

ZHU VILLAGE URBAN RENEWAL IN THE CITY OF GUANGZHOU

**ETH**  
Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

*Margrit Hugentobler  
Tanja Lütolf*

## ZHU VILLAGE: URBAN RENEWAL IN THE CITY OF GUANGZHOU

REPORT OF THE AGS - GUANGZHOU PARTNERSHIP PROJECT  
ON SUSTAINABLE URBAN DEVELOPMENT



*Margrit Hugentobler / Tanja Lütolf*

ETH WOHNFORUM - CENTRE FOR CULTURAL STUDIES IN ARCHITECTURE  
ETH ZÜRICH - FACULTY OF ARCHITECTURE - PROF. D. EBERLE

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## Foreword

At the beginning of the AGS cooperation in Guangzhou, I was hoping that the project could bring a package of alternative thoughts into the city, a different perspective of growth and a set of instruments (or methodologies) applicable to particular cases, which may serve as examples of sustainable development. Looking back, I believe these objects have been achieved.

In Guangzhou, as in many cities in China, Sustainable Development was simply defined as economic growth, pollution control, and landscaping of public and outdoor spaces. Programs of city development are mainly initiated and conducted by a combined effort of policy makers and local professionals. With an understanding of the particular circumstances of the city such as high population density, limited resources and energy available per person, high demands on economic growth, and a constrained information flow, a top down approach seems to be the only efficient and effective way to planning and change. However, this approach tends to reject implementation of any project initiated outside of the system, though actually being very local. It tends to perceive sustainable development, in order to be relevant to China, as technical and physical rather than socio-economical improvement. It tends to search eye-catching images rather than a process of thoughtful implementation.

The significance of the AGS project described here lies in the fact that it attempted to change this. Through various activities, research, seminars and tours in China, U.S., Japan and Europe, it promoted a concept of holistic sustainable development involving people and communities of different social sectors. It emphasized the process rather than direct results. It was to bring the grassroot level (in the case of Zhu village the former farmers making a living

by leasing land and apartments) to voice their views and needs to city government. It took Chinese officials, professionals and community leaders to visit projects abroad and, most importantly, to interact with people from Switzerland, the United States and Japan. These tours initiated by AGS revealed essentials and processes of sustainable development through a closer look at small and local projects.

When people from different economic and cultural backgrounds come together, speaking different languages, visual properties and technical aspects become dominating. The form becomes more important only because language and culture present barriers. From an architectural point of view, the beautiful and eye catching landscaping of most newly built “green communities” are normally over-estimated regarding their environmental and ecological quality. Some of them are actually environmental burdens if we carefully look at the resources they consume in terms of water, energy and labor required for the construction and maintenance of their eye-catching appearance. The AGS Guangzhou project emphasized the question of “how does it work” rather than “how does it look”. It channeled most of its efforts into communication and building a mutual platform where knowledge about sustainable development, always based on different local circumstances, could be shared. On this platform, a detailed and targeted case development program was drafted and put into practice.

The AGS Guangzhou project also addressed the need for action. It produced neither a politically ambitious program nor a comprehensive scientific study upon which a set benchmark or indicators of development will be built. (There have been too many studies with little significance in practice.) Rather, it emphasized social (inter)action

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to bring people together in order to move from particular local circumstances into a more sustainable future. And through this action, knowledge from local experience is gained and transformed into practice.

The intention of the AGS Guangzhou project was neither to draw a prestigious and grand future scenario for the city of Guangzhou nor to publish and shelf a set

of research papers. However, this report summarizes a working, learning and implementation process with mutual interests on the part of both Chinese and Western participants. It demonstrates the ultimate goal and approach to sustainable development: a process of moving towards a holistic change of society by learning-in-action through joint efforts of people.

Prof. Jia Beisi  
Faculty of Architecture  
University of Hong Kong

## Introduction

### The Report

This report focuses on documenting the goals, project phases, processes and outcomes of a 4-year research and development project carried out by a team of the ETH Wohnforum (ETH Centre for Housing and Sustainable Urban Development) joined by other Swiss experts in collaboration with a set of multiple actors in the city of Guangzhou in Southeast China. The project was carried out in the context of a larger cooperative project called “AGS Future Cities – Guangzhou – a Partnership for Sustainable Urban Development”. This “Alliance for Global Sustainability” cooperative project also involved a team from the Massachusetts Institute of Technology in Boston, the University of Tokyo and the University of Hong Kong. The report describes the context of the development of the larger project, the issues that the three emerging subprojects addressed and some of the main findings for the overall project. The subproject described here in more detail was focused on urban renewal, more specifically on how to approach the integration and renewal of traditional farming villages that are “swallowed” by rapidly expanding large cities.

### The Purpose

The report is aimed at those members in the academic and consulting community who are interested in the topic of urban renewal in cities of developing countries, particularly in China. It is also intended as a critical reflection on the potential contribution of academics to the real live messiness of urban development, on the conflict between research and interventions, on the difficulties of cross cultural understanding that hampers what appears at first glance the exciting opportunity to work with partners of a different culture, a different language, operating under a set of different incentives. The report also serves as a docu-

mentation for the Alliance for Global Sustainability (AGS) which funded the project.

### The Content

Part I describes the research context in which the overall project took shape, the characteristics and development of the city of Guangzhou in Southeast China, the challenges faced by this rapidly growing mega city that influenced the decision to focus on the three subprojects identified for the cooperation. This is followed by an overview of the project goals and project development as well as a description of the 3 subprojects, the issues they addressed and some of the main results of subprojects 1) and 2).

Part II focuses in depth on subproject 3), the project carried out by the ETH Wohnforum with the different projects partners mentioned below. The context of “villages in the city” and urban renewal is addressed, followed by a description of the social, economic and spatial characteristics of “Zhu Village” which was to serve as a model for a more sustainable renewal of urban villages in large Chinese cities. The different project phases, roles of actors and project outcomes are outlined, providing the background for Part III.

Part III offers some preliminary insights and conclusions looking back on the overall cooperative adventure and on lessons learned from the Zhu Village project in particular.

### The Sources

The content of this report draws on a variety of materials produced in conjunction with the overall partnership project and with the Zhu Village subproject: journal articles, masters and post graduate theses, planning and documentation materials developed by Chinese and Swiss experts,

project progress reports, working documents, discussions, and so forth. Where information presented is not drawing on earlier writings of the authors of this report, the sources are identified.

### **Acknowledgements**

The list of collaborators is long. Our first appreciation goes to our colleagues at the ETH Wohnforum who at different points of the project have made important contributions as part of the project team. First and foremost Professor em. Alexander Henz, who, beyond his retirement, took the time to serve as a consultant, adviser, and trusted “sounding board”. Susanne Gysi generously played the many roles she was asked to play: adviser, editor, networker, or gracious hostess to Chinese, Japanese and American guests in Zurich. Professor Dietmar Eberle, the new head of the ETH Wohnforum, supported the project continuation with interest and encouragement. A big thank you goes to the Chinese link in our team: Professor Jia Beisi, from the Faculty of Architecture at the University of Hong Kong. He was the instigator of this project. He took us on a first trip to Guangzhou, to meet with Dr. Li Min, a landscape architect with the city of Guangzhou and with Mr. Wu Jinzhang, the Vice Chief of the Landscape Architectural Bureau of this rapidly growing mega city. These initial contacts provided access to the many future collaborators within the Guangzhou City Government and its various planning departments. Our work in Zhu Village was supported by the expertise of Dr. Johannes Heeb, Dr. Werner

Stutz and his partner Margrit Christensen whose commitment to the project went way beyond the compensation our limited budget allowed for.

