



ARCHITECTURAL RECORD

Arup Developing Green City in China

February 23, 2006

With its booming economy and often-unchecked development, China is not exactly known for its environmental stewardship. But the country is starting to move in a different direction, as evidenced by a plan being developed by Arup to build what it calls the world's first sustainable city.

The firm recently signed a contract with the Shanghai Industrial Investment Corporation (SIIC) to develop the city, called Dongtan, located near Shanghai, on the third-largest island in China. Three-quarters the size of Manhattan (34 square miles), the site is now mostly agricultural land. But by 2010, when the 1,700-acre first stage is expected to be complete (the project will take clearer shape by 2020), it will be a mixed-use city of mostly 5-to-8-story buildings. Three villages—each with its own housing, shops, and schools—will converge at a city center.

Minimizing the environmental impact of all this development is essential to the project's mission. "If growth in China continues as it has until now, they're going to permanently damage the place," says Arup principal Peter Head, who is leading the project. "They hope that by ignoring the way the west has industrialized, they'll be able to keep growth growing while reducing the impact."

Sustainable development runs through practically every element of Arup's master plan, which is a work in progress. Public transportation will be plentiful and encouraged. Many streets will be arranged as service roads, not through roads, to promote walking, biking, and public transportation. Cars and trucks will use hydrogen or fuel cells, rather than fossil fuels. Buildings will harness energy from wind turbines, photovoltaic panels, and converted waste. They will also be constructed using organic and biodegradable materials, while refuse can be either converted into energy or turned into compost via a machine called an anaerobic digester.

The city will be built using a strict ecological footprint analysis, which measures how many resources each inhabitant consumes. The city will call for a footprint that is about one fifth that of the average U.S. city, and about one fourth of a major Chinese city. The island will remain about 40 percent farmland and thus self-sustaining. Most of the residents, adds Head, will live and work nearby to reduce commuting.

Design guidelines have not been developed yet, says Head. The SIIC plans to build a major tourist attraction and hold competitions for iconic buildings, targeted to be completed in time for the 2010 Expo in Shanghai.

Dongtan should become a model for future development in China, says Head. But it will also, he adds, allow the Chinese to develop environmental expertise and green products that they can then sell to the rest of the world.

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