China’s Cities, Globalization and Sustainable Development

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10:00—11:30 a.m.
Thursday, March 9, 2006
Sturm College of Law/Frank J. Ricketson Law Building
Room 165

This session provides a provocative and thoughtful look at sustainable development issues related to the unprecedented growth of China’s modern cities. In comparing Chinese and American planning, energy, and environmental policies the presentation provides a glimpse of future challenges for the U.S. and the world.

Moderator: Mary Kay Peck, AICP
Assistant City Manager
Henderson, Nevada

Panelists: Edward Ziegler
Professor of Law
Sturm College of Law
University of Denver, Colorado

Sandy d’Elia
Director of Development
EDAW, Inc.
San Francisco, California

* This session will repeat in the afternoon, from 3:45 to 4:45 p.m. in the Forum of the Sturm College of Law.
China’s Modern Cities, Growth Management and Sustainable Development

SHANGHAI’S SATELLITE CITIES: THE AUTOMOBILE, AND NEW URBANISM WITH CHINESE CHARACTERISTICS

By

Edward H. Ziegler
Professor of Law
University of Denver

I.
China’s Cities and Growth Management

China’s economic growth during the past twenty years (of nearly a 10% annual GDP increase) may be the largest and most sustained economic expansion in modern history. As China has become the manufacturer for the world, its growth and development has been working to significantly transform China’s built environment. Over 300 million peasants moved from the countryside to China’s cities during that time-- the largest migration in world history.

New towns are springing up in rural areas and existing cities are booming. Much of this growth has been largely uncontrolled and poorly planned. Moreover, growth in China is far from over. China’s urban areas will have to be developed to accommodate upwards of 500 million more peasants (nearly twice the population of the USA) who are expected to move to China’s towns and cities by mid-century.

China’s urban development during this period, both in the creation of new towns and the development of existing cities, has involved, perhaps, the largest construction and expansion of the
built environment in the history of the world. Aside from all the new tunnels, bridges, airports, expressways, overpasses, subways, light rail systems, port facilities, manufacturing plants, office towers, shopping complexes, and public buildings, China is now building nearly 6 billion square feet of new residential development each year, far more than the United States, which until now has been the world leader in construction and expansion of the built environment.

China now produces only about 80% of the energy that its present economy needs. China imports about half of its oil, increasing amounts of natural gas, and even coal from Australia. China is still a relatively poor and developing country. The conservation and efficient use of investment capital, skilled labor, and natural resources in the expansion of its built environment are now viewed by China’s government as necessary to maintain high rates of economic growth in the future. Reducing the waste and excessive infrastructure costs associated with rapid and largely unplanned urban development has become an important government priority.

Better growth management and sustainable development policies are also thought to be necessary by officials in Beijing to better address China’s enormous environmental problems. China’s environmental record is one of the worst in the world. The cessation of river flows and availability of potable drinking water are serious problems in some areas of the country and water shortages in some areas have affected economic development and production. Among other serious environmental problems (reports in China occasionally mention cancer villages and environmental riots), the loss of productive farmland has become a critical issue in recent years as grain production has continued to decline and as China has had to become a food importing nation to feed its people.

China’s government now is in the process of implementing important new policy initiatives that provide the first steps toward

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creation of a national land use planning and sustainable development policy framework for managing urban growth. These policy initiatives provide for an integrated hierarchy of tiered planning for urban growth by the establishment of national goals and policies followed by the adoption of implementing regional and local plans. This program requires adoption of local comprehensive plans, zoning maps and development codes and provides for integrated land development review and the adoption of land information monitoring and assessment system.

II. Sprawl, the Automobile, and Energy

In the United States, there is no comparable national growth management policy, program or strategy. Urban planning, zoning, and growth management are typically left to local cities and counties acting in pursuit of their own self-interest. Over the last half century, this framework for growth in the United States has produced a landscape of low-density automobile-dependent sprawl.

