Above: Crops grown along the river in Pixian
Right: "Welcome to our Happy Farm!"
Photo Credits: CURA

Anlong Village: Integrating Biophilic City and Countryside

By Phoebe Tran and Rositsa T. Ilieva

The biophilic city can hardly be attained by keeping action in the city alone. Considering ecological networks, rather than administrative boundaries, as the domain of nature-centered policies and actions is imperative if cities are to advance human and environmental well-being in tandem. Rivers are arguably the urban systems that best exemplify the need for a "rooftop to region" approach to biophilic urban development. The ecological restoration of the Funan River in the City of Chengdu, China through decentralized ecological interventions in the rural areas of the region, like the Anlong Village Project discussed below, effectively demonstrates the virtues of a multi-scale strategy for planning the biophilic city. What is more, it calls attention to the importance of people-centered biophilic interventions, empowering urban and rural communities, as a means to an inclusive and durable urban ecosystems governance.

The impetus for the restoration of the Funan River, and the ensuing development of the Anlong Village Project, emerged in 1992, when the City of Chengdu launched the Funan River Comprehensive Renovation Project to recover the city's most important waterway from severe pollution. Over ten years, the government invested RMB 20 billion (USD 3.4 billion) in pollution management, flood control, housing and infrastructure programs, and the construction of a greenbelt along the river. Despite these extensive efforts, results proved unsatisfactory. This was due to a considerable amount of chemical fertilizer run-off from rural areas upstream, causing sixty percent of the total pollution in the river. In 2003, to address the root cause of river pollution in the city, the City of Chengdu supported the establishment of the Chengdu Urban Rivers Association (CURA) – a non-governmental organization funded by government sources, private corporations, foundations, embassies, and individuals to explore new approaches to river pollution through research projects and environmental protection activities. One of CURA's most notable initiatives, the Anlong Sustainable Development Model Village Project, took place in Ande town, Pi county about 40 kilometers (24.8 miles) northwest of Chengdu along the Funan River. CURA took the approach of rebuilding the community's ecological system and promoting mutually beneficial rural-urban linkages to ensure resiliency in the co-evolution of the city's urban and rural landscapes. The association aimed to construct a river protection belt along the Funan River bank by integrating pollution-free, closed circuit ecological resource systems in villages. Anlong Village served as the pilot project for this plan, demonstrating that the sustainable ecosystem model is replicable, scalable, and has significant potential for positive change.

Over five years, CURA's team carried out their comprehensive program to address the economic, social, and environmental issues affecting Anlong Village. They addressed the issue of river contamination from households by installing a closed-loop system consisting of urine-diverting toilets (UDT) and phytoremediation systems, also known as constructed wetlands. With the UDTs, urine was used as fertilizer and feces were used for the 8-cubic meter bio-digesters, which were built by households and compensated with RMB 500 (USD 75) by CURA in order to curb deforestation and cut down on household use of wood for fuel. CURA also collaborated with Huang Shida, the bioengineer who designed the Huoshui Park's Water Purification System, to create a micro-water purification system for Anlong.

Wetland construction in Anlong
Photo Credit: Mark Takefman, CURA

A hydrophyte filter bed was used to connect a waste water pipe to a natural filtration system made of gravel and plants with extensive root systems to absorb and break down toxic substances in the waste water. The constructed wetlands were tested by the Director of the Chengdu Center for Disease Control & Prevention, Li Xiaohui, with funding from the National Geographic Air and Water Conservation Fund. After a year of testing, the wetlands were shown to successfully treat the water for use in farmers' fields for irrigation or directly back into the river. Since the grey water from the water treatment system and biofertilizer from the biogas residue could be used for the village's agricultural production, they were able to eliminate use of chemical inputs and therefore reduce river contamination. CURA was not only able to systematically introduce organic farming practices to villagers, but also to increase their income through a community-supported agriculture (CSA) program that targeted the urban market for organic food.

In 2006, twenty households of the 160 with UDTs, wetlands, and bio-digesters in Anlong Village took part in a trial to return to traditional agricultural production. These farmers made a commitment to eliminate the use of pesticides and fertilizers, only plant seasonally, and attract wildlife back into the farmland to re-establish a natural biologic chain.

The project allowed villagers to adopt a more environmentally-conscious lifestyle and created opportunity for new initiatives such as the Field with Hope organic plantation, a monthly philanthropic event hosted by volunteers that invited organic farmers and organic food consumers to interact in a shared space. To maintain information sharing within the environmental sphere, CURA also established the Farmer's Forum, a regularly held meeting that connects villagers with urban resources such as organizations and practitioners as well as new technologies and ideas. In addition, the Green Consumption Alliance was founded to mobilize and connect a network of over 2,000 urban volunteers and organic consumers who are interested in farming in their spare time. The re-establishment of trust between urban consumers and rural residents has, in fact, effectively enabled villagers to sustain their production independently from CURA, grow a strong relationship with city dwellers, and, in the process, transition Chengdu to a more biophilic city-region.

Gao family's constructed wetland in Pidu District

Family farm at Anlong Village
Photo Credit: CURA

A Closed Cycle Eco-Household of Anlong Model Village

Wetland construction in Anlong
Photo Credit: Mark Takefman, CURA

While different components of CURA's project are still carried on to this day, such as monthly tours to the village and use of the Environmental Center for teaching and events, many eco-installments were lost when the local government replaced several of the village's households to build small, centralized hamlets. The number of farmers still growing organically has reduced to about eight due to a number of reasons tied to their inability to achieve economies of scale and organic certification. As Chengdu's urban area encroaches upon Anlong Village with high-rise buildings, the local communities of Ande Town will need to harness the support of their urban network to preserve the ecosystem that they have worked so hard to restore and preserve.

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