We also thank the colleagues and students from our AGS teams in Boston and Tokyo, especially Professor Fred Moavenzadeh from MIT and Professor Hanaki Keisuke from the University of Tokyo for the long standing cooperation, rooted in their interest to cross disciplinary boundaries and to work together.

Too numerous to be mentioned comprehensively are the Chinese project partners, who contributed to the project at various stages. We thank them all, but would like to name just the key players who have made the project possible in several ways. They provided political support and access to relevant actors whose involvement was needed, offered professional expertise and contributions in the development of planning documents. Special thanks go to Vice-Mayor Li Zhuobin, Mr. Gao Dianying, Mr. Wu Jinghang and Dr. Li Min, Mr. Zhang Zai Xiang, Mr. Zheng Ben, Mr. Pan Zhonghai, Ms. Vivian Liang, Ms. Jade Li, Ms. Ann and Ms. Ellie Wang, Prof. Zhen Lipeng and his students, and Mr. Wang Yuwu.

Furthermore, we thank the Alliance for Global Sustainability for funding the partnership project. Dr. Roger Baud and Dr. Joanne Kauffman, AGS coordinators, have taken a particular interest in the development and implementation aspects of the Zhu Village project, which we greatly appreciated.

## PART I

### 1 The Research Context: Alliance for Global Sustainability

#### 1.1. What is the Alliance for Global Sustainability (AGS)

The Alliance for Global Sustainability (AGS) is an international partnership of four leading science and technology universities – the Massachusetts Institute of Technology (Cambridge, Massachusetts, USA), the Swiss Federal Institute of Technology (Zurich, Switzerland), the University of Tokyo (Tokyo, Japan) and Chalmers University of Technology (Göteborg, Sweden). Created in 1997, the AGS brings together hundreds of scientists from various disciplines to address the complex issues that lie at the intersection of environmental, economic and social goals of sustainable development. The overarching goal of this collaborative undertaking, which also involves farsighted leaders from global businesses and industries, local governments and NGOs worldwide, is to provide innovative and practical solutions to real and urgent environmental problems around the world. AGS activities are focused on three goals:

- improving the scientific understanding of global environmental challenges
- developing technology and policy tools to help societies reconcile ecological, economic and social concerns; and
- educate a new generation of leaders committed to meet the challenges of sustainable development

#### 1.2. The initial AGS Project: Future Cities – Toward Sustainable Cities

In 1996 - the start-up stage of the Alliance for Global Sustainability - researchers and students from ETH, MIT and University of Tokyo involved in research on sustainable urban development met at a workshop in

Boston in order to present and discuss their approaches to various challenges of urban development. Some of the faculty attending from ETH, University of Tokyo and MIT subsequently decided to submit a proposal to AGS entitled: “Future Cities - Toward Sustainable Cities”. As part of this subsequently funded project, the research group developed the following methods and tools:

- A multi-systems analysis of sustainable urban development
- Analysis of resource consumption and reuse in cities and surrounding regions
- Investigation of the environmental impact of human activities in cities
- policy choices to reduce urban transport related externalities

The collaboration of the “Future Cities Group” involved a variety of disciplines (engineering, chemistry, biology, architecture, urban planning, sociology and political science). It resulted in the publication of a special issue of the *Journal of Urban Technology* in 1997 [1] and later in a book published in a new series by Kluwer Academic Publishers in cooperation with the Alliance for Global Sustainability. This volume entitled “Future Cities: Dynamics and Sustainability” [2] encompassed the following contributions:

#### *Introduction*

Cities: Challenges and Opportunities for Sustainability (Liddle, Moavenzadeh)

#### *I Resource Management on a Regional Scale*

- 1) Restructuring Urban Systems (Baccini, Kytzia, Oswald)
- 2) Carbon Management in Future Cities: Long-Term Scenarios for the Transition to a Second Solar Society (Müller, Bader, Baccini)
- 3) Sustainable Water Management (Aramaki)



*II Urban Activities: Local and Global Impacts*

- 4) Multi-Systems Analysis of Sustainable Development: Brook Revitalization in Zürich (Hugentobler, Gysi)
- 5) Environmental Loading of Resource and Heat Recovery (Hanaki)
- 6) Towards Sustainable Urban Transport: Finding Synergies between Lowering Local and Global Impacts (Liddle, Moavenzadeh)
- 7) The Urban Heat Environment and Urban Sustainability (Dhakal)
- 8) "Green" Buildings: Private and Public Gains (Liddle, Finch)

*III Developing and Developed Countries: Challenges and Cooperation*

- 9) The Sustainability Challenge for Climate Change: Balancing Inter- and Intra-generational Equity (Liddle, Moavenzadeh)
- 10) Mega-Cities and Global Accords (Choucri)
- 11) Research Partnerships with Developing Countries: Applying Material Flux Analysis in Tunja, Colombia (Binder)

*Conclusions*

**1.3. The next Step: The AGS Future Cities - Guangzhou Partnership Project**

***The Initiative***

As longstanding partnerships sometimes have their roots in coincidental meetings – so did this project take shape. On the occasion of a visit to Hong Kong in early 1999, Prof. Jia Beisi, a former post doctoral student at ETH Zurich and now with the faculty of architecture at the University of Hong Kong, invited the author and two members of the subsequent ETH project team to visit Guangzhou, a thriving mega city in the adjoining Chinese province of Guangdong. There we had the chance to meet the then Deputy Director of the Urban Greening Department of Guangzhou and one of his project directors, a colleague of Prof. Jia. The informal discussion over exquisite Cantonese food in a restaurant, overlook-

ing a beautifully landscaped lake park in the heart of Guangzhou, quickly centred on the challenges to sustainable development posed by the rapid growth of Guangzhou and the surrounding region of the Pearl River Delta. This meeting of minds was subsequently turned into a plan to apply and adapt some of the technical, social and policy analysis tools and methodologies developed in conjunction with the preceding AGS project "Future Cities: Toward Sustainable Cities" to the real world challenges of a mega-city. This option was discussed at a meeting with the colleagues from MIT and the University of Tokyo in Zurich 3 months later, where Prof. Jia provided some background on the city of Guangzhou and the problems it faced with respect to sustainable development. The colleagues from Boston and Tokyo expressed strong interest in pursuing a collaborative project.

In October 1999, a proposal was submitted to the Alliance for Global Sustainability to provide initial 2-year funding for establishing a partnership with the Municipal Government of Guangzhou. In this partnership, the three research teams from MIT, ETH, University of Tokyo, would each contribute their particular expertise on issues of sustainable development of interest to the city government of Guangzhou. Fortunately, Prof. Jia Beisi was supported by the University of Hong Kong in his interest to be part of the group and to participate in the research as well as to play a central role as "cultural interpreter".

In order to understand the more specific goals of the overall project and the subsequently defined subprojects the context in which the project was to take place needs to be elaborated. This will be done in the following section highlighting important characteristics of the city of Guangzhou and its recent development.

## 2. Guangzhou – the Southern Gate to China in the Pearl River Delta

### 2.1. History and Recent developments

Guangzhou, the capital of Guangdong province, is located at the northern edge of the Pearl River Delta, bordering on the South China Sea. Geographically, the Pearl River Delta (PRD) forms a triangle, with the Pearl River, its central component flowing southeast from Guangzhou, and Hong Kong/Shenzhen and Macao/Zhuhai forming the southern boundary (Fig. 1). The Pearl River Delta economic region covers 42'000 square kilometres with a population of 20.5 million in 1993, expected to increase to 28 million by 2010.<sup>1</sup>



Fig. 1) Map of PRD

Guangzhou's history dates back more than four thousand years.<sup>2</sup> The first town on the site of present-day Guangzhou was established around 214BC during the Qin dynasty (221-210 BC). When Silk Road merchants started transporting their goods by sea, Guangzhou's location on the South China Sea was ideal. It enabled traders from East Asia and beyond to bring their wares into China. After first contacts with Indians and Romans in the 2nd century AD, a sizeable trade with the Middle East and South-East Asia had developed some 500 years later. The Portuguese arrived in the 16th century looking for porcelain and silk, providing Guangzhou with its first contact with a European trading nation. The

Portuguese were allowed to set up base down-river in Macau in 1557. The first trade overtures from the British were rebuffed in 1625, but the Chinese imperial government finally opened Guangzhou to foreign trade in 1685. From the late 18th to the mid 19th century, Guangzhou was the only port in China allowed to trade with the rest of the world. But after the first Opium War, which ended with the Treaty of Nanjing (1842) and the opening of new "treaty ports" to foreign trade, Guangzhou lost its exclusive trading position, and subsequently its riches declined.