This pattern of hypersprawl development in the United States requires an enormously expensive infrastructure and consumes a huge amount of energy. Sprawl development increases the urban footprint at many times the rate of population growth and this has been true even in areas near such “transit friendly” cities (by American standards) as San Francisco, Chicago and Boston. The United States, which has less than 5 percent of the world’s population, now consumes about 25 percent of global oil production, and most of this oil is consumed by transportation. If China would ever achieve the present pro capita energy consumption of the United States, it would need to consume all the oil now produced throughout the world.

China in recent years has taken significant steps toward increasing automobile production and ownership. In 1995, there were an estimated 10 million motor vehicles in all of China. By
2005, only ten years later, there are an estimated 100 million vehicles in China (with about 30% of that number estimated to be private passenger automobiles, as opposed to buses, large trucks and motorcycles). Last year China is reported to have invested about 25 billion dollars in its auto manufacturing industry. In 2004, China produced over two million automobiles and began exporting cars to other Asian and European countries. By 2007, China is expected to be producing about 14 million vehicles and plans to begin exporting automobiles to the United States.

III.
Urban Density, Transportation, and the Environment

Beijing recently created a new high-level State Energy Office to monitor energy resources and to advise the government on resource and energy security issues. China also recently adopted plans for a strategic oil reserve program, much like the program that now exists in the United States. Government officials in China, however, seem intent on preventing China from becoming (as has the United States) a completely automobile-dependant society. Reports in China increasingly link the conservation and efficient use of resources and energy security to the development of a more rational framework for future urban growth and expansion. While automobile ownership is surely going to increase in China, officials in Beijing are calling for the curtailment of urban sprawl and the implementation of development policies that will preserve alternative (non-automobile dependant) transit modes in China’s urban areas. China is investing heavily in all forms of public transit, particularly light rail networks in its cities.

Urban planners in China (and the United States) are increasingly aware of the link between the density of urban development and the resulting resource and energy consumption of that development. Both resource and energy consumption

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also typically relate in modern urban areas to the environmental impact of development, particularly the burning of fossil-fuels and green house gas emissions. As David Owen points out in his recent article “Green Manhattan” published in the New Yorker magazine, high density development tends to be “green development”. This has to do, in large part, simply with the lower resource, energy, transportation and environmental costs associated with higher density development.

In the United States, for example, where more than 80% of all trips are by private automobile due to the low density pattern of development, about 30% of all energy consumption goes toward transportation. In China, where over 80% of all trips typically are by walking, cycling, or public transit, energy consumption for transportation is only a tiny fraction of that amount. This correlation helps explain why in the United States over 80% of the crude oil supply goes toward automobile use and transportation and why the United States, on a per capita basis, has about 10 times the energy consumption of China.

In this context, an interesting aspect of growth management in China today is the emerging policy against continuing the very high density skyscraper-type construction that has characterized so much of the recent new development in many of China’s large cities. China’s major cities are already considered to be too crowded and planners are looking to decrease densities in main urban core areas of many major cities.

IV

The Satellite Town of Qingpu: New Urbanism with Chinese Characteristics

China’s officials and planners are embracing the concept of new satellite “towns” in outlying suburban areas of major cities, such as Beijing and Shanghai. This will be a complicated and
huge undertaking, to say the least, as some of these new satellite towns and cities are planned to accommodate anywhere from 500 thousand to more than 1 million people. Moreover, while these new towns are typically planned to have major automobile expressway and mass rapid transit (often light rail) connections to the main core areas of a major hub city, the new towns are designed to be largely independent and whole cities, with all the necessary residential, office, commercial, recreational, cultural, educational and manufacturing facilities, and with all the related utilities and infrastructure necessary to support the expected population.

These new satellite cities often have what we in the United States would describe as “new urbanist” design characteristics. A good example is the plan for the new satellite town of Qingpu located about 35 miles west of the main city of Shanghai. The city is planned for a population of 500-600 thousand people. Even with more than half the land of the new city placed in northern industrial zones, the population will be about the same as the City of Denver, though Qingpu will be only about one-fifth the geographic size of Denver. Development will first occur in stages outward from the existing city of Qingpu (population about 100 thousand) and ultimately will require major redevelopment of the city itself and new channeling of the Youdun River which will traverse the new city in many places. The nearby town of Zhujiajiao, a quaint historic river village, will largely be preserved for tourism.

