very fast after the Second World War, more specifically during the late 20<sup>th</sup> century. Cities grew where there was scope for business, trade and commerce; and also as centers of education, culture and so on. So cities have been drawing people to themselves for many reasons. Even then cities were much smaller in terms of space compared to the rural areas, and the human scale was not lost or diminished.

Recently cities have begun to grow at a scale never experienced before or many governments seem confused as to how to cope with such unprecedented rushes towards the cities. The problems are aggravated with the obsession for accommodating cars in the streets rather than pedestrians and non-motorized vehicle users. Safety and security in communication, quality of living, peoples health, etc. – all seem to be at stake. In the feeble attempts made to solve the problems of rapidly growing cities, the need for good

planning with people in mind is far from sight. Exercises concerning such issues have been rare.

Ecocity planning is a beacon of light in the horizon of fast growing cities. To prove that cities can be made for the people, the department of Urban and regional Planning, Bangladesh University of Engineering and Technology, Dhaka in collaboration with WBB Trust (Work for Better Bangladesh) and HealthBridge, organized an Ecocity Design program towards creating or reorganizing cities by focusing quality of life of the residents in the cities.

The program on Ecocity planning was not simply an academic exercise but also a creation of awareness and consciousness among the planning students that the cities can be built for people. The result is an eye-opener for all. Dissemination of knowledge regarding Ecocities is important, but it is far more important to implement it on the ground so that people can know the difference between living in an unplanned, fast growing city designed for cars that is good for the environment and for people.

The students of level 4 term 2 of BURP Program, 2007 have put together many ideas regarding Ecocity Planning. I believe, will never be lost. Because this program has left an everlasting impression on these young planners, we caringly place our hopes that they will bring the necessary changes to our cities to bring people and nature back to the forefront.

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## FOREWORD BY RICHARD REGISTER



In November 2006 I had the great pleasure of participating in the Bangladesh University of Engineering and Technology's class on ecocity design held under the auspices of the institution's Urban and Regional Planning Department. The models and drawings by the students there were a real inspiration, inspired in turn by Debra Efroymsen and her grand enthusiasm for both the students and the subject matter. That subject matter is no less than the reshaping of cities, largest of humanity's creations, for long-term sustainability.

Historically people designed cities for people, not vehicles. With an interim gap of less than a century in which the emphasis has been on vehicles, we are returning to that historical mode of prioritizing people. And no wonder – the way the vast majority of city planners have been shaping cities is a growing disaster, from local congestion, accidents and pollution to worldwide climate change, species extinctions and extraction of the Earth's cheap energy deposits in just two or three generations.

Ecocity design and planning is uniquely prepared to solve all these problems at once. Structural dependence on cars and cheap energy is at the core of the multifaceted problem, but such dependence cannot continue much longer given permanently escalating energy prices. The problem *will* go away, but has to be designed to go away peacefully and with good, ecologically-aware planning rather

than in chaotic and very likely violent collapse. By "structural" dependence I mean literally the structure of the city. That structure makes cities built for cars dangerously dependent upon them. We should not, and cannot afford to, build cities on the measure of the automobile. We need cities built on the measure of the human being instead.

The exercise that took place in November 2006 which resulted in much that you see in this publication was future-oriented. But what will that future look like? We will make that future ourselves, but planning for a positive future requires thoughtfulness, clarity and commitment to actually initiate change. Hints of that future are all about. Some hints come from seeing trends, extending them into the future and asking what they portend. For instance, the trend to ever more cars and highways comes up against an enormous problem: the fact that oil is a limited and increasingly unaffordable resource. There is only so much of it on the planet, and we have already used up that which is most easy to extract. As it requires more and more energy and expense to extract what remains, we will eventually reach the point where extracting oil requires more energy than the extracted oil contains. The days of cheap energy are over.

Here in the year 2008 we are seeing the first effects of a world-changing situation, as demand begins to outstrip supply and the price of energy suddenly and quickly rises. The price of food follows, especially where people try to raise fuel for cars instead of food for people from the thin soils of the Earth.

There are, then, fundamentals that will step in to alter or completely reverse trends. The implications are profound and one of them is that we need to design cities, towns and even villages to run on very little energy, with much of that energy coming from safe renewable sources like wind and solar. Bangladesh has a head start on America and other wealthier countries in that regard. Its people already know how to live with far less energy than the wealthy countries, who have forgotten how to live without a seemingly endless supply of cheap energy – and fail to realize that

drastic declines in energy use could in fact mean moving toward a much healthier state, for people and the environment.

Another fundamental issue has to do with getting a sense of proportion and making some decisions based on prioritizing what to do first and with most effort. For example, recycling is a good idea, but a bigger idea is building the city so that recycling becomes much easier in the first place: placing more diversity of activities and facilities close together makes recycling work much better.

Or note that cars are about thirty times as heavy as a human being, move ten times as fast and take up about fifty times as much space. If those numbers are taken seriously, how could we ever decide to lay out streets for “ample free parking” as planners have done for the last sixty years in the United States, and more recently even in Dhaka, despite the very low rates of car use in that city?

If you have a solution for a problem that happens to solve several other problems at the same time, you should focus special attention on that solution. Such solutions may appear complex to people and therefore are postponed while bureaucrats take on “simpler” solutions that only address one problem at a time. Planning for ecocities is like that.

But to reshape the city to cover less land and serve people better with less energy also helps solve problems of declining biodiversity by liberating land that is covered in sprawl development. It helps solve problems of agricultural land lost to sprawl by regaining it for food production, helps make transit and bicycles work far better, helps architecture that heats or cools (depending on the location and climate of a city), and helps solve some of the problems faced by low-income earners by helping them get to their destinations more easily and cheaply – by bringing the destinations close enough together that distances can be bridged by foot, bicycle or transit. Designing and reshaping cities into ecocities should thus be a high priority. It should not be postponed because it sounds more complicated – it actually simplifies everything else. It should be done. For all the reasons listed and many more, it *must* be done.

The drawings, models, talks and discussions of November 2006 related to all of this in a spirit of imaginative, pleasurable and serious work. But what if, in addition to designing a number of possible versions of an ecocity project, Bangladesh in particular could actually make an ecocity contribution directly related to its potential?

All around the world there are hundreds of cities on coastlines vulnerable to hurricanes, storm surges, floods and sea rise. The CO<sub>2</sub> that rich countries produce with their cars, trucks and factories is raising sea levels and amplifying the violence of storms throughout the world. If there is an ecocity solution for transforming such cities, then one of them, maybe in Bangladesh, should take the lead. In adopting the ecocity mode of building, Bangladesh could find places where many things come together – compact city form, streetcars and bicycles, and generation of energy through renewable means such as solar.

I visited New Orleans after Hurricane Katrina and noticed that the old section of the city, the French Quarter, was built on higher ground. On the north side of the city, by the edge of a lake so big you cannot see across it, is another “town” of a sort: the campus of the New Orleans University. It too is on elevated land, but in this case the school and its support community of shops, restaurants, housing and so on are on an artificial rather than natural high place. Neither the French Quarter nor New Orleans University suffered serious flood damage. Most of the rest of New Orleans, however, was built at or even below sea level – and was so badly devastated that a full half of its population has not returned.

How are those in New Orleans rebuilding? Instead of gathering the city together as a compact, highly diverse development with access to much of the city’s wonderfully lively and colourful culture, instead of finding places to build on artificial mounds of soil, instead of connecting centers with the streetcars and rails they already have and are quite proud of, they are building right back at or below sea level in harm’s way. Again they are rebuilding (what little that is actually being rebuilt) the city as scattered and low-density, heavily dependent on the automobile and cheap fuel that

is not going to be there – not only in the long-term future but starting right now.



Why aren't people already building on higher ground? Perhaps building on artificially elevated soil awaits the other element in our thinking that notices that ecocities take up much less land than cities for cars. Maybe we have simply gotten so used to the idea that progress *means and requires* cars and their infrastructure and energy supply systems, and that such "progress" means success, that we have simply not noticed there is a very different way of building.

In any case, I invite all those who contributed to this publication and all those reading it to pull these pieces together, take the leadership the world needs, and build ecocity projects in your own city. You will be building a healthier future into the deep future – ready to survive much better those crises that periodically punctuate the calm with disaster. Rise above it – literally – in the smaller footprint pedestrian cities standing tall in the fresh air.

-- Richard Register, founder, Ecocity Builders and author, *Ecocities - Rebuilding Cities in Balance with Nature*





## PREFACE

*What if cities were radically different than those we now live in—and better?*

In the spring of 2006, WBB Trust, HealthBridge and the Bangladesh University of Engineering and Technology (BUET) Urban and Regional Planning Department (URP) jointly announced an ecocity design program. The purpose was to encourage undergraduate design students to think “outside the box” by designing a small urban settlement of about 90 acres and 20,000 residents. The settlement was of a specific shape, with a reserve forest in one corner.

In these designs, the needs of people, particularly children, would take precedence over attempts at rapid travel, and agriculture and nature would form part of the city. The idea was less to create realistic plans that would be ready to implement than to challenge current thinking about urban planning and investigate, through creative thinking and imagination, alternate possibilities that deserve further exploration.

Working in small groups, the students created drawings/diagrams of their imagined ecocities. In the discussion and design phase, BUET professors, WBB and HealthBridge staff, and international experts advised the students on the design work. In addition to lectures, meetings, and informal consultancies, in November 2006 Richard Register and Kirstin Miller of Ecocity Builders in the United States traveled to Bangladesh to engage with the students and help them with their planning.

The next step was to build models using ideas from the plans. Since it is time-consuming, hard work to build a model even of such a small city, main ideas consolidated from the various plans were used to create just four models, which the students built in groups, again with advice from many others. The models, and the students’ thoughts about ecocity planning, were shown at a BUET exhibit held in July 2007.

This book is divided into two parts. The first half discusses the concept of an ecocity and some of its key features. The second half

presents the original plans and images of the BUET students’ designs and models, the basic criteria of their designs, and reactions by visitors to the BUET exhibit and to an Ecocity exhibit organized by WBB at Drik Gallery in June 2007 to present the concepts explained in the first half of this book. The latter exhibit was organized to present the concepts explained in the first half of this book. This book does not aim to present entirely realistic plans and designs for an ecocity, but rather to question conventional approaches and suggest possibilities for change and improvement in quality of life through enlightened urban design.



## INTRODUCTION

Cities have attracted people for thousands of years. Their denser populations allow for higher quality educational and health care facilities, employment opportunities, cultural centers and public spaces than exist in the countryside or towns. Concentrated populations in relatively small areas also provide the opportunity for extensive and diverse social interaction. Together, these create incentives to visit and settle<sup>1</sup>, as well as the context in which economies can prosper.

As Richard Register, the founder of Ecocity Builders, has written, “Something almost magic comes from cross-fertilization of ideas, ambitions, and basic human sociability when people gather in cities to share and take advantage of the gifts of others. ... The city is a rich soil in which ideas, art, science and innovation grow. It is a human social invention that makes other inventions possible.”<sup>2</sup>



Life in cities comes not from buildings, but rather from the public spaces that connect buildings—city streets and other open spaces where people gather and interact. As Australian advocate David Engwicht explains, “For thousands of years, streets have been the epicentre of the social, cultural and economic life of cities. ... In

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<sup>1</sup> Clearly cities offer more than simply opportunities for earning, as otherwise the wealthy would flee from their polluted, crowded and dirty conditions as soon as they prospered sufficiently, and return to the quietly, relatively unpolluted countryside.

<sup>2</sup> Register 1987.

order to reclaim our streets, we first need to dramatically reduce traffic levels.”<sup>3</sup>

Over time, existing cities have changed dramatically. Traditionally streets were used not just for movement, but also for meeting others and as a public marketplace. Such diverse uses began to disappear as the streets were paved for automobiles, leaving little if any space for signs of human life. Low-income countries in particular continue to follow this model, often creating new cities built from the ground up with mobility, not liveability, in mind.

Meanwhile, the links between the rising levels of obesity around the world and the transformation of public space into parking space has been acknowledged by many. However, by (re)introducing measures to encourage fuel-free transport and discourage cars, and by converting parking spaces back into public space, people would have the opportunity to exercise more and rediscover affection for their rejuvenated cities. For long distance travel, reliable public transport could give residents a better alternative to sitting in congested traffic in their private cars.

The mistakes made by trying to solve the challenges of urban mobility by building more roads and parking spaces for cars have been recognized by many in both Europe and America. Planners have learned that new roads simply attract more traffic, while discouraging car use and encouraging more efficient modes can reduce congestion *and* improve liveability.<sup>4</sup> Countries suffering from traffic jams, air pollution, high fuel costs and frequent injuries and deaths on the roads now have the opportunity to become a partner and leader in finding and implementing solutions to the challenges of traffic congestion, mobility, and economic survival. Global threats such as climate change, peak oil, rising fuel prices and water shortages further threaten our existence, and the dream of a technological situation to these crises is unlikely to materialize into reality. Clearly a new approach is needed.

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<sup>3</sup> Engwicht 1999.

<sup>4</sup> Bari and Efrogmson 2005 (1).



One such movement towards creating or reorganizing cities to focus on quality of life rather than travel by automobile is the Ecocity movement. A number of cities around the world, such as Curitiba (Brazil), Bogotá (Colombia), Copenhagen, Paris and London are reclaiming space from the car and returning it to people, and people around the world are seeking solutions to the problems created by car-based urban development. The primacy of people in urban planning is now being more widely recognized and urban patterns in such progressive cities changed to reflect the needs of people for recreation, socialization, and a pleasant outdoor environment, as well as for reintroducing agriculture and nature into cities.

As Danish architects Gehl and Gemzøe note, "The policy of pushing back cars and giving urban life better conditions continues to be a European phenomenon primarily, but it is interesting to note that corresponding urban policy strategies can now be found in cities in North and South America, Asia and Australia. ... Every part of the world has desolate, invaded and abandoned cities, and all over the world there are cities that have fought back by inviting inhabitants to return and use public space."<sup>5</sup>



<sup>5</sup> Gehl and Gemzøe 2003.

## WHY ECOCITIES?



Why work with students to create Ecocity designs? The main goal was to encourage students to think differently about cities, considering possibilities that would normally be considered impractical. Yet much of the reality of existing cities such as Dhaka is itself almost unbelievable when considered from a fresh perspective. Is it possible that we consider it acceptable to sacrifice people's lives on the streets, and the freedom of movement of the very young, old, and many others, for the sake of rapid movement of cars? That children may believe the only bird that exists is the crow?

Consider that while nobody could place a desk and chair or bed to work or sleep on the street, car owners are allowed to store their own private possessions in public spaces for free. To paraphrase Bogotá's visionary former mayor Enrique Peñalosa, do we consider public spaces for cars (parking) more important than public spaces for children (parks)? How can we accept that the residents of a single apartment building do not know each other, and that the fear of kidnapping and traffic danger prevents, around the world

and even where crime rates are very low, that most normal and natural of activities—children walking to school?