Fig. 2) Ancient Chinese harbor town



Fig. 3) Old, richly decorated temple in Guangzhou

In the 19th and early 20th century, Guangzhou became a cradle of revolt and a stronghold of the republican forces after the fall of the Qing dynasty. Sun Zhongshan, better known as Sun Yatsen, the first president of the Republic of China, was born near Guangzhou. In the early 1920s, Sun headed the Guomindang (Nationalist Party) in Guangzhou, from where the republicans mounted their campaigns

<sup>1</sup> Guangdong Planning Commission & PRD Economic Zone Planning Office, 1996: 93.

<sup>2</sup> The part on the history of Guangdong and Guangzhou is based on Liou, Lonely Planet: China, 2000: 661-664.

against the northern Manchu warlords. In more recent years, the development of the Pearl River Delta into one of the most densely populated areas in the world is based on the restructuring of the Chinese economy aimed at encouraging international trade and investment.<sup>3</sup> Since 1979, Guangdong has grown from the 10th most affluent into the country's most affluent province. The rapid economic development of the region is attributed to the Special Policy of 1980 which opened up new options for Guangdong as a result of the following key factors<sup>4</sup>:

- freedom to manage foreign trade: i.e. retain more foreign currency, set up promotional organizations and prices in Hong Kong and Macau
- fiscal independence: permission to pass on a fixed sum of taxes instead of a percentage of revenue to the central government
- financial independence: allowing Guangdong banks to make their own investment decisions

These policies set the stage for the establishment of the Special Economic Zones of Shenzhen<sup>5</sup> and Zhuhai in the southern part of the province.

The Pearl River Delta has thus become one of the fastest growing areas in China. GDP growth averaged about 13% annually in recent years with the per capita GDP of the region being more than 3 times the national figure. In 2000 the region accounted for one third of China's total exports and 30% of its total foreign direct investment.<sup>6</sup> The physical and economic transformation of this previously fertile estuary for the production of fish and rice defies description – growth figures can only give a pale image of the actual pace of change and the radical urbanization of the area.<sup>7</sup>

When, in 1985, the Chinese State Council designated the PRD as an open eco-

nomie zone, leading cities in the area like Guangzhou were also declared open zones, along with peripheral cities and open towns placed under the jurisdiction of open cities. With these developments, Guangzhou resumed its historical role as a key city for trade with the outside world. It has become the political, economic, scientific, technological, educational and cultural center of Guangdong province. Also the center of civil air traffic in South China and a nodal point for national rail traffic, Guangzhou is described as "China's Southern Gate".

Guangzhou's economic development reflects that of the Pearl River Delta overall. Between 1975 and 1990 spending on urban reconstruction in Guangzhou increased more than tenfold.<sup>8</sup> Guangzhou's GDP has virtually doubled since 1995. While agricultural output still tends to increase some (sugarcane and other food processing, especially tropical fruit), growth areas are mostly in industrial manufacturing (crude oils, steel, cement, motor vehicles and motor cycles, cigarettes, beer and soft drinks). The electronic information industry is the fastest growing sector, as Guangzhou has become one of China's three largest internet exchange centers. In 2000, Guangzhou's GDP was 238.7 billion Yuan RMB,<sup>9</sup> up by 15.7% over the previous year and nearly twice that of 1995.<sup>10</sup> GDP per capita increased to 34'500 Yuan RMB in 2000 compared to 19'400 Yuan RMB in 1995, with an annual growth of 11.2%, ranking second among China's ten top cities.

Between 1949 and 1960, the urban area increased sixfold,<sup>11</sup> as a result of the national policy to accelerate industrial growth ("First Five Year Plan" and "The Great Leap Forward").<sup>12</sup> This was followed by a period of de-urbanization between 1961-76 (also the time of the Cultural Revolution of 1966-76), which was due to forced mass resettlement and strict state control of access to jobs, housing, and food.<sup>13</sup> With the start of the reform era in the late 1970s, urban

<sup>3</sup> The roughly 700 persons per squarekilometer contrast with about half that number for Guangdong Province, and about 133 for China as a whole. (Washington D.C.: National Academy Press, 2001).

<sup>4</sup> Chang, 2001

<sup>5</sup> Shenzhen, little more than a fishing village in 1978, is now one of China's most prosperous cities with a population increase from 20'000 in 1979 to more than 3 million by the mid 1990s. (Campanello T.J., et al., 2002: 10)

<sup>6</sup> Australia China Chamber of Commerce and Industry, 2002

<sup>7</sup> The Great Leap forward (2001) provides a visually impressive picture of the transformation of the Pearl River Delta during the last decade.

<sup>8</sup> Chang, 2001: 455.

<sup>9</sup> 8 Yuan RMB (renminbi) equal about 1US\$ in 2004.

<sup>10</sup> The following parts are based on "A brief Introduction to Guangzhou", 2001. It should be noted that this is an official publication. The published figures also serve public relation purposes.

<sup>11</sup> The high increase in population from 1949-1960 had different reasons: First, there was a high natural growth rate due to social stability, improved standards of living, medical and health care, decrease of death rates, and the lack of birth-control. Second, the immigration rate to the city was high due to the rapid industrialization. Third, the administrative territory of the municipality was enlarged in 1957. (Xu, 1985:173-175)

<sup>12</sup> Ekblad et al., 1991: 35-36

<sup>13</sup> A variety of administrative measures were used to control the general growth and distribution of cities. Rural-to-urban migration was strictly controlled through food rationing and the household registration system (hukou). In the 1960s, several millions of city youth were transferred to the rural inland and frontier provinces (shang shan xia xiang). The goal was to constrain the growth of the larger cities and to promote small towns. In 1964, a vigorous promotion of birth control was introduced. (Sit, 1985:8; Yusuf and Wu, 1997:5; et al.)

settlement patterns and policies changed substantially. Since 1978, the urban population has been increasing again, due to the liberalization of migration policies, increasing enforcement problems of migration restrictions, and the expansion of the tertiary sector.<sup>14</sup> With the designation of “Special Economic Zones”, mostly involving coastal areas and cities in 1985, the flood gates for urban migration were open.

in the mid 1990s. Some of the new projects are of gigantic size: Dozens of residential and commercial high-rise buildings, luxury hotels, large new sport arenas and cultural buildings are constructed. The growth of Guangzhou, modeled on American cities and capitalist principles, is regarded as a symbol of success and economic power.<sup>16</sup> The real estate business is flourishing, aimed at an increasingly affluent middle



Fig. 4) Settlement pattern of Guangzhou (1979–1998)

The 10 districts and two county-level towns that make up the Guangzhou municipal area today cover some 7500 km<sup>2</sup>, of which the downtown area accounts for about half. The population of the city has doubled since 1995 to reach almost 10 million people in the year 2000.<sup>15</sup> The growth of the city, however, is not due only to immigration, but also to the incorporation of previously independent cities and villages into the city, thus extending its jurisdiction and sphere of influence, along with increasing its resource base. An example is the city of Panyu on the southern bank of the Pearl River, which was incorporated as a district of Guangzhou in 2000, adding 1.6 million inhabitants, and giving the city access to precious water resources and the opportunity to build a new deep-water port.