In the attached plan for the entire new City of Qingpu, the darker shaded areas in the northern half of the plan are industrial and manufacturing zones and sites for public utilities and power generation. The lower half of the plan consists largely of rather high density residential apartment neighborhoods with a mix of commercial retail, office, schools, recreational, cultural, and public uses planned at designated sites throughout the neighborhoods. Parks and other open green spaces are also shown on the plan. A major automobile expressway and rapid
light-rail public transit will connect the new city to the main city of Shanghai to the east.

The plan shown for the “East Qingpu” neighborhood highlights some of the design features of this planned mixed-use new neighborhood. The modified grid street pattern is evident on the plan and much of the residential housing is a short walk to the major town center shown near the top right hand corner of the plan. The width of this neighborhood, as shown on the plan, is about one mile across. Rapid light-rail public transit serves the neighborhood and runs along the major east-west thoroughfare just north of the major town center.

V. Density, Parking, and Alternative Transit Modes

The lighter zoned areas in the East Qingpu neighborhood plan are all residential zones planned for 6 to 8 story apartment buildings. Blocks in the residential apartment district will vary from about 600 feet to 1200 feet in length. On internal residential streets, sidewalks will be 18 feet wide with a roadbed of about 36 feet in width. The residential densities will be about the same as in parts of Berlin and Amsterdam. The density, obviously, is greater than most “new urbanist” projects developed in the United States, through lower than the density of central Vancouver or Lower Manhattan, both city models for the “true urbanist” planning movement.

Some of the darker zones, both at the town center and in a few of the other neighborhoods are planned for commercial/office uses in 15-18 story buildings. There are also a few truly mixed-use zones along some neighborhood streets that are basically planned for apartment buildings but with street level commercial retail, for shops, restaurants, and neighborhood services. Parks, open green space, and landscaped areas are
generously placed throughout the neighborhood plan, a design element not uncommon in new development projects in China.

An interesting aspect of the East Qingpu plan is how pedestrian friendly the plan is. There will be onsite parking (split between surface and underground of about 3.5 spaces for every 4 units) in the apartment zones to accommodate widespread private automobile ownership. Unlike most neighborhoods in the United States, however, life will not be completely automobile dependant. One will be able to easily walk, bike or take public transit nearly anywhere. Everyone is expected to be able to live, work, and play, if necessary, without owning or using an automobile.

Planners are hoping to maintain a transit mode split in these new satellite cities as close as possible to the existing transit-to-job mode split in the main city of Shanghai (which now has about 2 million automobiles). That transit-mode split is now as follows: trips to work by walking about 29%; by cycling about 25%; by public transit about 24%; by electromobile about 6%; by motorcycle about 5%; and by private automobile about 9% (and about 2% by other methods). The key to maintaining the neighborhood as one not automobile dependant is basically the very limited parking available beyond the onsite apartment parking in the residential areas. The very limited parking near the major town center and near the rapid transit stop is expected to be largely reserved for government officials and private business executives. Also, some streets will be closed completely to motor vehicles. Maintaining this limited parking planning model in the years ahead may prove to be a precarious balancing act as automobile ownership increases in China.
VI.
Some Final Thoughts:
Snob Zoning and Build Out Period

It took me a moment to get this, but in the Qingpu new neighborhood it is intended to be simply much more convenient to walk, cycle, or take public transit than to drive a car nearly anywhere in the immediate area of the city. A near complete inversion of the modern American land development prototype.

One final feature of the plan merits some mention. At the bottom of the East Qingpu neighborhood plan a somewhat isolated area is sandwiched between the lowest thoroughfare road running East to West and the Youdun River just to the North. This area is marked “low-density residential” on the plan. The area has its own small park and a commercial/office zone with an adjacent parking area. When asked about this area, a Chinese official commented, “This is the ‘Super Rich Villa Zone’…. We are providing a place in the neighborhood for some of Shanghai’s multi-millionaires to build a home.” One has to wonder just how fast Mao might be spinning in his grave?