As urban critic James Howard Kunstler writes about the United States following the mass car invasion, "The quality of city life suffered so enormously from the onslaught of cars that the majority of Americans soon made up their minds to reject the city... The car allows Americans to persist in the delusion that civic life is unnecessary. As a practical matter, this regime is putting us out of business as a civilization."<sup>6</sup>

Cities do not have to be as bad as they often are. Many cities around the world exemplify the qualities that increase quality of life for their residents, while reducing pollution, transport costs, and crime, and increasing sociability and liveability. European cities are far more likely to have the qualities needed to sustain civilization than cities in North America, encouraging high density, mixed use settlements in which people can walk and cycle safely and comfortably, and creating varied opportunities for social interaction.

Urban planning pioneer Jane Jacobs notes, for instance, this trait in Europe, where "boulevards are places to which people flock for a stroll when their day's work is done, to see the neighbours, get word of strangers, pick up other news, and enjoy a coffee...and a chat while they take in the passing scene, including sidewalk play of children. People in cities and neighbourhoods in much of the world understand their boulevards to be at the heart of their communities. A well-designed boulevard is always well provided with trees along its margins and its medians, because a major concern of serious boulevard designers is to create environments welcoming to pedestrians."<sup>7</sup> Such boulevards, clearly, are not dominated by cars, but rather engaging places for people.

International research on the needs of children and youth in low-income urban environments has consistently found similar needs: beyond their basic survival needs, young people need outdoor

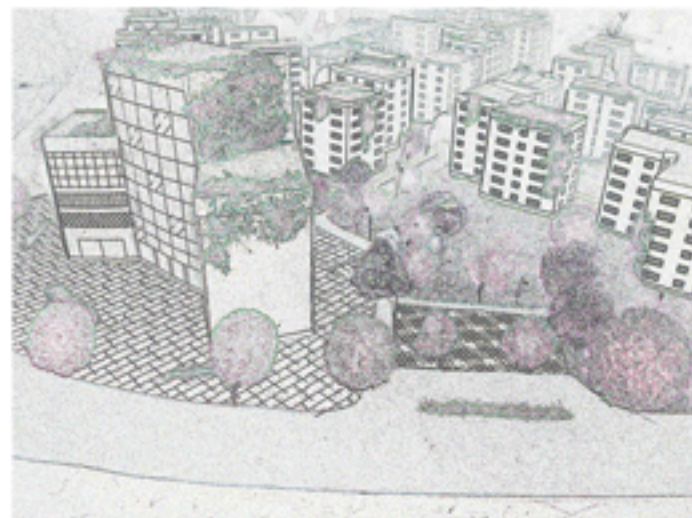
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<sup>6</sup> Kunstler 1996.

<sup>7</sup> Jacobs 2004.

opportunities for unstructured recreation safe from the danger of cars. Youth want more trees, parks, and public spaces in which to play, and less noise and pollution. Rather than parking lots and streets crammed with cars, they want the freedom to cycle, walk, and spend time with their friends. Rather than crave more possessions, they want to be accepted and valued by adults and given the opportunity to enjoy their childhood through active, creative play.<sup>8</sup>

Cities *can* make space for agriculture, parks, and nature. Cities *can* be designed to reduce the need for fuel for movement, and encourage the physical activity so vital for health and happiness. Less space for cars means more space for everything else—including the varied activities so vital to our economic, social, and emotional well-being. But if we don't dream it, we will never build it.



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<sup>8</sup> UNESCO 2002.



## ECOCITIES

### Main characteristics of an ecocity



"I liked this exhibition so much. When will we have our beloved Bangladesh like this? Or it will only be a dream? But we hope for the best."<sup>9</sup>

People come to cities for many reasons, including higher quality education, job opportunities, health care, culture and recreation. Yet the very presence of so many people in so little space, while making all those advantages possible, also creates many problems—particularly when most people travel significant distances each day, thereby creating pollution and traffic congestion. What if we could maintain the advantages of a densely populated city while minimizing the problems? What if Bangladeshi

<sup>9</sup> This and all other quotes in boxes throughout the book are from visitors to WBB and BUET ecocity exhibits in 2007.

cities were communal, friendly places where those of all ages led sociable, active lives in an environment with little pollution or congestion?

At their best, cities are, in the words of Jane Jacobs, "fantastically dynamic places"—when they allow and encourage, rather than inhibit and prevent, social contact in public places—primarily on footpaths.<sup>10</sup> Cities can provide benefits that are impossible in the less-populated countryside, but those advantages need to be available to all, and thus placed outdoors in publicly accessible areas. To promote the economic and overall viability of cities, a range of factors is important. According to Zoë Ryan, Senior Curator of the exhibition *The Good Life*, "Access to the arts, education, culture, and design is an integral element of the fabric of the urban environment promoting diversity, education, creativity, tolerance, and the exchange of ideas."<sup>11</sup>



Many factors are needed to make cities liveable. At a minimum these include provision to all inhabitants of basic services (water, sewage, health care, and education), good career opportunities,

<sup>10</sup> Jacobs 1961. This book uses both the terms footpath and sidewalk interchangeably.

<sup>11</sup> Ryan 2006.



and a healthy living environment low in pollution. High quality transport (including good infrastructure for walking and cycling) should be affordable to all. Fresh organic produce should be grown within the city and be accessible at low cost, without worries of chemical additives. Nature should have the opportunity to assert itself, including lakes, ponds, and parks that attract wildlife. Enjoyable, free, outdoor recreation should be available for all residents regardless of sex, age, or income. Prioritization of the needs of children and other inhabitants, not just business and cars, is critical. Liveable cities inculcate a cooperative, friendly feeling among residents, and thus low crime.

People should feel a strong attachment to their city; the city should do much for the residents, and the residents in turn should wish to do much to preserve the quality of their city. In Dhaka, conditions tend to be the opposite, making living in the city a form of suffering for many, rather than enjoyment of the benefits of urban life. This feeling is reflected in the behaviour of residents, who feel no constraints about littering and making excessive noise, with no concern for what they perceive as, after all, an inhospitable environment and uncaring neighbours.

Feelings of anger and alienation in many existing cities, which are a far cry from the ideal of an ecocity, should come as no surprise. Rather than encouraging interaction and creating opportunities in pleasant environments with little pollution, and facilitating the movement of residents in low-impact ways (via fuel-free means and public transport), many existing cities are characterized by frequent traffic jams, difficulty moving through city streets, such high levels of pollution that residents become ill and find city life unpleasant, very few opportunities to enjoy recreation outdoors and insufficient playgrounds and parks for children to play in and places for youth to gather and socialize. As a result, neighbours in the same building, much less the same street, may not know each other. Streets are often empty of human life, though cluttered with cars, leading to high rates of crime, isolation, and alienation. The natural environment is often in poor condition at best, with "natural" or green spaces in decay, offering little chance for vegetation or wildlife to survive.



"This type of exhibition will encourage us to protect our nature. Especially nowadays, our children are deprived of opportunities to play outside; they don't get enough playfields or outdoor places to play. So they are getting ill, they are suffering from headache, they don't want to read. They should get the facilities."

Are ecocities merely a dream? Are cities by definition polluted, unpleasant places to live with high rates of congestion and crime? With proper planning and prioritizing, cities actually could be pleasant places in which to live, and we could ensure that future generations inherit not our problems, but our solutions.



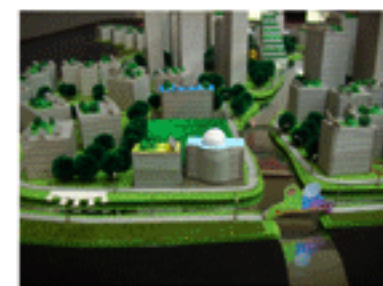
In order to remedy the problems of urban planning, we first have to remind ourselves of the purpose of cities. As discussed earlier, cities bring many people into a small geographic area, thereby maximizing the possibilities of exchange of goods, services, and ideas.<sup>12</sup> Residences, workplaces, schools, health facilities, cultural opportunities, shopping, and outdoor recreation should all be within a short distance of each other. Neighbours should have the opportunity to meet each other and socialize on the streets. Children should play outdoors without fear of kidnapping or of being run over. The young and the old should have independence of movement, able to navigate the streets, even the street crossings, safely and easily. Trees, water bodies, birds and other natural life should enhance the beauty of the city, and remind us that we too are part of nature. Food should be grown locally and organically, increasing urban dwellers; access to high quality, fresh produce transported without the use of fuel.

As communities re-establish themselves within cities, neighbours will find it easier to work together to solve local problems and further enhance their quality of life. According to Richard Register, "*Ecocities* proposes a fundamentally new approach to buildings and living in cities, towns and villages, an approach based on solid principles from deep history and an honest assessment of a troubled future."<sup>13</sup> Just how radically different—and better—cities could be has been explored in depth, for instance by J.H. Crawford in his book *Carfree Cities*, in which Crawford addresses the various potential problems with a carfree city, and offers designs to show how such cities could be planned.<sup>14</sup>



The negative effects on health, environment, and economics seen in our current cities are not irreversible. With enlightened thinking and a fresh perspective on urban life, we can do much to reverse current crises and make our cities liveable. We can create cities for people and nature, cities that people will be proud and happy to inhabit.

“Done well, but you have to go ahead.”



<sup>12</sup> Engwicht 1999.

<sup>13</sup> Register 2002.

<sup>14</sup> Crawford 2002.



### Mixed use areas



People mainly travel not for the love of moving about, but in order to access workplaces, education, health care, shopping and recreation. When destinations such as workplaces and schools are located far from residences, people are forced to travel a long distance almost on a daily basis. Yet if such places were located near to homes, people could easily carry out their daily business with little travel.

When workplaces and residential areas are not separated from each other, there is far less traffic generated in each during the day and evening. Traffic jams would decline and people could move about far more easily. Mixed use areas would also ensure the presence of people on the streets at all hours, which would reduce crime and make neighbourhoods safer. If the places we need to access were closer, we could invest less on infrastructure for travel, and more on the places themselves, or on other important services. Less travel would mean less travel expense, less wasted time, and improvements in quality of life. Less travel also means less air and noise pollution and less use of fuel. We could have less parking and more public spaces; instead of flyovers and wide roads we

could plant trees and reintroduce water bodies, and thereby have a greener, healthier, more beautiful, and far less flood-prone city.



### Traditional city design

Cities were originally much smaller than they are today, with most citizens living within the town boundaries. All amenities were within walking distance or—as cities modernized—a short ride by train or tram. In modern cities, there is usually a downtown core, including business and administrative areas, entertainment and cultural districts, commercial and industrial facilities, and residential space.

With the rapid expansion of megacities, the tendency may be to continue to develop the original downtown core districts for work and possibly shopping, while the citizens sprawl into the suburban vicinity. These suburbs are usually developed into almost purely residential areas with large malls positioned next to highways, creating a dependency on motorized transport to reach necessary activities, such as grocery shopping and getting to the downtown office. Even optional activities, such as eating in a pleasant restaurant or enjoying an outdoor concert in the centralized entertainment and cultural districts, require long distance travel as these facilities are not adequately available outside of the town core. With everybody moving long distances to the same spots at the same times of day, traffic jams become a regular part of life, and the amount of time moving from one place to another is often more than the amount of time dedicated to leisure activities and to family and friends.



Meanwhile, the problem has become so widespread that at least some city officials have accepted the need for a change in thought about urban structure. Writers have defined automobile dependence as a situation in which "a city develops on the assumption that automobile use will predominate so that it is given priority in infrastructure and in the form of urban development. Whereas automobile dependence was once assumed as a feature of the modern world, it is now being questioned in cities in all parts of the globe".<sup>15</sup>



<sup>15</sup> UN Centre for Human Settlements, cited in Newman and Kenworthy 1999.

### Decentralization



What if key city functions were located in different parts of the city instead of all focused in one downtown hub? What if the downtown hub also included a good quantity of housing and other amenities? In this way, distances from people's homes or workplaces to necessary offices could shorten, thereby decreasing traffic.

What if different parts of the city were designed as self-sustaining communities built around the natural features of the land, with their own cultural, commercial, industrial and business facilities? If this were the case, each community would not have to rely on a single downtown core and there would be no more isolated residential plots of land that depend on the automobile to access all facilities.

With necessary functions being closer to most residents, travel distances would be shortened and thus would not always require fuel. A comprehensive network of bicycle, rickshaw<sup>16</sup>, and pedestrian facilities running through and connecting each community would further facilitate fuel-free access. For longer distances, for instance connecting different communities, frequent tram or bus service could meet most people's needs. Such an approach would both be better for the environment and for everyone's wallet.



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<sup>16</sup> Throughout this book, "rickshaw" refers to cycle rickshaws, the most common form of transport in Dhaka after walking, and an increasingly popular mode in many other cities.

### Building clusters



It is easier to develop relationships with neighbours when city districts are clearly demarcated, preferably clustered around attractive public areas. It generally requires frequent meetings in order to establish even a casual relationship of nodding and smiling, then greeting, each other, and even more meetings to evolve into friendship. Where many high rise buildings are located near each other, most people will remain strangers.

But even if there are fewer families in close proximity, the absence of common meeting spaces will still prevent socializing. The optimal arrangement may be residential areas arranged in smaller clusters surrounding semi-private courtyards and gardens for the use of local residents, owned and maintained by the residents of the housing group. Such a set-up—found, for instance, in parts of Azimpur housing colony in Dhaka—can help maintain a high level of neighbourhood interaction and sense of local ownership of shared places. Families can look outside their windows at their children playing below, and gather together in a comfortable social



setting. This kind of situation is visible in government housing colonies—but unfortunately markedly absent from most recent housing developments in Dhaka.

### Inclusion



In creating neighbourhood and community ties, all members of society should be given equal opportunity to belong. By forming no major walls or rigid boundaries around the buildings or blocks, disparity in neighbourhood development can be decreased. Bushes can serve as an effective fence, with frequent gaps that invite all community members to enter.

When cluster courtyards and gardens are given unique features (such as a garden under arches in one cluster, badminton courts in another), movement and interaction within neighbourhoods is promoted. Recreational facilities within the clusters could—if all involved so choose—provide occasional activities open and advertised to everyone in the surrounding community, in addition to the regular activities held for neighbourhood residents. Jan Gehl has written in *Life Between Buildings* about the importance of

gentle transitions from completely private to semi-private to semi-public to public; interior courtyards and public fields can aid in these transitions.

By varying the façades, shapes, sizes, colors and architectural details of buildings and apartments within, visual stimulation and affordable living quarters can be provided in all areas for all income groups, decreasing the creation of undesirable slums and the negative labels and often deplorable conditions for people and places associated with them.





## Recreation



Recreation is a basic right. People of all ages need recreation for their physical and mental health. Public spaces are valuable in that they provide a place where people of different ages, incomes, and interests can meet, observe each other, and mix. Each of these actions is important for maintaining positive interactions among city residents. It is vital in cities to have sufficient playing fields, parks, and other public spaces where everyone can gather outdoors for free. But open space is often disregarded or encroached upon if it does not have a function. Thus parks become parking lots, or are taken over by the homeless, rendering the spaces unfit for their originally intended uses.

Some public spaces are cherished by the community, while others have little appeal. One example of this is the difference between Dhanmondi Lake and Gulshan Lake in Dhaka: what a difference a pleasant path and a few other amenities make! Parks are often more utilized when they are small and can be used as a shortcut, rather than hidden behind imposing walls or gates. Public services and institutions such as schools, religious buildings, and community centers can be grouped together around a common

open area, creating multiple-use areas that will ensure frequent utilization and appreciation.