As a result, the face of Guangzhou has changed dramatically in recent years: Old town boulevards, populated by thousands of bicycles and pedestrians only 20 years ago have been turned into expressways, lined with commercial and residential high-rise buildings. The old city center with its historical buildings was partly demolished and has been replaced with scale breaking towers. High-rise buildings literally sprout up in Tianhe District, the so-called “new town”, a large expansion area established

and upper class urban population. New residential housing projects are often planned for as many as 30,000 future inhabitants and are constructed in record time within 2-3 years.<sup>17</sup> They may replace old neighbourhoods in central districts and former agricultural villages at the fringes, with the former inhabitants being resettled in areas far away from the city center.

Other large scale housing projects are constructed in new subdivisions or rapidly developing suburbs. The new residential areas are often very attractive at first glance. Especially for young people, the traditional Chinese house lacking modern sanitary facilities and the overcrowded courtyard represent an unattractive way of living. However, many people might still prefer life in a small courtyard house, within the network of their own family, rather than to live in a small apartment in a high-rise building, cut off from the ground and without familiar surroundings. Furthermore, most of the new residential housing developments are unaffordable for a large part of the population and often lack the necessary social and urban infrastructure (schools, shops, leisure facilities, access to public transportation) necessary to make them grow into viable settlements.<sup>18</sup>

<sup>14</sup> Xu, 1985: 175

<sup>15</sup> This official population figure was published in 2003 (Ecological City Planning Guideline of Guangzhou, 2003:6. The 10 million are referred to as the permanent population of which 7 million are registered citizens of Guangzhou.

<sup>16</sup> Martin and Hoffmann, 1997: 1292

<sup>17</sup> E.g. Riverside Garden, a complex built south of Pearl River. It consists of various types of buildings, ranging from high-rises to expensive villas. The figures given here are based on discussions with responsible persons.

<sup>18</sup> Ekblad et al., 1991: 52



Fig. 5) Waiting for the bulldozer



Fig. 6) Old, lively city streets... rapidly disappearing



Fig. 7) Post modern condominiums with penthouse apartments sold for 500'000 US \$



Fig. 8) Riverside Garden highrises and villas, new housing for 50'000 upper middle class people



Fig. 9) Urban sprawl at the outskirts of Guangzhou

The improvement of the housing situation for the less affluent segments of the urban population remains a challenge. A particular phenomenon in rapidly growing Chinese cities is the so-called “floating population”, rural laborers migrating to the cities in order to make a living. In the late 1980s, over 701 million rural migrants<sup>19</sup> were estimated to live in nine Chinese cities of over 1 million people making up approximately 23% of their official resident populations. In Guangzhou, the ratio of the so-called temporary population was about 30% in the mid-Nineties.<sup>20</sup>

The rapid expansion of industry and construction in cities like Guangzhou would have been unthinkable without the voluntary and induced migration of large numbers of rural workers. Leaving a life of poverty in Hunan, Guangxi, Sichuan and other provinces, they flock to Guangdong province and other growth areas to work in factories, on construction sites, and in the formal and informal service sector.<sup>21</sup> Because of their numbers, they have become a major factor in the urban economy. Yet in spite of their important contribution, they are still treated as second class citizens, their existence having been officially acknowledged only in very recent years. Not considered official urban residents, they are excluded from the benefits enjoyed by permanent urban residents (e.g. housing, medical care, schooling for children, unemployment benefits). Their working conditions are often poor, with temporary or insecure contracts, low pay, hard physical labor or dangerous work. Although the population movement control (household registration) was relaxed in the 1980s and 1990s, rural migrants were not given the full rights of urban residents.

The impact of large-scale temporary migration on cities is mixed.<sup>22</sup> On the one hand, it helped meet the demand for labor in urban areas, especially in the booming construction and service sectors. Flourishing urban free markets, staffed by temporary rural vendors of all types, have enriched the

daily supply of consumer goods for urban residents. Since temporary migration does not involve official state intervention, it can respond to labor-market needs more quickly than controlled permanent migration. Hired in place of ordinary urban laborers at lower wages and benefits, migrants help keep the financially troubled and burdened state factories in business. On the other hand, the rapid growth of this temporary workforce places added strain on the urban infrastructure, crowding public transportation, raising the need for food and water supply, and contributing to crime.

## 2.2. Challenges to Sustainable Development

The downside of the tremendous growth in population and economic activity is the increased pressure on the environment. Guangzhou is both at the contributing and the receiving end of the environmental problems the larger Pearl River Delta region has to wrestle with:

- Air pollution from vehicular emissions, industrial operations, power generation, construction activities, and trash and agricultural burning are the most visible and urgent environmental problems. Atmospheric emissions increased by almost 120% in the 90s. In dense urban areas carbon dioxide and nitrogen oxide levels have soared with the exponential growth in automobile and truck traffic.<sup>23</sup>
- The amount of domestic wastewater and sewage generated has surged in recent years, with treatment capacity lagging behind. The treatment rate of domestic sewage was only about 9% between 1991 and 1995.<sup>24</sup> Estimates of how much of the industrial overflow is treated vary from 50% to 85%, contaminating sources of drinking water.<sup>25</sup> However, environmental regulation and their enforcement vary considerably throughout the Delta.
- Due to the massive population increase

<sup>19</sup> They are also referred to as floating population, temporary or labor migrants, peasant workers, or unofficial poor. There are two types of temporary population (Yeh and Xu, 1995). The first type is temporary residents (zanzhu renkou). Unlike permanent residents (changzhu renkou), whose households are registered in the city, temporary residents are mainly people who obtain permission to stay in a city for a fixed period of time. They are mainly contract workers working in factories or on construction sites. The other type is the floating population (liudong renkou). They are people who enter and leave the city within a few days, weeks, or longer. They may be travelers or businessmen, but very often they are people looking for jobs. The floating population is normally not reported in city statistics, while temporary residents usually are part of the statistics.

<sup>20</sup> Chen and Parish, 1996: 77

<sup>21</sup> A 1988 survey showed that 48% of all temporary migrants were job seekers or jobholders (Chen and Parish, 1996: 75). Fifty-nine percent of the temporary migrants in cities with a population of one million or more came from rural areas. Most of the temporary migrants were young males with little education. This profile has begun to resemble that of most migrants in large cities of developing countries. The length of stay for temporary migrants has increased. Most of them stayed for a few days in the early 1980s. By 1988, those who stayed for over one month made up 62% of the total, with 29% of them living in their city of destination for over one year.

<sup>22</sup> Chen and Parish, 1996: 75-76

<sup>23</sup> Campanella, et al. 2001.

<sup>24</sup> Barron and Steinbrecher, 1999: 151

<sup>25</sup> Ng, 1999: 11

and the concomitant decrease in cultivated land, the Pearl River Delta has changed from a food exporting to a food importing area. In the 1980s alone, use of chemical fertilizers in the Delta increased by 40%.

The environmental problems facing the region are also the problems the municipal government of Guangzhou has to wrestle with. Efforts to address issues of traffic congestion, air pollution and as yet insufficient capacities for wastewater and sewage treatment are lagging behind the continuing rapid economic development. Infrastructure needs in terms of public transportation connecting the mushrooming new residential subdivisions to the center are as yet unmet. While most of the economic and social activities are still concentrated in the old city proper<sup>26</sup> (and increasingly in the designated growth area of “new town”), the development policy

since the economic boom started in the mid eighties focused on the suburban fringe. The lack of investments to rejuvenate the old core of the city and to provide sufficient infrastructure and employment opportunities in the newly developing centers is a major problem. The different districts of Guangzhou are unbalanced in terms of employment and residential facilities. Additional pressures with the potential for social unrest come from the visibly growing disparities between the new affluent urban middle class and the poor migrant labor population joined by other victims of an urban economy in a restructuring process. Previously secure jobs available in outdated state-owned manufacturing facilities are disappearing at a rapid rate.

