

# Urban Growth and the Environment in Shanghai

**8** In recent years Shanghai has become the "head of the dragon" of China's booming economy. Between 1992 and 1993, the city's Gross Domestic Product (GDP) jumped 14.9 percent, reaching a total of about US\$1 7.4 billion in 1993. This growth has fueled the need for urban infrastructure, launching a construction boom *perhaps* unprecedented in history. The total capital invested in urban infrastructure in the 1990s has already far surpassed that invested during the entire decade of the 1980s.

This massive construction effort is being led by the municipal government of Shanghai. A new subway line running north to south has been completed, and a second line to connect the eastern and western parts of the city is under construction. An elevated ring road now connects downtown areas to the surrounding suburbs. A wastewater and sewerage disposal system is being built to serve the northern parts of the city, with a second wastewater conveyor planned for southern Shanghai. Also underway is a US\$457 million environmental project, financed in part by the World Bank, to improve the quantity and quality of water available to Shanghai's burgeoning population (see story opposite).

As Edward Leman points out below, the *pace* of construction is changing the landscape of the city. Nearly 10 million square meters of public housing, mostly high-rise apartment buildings, are being built to house residents relocated from the city's downtown core. A new business and financial district is under construction in the Pudong area, to the east of the Huangpu River, and **industrial** plants and factories are being moved from the old city center to the northern and southwestern suburbs.

In visiting Shanghai, one is impressed by the scale of the city's development. The obvious question is what effect such development is having on the city's environment. "Without economic development we have no money to improve the environment," says Lu Fu Kuan, former head of Shanghai's Environmental Protection Bureau and a current member of Shanghai's Municipal People's Congress. Kuan has been instrumental in gaining passage of new environmental regulations that will ensure that development and environmental concerns go hand-in-hand. "We have updated our regulations to suit the market system; it is now possible to control the levels of growth if they go against the environmental law." To do so, he continues, "is the responsibility of us all."

-May McNeil

## The Changing Face of Shanghai

by Edward Leman

SHANGHAI. Largely insulated from economic reforms that transformed China's southern region in the 1980s, Shanghai is now undergoing a process of change perhaps unprecedented in Asian cities. With a population of almost 16 million in the greater metropolitan area, the municipality is rapidly evolving from a collection of large state-owned industries into China's principal entrepot and financial services center. In the process, it not only is responding to demands for entirely new kinds of infrastructure and facilities but also is dealing with a legacy of forty years of pollution and resource depletion.

Shanghai's ten thousand industrial enterprises are scattered throughout the city. Since early in this decade, Shanghai's government has been actively promoting a policy of large-scale industrial relocation. With the emergence of a booming real estate market, industries are now

finding it possible to pay for new facilities in suburban districts and county towns from sales of land-use rights for sites that are often in prime inner city locations. The result is that the structure of the inner city is changing dramatically.

Entire neighborhoods are being cleared to make way for new office buildings, retail facilities, and elevated expressways to support Shanghai's tertiary sector growth. Once quaint streetscapes, built in the early part of this century during the city's heyday as a foreign enclave, are being replaced by high-rise towers and retail podiums. Although key heritage sites are protected, including the historic Bund area, the urban fabric of dense, low-rise neighborhoods is rapidly being transformed. Over 300,000 households have been resettled in the past few years to make way for redevelopment projects, and government officials predict at

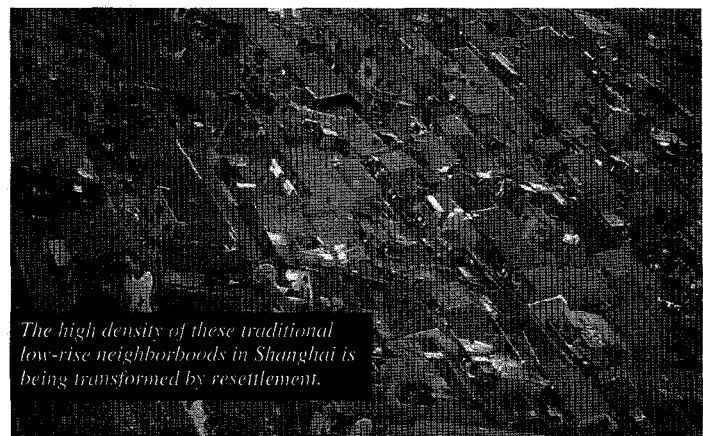
least as many will need to be relocated by the end of this decade, often to suburban districts.

### Move to the suburbs

While inner city redevelopment is reducing densities and ridding the core area of industries, it is also causing a radical shift in the industrial structure of the city as a whole. Suburban districts and county towns are booming as

their local economies reorient from farming to both large-scale heavy industry and to light manufacturing. Some districts are now registering annual GDP growth rates of as much as 30 percent; the gross value of manufactured output in Qingpu County increased by 50 percent last year alone. The environmental implications of this shift are far-reaching. Shanghai's industries created 1.3 billion tons of

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*The high density of these traditional low-rise neighborhoods in Shanghai is being transformed by resettlement.*

wastewater last year, 12 million tons of solid waste, and 360,000 tons of sulphur dioxide. As industrial development becomes dispersed among suburban districts and county towns, it will be increasingly necessary to monitor effluent discharges. Particularly high levels of industrial growth are now occurring along the Huangpu River, the source of 90 percent of Shanghai's drinking water. The World Bank is supporting major infrastructure projects in an attempt to monitor and minimize adverse environmental impacts of this development, and to protect water quality along the Huangpu River.