By creating a network of public spaces with diverse functions, more of the city's residents are likely to have access to enjoyable areas for relaxation, physical activity, and socialization. As many people, including the very young and very old, cannot travel far from home, it is more important to have many small public spaces scattered throughout the city than a few large ones that most people cannot easily reach. As many different types of people enjoy their neighbourhood public places, interaction among people and mutual learning is encouraged, thus enhancing citizenship and a sense of community.

While city planners and officials around the world are increasing the number and quality of public spaces, such spaces are both limited in Dhaka and suffer from many problems caused by neglect and lack of maintenance. We need both more and better public

spaces in Dhaka to respond to people's need for physical activity, recreation, and socializing.



The lack of appropriate outdoor play spaces for children and youth means that they are often forced to spend their free time at home watching TV or playing computer games. As a result, their physical, mental, and social development are all hampered<sup>17</sup>, and, in the words of an American social critic, “the daily examples of violence and moral degeneracy” on TV may undermine children’s belief in “adult rationality, in the possibility of an ordered world, in a hopeful future”.<sup>18</sup> There are simply no alternatives to active and preferably unstructured outdoor play.

Similarly, adults need pleasant outdoor recreational opportunities; wandering through shopping malls or eating in restaurants is not the same as enjoying a pleasant park or neighbourhood hangout, meeting neighbours, observing strangers, and learning about—and learning to love—one’s city.

### **Recommendations to improve public places**

It is not enough to provide recreational areas within a city. Such areas often become unfit for use by most area residents, and can become scenes of crime and other anti-social behaviour. The first and most important rule may be to ensure that public places in each neighbourhood are owned by that neighbourhood, which will then have a stake in preserving it in good condition. Large empty

areas, especially when walled in, can easily attract vandals and fall into disrepair, whereas “pocket parks” used by the locals as shortcuts and resting places will stay in better shape.



Encouraging community ownership will help ensure that public places remain clean; the city government should also ensure that they are well lit. It is helpful to plant plenty of trees, for shade and beauty, and to provide plenty of seating, including benches, low walls, stairs, etc. A mixture of active and passive uses is most likely to help preserve a public area. Finally, it would be helpful, where possible, to ban the use of motorized vehicles on surrounding streets to improve safety and accessibility and to make public places quieter and more pleasant.

*\*Many things have been shown in this exhibition to create an ideal city. The exhibition will be successful when these things will be implemented. People should work to make the city liveable.\**

<sup>17</sup> Kabir, Hillol and Efrogmson 2007.

<sup>18</sup> Postman 1982.



## Gardens

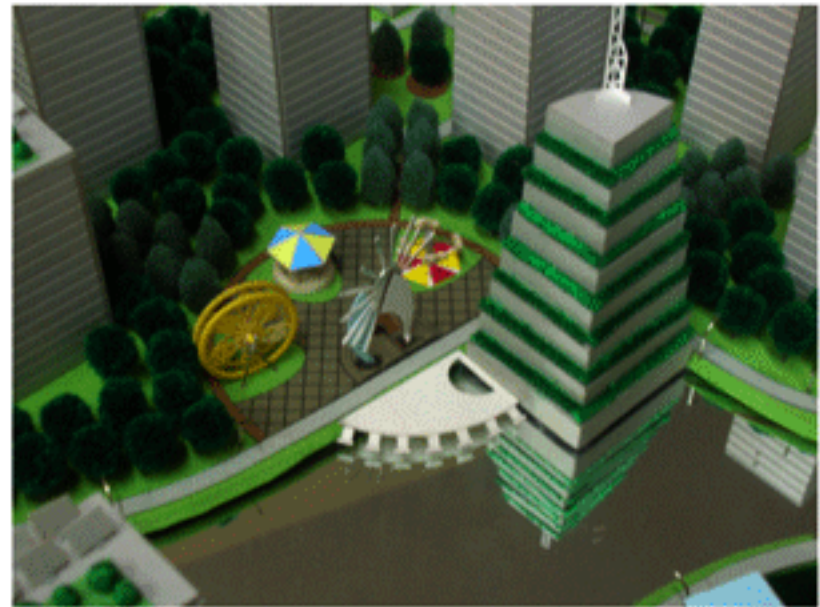


In much of the world, rooftops are neglected as part of a building's living space, used at most to hang clothes. The social, financial, and ecological value of this space can be increased significantly by introducing rooftop gardens.

By planting trees and flowers and creating a social area with chairs and benches, a building's inhabitants gain increased access to outdoor green space, often with great views of the surrounding area. This increases the habitat for birds and improves air quality. By setting up rooftop vegetable and herb gardens, urban food production is supported and job opportunities are created for those who cultivate and distribute the produce, while residents benefit from greater access to healthy, affordable food. The building gains better insulation and storm water runoff can be delayed and/or better controlled through immediate absorption of rainfall by the soil, in reservoirs for future watering, and by terracing the roof

gardens to direct and slow the rain runoff. The property value of the building increases for tenants and owners, providing a financial incentive.

On the ground, neighbourhood yards can include areas where vegetables, fruits, and other foods can be grown. Fruit trees can line courtyards. Vendors can easily transport produce throughout the local area via rickshaw van (bicycle cart). Dependence on food coming from outlying areas can be brought down to a minimum through the implementation of permaculture, a permanent system of agriculture relying on renewable (unlimited) resources, thereby encouraging a self-sustaining ecosystem within the community.



## GETTING AROUND THE CITY

### Pedestrians



Walking should be about a lot more than getting from here to there. It is, at its best, a highly pleasurable activity; it is on foot that one can really experience the city, explore its neighbourhoods, and interact with the variety of people in the streets. Yet while some city environments actively attract pedestrians, others serve mainly to repel them. But pedestrians are vital to city life, maintaining an active presence on the streets, providing safety to others, and reducing the traffic snarls that inevitably occur when most people move about in vehicles rather than on foot.<sup>19</sup>

The authors of the book *Health and Community Design* posit three main factors which will determine how many people walk, how far,

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<sup>19</sup> Alam 2007.

and whether the experience is pleasant or one to be suffered due to lack of alternatives. First, cities built so as to create much distance between destinations—by allocating ground floor space to car parking rather than shops, by separating uses in different districts, and by allowing and encouraging big lots rather than clustered façades—all discourage pedestrians. Second, cities that cater to the car, providing wide streets intended for fast travel and limiting opportunities to cross, thereby making walking unsafe and unpleasant, discourage walking. Finally, the appearance of the city itself—whether it is finely grained and attractive to encourage slow movement and observation or big and ugly, meant to be passed quickly by car—can have a big effect on how people move about.<sup>20</sup>

Further, it is far more pleasant in hot and rainy climates when there is shelter available to protect pedestrians from the sun and rain. Shelter can include trees and awnings. Benches allow for opportunities to rest and socialize, and are particularly important for the elderly who otherwise may not be able to travel far on foot. For younger people, informal seating, such as low walls, steps, and even statues are welcome breaks from walking, and inviting places to stop and chat with friends.

Long, straight streets are built for cars, not people. While it may be easy to drive on a straight street, it is boring for pedestrians. The farther one can see ahead, the longer the route seems. Winding streets lend a sense of adventure, as people can only see a little way ahead; the question of “what is around the next corner” provides incentive to walk and encourages pedestrians to travel farther on foot than they otherwise would.

The greatest stimulation of all for pedestrians may, in the end, be other pedestrians. People enjoy being in lively places. Whatever attracts people to both walk and stop (sit, stand, lean against a wall, drink tea, chat with a friend) can serve as an attraction for other pedestrians.

In cities in Europe and elsewhere, pedestrians have priority on the roads; rather than pedestrians waiting for cars to stop, cars must

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<sup>20</sup> Frank, Engelke and Schmid 2003.



stop whenever someone wishes to cross the street. Where such a system takes place within a mixed use area offering many visual and other attractions for the pedestrian (ground-level shops and restaurants to look at, attractive parks, wide sidewalks, and a lively mix of people enjoying their neighbourhood), excellent conditions for walking are virtually ensured. By so doing, it is possible to greatly reduce the reliance on other, often expensive and polluting, forms of transport. Just as walking benefits people's health, and a pleasant environment encourages people to walk, so people walking on the streets makes the streets safer and pleasanter for other pedestrians and everyone else.

About 60% of all trips in Dhaka occur on foot, yet conditions for walking are often abominable. In many parts of the city, footpaths are used as rubbish bins, or to store construction materials. Further, drivers frequently park their cars on footpaths, making the footpath unusable for pedestrians. If the ban on car parking on footpaths were fully enforced, a huge obstacle to walking would be removed.



In various parts of Dhaka, pedestrian bridges have been built for crossing streets. Yet those bridges often are not used by the majority of people crossing the road. This is hardly surprising, given how difficult it can be for women (especially if wearing a sari), small children, the elderly, the infirm, and people carrying goods to climb the steps. Underpasses are similarly problematic, with the added problem of being dark and thus threatening. The frequent use of barbed wire or high cement medians, while perhaps billed as a safety measure, is a further affront to pedestrians, requiring

people to walk farther to find a place to cross and suggesting that cities are about the rapid movement of cars, not the convenient movement of people. Rather than prioritizing the movement of cars, we should prioritize the movement of people on foot.



There should be provisions for safe and frequent street-level crossing for pedestrians throughout the city. Often pedestrians must cross at the risk of their lives, as cars stop in the marked pedestrian (zebra) crossing. In other cases, continually turning vehicles mean that pedestrians must race between moving cars. Traffic police should ensure that cars do not block the zebra crossing, and that people are able to cross safely.

The presence of vendors<sup>21</sup> on the footpath means that low-cost goods are available for sale throughout the city, and that people can walk more safely (as it is difficult to commit a crime when there are people about). Hawkers represent a small-scale informal business, creating an extremely important income opportunity for the urban poor<sup>22</sup>; without such opportunities, cities can easily fall into decline and decay marked by high crime, inequity and alienation.

Further, the visual interest created by hawkers rewards those moving on foot, giving them something to do and look at as they travel. Rather than banning hawkers from footpaths, positive arrangements should be made to ensure that they do not entirely

<sup>21</sup> There are many terms used to describe informal merchants operating on streets and footpaths of cities, including vendors and hawkers; the terms are used here interchangeably.

<sup>22</sup> Efroymson and Rahman 2005.

block footpaths, but are allowed to remain throughout the city. By licensing hawkers where there is adequate space on or adjacent to the footpath, both pedestrians and city government revenues will benefit. Where space is inadequate, rather than turn it all over to the car, planners should reclaim space for pedestrians and hawkers and diminish road space for cars.

**"A planned city for people can bring comfort to our life."**

#### **Recommendations for improving the situation for pedestrians**

People will generally only walk what they consider a reasonable distance. That distance varies depending on such factors as income and culture, but is also determined in part by the walking conditions in the city. However, the first step for encouraging walking is having a mixed-use city that brings destinations close enough to make walking possible. Once that condition is met, it is time to consider the various obstacles faced by pedestrians.

Pedestrians obviously need a place to walk, so *all* city streets have amply wide footpaths, and those that are broken should regularly be repaired. Footpaths should be kept clear of parked cars, trash, construction materials, and other obstacles. There should be ample, safe, street-level crossings for pedestrians, and space for hawkers on or next to footpaths. For shade, beauty and protection from rain, there should be plenty of trees along footpaths. Footpaths should be well lit at night. Since people use their city not only to get about but to enjoy themselves, and since the elderly may not be able to walk far without resting, there should be benches and other arrangements for people to stop and rest, have tea, and socialize on or next to footpaths. Finally, drivers should be heavily penalized for stopping on pedestrian crossings at intersections.

#### **Fuel-free transport**



The extensive use of fuel over the last hundred years has led to two major international crises: climate change and the threat of rapidly diminishing fuel supplies accompanied by catastrophic price rises. Fuel is expensive, in terms of both price and the results of its use, such as war in Iraq. The use of fuel-dependent vehicles pollutes our air, water, and soil. Meanwhile, an obesity epidemic related to car use is causing an upsurge in deadly and debilitating chronic disease, such as cancer, heart disease, diabetes and stroke. As a result, life expectancy is likely on the decline in the United States.<sup>23</sup>

Yet simple solutions exist to reduce our reliance on and use of fuel. Much transport, of both people and goods, already occurs without

<sup>23</sup> See, for example, the *New England Journal of Medicine* (<http://content.nejm.org/cgi/content/short/352/11/1138>).



the use of fuel, via foot, bicycle, and rickshaw/rickshaw van. Since fuel-free transport also occupies far less space for movement and parking than does fuel-dependent transport, traffic congestion could also be greatly eased.<sup>24, 25</sup>

### Bicycles



"A special thing I liked very much in this exhibition is the use of bicycles. To make our city an ideal city we have to promote the use of bicycles. In this way noise and air pollution will decrease."

Decades ago, cycling was a key form of transport in Dhaka, and—thanks in part to government support to this valuable mode—continues to be a main form in Amsterdam, Tokyo, and Copenhagen, and in many cities in China, Germany, and the Netherlands, among others. Bicycles could be a means to reduce the unbearable traffic jams of Dhaka, if the importance of cycling were recognized in national transport plans and appropriate infrastructure created to make cycling safe and pleasant. Bicycles

<sup>24</sup> Bari and Efrogmson 2005 (2).

<sup>25</sup> Efrogmson and Bari 2005.

take up very little road space, use no fuel, and create no air or noise pollution. Bicycles could give independence and freedom of movement to many people at very low cost and with significant health benefits.

### Ways to popularize cycling

Certain conditions need to be met before those other than the most desperate or foolhardy are willing and able to cycle for transport. Where streets are dominated by cars, cycling is both unsafe and unpleasant. To regain space for bicycles, city officials can create separate lanes for cycling that are sufficiently wide for at least two cyclists to ride next to each other (because cycling will never be a major mode unless sufficient space is given to it, including the ability for faster cyclists to pass, and social cyclists to ride together), and that are elevated above the street to prevent incursion by cars (which otherwise tend to park completely blocking cycle lanes, making them useless to cyclists; elevated cycle lanes are the rule in, for instance, Copenhagen).

To further reduce danger to and improve efficiency for cyclists, bicycles should have priority at intersections, for instance with separate signals allowing them to clear the intersection first. Ample and protected stands for cycle parking throughout the city will ensure that cyclists can park, and thus use bicycles for transport and not just recreation. Finally, government could encourage the development of a local cycle industry, but in the meantime, should stop all tax on imports of bicycles.

"If these ideas are really implemented, we can have a nice city to live in."

### Rickshaws, pedicabs, cyclos.....



Cycle rickshaws, also known by other names such as pedicabs, are very convenient for short- and medium-distance travel within a city. Like bicycles, rickshaws require no fuel and are environmentally-friendly. Rickshaws are particularly beneficial and important for women, children, the elderly, and the disabled, as well as for the movement of goods. In addition, rickshaws are a major source of employment for the urban poor, and cities cannot remain vital if they do not generate employment options for those with little education.