Time will tell, of course, how this plan for the satellite city of Qingpu is implemented as development goes forward. We won’t have to wait long. The build out period for the entire new satellite city of Qingpu is estimated to be fifteen years.
Some Comparative Thoughts On Urban Planning, Energy, And Environmental Policy In The Emerging Middle Kingdom

Edward H. Ziegler
University of Denver

MODERN CHINA'S CITIES
GLOBALIZATION/TRANSFORMATION 1980-2005

1. Economic Transformation
2. Rural/Urban Transformation
3. Built Environment Transformation

CHINA'S PEASANTS

60% of population = 800 million

CHONGQING
Private Property and Takings

Free enterprise with Chinese characteristics "commitalism"

CHINA’S ENVIRONMENTAL POLICY
- Air Pollution
- Water Pollution
- Water Supply
- Toxics/Waste Management
- Loss of Forests, Grasslands, Wetlands
- Soil Erosion and Loss of Soil Fertility
- Loss of Prime Farmland
- Loss of Habitat and Species

CHINA’S GLOBAL ENVIRONMENTAL IMPACT
- Asian Brown Cloud
- Global Warming
- Climate Change
- Peak oil
- Ozone Depletion
- Deforestation
- Ocean Pollution

Urban Planning and Zoning Controls

China
National Land Use and Sustainable Development Policy
CHINA'S ENERGY POLICY

- Coal: 65% (China), 23% (USA)
- Oil: 25% (China), 44% (USA)
- Natural Gas: 3% (China), 23% (USA)
- Nuclear: -1% (China), 8% (USA)

- Hydro: 6% (China), 3% (USA)
- Solar: -1% (China), -1% (USA)
- Wind: -1% (China), -1% (USA)
- Geothermal: -1% (China), -1% (USA)

GLOBAL WARMING CLIMATE CHANGE

CO2 Increase
- 1700-2800ppm
- 2000-3700ppm
- 2999-7000ppm

IPPC Estimate
Temperature Increase by End of Century
+1.4 - +5.8°C

China
Population by 2050
+ 300 million

USA
Population by 2050
+ 100 million

Cost
28 billion
FUTURE GROWTH
CHINA AND UNITED STATES

Increasing Resource and Energy Consumption

• Increase in population
• Increase in number of households
• Increase in physical size of housing
• Increase in per capita consumption
• Increase in urbanization and low density of development.

GROWTH & CLIMATE CHANGE

FUTURE GROWTH

China and the US are likely to build hundreds (500+) of coal-fired greenhouse gas emitting power plants by mid century, and both countries will have a tremendous increase in automobiles and greenhouse gas emissions from oil consumption.

GLOBAL WARMING

To limit global warming to not more than a 2º Celsius rise in temperature, the world will need to produce by mid century from 100 to 300% of all the energy now produced and all from non-fossil fuel sources.

SHANGHAI

+20 Million Pop.

Shanghai Comprehensive Plan

New Pudong Area

Shanghai City has 20x the population of Denver

City of Denver
Infrastructure and Transportation Planning
CHINA AND THE AUTOMOBILE

Total Motor Vehicles
- 1995 - 10 million
- 2005 - 100 million
- Annual Increase +10 million

China's Oil Consumption 1995-2005 +1.2 billion barrels yr.

U.S.A.'s Oil Consumption 1995-2005 +1.1 billion barrels yr.
Peak Oil

Urban Collapse?

• Major highway toll roads
• Traffic congestion fees
• Growth caps on cars
• The parking dilemma?

Transit Alternatives

29% of people walk to work.

25% of people cycle to work.

24% of people mass transit to work.

Only 8% take a private car to work.

Energy – Transportation - Density

USA Transportation (+80% of oil supply)
Can Cities Survive the Temporary Availability of Fossil Fuels?

The Historical Record?
QINGPU
NEW SATELLITE
CITY
(500,000 Pop.)