### Industrial relocation

Recent research has found that industries are relocating not only to suburban Shanghai, but also beyond its border in the wider Yangtze delta region. Approximately half of the industrial output of the delta is now created outside of Shanghai, mostly in smaller townships and village enterprises; an industrial corridor is emerging which stretches almost 200 km from Shanghai to Suzhou, Wuxi, and Changzhou. Development is occurring in villages and hamlets with little or no land use controls and supporting municipal infrastructure. The entire corridor traverses the Taihu Lake Basin that feeds the Huangpu River, Shanghai's source of potable water.

Exacerbating demand for infrastructure in this corridor is a large and growing number of rural migrants seeking employment in construction and industry. At the present time, there are an estimated 9 million migrant workers and dependents in the Yangtze delta region. Labor demand is expected to continue at very high rates; the migrant population is anticipated to grow by 10 percent annually well into the next decade. This means that there could be as many as 22 million migrants in the Yangtze delta by the year 2005.

While Shanghai is succeeding in transforming its economy from secondary to tertiary sectors, the surrounding region is changing from agriculture to industry. Unplanned development threatens not only to deplete cultivated land, but to affect the air and water quality in Shanghai. Confronting this situation will be challenging from an institutional perspective: the delta area traverses not only Shanghai but also Zhejiang Province in the south, Jiangsu Province in the north, and Anhui Province to the west. There are 225 cities, towns, and counties in the Yangtze Delta Economic Region with a population of 193 million, slightly more than the population of Indonesia. Competition among local governments for industrial investment is strong; it will be difficult for them to incur the heavy costs of environmental infrastructure that

## Environmental Education in Shanghai

*Jijiang Wang is a reporter for the Shanghai Environmental Education Centre.*

The Shanghai Environmental Education Center was set up by the Shanghai Environmental Protection Bureau in 1984 to promote environmental education, environmental protection, increase environmental consciousness, and mobilize public participation.

Since its creation 11 years ago, the Center has provided the general public with environmental protection education by publishing science articles and literary and artistic works through the establishment of a weekly newspaper called the *Shanghai Environment Press*, which also helps to promote special occasions, including the Planting Festival, Earth Day, and World Environment Day.

The Center has also developed an audio-visual education department, a public education section, and a youth education department. Over 30 senior and middle-ranking professional personnel provide different types of environmental education to the city's youth, professional environmental staff, and to the general public by means of newspaper, television programs, publications, lectures and training courses.

Education for staff is mainly done through environmental protection training, which raises environmental consciousness while at the same time improving their work skills. Education for professional environmental staff aims to provide primary, intermediate, and senior training in various forms based on their different educational backgrounds and work history. The Center has organized courses in environmental impact assessment for the Asia Development Bank and the World Bank and, with a Japanese specialist, provided senior training courses on air pollution control.

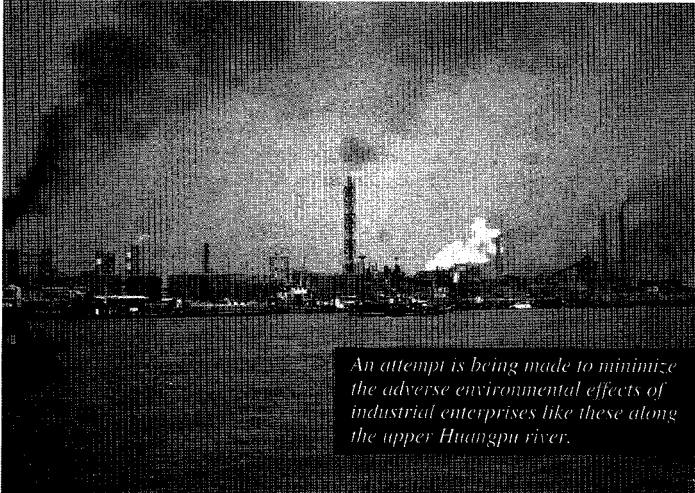
Youth environmental education programs consist of two types: programs for students in primary schools and middle schools, and programs for students in technical secondary schools, colleges, and universities. Education for the first group is organized and implemented by the Shanghai Primary and Middle School Environmental Education Coordination Committee, comprised of experts from the Shanghai Environmental Protection Bureau and the Shanghai Education Bureau. Education for the students in primary schools is delivered through classroom instruction; education for the students in middle schools is delivered through physics, chemistry, biology, and geography classes. Some schools also carry out extracurricular environmental interest activities, including environmental inspection, social investigation, and experiments. Since 1981, environmental protection summer camp activities have been organized by the municipality, districts, and counties. To maintain long-term environmental education programs in primary and middle schools, the Center organizes a training program for school principals and environmental teachers, preparing teaching materials and organizing environmental knowledge competitions.

Environmental education for students in technical secondary schools, colleges, and universities is mainly professional education; for example, some courses include environmental monitoring, environmental engineering, and environmental medical sciences. Some colleges and universities have also set up specific departments or classes to teach the same subjects. There is also an environmental law department in some of the universities. For other university students, there are introductory courses on the environment and extracurricular environmental study and investigation courses.

might affect their municipality's competitive advantage.

Notwithstanding these constraints, Shanghai needs to take the lead in formulating a regional environmental program that ensures that the large investments it is now making in protecting the quality of its water, air, and land resources are not canceled out by uncontrolled development in the wider Yangtze delta area. □

*Edward Leman is president of Chreod Ltd., development planning consultants based in Ottawa. Chreod began working with the Shanghai municipal government in 1988, and has provided services to local government, the World Bank, the Asian Development Bank, and private investors. It recently completed a review of development trends in the Yangtze Delta Economic Region.*



*An attempt is being made to minimize the adverse environmental effects of industrial enterprises like these along the upper Huangpu river.*