Rickshaws, pedicabs, cyclos—by whatever name, this fuel-free mode of travel was once popular in many Asian cities. In cities such as Jakarta and Bangkok which have banned rickshaws, reliance on motorized transport has soared and so as a consequence have congestion, pollution, travel costs, use of fuel, and injuries and deaths from road crashes<sup>26</sup>. It is important to

<sup>26</sup> The word "accident" is actually a misnomer for something that is an inevitable result of vehicles traveling at high speed. The term "crash" is preferred due to its connotation of the inevitability of their occurrence. Meanwhile, the chances of survival are directly related to speed, so that efforts to reduce injury and death from road crashes should involve

learn from the mistakes of such cities as well as the experiences of cities as diverse as New York City, London and Tokyo which are now eager to introduce and promote rickshaws as good for environment and the economy. Over ninety rickshaw companies exist around the world, and rickshaws operate in at least 42 cities of North America and 69 cities in Europe and elsewhere. Rickshaws would be far more popular in Europe if cycling were not so prevalent and popular; attaching a small carriage to a bicycle to use as a carrier for children and goods converts the common bicycle into a vehicle similar to a rickshaw, but in a far more affordable way given far higher wages for pullers in Europe. That is, throughout the world, the importance of transport without fuel is widely accepted and acknowledged.

Rather than banning rickshaws, proper systems should be established throughout Dhaka to allow rickshaws to continue playing an important role in our transport system.



"Use of rickshaw as non-motorized transport has been shown in this exhibition. I liked this use of NMT [non-motorized transport]. Many problems related to the city and their solutions also have been shown here. And also international experiences helped us to realize the problems."

reductions of speed and switching to safer modes of travel, such as train instead of bus/truck/car.



### Recommendations concerning rickshaws

The belief in Bangladesh that rickshaws are somehow harmful, causing air pollution despite using no fuel, and generating anti-social behaviour (quite the opposite being the case as they provide employment to the uneducated masses), various measures have been taken to limit their use. Yet rickshaws continue to be the most popular mode after walking, due to the many advantages they offer. Rather than government determining how many rickshaws should be on the streets, officials should grant licenses for rickshaws and rickshaw pullers based on the market demand for their services. To facilitate ease of transport throughout the city, rickshaws should be allowed to operate on *all* city streets, and should be allocated space commensurate to the percentage of passengers they serve. On roads that currently ban rickshaws, special lanes could be added, of sufficient width for at least two rickshaws to travel abreast in each direction.

The outdated rickshaw design could be greatly improved to make them easier on the puller and more comfortable for the passenger. Finally, rickshaw pullers—and in fact all road users—could benefit from basic training on traffic rules and safety.



### Public transport



The most efficient way to move a large number of people is by public transit—tram or bus. Not only does public transit move large numbers of people while occupying little space, but it also requires virtually no parking space during the day, whereas cars spend most of their time parked and thus have inordinate space requirements. Transit is both good for the environment—requiring far less fuel per person moved than private cars—and for the city, as it leaves more space for all other activities than do cars.

Unfortunately, public transit in many low-income cities generally consists of a haphazard and disorganized bus network run by individual operators with no central control. As a result, there are often long waits for buses, drivers speed to make more money, and buses get caught in traffic congestion due to the lack of any priority measures for them.

Curitiba, Brazil introduced Bus Rapid Transit (BRT) decades ago, proving that a coordinated bus network organized by government but operated by private companies can provide extremely high quality and efficient service. In Curitiba, over 60% of work trips are

made by bus, with buses arriving on average every fifty seconds during peak periods.<sup>27</sup>

According to urban spaces designer Marilyn Taylor, "Well-planned public transportation is a great contributor to the shared space and public life that are essential elements of the successful 'mixed-use' city. But for many decades in the United States and in new 'quick-growth' cities, the emphasis has been on roads for cars which remove us from participating in the life of the public realm."<sup>28</sup> An extensive, well-run system of public transport complemented by excellent conditions for walking, cycling, and travel by rickshaw can greatly reduce congestion and pollution and increase liveability in cities.

### **Recommendations concerning public transport**

Public transit should be given a key role in transport planning, rather than being considered subordinate to the automobile. An entire city bus system can be rationalized through a centrally-controlled system rather than allowing competition on the same routes, through Bus Rapid Transit (BRT).

When discussing public transit, it is important to emphasize that the most cost-efficient and practical mode is surface-based, be it tram or BRT. Building underground or above the ground level is both expensive and, in the case of underground transit, leads to a less inviting situation for those using public transit. For the same investment, BRT could cover a hundred times or more the distance as would be met by an underground metro.

People's access to public transit must be ensured through good facilities for fuel-free transport and safe and rapid surface crossing of streets. Finally, conditions for bus passengers could be improved by adding bus shelters to protect waiting passengers from sun and rain; speeding bus service by providing separate lanes and turns for buses; and working to ensure that bus drivers follow traffic

rules, drive more courteously, and greatly reduce or stop their honking.

### **Fuel-dependent transport**



As use of fuel-dependent (motorized) vehicles increases, so does pollution, use of and dependence on fuel, congestion, travel expense, and road crashes. Reducing the use of fuel-dependent vehicles is thus important for public health, the environment, and the economy. As far as fuel-dependent vehicles go, cars are the worst offender.

Consider that about two cars occupy the same amount of road space as one bus. But while one bus can easily carry 50-60 passengers, only about 6 passengers will travel in the two cars. Cars spent about 95% of the time parked, while buses and trams are continually moving, further limiting their use of space. So to reduce traffic congestion, it is important to reduce the use of cars and encourage people to travel by public transport, in part by greatly improving its quality. In addition, trips by fuel-free means (walking, cycling, and cycle rickshaws) can be increased by

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<sup>27</sup> Del Bello 2006.

<sup>28</sup> Marilyn Taylor in Ryan 2006.



improving conditions for those means. At the same time, car travel can be directly discouraged through a variety of means.<sup>29</sup>

"We don't want destruction, we want a better future. Let's go ahead."

### Recommendations to reduce reliance on cars for transport



The first and most critical step in reducing unsustainable and unaffordable reliance on cars for transport is to change the way we think of cities. Rather than designing them to encourage or even almost force people to use cars, they should be designed to encourage and maximize travel by fuel-free modes, with most distances easily reached by foot, bicycle, or rickshaw.

In addition to positive measures that will encourage other modes, cars should be positively discouraged through a number of means. Since cars are parked most of the time, space used by cars for parking should be charged by units of time and space occupied, utilizing market rates for the space occupied. This would encourage those parking all day to use alternate means, and would decrease the amount of space needed for parking, as one spot would serve several cars over the course of the day instead of only one.

Increasing the cost and limiting the availability of licenses to buy cars would be another direct measure to reduce their use. Finally, officials should stop encouraging car ownership, by changing the rules that require provision of car parking throughout the city and by ceasing to give priority on roads to cars.

<sup>29</sup> Bari and Efrogmson 2005 (3).

## ENVIRONMENT

### Waste and sanitation<sup>30</sup>



Most solid waste generated in Bangladesh is organic (from food, plant, and animals), as opposed to synthetics such as plastic. Simply by separating waste when it is disposed of, this organic material could be converted easily and naturally to compost through community composting or in treatment plants, rather than being dumped with other compounds. The resulting compost could in turn be used in the gardens and agricultural lands of the city's ecosystem, thereby enriching the soil. This would drastically reduce the quantity of waste needing to be disposed of in other ways.

With "modern" flush toilets, one person can easily produce 10,000 to 20,000 litres of wastewater a year, while many people continue to lack access to clean water. Most discarded waste is not properly treated and sewage further spoils surrounding bodies of water when it is released into the environment. Pit toilets also create unsanitary conditions, the mixed waste creating bad odours, while also attracting insects, rats and other disease-carrying organisms.

Ecological sanitation, or Ecosan, is a practical solution to these problems. By separating and containing liquid and solid waste in modified toilets, and replacing flushing water with selected solid materials (such as ash or sawdust), water is no longer wasted and

the resulting products can be treated and used as a resource. Expensive and often toxic fertilizers that pose health risks can be replaced with the treated liquid, a natural fertilizer. In the same way that food and animal waste decomposes, the solid mixture will naturally turn into rich soil, which can prove useful in urban gardening where local animal compost is less available. Existing soil, after all, contains the waste and remains of animal, plant, and human life. Finally, Ecosan toilets are easier to keep clean, and the contained waste is virtually odourless, kept free from insects and disease in an airtight container. By allowing the waste to dry for months, diseases are eliminated, which otherwise can spread to people for instance when fresh waste ("night soil") is used directly on crops.



<sup>30</sup> See Litu 2008.



## Noise Pollution



Among the many difficulties of life in modern cities is noise. Noise not only causes much aggravation and disturbs sleep, but is responsible for a range of health problems including hearing loss and high blood pressure. One of the main sources of noise pollution in cities is car and other vehicle horns. In research undertaken by WBB in 2002, 97% of students in Dhaka reported that their studying is interrupted by horns. While the poor bear the brunt of the problem, usually living in the loudest neighbourhoods, nobody is immune.



Fortunately, there are many solutions to reduce this problem, and those solutions are far more feasible since the government has passed regulations on noise pollution. Noise is not inevitable even in large bustling cities; we can act to reduce it significantly.<sup>31</sup>

"Noise and air pollution from car has been shown here. I liked it."

<sup>31</sup> See, for example, Dey, Hillol and Uddin 2004 and Dey and Kabir 2006.

## Recommendations to reduce noise pollution



The first step in cities without noise pollution regulations would be to pass such regulations. Since the regulations already exist in Bangladesh, what is lacking is enforcement. For a start, government officials should enforce the rules making the 100-meter area surrounding hospitals and schools as quiet zones by fining anyone honking within those areas and banning loudspeakers and miking<sup>32</sup> in the immediate vicinity of hospitals and schools.

Honking is a nuisance throughout the city. Honking should be banned at all intersections and in traffic jams, and offenders should be penalized.

The use of loud machines (for breaking stones or mixing cement, for instance) in residential areas should be banned. Where quiet alternatives exist, such as hand-breaking of bricks, the noisy machines should be banned entirely.

Miking at night-time should be banned entirely, and during the day for more than a specific time and at a specific decibel.

<sup>32</sup> Miking refers of course to outdoor microphone use, or indoor use intended to reach the entire neighbourhood.

## Polythene and plastics



An ecocity should not only compost all of its organic waste, but also reduce use of inorganic waste, especially what cannot easily be reused or recycled. The production, use, and disposal of polythene and plastics are harmful for the environment, blocking drains, increasing flooding, and poisoning our air, water, and soil. When plastic waste traps water, havens for mosquitoes are created, increasing the risk of mosquito-borne illnesses such as malaria and dengue. When children and cows ingest plastics, they can become sick or even die.

Polythene and plastics essentially never biodegrade; when they are thrown away, the trash remains for hundreds of years. Further, the chemicals used to create them are harmful for health and the environment.

As the use of polythene and plastic packaging has increased, so the use of environmentally-friendly alternatives have declined and with that decline makers of ceramic, glass, paper and jute products are losing their livelihoods. Yet a change in habits could easily help restore the environment and the ability of many artisans to earn a living.

"If these ideas are implemented it would be really nice."

## Recommendations to reduce the use of polythene and plastics

Individuals are unlikely to change their behaviour when they perceive that others are not doing likewise. It is easy to justify that one person's harm to the environment is insignificant. Government policies are critical in changing behaviour because they can establish new norms that affect virtually the entire population, thereby achieving marked change in a short period for little cost. Just as government rules and regulations are needed to address the other environmental problems discussed in this book, so they are needed to reduce the use of polythene bags and plastics.

Such policies include placing a high tax on import of inputs for plastic products and banning the use of one-use plastic products for which alternatives are readily available (such as plates, cups, and bowls). The use of glass rather than plastic bottles for soft drinks and bottled water could be promoted by placing a high tax or surcharge on plastic bottles. Rules could be passed that would ban unnecessary use of packaging and promote environmentally-friendly packaging over plastics. Taxes on environmentally-detrimental products could be raised and incentives used to promote environmentally-friendly ones. Finally, the government could ensure that *all* polythene bags are banned and that ample alternatives are available. Or more simply the government could follow the example of countries such as Ireland, in which a surtax on plastic bags *at the point of purchase*<sup>33</sup> led to an almost complete cessation of their use.

<sup>33</sup> This is important, as otherwise the tax is absorbed by the retailer, so the consumer does not notice, or respond to, it.



### Smoke-free places

There are over 4,000 chemicals in tobacco smoke. Smoking and exposure to other people's smoke causes many kinds of cancer as well as heart disease, stroke, respiratory problems, and other serious illnesses.

Exposure to tobacco smoke can also cause intense discomfort and worsen symptoms of existing illnesses such as asthma. For this reason, all public places, workplaces and public transport should be smoke-free.



### BUET STUDENT DESIGNS



In order to improve urban life in Bangladesh, it is important to move from theory to practice. One such step was the work with BUET students to begin to envision a very different city and to put such ideas on paper and into models. The students were given a set of rules to follow, which are clearly visible in each of the designs. The purpose of the rules was to encourage the students to think about a people-friendly environment, making provision for agriculture and nature within the city limits. Since the designs were meant to encourage creativity and new ways of thinking, they did not conform to existing norms and rules of urban planning in Bangladesh.

As urban planning critic Wolfgang Zuckermann has observed, much can be done to improve the experience of living in a city, by avoiding rather than copying the mistakes of urban wastelands that have given themselves entirely over to the car. As he writes:

“...a small alley opening into a street, a little square suddenly encountered, an avenue divided into different areas, or small spaces cleverly arranged (sometimes called spaces within spaces) gives a better psychological feeling of space than a wide open expanse. ... an American city with its immense freeway and parking infrastructure resembles not so much a city of the 21<sup>st</sup> century as a city which has suffered saturation bombing. ...neither the typical suburb, nor the urban sprawl, nor the freeway city is a true assembly of people.”<sup>34</sup>

Instructions given to the students were:

- Think how to make children happy; you can bend residential land development rules of Bangladesh but you can NOT break this rule.
- Do not separate uses; people should be able to walk from their residence to their job and to shops and markets, and children should be able to walk to school.
- Your built-up area should be kept to a minimum—about 50% or less of the provided site. The built-up area should be fairly high density and all mixed use, with homes and

other services (school, jobs, health care, recreation, shops, and restaurants). Every area should have a mix of the basic elements (at least homes, offices and shops).

- The gross density of your city cannot be more than 350 persons per acre (i.e. total population would not be more than 35,000 for a 100 acre site.)
- Your center will be higher density, but need not be fancy office buildings, and MUST be mixed use. You can put shops at the ground floor, and residences and offices above, but think about what will attract people to the center at different times of day. Your center could be a university, or a plaza surrounded by buildings, or a small pond or lake with surrounding areas for play, work, and residences, etc.
- The entire area should be free of motorized vehicles; transport must be by rickshaw, bicycle, and walking only. (How, one might ask, is a city to manage with *no* motorized transport? First, the size of the city is quite small, so that the entire city can easily be covered quickly by bicycle or rickshaw, from which the main roads are easily accessible. Second, ambulances in traditional cities often get stuck in traffic jams, and thus may travel at little more than the speed of a rickshaw; by fitting out a few rickshaw vans as ambulances, one could easily get people to the hospital in roughly the amount of time that would be required by motorized ambulance. Freight could, as much freight in Dhaka already is, be managed by rickshaw van. It is also possible to use a very basic light rail system throughout the ecocity to allow for the movement of freight and emergency supplies quickly and easily. The two key concepts here are that the ecocity is small and dense, making distances short and efficiency high; and that existing cities are, in many ways, unworkable.)
- Roads can be of different widths, but should focus on the flexibility of a pedestrian and should be pleasant enough to serve as a place for social interaction. You can include

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<sup>34</sup> Zuckermann 1991.



narrow roads; after all, the design does not incorporate cars.