Shanghai Region

Suburban Polycentric
Regional Growth

Shanghai

Highways

Mass Transit

IT Industry
Automobile Industry
Petroleum and
Chemical Industry
Steel Industry
Manufacture Industry

New Qingpu
Satellite City
estimated
population +500,000
NEW URBANISM WITH CHINESE CHARACTERISTICS

East Qingpu New Urbanist Neighborhood +60,000 pop.

SNOB ZONING WITH CHINESE CHARACTERISTICS
Snob Zoning with Chinese Characteristics

*Villa developer chasing the super-rich with luxurious homes, trappings*

To guarantee the high status of Sunvilla, possible buyers must register and file their individual materials first, then they will be allowed to buy the villa, provided they pass the examinations on individual assets, social reputation and family background. *

- China Daily, May 16, 2005
Rocky Mountain Land Use Institute

Topic: China’s Cities, Globalization and Sustainable Development.

Our work at EDAW deals with the physical environment so I will focus on that aspect of China’s urban challenge. Our firm has been involved in a very wide range of projects including the overall planning of new communities, regeneration plans for post-industrial areas of existing cities, waterfront redevelopment and resource management plans. Though the projects illustrated here can only touch on this development movement in China today, they do give a good picture of type, quality and approach being applied by our firm in responding to the great need for development consulting in China. What the plans and pictures can only hint at though is the enormity of change taking place in China; change that is both good and bad. Good or bad, this change is compelling and will have impacts throughout the world.

![Global Urbanization Trend](chart.png)
Demographers predict that by the year 2008, over half the people in the world will live in cities and this movement will accelerate as the century progresses. With its unparalleled growth and planned economic expansion, China will grow its cities faster and larger than the global average. China will urbanize to about 520,000,000 people in the next twenty years. A population of roughly 1,300,000,000-people will shift its current ratio of 35/65 (urban/rural) to 65/35 or more. This is roughly comparable to the populations of the US and Indonesia moving into Chinese cities. It is much greater than the rural/urban flip the US went through between the Great Depression and the post WWII boom, the most unprecedented change in the US economy in history. The impacts of the Chinese urban diaspora are overwhelming and reach far beyond the general concerns of sustainability to embrace issues of extreme social and cultural change and industrialized economic development to an unprecedented degree. The environmental issues and sustainability challenges emerging in China are well-documented, as evidenced by some project examples and by our emerging environmental practice in China.

In China the issues addressed by urban planners, designers, architects and government officials go far beyond those of environmental sustainability to embrace the impact of unraveling one type of culture and replacing it with something else. We are in the process of defining what that “something else” is as we work with a variety of public and private clients on a wide range of projects. At this time in China, economic development
takes precedence over just about all other concerns, including those of the environment, air and water quality. Yet as this economic development grows, there are inherent cultural changes. These are reflected in the physical land-planning with which we are involved, as much of our work involves new interpretations of urban development. A new class is emerging in China, one for which there is no historical precedence. And this new class has new interests and new expectations.