It was different aspects of this range of challenges that the collaboration between the city of Guangzhou and the AGS teams were to address.

<sup>26</sup> Xu, 1985:181; Guangzhou Urban Planning Bureau, 2001:6

### 3. Project Goals and Preparation Phase

#### 3.1. Objectives

In the context of the challenges confronting Guangzhou planners and decision-makers, the following overall objectives were defined in the project proposal subsequently funded by AGS:

1) To support the city of Guangzhou in addressing problems related to urban transportation, housing, air quality, water and land use management through the application and adaptation of technical, social and policy analysis tools and methodologies developed in conjunction with the AGS project "Future Cities: Toward Sustainable Cities".

Specifically the project was to:

- provide approaches for developing and assessing policy measures to reduce air and water pollution in the city of Guangzhou and the Pearl River Delta region
- assist in developing recommendations for sustainable policies related to land use and property development
- assess the current wastewater treatment system and suggest methods for improvement
- assist in the development of a concept and process for sustainable urban development planning in the city of Guangzhou
- provide and apply a multi-systems analysis for sustainable development in housing construction and renovation and in other selected areas of urban planning

2) To develop a model of a research partnership between developed and developing countries aimed at capacity and institution building. In addition to its focus on the ex-

change and enhancement of know-how, improved decision-making and the actual implementation of policies for sustainable urban development are of central concern to this project.

#### 3.2. Preparation Phase

##### *Preliminary Meetings*

Principal investigators of the AGS group met with city officials, planning staff, and selected business representatives during two 3-day meetings in Guangzhou in May and in August 2000. A verbal agreement about the goals of the project, the contribution (staff, time, financial resources) of the project partners and the project coordination and planning was reached.

The following three priority research areas were proposed by Guangzhou city government representatives:

- environmental protection and environmental management;
- urban planning and land use (urbanization);
- pollution treatment and control; traffic reduction.

Based on these broadly framed issues, seven potential research topics were outlined by members of the AGS Future Cities group to be pursued in collaboration with local researchers and city administration staff in Guangzhou. A brief description of these topics and the principal investigators and partners involved is found in Appendix 3.1)

At the same time, a project organization was established in the city of Guangzhou under the sponsorship of Mr. Li Zhuobin, Vice Mayor of Guangzhou, in collaboration with high-level policy makers and city administration staff. A local project leader for each research project was named who was to assemble the local project team.



**November 2000 – Kick-off Conference in Guangzhou**

The first AGS Future Cities Partnership conference was held in Guangzhou in November 2000. It served the goals of a) officially establishing and publicizing the partnership project; b) identifying sustainability related problems of concern to the city of Guangzhou; and c) presenting and discussing methodological approaches and tools developed by members of the AGS Future Cities Group as they relate to selected problems of sustainable urban development. About 30 Chinese participants joined the AGS research group in the conference sessions. They had been selected by the Guangzhou project partners and consisted of executive staff from several municipal government departments involved in the topics to be discussed. In addition, selected faculty and some of their students from various Guangzhou universities had been invited.

Following plenary sessions on the first day, three topic areas were proposed for the joint research: 1) land use and urban planning, 2) recovery of pollutants and environmental protection, and 3) improvement of the urban residential environment. The proposed subprojects thus reflected the priorities of the city of Guangzhou and the particular expertise of the members of the AGS groups involved. They addressed questions of sustainable urban development at three important levels, encompassing a regional, a municipal and a neighborhood (city district) focus. The projects thus complemented each other: Overall economic development, population growth and concomitant land use and transportation

planning (project 1) will affect strategies for and requirements of water management (project 2) which in turn will affect decisions about urban renewal at the level of residential neighborhoods (project 3). In a workshop format, accompanied by site visits, these projects were further specified. In addition, roles and responsibilities, forms of collaboration, methods for data collection, modes of information exchange, time tables, etc. were discussed. The projects were to be conducted either by local teams or jointly between AGS principal investigators and local research and city administration staff. The meetings concluded with the signing of a memorandum of understanding for each subproject. The findings for each of the subprojects were to be presented at a subsequent international seminar in December of 2001 in Guangzhou.

In addition to the memoranda of understanding related to each of the subprojects, a memorandum of understanding was signed by all the parties involved that specified the overall goals and content of the project, a time frame for conferences and reporting as well as the financial responsibilities of each of the parties. On principle it was agreed that each party would cover their own expenses.

Some 20'000 US \$ were set aside in the AGS budget to allow for visits of Chinese project delegations to their respective partners in the U.S., Japan and Switzerland. It was felt that such visits would contribute to the reciprocity of the exchange process and would allow the Chinese partners to better understand the context, technologies and methods to be discussed and brought to bear in the different subprojects.

## 4. Project Development

### 4.1. Identifying Three Subprojects

Following the conference in November 2000, each AGS project team worked independently on its subproject together with the respective Chinese counterparts - municipal policy makers, planners, faculty and students of local universities. For each subproject, its collaborators, focus, and activities as specified in the agreement of understanding are summarized below.

#### 4.1.1. Subproject 1)

*Developing Sustainable Urban Transportation Systems and Policies (Cooperation in Urban Planning and Land Use)*

*AGS Research Team:* Prof. Moavenzadeh with graduate students from MIT; Chinese partners from the City of Guangzhou Urban Planning Bureau, Environmental Protection Bureau, Municipal Planning Commission

*Project focus:* Research activities were to look at economic development, concomitant population growth and the impact of these two developments on Guangzhou's metropolitan area from the viewpoint of a multi-centered, transport-oriented development strategy. The demand as well as the supply side of services was to be examined. Specific tasks and plans would be submitted by the AGS group by mid December and finalized by specifying research fields and implementation details on the part of Guangzhou partners.

The research identified urban transportation policies, technologies, and strategies to cope with the increasing traffic congestion Guangzhou is faced with. The parties studied the potential impact of various urban transportation systems and land-use planning policies on traffic congestion and its corresponding environmentally harmful

side effects. The research was conducted while taking into account Guangzhou's commitment to a poly-nuclear plan and transport-oriented development (TOD). The AGS research supported on-going local efforts to introduce "Best Practices" for the benefit of the Guangzhou Municipality Government decision-makers.

#### 4.1.2. Subproject 2)

*Sustainable Water Resource Management (Pollutant Control and Protection of the Ecological Environment)*

*AGS Research Team:* Prof. Hanaki, Dr. Aramaki and graduate students from the University of Tokyo; Chinese partners from the City of Guangzhou Environmental Protection Bureau and the Guangzhou Science and Research Institute of Environmental Protection.

*Project Focus:* This subproject was to address pollution control and the sustainable management of water resources in Guangzhou. The city is rapidly developing and its increasing activities will put strong pressures on the water environment through water use and wastewater discharge. This work was conducted to identify possible water related environmental problems that must be solved to enhance a sustainable development. The major activities of the research work were to include:

- an analysis of the current status of utilization and pollution control of water resources in Guangzhou City
- a proposal for relevant strategies as well as policies to enhance the rational utilization of the water resources of the Liuxi River;
- a proposal for improving the institutional mechanisms and policies for water pollution control
- studying the sustainability of water resource utilization in newly developed areas;

- establishing the development pattern as well as evaluation methodology for an ecologically benign urbanization process;
- establishing implementation guidelines for policymakers after consultation with stakeholders as well as experts in order to consider possible modifications.