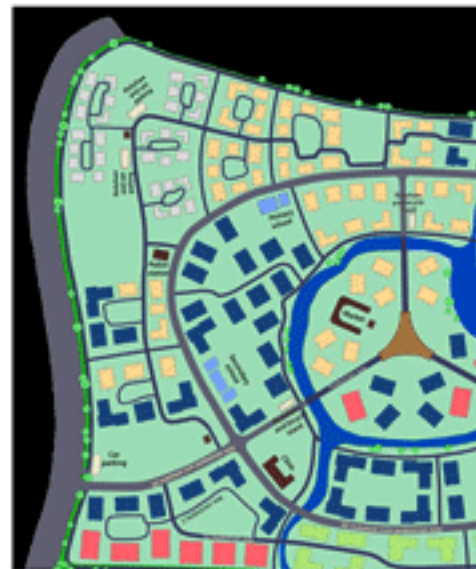
- Rather than grids, focus on courtyards, clusters of buildings, winding streets, canals, etc. Make it an interesting area in which to walk so that people do not stare up and down endless uninteresting blocks. (Grids are important for bringing destinations closer, by providing many routes, and are certainly preferable to many dead-end streets and cul-de-sacs. However, unbroken grids tend to favour rapid movement of cars, and be very boring and uninviting for pedestrians.)
- Cluster your buildings close together and leave open spaces for gardening.
- Design to promote socializing; reward those who move slowly.
- You can make your city more attractive by providing a landmark in your city center (in the form of a high-rise building, or any other structure) that would act as the identity of it. In that case, you would have to guide the movement pattern into your city with respect to the landmark.



## EDITORS' COMMENTS ON THE STUDENTS' DESIGNS

The design program gave twenty-one BUET undergraduate students of urban and regional planning the opportunity to think creatively about cities, challenging their preconceived notions and helping them to question whether it is possible to design a city that is conducive to socializing, children's play, and nature.

The students were not design or planning experts with years of experience, and the concept of ecocities was new to them. The designs shown here were later modified and combined into the four models pictured at the end of this book. Given their limitations, the designs they made are impressive. Various issues arose in their designs which show some of the likely problems that arise in promoting the concept of nature-friendly, liveable cities.



Almost all of the designs incorporated car parking at the entrance to the city, yet little or no consideration was given to bicycle and rickshaw parking within the city itself—despite the fact that, even in the existing non-ecocities of Bangladesh, the majority of trips

are made not by car, but by foot, bicycle, or rickshaw. Further, nobody suggested a train connection to the main city and other ecocities, though again trains are a far more common means of transport than cars.

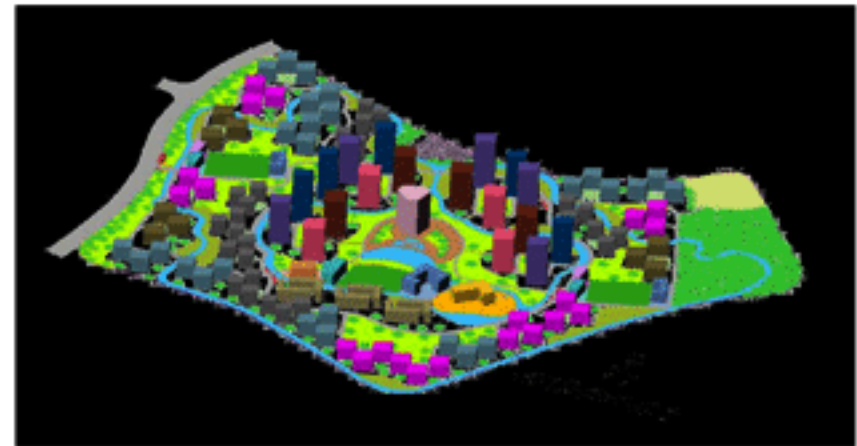
The apartment sizes (not shown here) were often quite large, revealing a preference for building for the very wealthy—just the group least likely to wish to move to a city without cars. The poor and lower middle class, who are most likely to appreciate the benefits of an ecocity, were not considered to the same degree, and many of the students segregated the “hard core poor” to separate neighbourhoods—thereby likely ensuring that they would attend worse schools and have fewer opportunities to climb out of poverty.

Similarly, students tended, in their designs, to mix only proximate social classes, limiting the chances for people to learn from those unlike themselves. It would be far better and more equitable to include low-income housing in each housing cluster as separate buildings, or within each building through provision of different-sized apartments. After all, social equity should be a further goal of an ecocity. On that note, interestingly, many groups included provision of housing for single people (reflecting the age of the designers)—without reference to their income.

Many of the designs also incorporated shopping centres, but shops in an ecocity would be scattered throughout the city to minimize the distance one must travel to obtain basic needs. Meanwhile, virtually none of the designs mentioned hawkers, who are an important source of low-cost goods and who improve walking conditions by increasing safety at night (eyes on the street) and by giving people something to look at, an attractive inducement to move slowly.

Many students were concerned about provisions for emergency vehicles (such as ambulances and fire trucks); only one group suggested using fuel-free ambulance services via trolley and roller skates. The roller skates may be impractical, but some low-income countries such as Kenya use bicycle (rickshaw) vans as ambulances. In any case, a one-lane street is still wide enough for an ambulance or fire truck in an emergency.

One of the groups originally mentioned prioritizing public transit. In such a small area, public transit would be unnecessary, but should indeed be the main form of transport between neighbouring ecocities; in particular, surface rail (tram) is an environmentally-friendly mode of transport that is highly compatible with city life and more enjoyable and less time-consuming to use than an underground metro.



The designs tended to incorporate very wide streets, but with most people walking to most destinations, there will be far less need for road space. It is important to consider how long it would take to cross the streets in these designs. People want to move freely; very wide streets can be a barrier, although the occasional wide pleasant boulevard can also add much charm in a city. Finally, a further advantage to revising city planning would be to include better provisions for the physically disabled, which were not evident in these designs.

The mention only of mosques is not meant as a suggestion that other religions should not be accommodated within an ecocity; in many designs, the intention was that buildings for community gatherings also serve other religions. Where mosques were



mentioned but basic services such as health clinics were not, the designs obviously need to be amended.

On a positive note, many groups planned for good views and cool breezes throughout the city, recognizing that views can be an important and valuable asset. A couple of groups had a lot of ideas on waste management; much more could be done in terms of composting vegetable matter and using solid waste to generate energy. Similarly, there may be more possibilities for solar and wind power, as suggested in one or two of the designs.

Various plans included the possibility of rooftop gardens, which would economize on space for growing vegetables, help to reduce flooding, and make homes cooler. Such "green roofs" are widely used in Germany and England. Finally, it was clear in *all* the designs that the extra space created by not planning for cars, and not using the ground floor for car parking, meant plenty of green space, place for children's play and for socializing, and for a rich and compact city fabric in which it would be a pleasure to walk—and to live.



## Plan : The Green Replica



## DESIGN HIGHLIGHTS

The designs are presented in no particular order and do not always reflect the views of the editor or publishers, but instead represent the thinking of the students themselves and are described in the students' own words.

While attempting to remain true to the students' plans, the editors have made a few corrections as well as pointing out areas that are inconsistent with Ecocity concepts. Since the designs share many points in common, the students' full descriptions have been shortened, with emphasis placed on the key points. The illustrations do not always come from the design being described, though they serve to illustrate the main points.



## Design One: A City of Zones<sup>35</sup>



<sup>35</sup> There is a big difference between dividing a town small enough to be entirely walkable into zones, and using zones in big cities to separate uses. This design would not necessarily be replicable on a larger scale, though in any case, the zones are all mixed use to some extent.





### Description

The Ecocity concept is based on three goals: less energy consumption, least interruption of environment, and compact settlement. The built-up area will be considerably smaller in size than the open spaces, the whole area will be free from motorized vehicles, and mixed-use buildings will be preferred.

The built up area is approximately 35% of the total area. The city includes a water body, and is connected to Dhaka on the western side by a railway.<sup>36</sup> The whole area is divided into three zones: Zone 1 - Town centre; Zone 2 - Vicinity of town centre; and Zone 3: Peripheral zone.

<sup>36</sup> In the original design, the city is connected by a highway, but of course in ideal ecocity planning, the far more environmentally-friendly, fuel-efficient, and significantly less accident-prone mode of train travel is preferred. See also Dey, Iqbal and Sabuj 2006.



### **Zone 1 - Town centre**

The town centre consists of commercial, residential, and recreational areas, while in the surrounding area are residential and commercial areas and community facilities. The outer circle, meanwhile, is more or less purely residential. Walking will be encouraged throughout the ecocity by providing good quality footpaths and formal and informal roadside seating arrangements<sup>37</sup> with and without shade. The apartments will be clustered, and each cluster will have a courtyard which will be the place of interaction of the people of the cluster.

The height of the buildings decreases from the centre to the periphery, giving a good view of the lake and reserve forest from the downtown.

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<sup>37</sup> Formal seating arrangements refer to benches; informal includes a variety of objects that serve the dual purpose of decoration and seating, such as low walls, steps, bases of statues, and large pots for plants.



There are two kinds of roads: one for rickshaws, bicycles, and pedestrians of 25-30', and one for bicycles and pedestrians of 5-10'<sup>38</sup>.

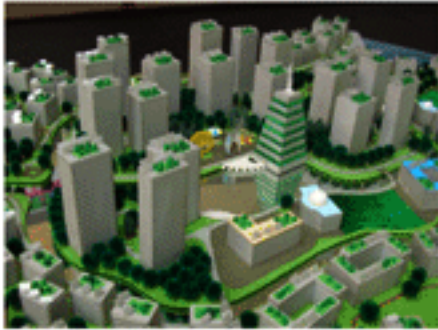
The town centre is different from the central business districts of today's traditional cities, consisting not only of commercial use but also residential and recreational uses to a considerable extent. High rise and large buildings are provided in the town centre to ensure high population density<sup>39</sup>; the downtown will be a pedestrian precinct.

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<sup>38</sup> Five feet is far too narrow for footpaths in cities oriented towards walking, especially since pedestrians can be expected to stop and socialize, not just walk. These widths would have to be changed if ever implemented.

<sup>39</sup> As many authors have pointed out, it is possible to achieve very high density attractively with buildings of just 4-6 stories, placed with no gaps between them, as in many European cities, as opposed to individual high-rises. This also eliminates or at the minimum greatly reduces the need for elevators.





The core of the town centre is a central commercial building of 15-18 stories. The central building will accommodate administrative and commercial offices, a shopping complex, a cinema hall, an exhibition hall, a hotel, and so on. A U-shaped market is provided. The ground floor of the market will be used as a katcha bazar (market selling fresh fruits and vegetables) and the rest of the floors will have miscellaneous shops of food, groceries, books, etc. The apartment buildings in the town centre will be of ten stories, and will have offices and shops in the first two floors, keeping a lively mix of people moving through the area at all hours.

The town centre plaza and a park along the lake provide the main sources of recreation in the town centre. The roof of the central building will provide a vantage point from which the whole city can be viewed; to capitalize on its popularity, a rooftop restaurant will be located there, and the lifts of the building will be capsule lifts to ensure an excellent view. A vista is created from the central commercial buildings of the town centre to the reserve forest.



The buildings of the city are so arranged that a vista is created that provides a continuous view from one of the three faces of the central commercial building to the reserve forest. In addition, the central park and the lakeside linear park are located very close to the town centre.

The philosophy of this design is that people spend most of their waking hours at their workplace<sup>40</sup>. The town center, which offers the maximum commercial activity, is thus provided with the higher order recreation facilities to ensure a pleasant environment for the

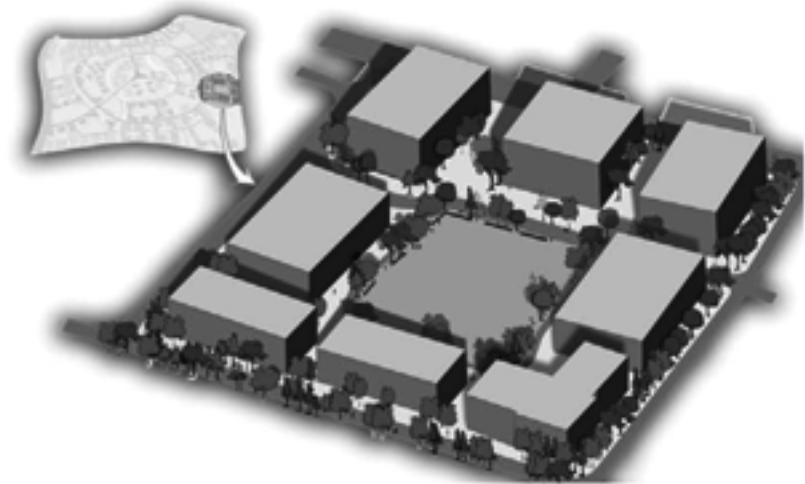
<sup>40</sup> For most Bangladeshi women the workplace is the home, which should also be close to recreational and other facilities.

working people and to ensure the maximum utilization of the most significant recreation facilities.<sup>41</sup>

Facilities are not limited to the town center. Other areas also have a good provision of recreational facilities, local shops, and community facilities such as schools, colleges, community centers, play areas, and so on. Despite the subtle zoning, the plan does not invite "locational disparity", favouring residents of some areas over others.

### **Zone 2 - Vicinity of town centre**

Zone 2 will consist of five-storey residential and mixed use buildings. In some apartments, there will be commercial uses on the ground floor. The open spaces of the educational institutions can be shared by the neighbouring communities, ensuring playing grounds for students as well as outdoor recreational areas for residents. Since each such open space will belong to a school or housing cluster, they will be well-preserved and maintained by the residents.



### **Zone 3: Peripheral zone**

In Zone 3, building heights vary from 3-4 stories, with a more or less residential environment. There are plenty of open spaces, places for active and passive recreation, and places for gardening. The recreational centre will have a community centre, boating club, outdoor restaurant, toddlers' play zone, open theatre, and other amenities. A reserve forest of around nine acres is located at the northeast corner. A vast playing field is located near the entrance of the city. Near the entry will be a parking lot with a capacity of 10-15 cars.<sup>42</sup>

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<sup>41</sup> In an actual ecocity, the focus would be less on earning money and more on quality of life. Consider that a significant portion of people's incomes in the United States, for instance, goes to their cars, so they could spend far less time working and far more with family and friends if they didn't drive. Fewer working hours would mean more time to care for children and the elderly, and to enjoy the many facilities of an ecocity.