There is a new class: China's new urban residents - the vast majority of whom have not grown up in Cities - only 15 years ago they lived their lives in workers communes. Now, they are independent and free to go where their incomes can take them. They are learning how to be urban dwellers and how to construct a society of urban dwellers. This emerging middle class is increasingly comprised of economic stakeholders in ways that less than a generation ago were impossible. At this time, there is a movement to grab as much as possible, but after time, the importance of the public realm will develop because the best way for stakeholders to protect what they have is by collaborating with other stakeholders. Most of the physical and social environments that Chinese urban dwellers were used to - the Li Long houses - were of a scale and intimacy that led to strong societal ties; a Jane Jacobs village if you like. This is fast being replaced by anonymous high rise apartment dwellings, which result in drastic changes to the societal bonds that historically linked people in urban environments. However these bonds will be re-invented as new cities emerge.
Though our work illustrates an extremely broad range of development and (in some cases) preservation challenges, what these projects have in common is the planning for a society and a culture that did not exist in China 20 years ago – that really NEVER existed in China. Though not free in the Western tradition, this society of urban dwellers is becoming more transparent and prosperous. We must address the impacts of what this means to land-use, culture and community. As cultures are being uprooted, new societies are being developed. Though China may be accused of turning its back on its heritage, we must also acknowledge the power and energy of the movements taking place. As planners and designers we must understand and design for extreme social change, for an emerging middle class with virtually no reference points in this ancient society. This new class of people looks both to the west and to their own cultural reference points for ideas and direction in planning new communities. Both these reference points are lacking on many levels, and so we work with our clients to INVENT the paradigms for regeneration and development. They never existed in China before - did not exist anywhere before. This is very different from the idea of "importing" western precedents and our role is not to give them what we know worked in the west but to bring our global perspective to the challenge that the current situation presents to us.
Since 1949 until the beginning of the 1990's China's development was driven by an anti-urban agenda. Take Shanghai as an example. In the period from 1994 to 1999 Shanghai invested more in its urban infrastructure than the total invested in the previous 40 years. Shanghai was seen as the industrial engine of China. In Mao's time, from 1950 to 1976, Shanghai sent 13 times more revenue to the central government than the amount it received for the city budget. The revenue sent to Beijing left Shanghai with little money to update urban infrastructure and the city was in desperate need of new roads, better transportation, improved water supply, adequate housing and an improvement in the environmental quality of the city and of the city's rivers. However let’s note that during this same time many western cultures viewed urban centers as undesirable. We created industrialized and residential wastelands, fouled our urban waterfronts and warehoused unwanted citizens while creating isolated monuments to culture and the arts. The emergence of the “lifestyle” city is a relatively new phenomenon, but one I think that stands a good chance of producing more sustainable urban development throughout the world, including China.
In a matter of 15 years Shanghai has emerged as a global metropolis. Since 1990 the city has undergone unprecedented, rapid and large-scale development. The transition from planned economy to socialist market economy, from the free use of land to the paid use of land, has required an appropriate adjustment of the city's layout and function and with it a tremendous change in the very culture of the city. There simply is no precedent in Chinese history, or in world history, for the scale and pace of development now occurring in China. In less than a generation this country, and its huge population has undergone development that took a hundred years in other locations - and with that there has to be tremendous cultural consequences.

In our work we deal directly with the progress demanded and the impacts resulting from inventing new paradigms and addressing new issues of culture, environment and community. Projects that illustrate this work include a broad rage of development and resource management efforts including:

- **Planning New Communities** – Jinji Lake (Suzhou), Don Qian lake New Town (Ningbo), Qianan Village.
- **Waterfront Regeneration** – Suzhou River District (Shanghai), Haihe River (Tianjin).
- **Post-Industrial Redevelopment** – Shanghai EXPO, the Italian Concession (Tianjin).
- **Parks and Open Space** – Central Square (Wuxi), Jinji Lake (Souzhou)
- **Environmental and Cultural Resource Management** – Purple Mountain District (Nanjing), Nansha Coastal Wetlands Park Master Plan (Nansha), Wenyu River Eco-Corridor Planning & Design.
- **Water Conservation** – Forest Park - Beijing Olympics master plan (Beijing)

We try not to advocate for a particular social position, but rather to integrate social precedent with the demands of emerging urban dwellers. One of the strongest themes running through our work is the importance of open space. A new class of people needs new housing, new places to work, new forms of recreation and new ways of defining community. As urban designers, landscape architects, environmental planners and economic development specialists, we are committed to the importance of a strong
framework of interrelated spaces and uses to help establish a sense of community. It is this sense of community, centered as it often is in communal open space, that helps lay the groundwork for new interpretations of culture in this fast-growing and changing society. This “democratic open space” is one of the basic building blocks of sustainable communities.