#### 4.1.3. Subproject 3)

*Improvement of the Residential Environment in Zhu Village in the Experimental Zone for Sustainable Development of the Tianhe District of Guangzhou (Improvement of Residential Environment)*

*AGS Research Team:* Prof. Henz, Dr. Hugentobler, Ms. Gysi and a postgraduate student from the Swiss Federal Institute of Technology (ETH Zurich); Prof. Jia (University of Hong Kong); Chinese partners from the Leading Group of Tianhe Pilot Zone of Sustainable Development, Guangzhou Municipal Administration Bureau and Gardens Bureau, Administrative Office of Tianhe Pilot Zone, Architecture Department of the South China University of Science and Technology, South China Agricultural University, Guangdong International Engineering and Architecture Design Ltd.

*Project Focus:* The goal of this project was to develop a model for sustainable urban renewal of old villages and neighborhoods in the Guangzhou metropolitan area. The location selected, Zhu Village, is situated at the edge of the City, encompassing old and more recently built residential housing, commercial areas and some small factories. The current population is about 11'000 persons. While the physical appearance and social and economic activities of the village has potential for "soft renovation", there are major environmental problems to be addressed such as dilapidated housing, badly polluted open canals and man-made ponds. Major activities within the project were to include:

- an overall assessment and analysis of the existing physical situation (buildings, streets, lakes, etc.), the social and economic structure and dynamics (socio-demographic characteristics, social and economic activities), and the cultural history (artifacts like ancestors halls, temples) etc.
- development of a plan for urban renewal that achieves the goals of improving the physical and ecological situation in Zhu village, while preserving valuable existing physical, social, economic and cultural qualities of the village
- submission of the proposed plan to relevant stakeholders (municipal government, village residents and governing bodies, professional experts, members of AGS group, etc.) and its modification according to input and suggestions
- implementation of the agreed upon plan with participation from the village and other relevant bodies
- summarizing the experiences and evaluating the outcomes as a basis for suggesting guidelines for similar urban renewal projects

#### 4.2. Methods of Cooperation – Approaches to Know-How Transfer and Exchange

The ways in which information would be gathered and exchanged in order to evaluate the problems to be addressed, and the policy alternatives to be considered encompassed the following important elements as to content and process. It was characterized by both similarities and differences as to how the three subprojects would proceed.

Firstly, and most importantly, the specific topics to be worked on in each subproject of this cooperation were proposed and defined by the Guangzhou project partners. With this approach, the AGS group hoped to ensure – in line with the AGS goals, that the research done would not only generate

new knowledge, but might have some real impact in contributing to a more sustainable development of Guangzhou.

Secondly, in order to benefit from approaches to similar problems in other cities, AGS researchers and students tried to identify relevant information in their own countries of origin (Japan, Switzerland, U.S.) and to identify best practices elsewhere in relation to the issues to be addressed in Guangzhou.

Thirdly, rather than just “bringing” this information to Guangzhou, some resources were set aside in order to invite small group delegations of Guangzhou planners, academics and policy makers to visit the countries of the collaborative subproject partners in order to facilitate cross cultural understanding and to familiarize them the Chinese partners first hand with how the respective issues were approached in these countries (see chronology of events, Appendix 2)

While the principles above applied to all of the three subprojects, there were some important differences in how the three research teams from Boston, Tokyo and Zurich defined their roles, in agreement with the Guangzhou partners. Faculty and students from MIT and the University of Tokyo defined their task as primarily one of contributing their existing know-how and doing additional research on the issues proposed by the Guangzhou project partners using data provided by Guangzhou and other data sources considered of relevance (i.e. best practices from other large cities around the world). The findings would then be presented to Guangzhou researchers, planners and policy makers in the hope of informing decision-making processes.

Following discussions with the Guangzhou partners on subproject 3) “Improvement of Zhu Village”, for which the project goals entailed both analysis, implementation

and evaluation aspects, the respective AGS team from ETH defined the project more along the lines of an “action research project”. This implied that problem identification and analysis was to be followed by the development of an action plan, and the joint evaluation of implementation of at least parts of it. ETH team members would thus limit their role to providing input and feedback to the analyses and interventions proposed by local collaborators. This approach was based on the assumption that existing local knowledge and locally defined goals would have to guide the project and that successful implementation would depend on a sense of ownership for the solutions to be developed.

This difference in role definition also accounted for the fact that most of the research tasks defined for subprojects 1) and 2) were carried out by master’s students supported by their respective faculty member at MIT and University of Tokyo. By contrast, subproject 3) involved primarily ETH and University of Hong Kong faculty and senior researchers as well as other Swiss experts on specific topics to be addressed.

### 4.3. Project Milestones

Following the kick-off conference in November of 2000 (see 3.2), the research focus and tasks for each subproject were further detailed in collaboration between each AGS team and its Guangzhou partners. This coordination involved visits of researchers and students to Guangzhou as well as visits of Chinese delegations in the respective partner cities.

#### *December 2001: International Seminar on Guangzhou Sustainable Development*

The conference was opened by welcome addresses by Vice-Mayor Li Zhuobin and the international AGS coordinators. This event was co-sponsored by the Faculty

of Architecture of the University of Hong Kong who participated in the seminar with several presentations.

This conference was focused on presentations and discussions of the findings from the first research phase. Other presentations included examples of best practices in the field of sustainable urban development from other large cities in China and elsewhere by speakers from different countries. The presentations were followed by discussions of strategies for how to implement policy changes based on research results.

In the course of the work done in 2001, it had become clear, that many aspects of the problems addressed by the three

subprojects were regional in nature and extended beyond the city boundaries of Guangzhou to the Pearl River Delta. This was to be reflected in the proposal for project continuation.

***January 2002:***

***Start of Phase 2 of the Project***

In October of 2001, a project proposal was submitted to the Alliance for Global Sustainability for a continuation of the project. This proposal, subsequently funded by AGS, was to extend the research focus to include issues of sustainable regional development in the Pearl River Delta in which the city of Guangzhou is embedded.

## 5. Project Results

In this section we report on the research focus and results of the two subprojects involving the MIT and University of Tokyo research teams together with their Chinese counterparts. More detailed information on the questions addressed and the research results can be found in the master's theses and other publications resulting from this project (see Appendix 1).

### 5.1. Subproject 1)

Developing Sustainable Urban  
Transportation Systems and Policies

During meetings held in Guangzhou in June 2001, it became evident that the Guangzhou Municipal Government had substantial existing capacity for developing innovative programs and conducting research in the field of transportation planning, land use planning, and demand management. As such, it was agreed that AGS would continue to support local research and policy development efforts by demonstrating the effectiveness of relevant programs implemented around the world. By drawing on real-world examples to demonstrate political feasibility, cost/benefit analysis, and possible implementation pitfalls, this information could help Guangzhou to avoid repeating the mistakes made by other large cities. AGS provided the Guangzhou municipal government a "menu" of options from which to select preferred strategies.

In June 2001 Guangzhou officials identified three specific areas for continued, in-depth research to support their on-going work, and to bolster their attempts at influencing city policy. The three research topics identified were:

- road pricing options for urban centers;
- development, financing, and operation of mass-transit systems;
- land-use planning and development strategies for transit corridors.

*Phase 1)* Concerning these areas of concentration, it was agreed that for the December 2001 Conference, AGS would assemble a research report detailing the experiences of other cities, in both developing and developed countries. It was further agreed that institutional, socio-economic, financial, environmental frameworks and technological systems would be included in the analysis of each of the research topics.