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<sup>42</sup> Ideally the residents of the ecocity would not own cars, as they can easily travel throughout their small city by foot, bicycle, or rickshaw, and throughout the country by train. Of course given current transport conditions and aspirations, it may be necessary to provide some provision for cars for visitors to the ecocity, and those residents still wishing to keep one. Car use to and from the ecocity would be kept to a minimum by high parking fees at the lot.

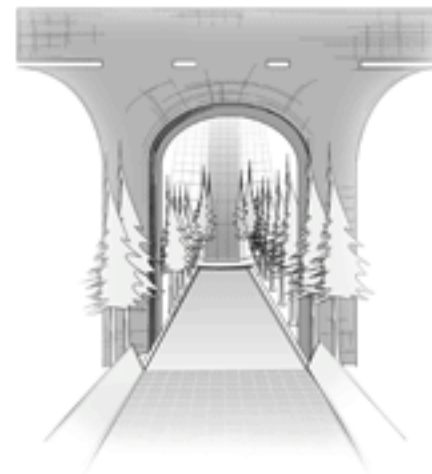




A separate housing area is provided for the low income group, with rickshaw and van stands and repair shops.<sup>43</sup> Space for vegetable gardens and other limited agriculture are provided near the low-

<sup>43</sup> Low-income housing should be integrated throughout the city rather than set aside in one area. By mixing income groups, people have more opportunities to interact and learn from others, and the wealthier residents, in maintaining services in their area, will indirectly ensure a decent quality of city services for their poorer neighbours.

income housing.<sup>44</sup> The ring path of pedestrian cum bicycle way at the peripheral zone provides a continuous movement through most of the apartment clusters of all income groups. Walking has been given the highest priority. There is a pedestrian path along the periphery of the city. Along the outer edge is a 5' plant strip, which widens to 10' beside the road/railway. The peripheral pedestrian path along with this thin green belt will make an edge of the city.

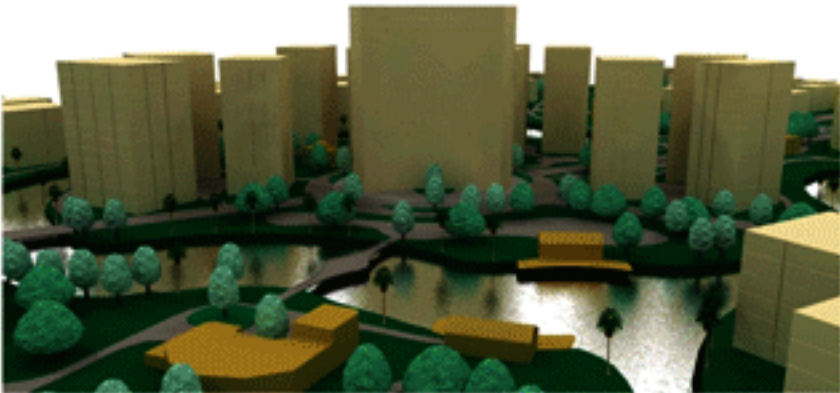


There are three giant arches at the three entries of the town centre, demarcating the importance of the town centre.

In order to further environmental principles, energy consumption will be reduced through the use of non-motorized vehicles, with an emphasis on pedestrian movement. High density, compact settlement allows for much of the land to remain undeveloped, preserving the environment and allowing natural drainage for water. Fewer paved surfaces means less destruction to the

<sup>44</sup> Small garden plots and other spaces for urban agriculture should be spread throughout the city and utilised by all income groups, as gardening can be a significant form of pleasure and recreation, not merely a way to earn income.

environment and better rainwater absorption. The trade-offs include the forms of "comfort" in a traditional city (air conditioning, car use) versus the friendly environment, natural breezes, lesser pollution, and greater peacefulness of the Ecocity.





## Design Two: Highlighting Recreation



An ecocity is a city enriched with nature; in this case, a city planned on a small scale, where the built up area is kept to a minimum. Clusters or blocks of building are preferred instead of grids, and an attempt is made to create a healthy and interesting environment for pedestrians. This design includes segregated rickshaw ways, cycle ways, and pedestrian paths. A huge open space (green belt) is kept at the edge areas of the city to merge with adjacent villages. Spaces are provided at the entrance points of the city for a bus-stand, cycle and rickshaw-stand, car parking, and for loading-unloading. The focus of the design is to create an environment that will be very much child-friendly.

There are two entrances for the city, and three types of roads are provided:

- The rickshaw roads are 25 feet wide, consisting of 5-foot pedestrian paths on each side of the road, with the middle 15 feet reserved for rickshaws. In some cases, bicycles can use this road.<sup>45</sup>
- A cycle way is provided at the periphery of the area.
- Buildings are accessible from the 5-foot wide pedestrian path.
- Ten bridges are provided in the area: four for rickshaws, two for cycles, and four for pedestrians.

<sup>45</sup> There are a few reasons to separate bicycles and rickshaws, including the greater average speed of bicycles and the fact that the sudden movement of rickshaws can make them hazardous road companions for bicycles. In terms of pedestrians, walking on a separate footpath beside either bicycles or rickshaws will be much pleasanter than cars, due to the lack of vehicle emissions and the relative lack of noise and danger. (Of course there will also be no problem of cars parking on footpaths in the ecocity.) However, to ensure that cycling is a viable form of transport, cycles should be allowed everywhere rickshaws can go, with direct access to all buildings.



The main part of the Ecocity is the building blocks. No fixed layout is designed for each and every block. To make the building arrangements interesting, the following aspects have been considered:

- Four- and six-storey buildings are provided in the building blocks. The distance between the buildings is kept at fifteen feet or more, for ventilation.
- No block contains only buildings of similar size. A combination of various sizes of buildings is proposed to make the blocks more interesting and to ensure the mixing of all income groups.
- Open space is provided in each cluster so that people will enjoy breezes, a view, and a sense of space. These open spaces are specially provided for children so that parents can feel secure allowing their children to play within the premises.





- Mixed-use buildings are distributed throughout the area and are accessible from each building. The mixed use buildings contain katcha bazaar (fresh produce markets) on the ground floor, shops selling daily necessities, pharmacies, restaurants, indoor recreational facilities, offices and other commercial activity above, as well as housing for the hard-core poor. A school, a play lot and small shops are provided in their area.



The city centre can be broadly divided into two parts: 1) Administrative, commercial and residential zone; and 2) Recreational zone or the central park. The lake passes through the city centre and divides these two zones.

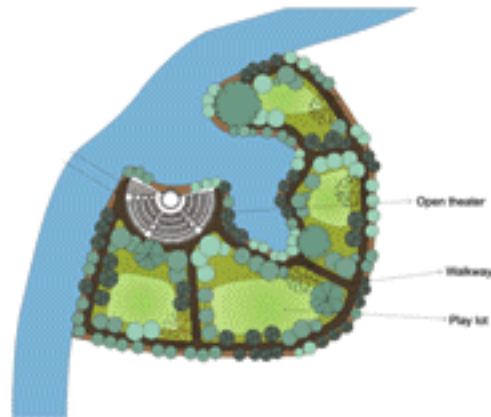
#### Administrative, commercial and residential zone



Key features of this zone include provision of rickshaw and cycle parking at the entrance of the city centre, with bollards provided to restrict vehicles and to encourage pedestrians. Seating arrangements, mobile restaurants, and other facilities are provided along the lake and also in the central open area. There are four buildings in the city centre. These buildings can be categorized into two groups: Building Type 1 consists of a front portion (4-storey) for commercial purposes like market, office etc.; and a middle portion (12-storey) with the lower seven floors reserved for commercial use, and the upper five floors for residential use. Finally, there is a 6-storey rear portion for residential purposes. The other two buildings of similar shape would be used in a similar fashion. Building Type 2 consists of a 4-storey front portion and 12-storey middle portion for a shopping centre<sup>46</sup>, restaurant, exhibition hall, theatre, etc. An 8-storey rear portion is reserved for residential purposes.

<sup>46</sup> In an actual ecocity, rather than concentrating all stores into one large shopping centre, there would be many small, locally-owned shops scattered throughout the city so as to reduce the need to travel for all residents and encourage local businessmen, rather than large corporations, to prosper. Small local shops not only reduce travel need; local businessmen are far more likely to invest in the well-being of their neighbourhood than are big companies.

### Recreational zone or the central park



The recreational zone constitutes the main outdoor recreational area of the city, with a park at its centre. The park is very close to the city center, with a lake separating them. Features of the park include a 10-foot wide walkway throughout the area to encourage walking for the visitors of the park and to provide a pleasant place for city residents to exercise. An open theatre provides a suitable venue for a variety of outdoor functions. There are various play lots for children in the park. At sundown people will be able to enjoy beautiful combinations of light and shadow between the buildings of the city center, sitting in the park or beside the lake.



The lake is 60 feet in width, and will help the drainage system of the area. A green area of 15 feet width is provided for walking and sitting, and an outdoor restaurant beside the lake is planned. Two islands are provided in the lake, with recreational facilities, and people will be able to enjoy (non-motorized) boating on the lake.

Other facilities in the ecocity include three 2- to 3-storey nursery schools, placed between the building blocks; and primary and secondary schools with adjacent large playing fields. The school playing fields can also be used for various community fairs and festive events. Schools are placed so as to be easily accessible by the students by foot or bicycle. Further, a college on a one-acre campus is proposed at the northern side of the city. There are also two mosques, located beside the playfields of the schools so that the fields can be used in special cases such as Eid. A health centre or clinic is provided.



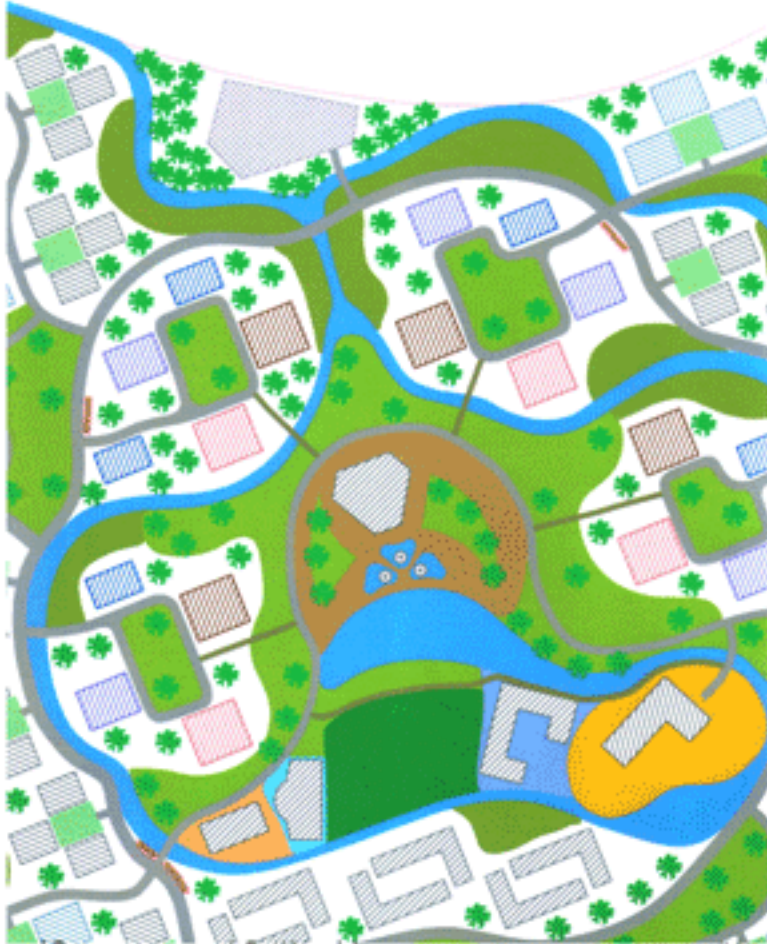


A bus stop is proposed just beside the north entrance of the city, which will help people to reach the various parts of the main megacity (Dhaka). There is also car parking for those residents who own a car, though it is mainly provided for the visitors. Car parking will be discouraged by imposing a high parking charge, based on length of time used and size of the vehicle. Space for loading and unloading of goods is kept at this entrance. Rickshaw and cycle parking is provided beside both of the entrances.

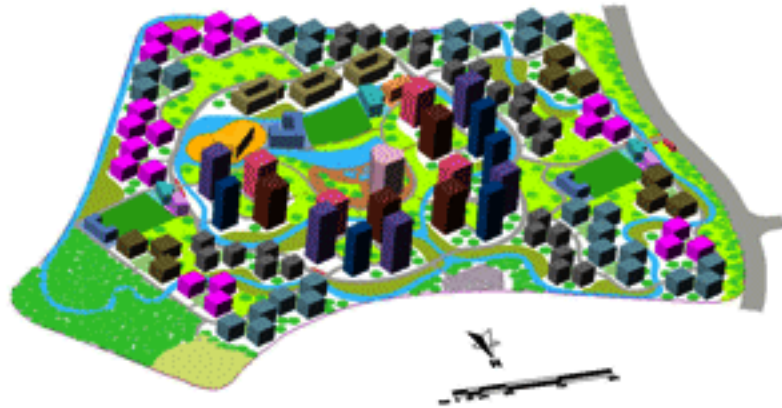
Utility facilities include two water pump stations, from where water will be supplied to the buildings; one sub-station for power generation located at the northeast corner of the city; and one waste treatment and recycling plant located at the southwest corner beside an entrance so that the compost and other disposed items can (if necessary) be taken out of the site easily.

Features	Area (In acres)
Lake	4.5
Rickshaw road	8.0
Cycle Road	2.6
Pedestrian path	5.0
City centre	1.6
Park	1.8
Buildings	21.2
Schools	3.3
College	1.0
Mosque	0.2
Play lot & other open space	45.1

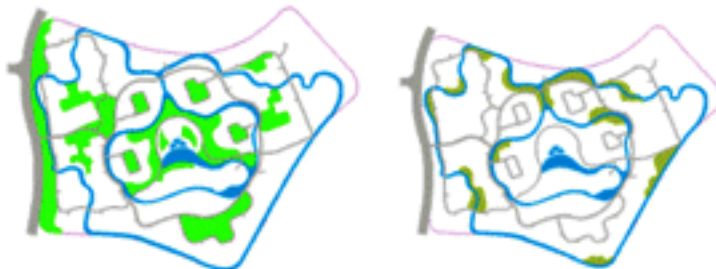
### Design Three: A Quest for Sustainability







Current cities represent an inefficient, immoral and counter-ecological habitat. In order to promote *Smart Growth*, cities must be developed as environmentally sound, economically viable and socially acceptable. In order to achieve these goals, almost 40% of the total area in this design is retained as ecological open spaces in the form of parks and meadows, agricultural land, woodlands, canals and lake. They serve the purposes of agriculture, recreation, and ecological balance.



*Parks and meadows (left); agricultural lands (right)*

These open spaces form the natural life support system as well as a pleasant landscape within the urban area. These open spaces are, to the extent possible, kept in connection to each other to form networks of open spaces in order to help maintain the continuity of diverse ecosystems.

The proposed design intends to promote smart growth initiatives by creating a compact, walkable, mixed-use community. Great effort was made to provide ample opportunities for socialization, spiritual and cultural enhancement, and active and passive recreation for citizens. The city has been designed with a view to provide a happy and healthy habitat to future generations where they will have a favourable environment for physical and psychological development.