To me the old China did have this type of “democratic” open space: open space was either vast and ceremonial such as Tiananmen Square, or private and contemplative such as a meditation garden – hidden behind a wall. Several new parks projects, waterfront regeneration and neighborhood revitalization efforts illustrate the vitality of the urban scene and the need people have to congregate and create community once provided with the appropriate setting. I firmly believe that this type of space creates the framework for developing culturally sustainable communities within the greater complexity of China’s enormous cities. We are taking people out of intimate mixed-use housing sub-communities and placing them in anonymous high-rises. The parks, streets and regenerated waterfronts replace the courtyards and stoops of generations of extended family life.
There is no doubt that China’s rampant growth will have environmental impacts of staggering proportions. The government has been clear that the primary goal at this time is economic development and there is a feeling that once this is achieved environmental issues can be addressed. A more thoughtful approach would be to say that the two are intertwined and that sustainable economic development can not be achieved without addressing environmental concerns. Will this change? Certainly air quality and water resources are pressing and the government must address those issues. There are regulations in China but they are often flaunted for the sake of development and economic growth. This is evidenced by the obvious degradation visible to even the casual observer.

As a practitioner in China, I have mixed reactions to the pressures on the environment caused by the growth we have been discussing. On the one hand, I believe the type of growth China is undergoing (and the government is supporting) is growth that includes higher energy use, growing dependence on the automobile, and an emphasis on style over substance. It is therefore unsustainable. On the other hand, I believe in market forces to help regulate the environmental impacts of this growth. As the emerging middle class has more lifestyle options, choices will be made with respect to the quality of life and the choices made will place more emphasis on sound environmental management policies; policies which are often already on the books in China but are not implemented at this time. One can be cynical and say that China (like the US) will always chose economic
growth over environmental sustainability, but in such enormous urban areas with such apparent finite resources, the decisions this new class of people make may be more sustainable than those we have made when the US was at this point of development.

The use of resources is already an area of focus for many of our clients and we are in the process of developing an environmental resource management practice in China. We have been involved in some significant projects focused on environmental stewardship, possible only with clients who understand the importance of long-term sustainability in developing long-range plans.

**Environment and Urban Development**

- Spatial concentration of people, capital, infrastructure, innovation and education can allow focused management of environmental solutions in local to global contexts.
- Increasing urbanization helps protect biodiversity in rural areas
- The global linked bioreserve system can be achieved even in cities!

**Urbanization and the Environment.**

Though China will face the impact of overtaxing automobile use just as we have in the US, the urbanization of its populace will also create opportunities for more far-reaching environmental stewardship. Cities are inherently more energy efficient than sprawl. There is already a serious interest in many urbanized areas to create opportunities for nature preserves, wilderness areas and parks. Though we may look nostalgically to the past as bucolic and more environmentally-friendly, the fact is that over one billion people in China could not improve their standard of living without an urban context. A suburban low-rise response would reap far more environmental degradation than will be done through urbanization. To raise that number of people out of abject poverty without
urbanization would drain the resources of the country without providing a framework for stewardship that the cities may leave as a legacy.

These thoughts are obviously generalizations, broad-based and opinionated. They serve as a background to the projects illustrated which may better speak to some of the dynamic development and creative energy being invested in China’s urbanization. Perhaps when you see the small sampling of projects here you may have questions that we can use to probe deeper into these issues.
### Population of the World 1950-2030

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<th>Year</th>
<th>Total (millions)</th>
<th>Rural (millions/%)</th>
<th>Urban (millions/%)</th>
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<td>574.82</td>
<td>503.19 / 87.5</td>
<td>71.63 / 12.5</td>
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<td>1985</td>
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<td>807.57 / 76.3</td>
<td>250.94 / 23.7</td>
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<td>1990</td>
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<td>841.42 / 73.6</td>
<td>301.91 / 26.4</td>
</tr>
<tr>
<td>1997</td>
<td>1,236.26</td>
<td>866.37 / 70.1</td>
<td>369.89 / 29.9</td>
</tr>
<tr>
<td>2010</td>
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### China Urbanization

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**China’s Cities**

- Globalization
- Sustainable Development

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Haihe River Embankment Design, Tianjin, China

Shanghai Expo Plans

Water systems as structure for EXPO: Maximizing Property Values

Gain 120 Ha Prime Waterfront Property
Jinji Lake, Suzhou, China

"The Cuyahoga will live in infamy as the only river that was ever declared a fire hazard."
- Congressman Louis Stokes