The research led to the recognition that Guangzhou's ability to continually supply additional road infrastructure is limited by environmental, financial and social considerations. Therefore, it was concluded that demand-side management of the existing transportation infrastructure (road space) would be required. Specifically, the following four primary recommendations were made:

- integration of land-use and transportation planning into a comprehensive transit oriented development strategy
- development of an efficient, privately operated bus rapid transit system
- employment of electronic road pricing to curtail demand for travel in the central business district and thereby reducing congestion and pollution
- establishment of a process of institutional review, reform, and integration at the local level to consolidate and clarify responsibilities relating to land-use planning, transportation planning, traffic management, and enforcement (Cheatham, 2002). [4]

Also during Phase 1, a second Master's Thesis was completed at MIT, addressing sustainable urban and regional development in conjunction with the challenges and opportunities of massive industrialization and real estate development in the wider region of the Pearl River Delta. Using the natural capitalism model, the thesis explored the financial, social and ecological benefits of green development and its application in the Pearl River Delta. It de-

scribed leading international case studies and research in green building, including activities underway in south China (Seal Uncaphor, 2001). [5]

**Phase 2)** With the continuation of the AGS - Guangzhou partnership to include regional development issues extending into the Pearl River Delta, a second transportation related subproject was framed in collaboration with Guangzhou government officials. It focused on identifying regional and local planning policies that would support the sustainable development of a Metro System in Guangzhou. As the city of Guangzhou continues on its current path of rapid development the congestion within the city center continues to worsen, with drastic effects on air quality and the economy of the city. In an attempt to combat the congestion and improve both local and regional mobility, the municipal government has made plans to develop an extensive regional rail network. Construction of the first line concluded in 1999 and line 2 was set to open at the end of 2002. The long-term plan includes seven lines with a length of over 129-kilometers. Since much of the planned development will extend through as yet sparsely populated land, this provides a great opportunity to manage and direct future urban growth. During meetings held in Guangzhou in August 2002, preliminary research on Transit Oriented Development (TOD) was presented to the Vice President and staff of the Guangzhou Metro Corporation. The concepts met with great interest, and it was determined that Metro Line 3 would provide a good opportunity to utilize some of the planning strategies and policies associated with TOD.

Findings showed that the prominent method Guangzhou has chosen to combat the negative effects of the automobile is Heavy Rail Transit (HRT). The city has established both a near and long-term plan to implement an extensive HRT system. This long-term commitment is the first

and most critical step towards improving the environment in the region. Yet just placing the rail network will not produce the desired benefits. If the rail network is not implemented under a larger strategic development program it may have negative economic impacts on the municipal government and the region. It was found that TOD is an effective method of fighting the negative impacts of urban sprawl, by reshaping the travel and land-use patterns into a more sustainable form. For the Guangzhou Metro system to have a significant impact on the energy efficiency, air pollution, and economic development of the region it must be implemented in coordination with supportive long-term strategic planning and complementary and comprehensive policies at both the regional and local level. To effectively reduce energy consumption through TOD the policies must span multiple jurisdictions and cover the areas of transportation, urban planning, and land-use. The institutional arrangements need to promote cross-boundary, multi-disciplinary governance that will produce comprehensive systems solutions to the problem of urban transportation. These policies must be aimed at reducing vehicle miles traveled while blustering transit ridership (Lion, 2003). [6]

## 5.2. Subproject 2)

Sustainable Water Resource  
Management

**Phase 1)** In conjunction with several planning meetings between the Guangzhou and the University of Tokyo teams potential problems of water resource management were identified and discussed. A Chinese delegation visited Tokyo in November 2001 to learn about water management practices in Japan, where this is also a very important issue.

It was found that the rapid development and expansion of the City of Guangzhou is putting increasing stress on the surround-

ing environment. Close to 10 million people and large scale industrial, commercial and other activities require a huge amount of water uptake from the Pearl River. Wastewater is discharged to the Pearl River in increasing amounts because the construction of infrastructure for water supply as well as for wastewater treatment is not fully able to catch up with the rapid development. The rate of discharge of municipal wastewater is increasing at a rate of around 7.6% per year. In 1998 the total wastewater discharge amounted to 1085.4 million m<sup>3</sup>, consisting of 72.8% domestic sewage and 27.2% industrial wastewater. Industrial pollution has been brought under control such that the concentration of heavy metals and toxic materials in the Guangzhou urban water bodies achieved a level lower than level 4 of the national water quality standards. However, the pollution that is of most concern and still exceeds the national water quality standards is that of Ammonium Nitrate NH<sub>3</sub>-N, and dissolved oxygen (DO). The Pearl River is both the main water supply source and the main sewage and wastewater receiving body for Guangzhou. While the river branches above the Guangzhou section are relatively clean, when the water flows into the Guangzhou section its quality gradually deteriorates with the addition of copious amounts of pollutants.

The project team concluded that before looking at economic measures as a method to reducing the pollution load, it would be important to fully understand the present condition and to look at measures to improve the present conditions first. Furthermore, the formulation of a water resource management plan for water protection as well as the instigation of policy measures to limit certain industrial activities in areas sensitive to pollution, for example areas where water is used for industrial and domestic purposes, is essential (Eastcott, 2002). [7]

**Phase 2)** With the project extension to include a regional perspective, Guangzhou city officials asked the University of Tokyo research team to assist in developing a water resource and environment management plan for the Panyu district, and thus to make a contribution to a major development project extending deeply into the Pearl River Delta Region. The Panyu district is a large area for residential and commercial development that in 1999 was incorporated into the administrative boundary of Guangzhou.

The Shawan River is the focal point in the development of the Panyu District. Using two scenarios, the future water quality of the Shawan River was predicted in relation to changes in the water quantity utilized to fuel industrial and domestic development. The worst-case scenario used, simulated the situation if no wastewater treatment was employed, and the best-case scenario simulated the situation if 90% of the pollution load was removed. The period of simulation was for the years 2020 and 2050. The research based on future scenarios showed that the anticipated development for the Panyu area in the next 50 years could cause severe negative impact on the water quality of the Shawan River that flows through the area. Based on these findings it was recommended that industrial countermeasures be used that take into account water saving, water recycling, the use of brackish water for cooling, and the implementation of economic pricing initiatives. Also that inter-district governmental policy initiatives be introduced to prevent upstream pollution from influencing downstream water quality, further enhancing sustainable water management of the river. However, the great uncertainty about the future development of this area makes the prediction of the water environment very uncertain, because water flow rate and pollution discharge very much depend on the future de-



velopment of industry as well as the residential areas.

In August of 2002, it was decided to expand the collaborative research to the study of water resource availability and water pollution problems in the Nansha area, a particular sub-district in the Panyu district. This area is to be rapidly industrialized over the next few years, at least up until 2005 under the 10th 5-year plan. The newly developed industries in the Nansha area will include steel, petrochemical, ship-building, automotive, and others. These industries are water users as well as water polluters. The city is considering to set strict standards for industry in order to develop this area in a sustainable way. The research focused on the effect of introducing cleaner technology into these industries related to water demand and water pollution.

First, a reasonable target of water use and pollutant discharge minimization was to be established. In order to compare ordinary types of industry and cleaner production types, the typical water use for each type of industry was to be studied. For comparative purposes, the UT team started studying the industrial water use improvement in Japan since the 1960s. Water recycling and water saving measures were intensively introduced in Japan between 1960 and 1975. Unit water demand for each type of industry was compiled, and the water demand in Japan was considered as a reference for a moderately cleaner technology. Meanwhile, Guangzhou partners did a survey on water use in the prevailing industri-

al types in China and Guangzhou. As there was no readily available data, the obtained information is very valuable. A comparison between Japanese and Chinese data was to be attempted, although there are several difficulties presented by differences in national statistics and differences in water use practice.