The major public and freight transport will be achieved by means of waterways in the form of canals. Internal streets have been designed to accommodate only pedestrians and cyclists. An arrangement of retention ponds could be incorporated in order to control the seasonal fluctuation in water level of the canals and maintain their navigability throughout the year.



Lands surrounding the retention ponds would be left to be inundated for a particular period of time in a year. During this period, the areas would serve as breeding grounds for fish and thus help maintain fish population and diversity. However, during the dry season, these lands would be used for agricultural purposes, particularly for growing vegetables.

The proposed design incorporates a solid waste treatment plant engaged in resource recovery from solid waste. As the principal wind flow direction in Bangladesh is from south to north, this treatment plant is located on the northern edge of the city. Almost 75 to 80 percent of solid waste generated in urban areas of Bangladesh is organic solid waste. The huge amount of organic waste generated in the city will be converted to eco-friendly compost in the treatment plant. The rest of the solid waste (inorganic portion) will be taken out of the city for reclaiming useable materials mainly through recycling and, when absolutely necessary, dumping of refuse.



According to social scientists, housing groups with 6 to 40 families have the best level of social interaction and neighbourly environment. Beyond this limit, the level of social intimacy gradually decreases with an increase in the number of families, although face-to-face acquaintance still remains. But when the figure exceeds 100 families, it becomes almost impossible to maintain a sufficient level of social intimacy to promote a strong neighbourly environment. The walk-up apartment housing clusters are designed on the basis of this principle.

#### **Housing groups/clusters**

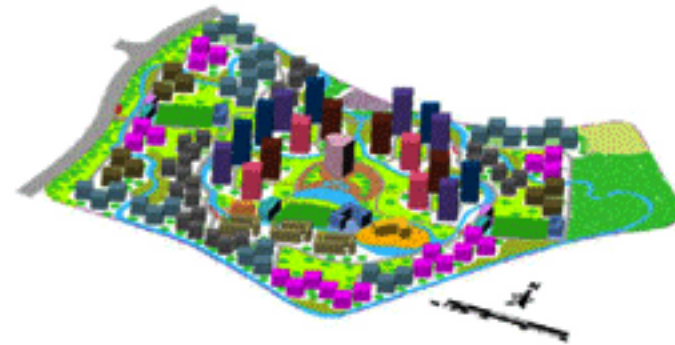
These buildings are grouped around a courtyard, which will act primarily as a play lot for toddlers as well as a place for social gathering and gossiping during leisure hours. A screen of trees and shrubs is planted at the street end of each courtyard in order to ensure privacy of the residents. Two buildings in each cluster have various types of shops in their ground floors, such as groceries, laundries, tailor shops, hair dressers, pharmacies, and food shops that meet the day-to-day needs of citizens as well as keep the nearby streets lively all day long.





207

The city centre comprises a 15-storey public building, an *Administrative and Cultural Hub*, which will be the heart of all administrative and central cultural activities of the city. Its strategic location and distinctive appearance combined with its functional supremacy will make it the city landmark. The building consists of the following: the city council headquarters, offices of service-providing agencies (water supply and sewers, electricity, gas, telephone and telegraph, police, post office, etc.), central library, multiplex cinema, theatre, conference halls, exhibition halls, hotel, and restaurants at different floors including a rooftop café.



The town centre is surrounded by a 30'-wide ring road. The town centre comprises a fire service station, a hospital, central mosque, a secondary school cum college and a playground. There are 18 high-rise mixed use buildings in the town centre, varying from 14 to 20 stories that surround the public square on three sides. No high-rise structure has been placed on the south side, since in the context of Bangladesh the prime wind flow direction is south-north. Together these 18 buildings consist of 46 commercial floors and 264 residential floors.

The public square will be the meeting place of the citizens as well as an appealing space for relaxation with a charming waterfront, magnificent fountains and surrounding parks. Dormitories<sup>47</sup> and other basic housing for low-income people have been provided along the south edge of the town centre. Sweepers, boat operators and other low income groups have been provided with subsidized housing, comprising six 5-storeyed buildings.

<sup>47</sup> For those who spend much of their time away from home, especially the unmarried, a very simple room or bed in a common room with shared bathroom and kitchen facilities would often be sufficient, and would save money for other things. Such arrangements, if well-designed and looked after, could be quite pleasant, providing far more attractive and amenable living environments than current slums.

Community facilities (educational institutions, mosques and community centre, gymnasium and mother and child care homes) are grouped together around playgrounds, thus saving a substantial amount of land that would otherwise be required for providing open spaces within each of their precincts.



### Design Four: City of Air and Light

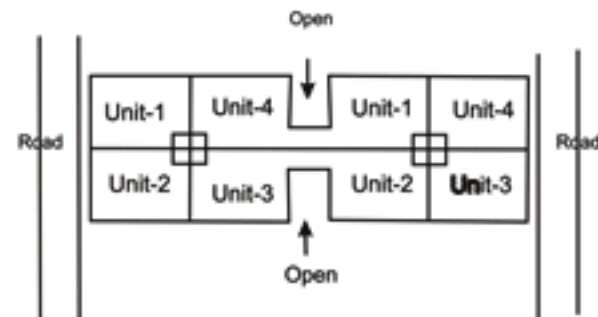




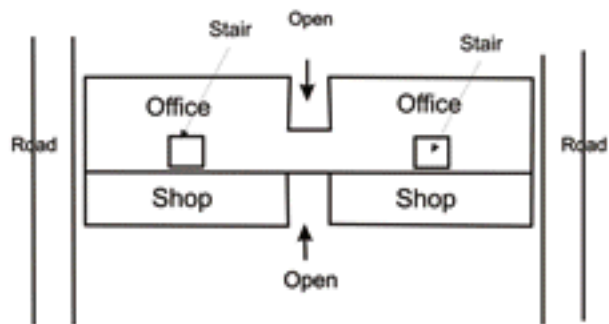


Of the total area of the ecocity (89.91 acres), half is kept as open space consisting of a park (14.57 acres), playing fields (21.76 acres), and agricultural fields (7.67 acres). The total population (25,800 people) will occupy the remaining half. In the town centre are 10-storey and 6-storey mixed-use buildings, educational institutions, a small health clinic, a community centre, and a mosque.

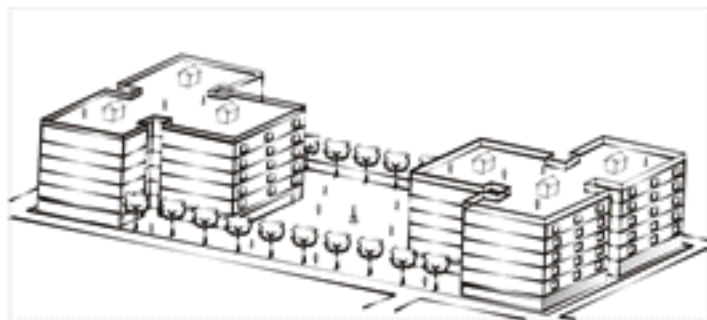
In all buildings, there are four units on each floor, with a minimum 10' cut-off to provide air and light.



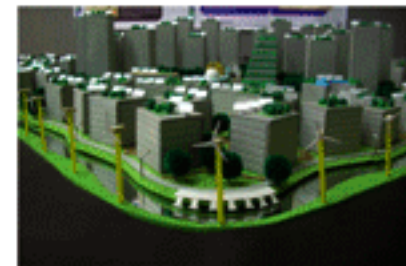
On the front side of the buildings, the ground floor (no longer needed for car parking) will be used for various shops, while the back side will be used as office space.



There are three types of road: 30', 25', and 15'. Two or more buildings join together to create a common open space. These open spaces or play lots are mainly intended for children. Play lots are designed with landscaping, landscape elements (sitting arrangements, walkways, surface treatment), sculpture, and other amenities to encourage use and preservation. The play lots can be separated from the road by using hedges and small trees. The distance between the road and the building block is 5'. Rooftops are designed for gardening.

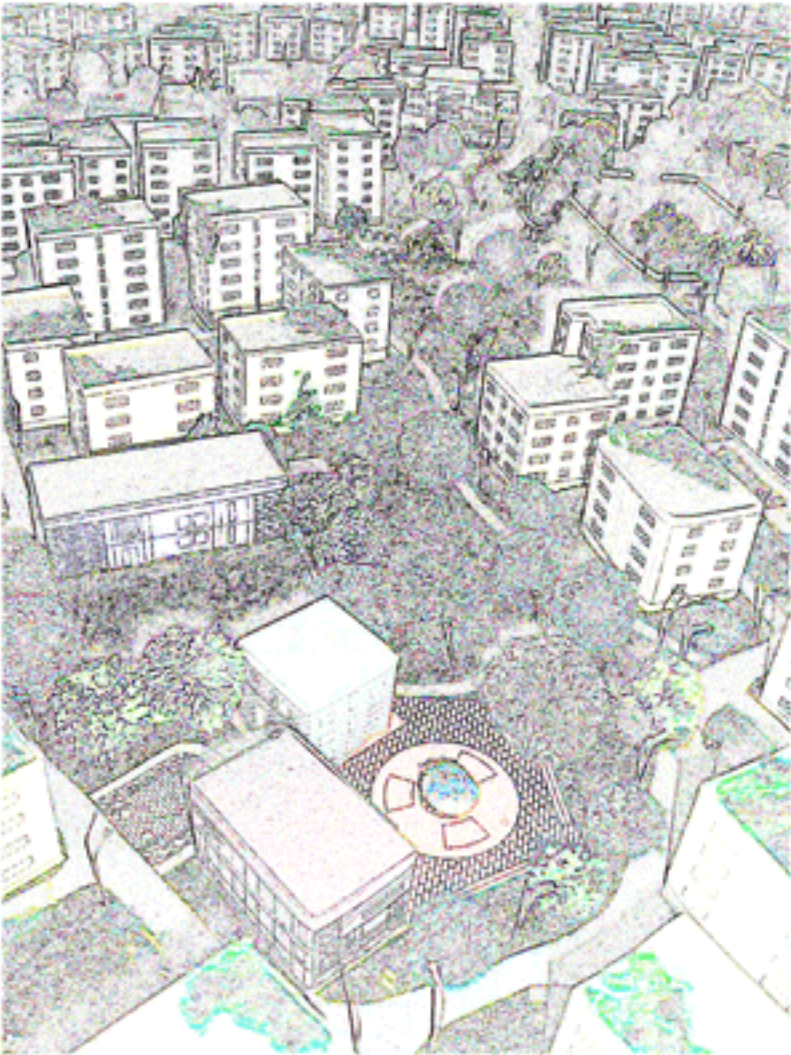


As the illustration shows, the city's highest points are at the center, offering an excellent view.





**Design Five: Ecocity, A Dream for Future Living**



The key aspects of the ecocity are high density living, humanized living conditions, reduced travel requirements, emphasis on fuel-free travel, mixed land use, quality open public spaces, and a child-friendly environment.



High rise buildings will be built only in the city centre, carefully placed so as to attract breezes.

Specific areas for community use are scattered throughout the Ecocity, offering all of the city's inhabitants easy access to them.<sup>48</sup>

<sup>48</sup> Decentralization of city functions, by providing them throughout the city instead of all in one central area, is intended to reduce congestion.



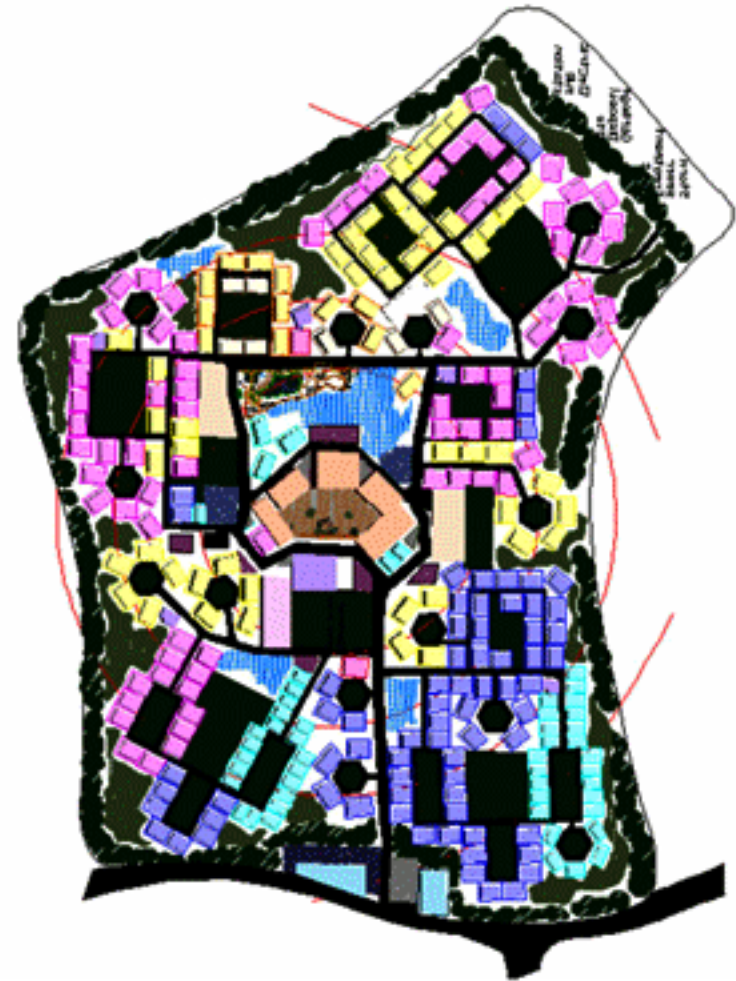
A significant portion of the city will be left as open space and native forest; a lake will also be preserved. High-density dwellings and workplaces in the built-up area will allow for the high acreage of open areas.

Elements	Total area (acres)
Housing area	14
City centre	4
Community facilities	3
Open space	41
Lake	8
Native forest	30





## Design Six: The Organic City



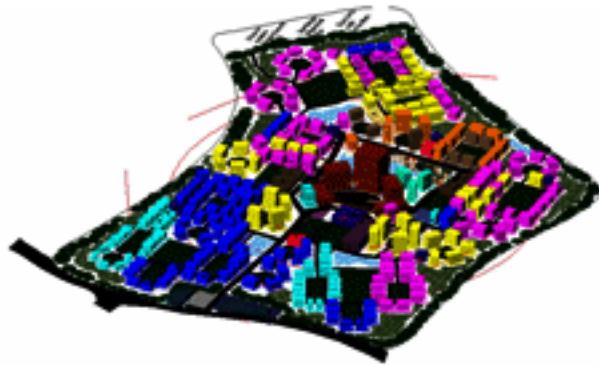


The main design goals are to restore degraded land, encourage balanced development, halt urban sprawl, optimize energy performance, build a sustainable economy, provide health, security, and all sorts of amenities (sociable living, attractive public spaces, pleasant outdoor environments, quiet, and clean air) to *all* residents regardless of income or age, encourage community living, promote social equity, enrich the cultural landscape, and heal the biosphere. Key aspects towards achieving these goals are the ban on motorized vehicles, high-density living allowing for half the area to remain as green space, and mixed-use environments throughout to reduce the need to travel and encourage mixing among the residents.

Considering the purposes and logic that have been taken into account while designing the city, it is called "The Organic City". Like any living system, the city is compact and has been designed primarily for a population of living things, mostly people, rather than for machines like cars or even buses.

Another important goal is to **halt urban sprawl**. To stop sprawl, a green belt has been proposed around the city. This belt will not only serve as a barrier but also as a source of different types of agricultural products, and will be divided into two parts: a forest zone and an agricultural zone. Permaculture will be encouraged, through which fruit and vegetable plants are cultivated which bear year after year or reseed themselves, rather than annual crops that are sown and harvested every year.





**Energy performance** will be optimized due to various aspects.

- *Compactness of the city:* When buildings are placed close together, they save energy because they share heating and cooling energy. Moreover, consumption of energy per person is less in this pattern than with scattered small houses. The cost to government to provide services is also far less in dense settlements.
- *Ban on motorized vehicle movement.* An enormous amount of energy can be saved when all travel within the city happens by foot, bicycle, and rickshaw/rickshaw van.
- *Use of solar energy:* A huge amount of energy can be trapped through solar panels. Though the installation of solar panels is very expensive, the energy gains would be great, and as solar energy becomes more widespread, the costs will decline significantly.
- *Bio-gas plant:* Waste from animals and people can be used to provide fuel for the ecocity.
- *Build a sustainable economy:* Most of the outlying communities will be able to produce agricultural products

in the surrounding buffer zone. There will be plenty of corner shops or grocery shops in the city which will be a good source of employment. Transport can provide much employment. Local amenities such as health, education, recreation, and management of the city will need a large workforce. Other potential sources of employment include medium-sized garments factories, information and technology, banking, and consultancies.

**Health and security** will be provided via a central clinic in the centre of the city and two other small clinics. Well out-fitted gurneys (a type of trolley used to carry patients) pushed quickly by strong paramedics on roller skates<sup>49</sup> will be used, which will actually move faster than an ambulance in a typical congested city such as Dhaka. The mix of uses will ensure that streets throughout the city are lively at all hours, so that there are always “eyes” on the street, helping to ensure safety. In addition, a police station has been proposed in the city centre.

Police will use bicycles<sup>50</sup> and operate out of small “neighbourhood stations” on the fifth and tenth floors, as well as on the street level. Police can also keep a close look on the area by darting across the bridges that will be built connecting the buildings. The easy proximity of the police to the people, as they will travel by foot and bicycle, will help ensure that the police are part of and accepted by the community, which will do much to improve safety and compliance with law.

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<sup>49</sup> Carefully retrofitted rickshaw (bicycle) vans would be more practical, and are in fact used as ambulances in some parts of the world.

<sup>50</sup> This is done in many cities of the world, even in the car-obsessed United States.



**Community living** will be encouraged through the clustered pattern of mixed living and working in the organic city; such an arrangement will do much to increase social interaction among the residents. Pedestrian movements will also increase social interaction, as people easily interact when moving by foot. Plazas and open spaces will also play a great role in this regard. Since most of the people will be able to earn their livelihood by working in or near the city, they will easily know each other. The total area of the city has been divided into four neighbourhoods, each of which has its own physical identity and sense of locality. A huge open plaza has been kept in the city centre so that people can gather there on any occasion and enjoy together.

The focus on **mixed use** involves using the ground floors of many of the apartments for corner grocery shops. Nursery schools are also proposed to be in the ground or first floors of the buildings. The secondary school and the college will be in the same building. To operate more smoothly these two can operate at separate times.

The difficult task of **healing the biosphere** will be supported by the presence of a green belt around the city, while within the city there will be plenty of open spaces and places filled with trees, giving the whole city an element of wilderness. The ban on motorized vehicles will result in an environment with very little smoke.

Other key features of the organic city include a gradual increase of building height from the outskirts to the center, and a hierarchy in the roads that gives priority to pedestrians. The city centre will contain a significant landmark and a huge open plaza. There will be storm water management and a water body to collect rainwater.





### Design Seven: Lake Views, Fresh Breezes





What is an ecocity? It should combine the concepts of ecologically healthy city building, building a city in balance with nature, and creating a new cultural and economic life to tackle the problems of healthy evolution. In other words, it should involve building a city in such a way that future generations receive something better than what we did from our ancestors.

In this design, built space accounts for 40% of total area, with the remaining 60% being open space. Within the city there are two collector roads of 40 feet width<sup>51</sup>. On both sides of the road there are roadside plantations, restaurants, fountains, planters, and walkways, to reward those moving slowly. Within the ecocity are access roads of around 15 feet width.



232

Buildings are arranged in clusters; within each cluster, there is at least one building of six stories for mixed use: four for commercial

<sup>51</sup> Ecocities, in which people move mostly by foot, will not require such wide roads, though boulevards where people can congregate at sidewalk cafés and enjoy majestic views could enhance the city.



purposes (such as grocery shop, vegetable market, offices, private firm) and two for residential use. Four-storey buildings are provided at the edge areas, and community facilities include three schools, three mosques and a hospital.

This design features an irregularly shaped city centre surrounded by a lake and a road. Included in the city centre are nine fully residential 20-storey buildings, six buildings of 15 stories for mixed use, an attractive building of 12 stories at the core for shopping centre, theatre, exhibition hall, community centre, etc.

The lake flows around the city centre and through most of the city, and the city is designed in such a way that most people can get a lake view from their residence and workplace. There are two islands within the lake, which also flows through the forest. Well-shaded seating arrangements are provided along the lake walkway. In each cluster of dwellings there is a special play area for children. Provisions for open space include playing fields in front of the school, a forest at the north-east portion, and two parks designed for people of all ages.

### Design Eight: Independent Mobility for Children





The area has been designed by dividing it into blocks. The blocks, consisting of two or three buildings joined together, are surrounded by roads. Each block contains a courtyard which is totally free from vehicles and thus all road hazards, thereby facilitating children's play and offering a quiet, pleasant place for others to rest and socialize. The buildings within the blocks are between 4 and 6 stories to avoid the need for lifts and to ensure that young children can move about independently. (Research has shown that if mothers can see their children from the home, they are more likely to let them go outside at a young age; the higher the residence, the later the age at which children are allowed to go out on their own.)



The ground floor and the first floor of the buildings are reserved for offices, shops or other commercial purposes that don't hamper residential living. The joined buildings share a common lobby, while walkways help people to move amongst the buildings or blocks easily through the courtyards. There are no rigid boundaries around the buildings or blocks; fences consist of plants/bushes, with gaps for pedestrians.



The major road of 35-foot width<sup>52</sup> covers almost the whole area and connects the blocks. Non-motorized traffic has been separated from pedestrians. Local roads vary from 12-15 feet in width. Roads have been designed to encourage people's walking by placing the buildings about 10-12 feet back from the roads in order to create openness and eliminate the feeling of suffocation while walking.<sup>53</sup> The landscaping beauty of the buildings helps ensure that walking is enjoyable and charming; further, roadside spaces are used for entertainment.



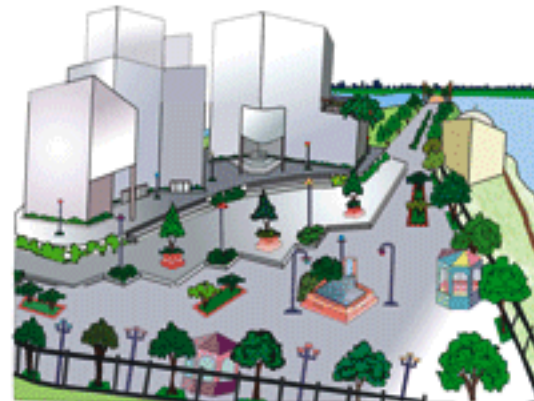
The city centre is placed almost in the precise centre of the site, and is thus easily accessible from all points in the city. The centre contains office space, a shopping centre, town hall, restaurants, café, libraries and housing. The whole centre acts as a plaza. No vehicle is allowed in the centre, thereby maximizing the space available for people to use and move about in. Three large high buildings front a large open paved space. The large paved space acts as an open auditorium and is well decorated with outdoor furniture. The park and central play field are part of the town centre, and have been kept together to attract people and to keep

<sup>52</sup> As elsewhere, this is too wide for an ecocity unless much of the space is to be given to vendors and/or for recreational purposes.

<sup>53</sup> A more common approach is to use the ground-floor level as shops, with windows clearly revealing the goods for sale to passersby, which gives people something to look at and amuse themselves with as they walk; sidewalk vendors can have the same effect.

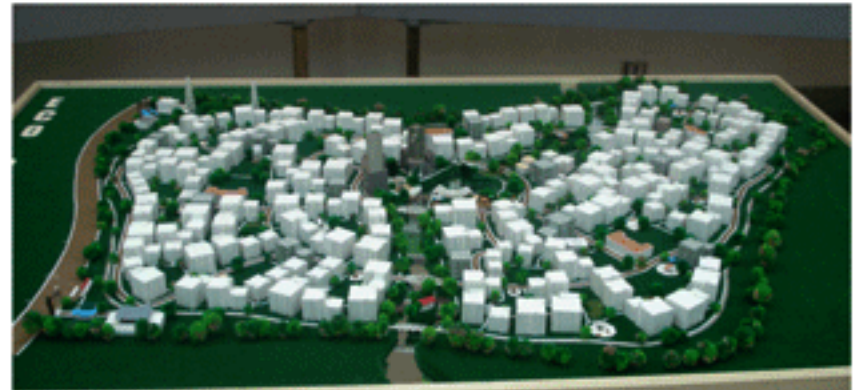
the town centre lively. The park, adjacent to the lake, is easily accessible from all blocks. Affordable housing is provided in the centre for about 1,500 people, in order to keep the centre lively at night and during holidays. The upper stories of the central area provide a pleasant view to the office users sitting on high.

Facilities include a nursery school and primary school in each block. Children can get to school by passing through courtyards, without having to use the roads, further increasing their mobility and safety (though there is no motorized traffic, rickshaws and bicycles do present minor obstacles to road crossing, especially by small children). The high school is located just beside the central playing field and is easily accessible to all residences. Within the city centre are a mosque, health clinic, office space, stores and shops.





### PHOTO AND COMMENT GALLERY: THE MODELS AND PEOPLE'S REACTIONS



"I wish one day our country will look like these beautiful virtual cities."

"I don't want to lose this feel that I have got here."

"The ecocity planning exhibition is very charming. I hope that it develops day by day."

"This project is something that's really needed to save this city."

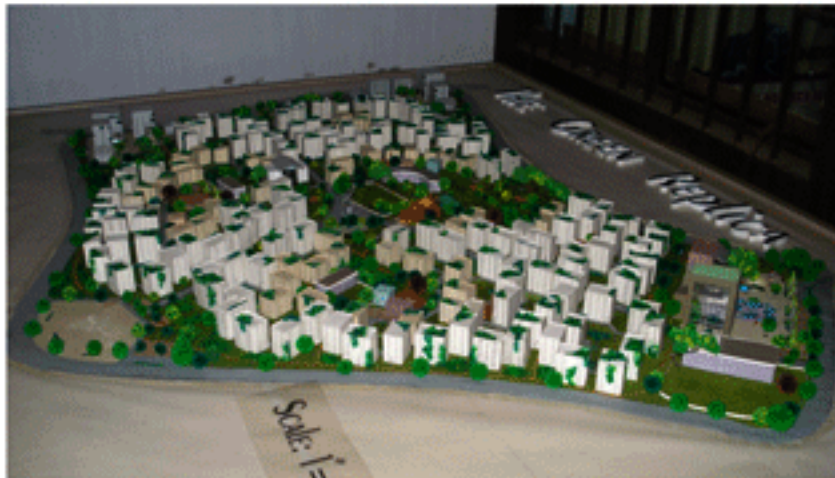


"Really very thoughtful process for our city development, Especially road deaths is newly thinkable term for me, It's one kind of learning process."

"I can hope this kind of city for our country."

"Very interesting, It would be better after implementation of these models."

"The department should continue such work."



"It's a good attempt. However traffic free neighbourhood and lots of green cannot alone make a city a ecocity. You need to address the issues of energy consumption as well."

"Encouraging, enthusiastic and thought provoking ideas and principles of urban design and planning."

"As NMV [non-motorized vehicle] and MV [motorized vehicle] conflicts in Dhaka city is now in a great problem so such projects are always appreciable."

"Nice attempt for the promotion of Ecofriendly fuel-free transport system in a planned city."

"The exhibition of city designing shows us a new idea which can help us making our city as our dream. I think such type of measures should be taken in all departments of BUET."

"Good effort. Would have loved to see deeper reflection of ecological design encompassing all major aspects of human lives."



"I think in near future we can implement this type of plan for our safety environment which is very essential in respect our country."

"I like the ideas, we need this to be happening in this country. I am interested in your use of renewable energy in an urban context."

"Excellent efforts. Hope we will enjoy all these in future."

"I just wish this really happens here in Bangladesh."

"Simply outstanding."



"This is good effort. There should be present the urban planning issues and introduce among the general people and policy and decision maker."

"If all the ideas are jointly used than it can bring a huge success. But the cost is a great fact here."<sup>54</sup>

"It's a good initiative. I realize that the concerned authorities should take steps to implement these type of projects."

"All should be aware of and concerned about these matters. Environment matters!"

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<sup>54</sup> In fact, car-focused development is far more expensive, with all the costs for roads, highways, elevated expressways, and parking—and often subsidies for fuel, plus all the "invisible" costs such as injuries and deaths from car crashes, reduced mobility for the majority, air and noise pollution, use of land for cars rather than people, poor health, and so on.



"Amalgamation and integration of ideas would definitely be beneficial to policy makers."

"Good thinking. May be utilized for our as well as other countries."



## CONCLUSION

Cities can be crime-ridden concrete jungles, but they can also be pleasant, inspiring places to live that preserve nature and promote socializing and interactions among their residents. If we believe in the possibilities of cities, we can work to transform our existing problematic cities into ones in which we will happily live, and proudly pass on to future generations.

The designs in this book are not meant to represent ideal ecocities, but rather an experiment with new ideas, and the posing of questions about whether we could do better with our cities and planning models. Similarly, the WBB exhibit was meant to encourage people to question the basic nature of cities—to ask, “Can we do better?”

One sign of success is in the enthusiasm evinced by the students about the design work. When asked if they could imagine living in the small ecocity they designed, students replied, “Oh yes, it would be great!” Another student commented that this was her first opportunity to bend the rules and apply her own creative thinking in a design. At an exhibit of the models organized by BUET, several of the students asked when the first prototype ecocity would be built, eager to have something on the ground to show people what environmentally-friendly, pro-people urban planning is all about.

“Ecocity concept should be implemented soon. Implementation is important besides disseminating.”

The concepts in this book will, it is hoped, encourage people to think differently about our urban landscape. Rather than simply rejecting anything better as an impossible dream, we need to work to create practical solutions. Only then can we move from questioning “Is it possible?” to “How can we make it possible?” It will take much creativity, initiative, and hard work, but surely we can hope to achieve the benefits of ecocity living.

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