Preliminary findings indicated that the planned development of industry could cause severe environmental effects on the water environment in the Panyu/Nansha area. However, Guangzhou city government is trying to introduce cleaner production as a control policy. The obtained water use value under current conditions in China shows the possibility of water saving. Increased salt water use is possible in this new area. A comprehensive approach to water use management in this newly developed area is essential if sustainable industrial development is to be promoted (Kobayashi, 2005). [8]

### 5.3. Subproject 3)

#### Improvement of the Residential Environment of Zhu Villagex

The context, objectives, processes and results of this subproject are described in detail in Part II and Part III of this report. The description of the characteristics of Zhu Village in Chapter 6 draws on the post-graduate diploma thesis of the second author, Tanja Lütolf, who, as a member of the AGS ETH team, conducted her research in Zhu Village (Lütolf, 2002). [9]

## PART II

### 6. “Villages in the City” – the Zhu Village Project

#### 6.1. Urban Growth and Urban Renewal – Traditional Community Structures in Transition

The term “villages in the city” refers to residential settlements with a previously agricultural population that became part of the urban area during the massive city expansion in recent years. While in 1995, the 109 “villages in the city” in Guangzhou made up about 4% of the residential area, their number grew to 138 villages making up 11.6% of the residential area in 2001 with an estimated population of 1-2 million people. As city boundaries continue to expand, the construction area of such villages is estimated to occupy 22.7% of the total built-up area by 2010. These villages, historically relatively self-contained political and economic systems have become seemingly out-of-place witnesses of a world past in a 21st century metropolis.

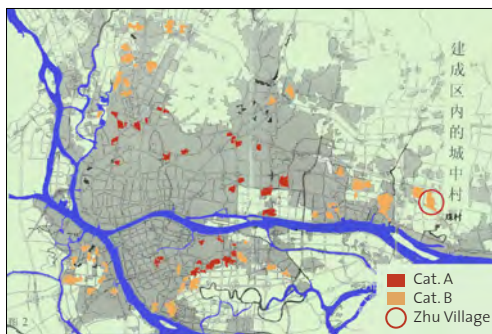


Fig. 10) Map of Guangzhou and “villages in the city”

In 1989 Beijing issued the Law of “Transfer of Land-Use Rights”, regulating the use of land surrounding the cities located in the Special Economic Zones. It allocated one hectare of land to each farming household as a source of wealth. In urban areas of the Pearl River Delta the value of farmland skyrocketed. Farmers, now entrepreneurs and

landlords overnight, individually and as collectives lent their land-use rights to developers.<sup>27</sup>

With the rapid expansion of cities like Guangzhou, many such villages were razed to the ground as a result, giving way to highrise buildings for commercial and residential use. The villagers, often handsomely compensated according to the new law, were moved to newly built subdivisions at the edge of the city (Fig. 11).<sup>28</sup> The social fabric of family clans and communities – evolved over hundreds of years – was destroyed over night, along with the many small scale income generating activities (repair shops, small factories, food stands, restaurants, etc.) that had been part of the economic base and social life of the historically grown settlements.



Fig. 11) Shadong – a postmodern village for relocated farmers at the outskirts of Guangzhou

Those “villages in the city” that have until now survived the “tabula rasa” approach to urban renewal find themselves in a difficult process of transition. Although being a part of Guangzhou’s urban area, their social and economic development as part of village renewal has failed to be integrated into the city planning and development due to China’s dualistic urban-rural management systems.<sup>29</sup> The importance of agriculture is dwindling, traditional sources of income, but also traditional values and

<sup>27</sup> Craciun, 2001

<sup>28</sup> E.g. Shadong village, newly constructed about 40 kilometers northeast of Guangzhou’s city center, to relocate former inhabitants of a “village inside the city”. Their old village was eradicated and turned into a new residential area for urban citizens.

<sup>29</sup> According to Zhou (1997: 14-16), China’s dualistic urban rural structure is a widely acknowledged fact that relates to three key aspects:

1. The household registration system (hukou), which differs between “rural areas” and “cities”. Up to these days, people have virtually no chance of changing their status.

2. The social security system (including social welfare, retirement, labor protection, health and medical systems), which is implemented only in cities. Rural populations are excluded.

3. The two systems of land ownership: Urban land belongs to the state, rural land to the collective of the villagers. Land reform took a major step in 1988, when the Chinese parliament modified the constitution to permit the transfer of land-use rights (Chen and Parish, 1996: 83). As a clever investment, suburban farmers in places like Zhu Cun took note of the opportunities to make money by taking advantage of the tight supply and demand situation and began to pool their money and put up various buildings for rental to the urban population. In addition, a lot of agricultural land was sold to the municipality for urban expansion. For giving up their land, the villagers received compensation payments and/or were offered permanent citizenship (hukou) by the municipality.

social structures are increasingly lost. The secondary and the tertiary sector, including the fast growing real estate business (the so-called “house renting industry”) have become the main economic base.

Because of old and cheap housing available in the villages, a great number of migrant laborers (floating population) from other parts of the country find a place to live there. Considered to be outsiders, they are not integrated in village life which creates further tension. The multitude of changes and the fast urbanization also leads to a rapid deterioration of the rich ecological environment of the villages. While surrounding town and district governments issue general planning guidelines and policies for the village level, implementation, administration, and planning largely remains with village level authorities. As a result, land use and infrastructure planning and development appears to be rather haphazard and uncoordinated, due to a combination of lack of know-how, competing interests, blurred lines of decision-making, favoritism and corruption. Although the city of Guangzhou is in the process of bringing village planning under the jurisdiction of its district administrative bodies, this process was not yet completed in the course of our project.

In negotiating the content of the AGS-Guangzhou partnership project, Guangzhou city officials proposed to the ETH team to consult on the renewal of Zhu Village – one of the villages in the city. Rather than demolishing it, new ways should be explored to improve the appearance of the village and plan its future development. While the motivation behind this new urban development strategy was never made quite clear, an agreement was reached, and publicly supported by the Vice-Mayor of Guangzhou, that Zhu Village should become a model project for village renewal, from which lessons could be applied to other village renewal projects in the city.

## 6.2 Zhu Cun – “Pearl Village” – a Village in the City

Zhu Village is located at the edge of Tianhe District in the eastern part of the city, an area of the city government’s current development focus. Also called the “Experimental Zone for Sustainable Development” the Tianhe District is destined to become the city’s new commercial and administrative center. The vision is well on its way to become reality. Shiny glass façades mirror post modern architecture of office towers – in the prevailing pink and green colors. Hotel lobbies, half the size of a football field open onto large park creations with little shade for people to linger. Tianhe District advertises itself as the glitzy „new town“ – defying any notion of China as a so-called developing country.

Tianhe district also includes Dongpu town where Zhu Village is located, about 17 kil-



Fig. 12) New Town Model - Guangzhou Planning Department <sup>30</sup>



Fig. 13) ... contours of New Town taking shape

<sup>30</sup> Model for the development of a new business district between the central train station and the Pearl River.

ometers to the east of Guangzhou’s city center. Leaving the busy 4-lane Zhongshan Avenue that connects Zhu Village to the city, a modern arch symbolizes the gate to a different world, where the pace of life suddenly slows. Behind a big open market with small booths – an outdoor extension of the large store behind - lies the village administration building, next to a large school with adjacent playgrounds and soccer fields. None of these buildings is more than 5-10 years old, the architecture uninspiring, the facades finished in the typical white tile. Passed these buildings, a different world begins to take shape. 2- to 3-storey older residential buildings are connected to the street by small concrete overpasses. The canal they bridge carries not so much water as thrown away pet bottles, cans and other disposables of civilization. A few steps further, an unexpected view opens to a pond

surrounded by white and pink tile-finished buildings of varying heights, seemingly doubling in size with their symmetrical reflection in the water. The huge banyan tree at the far end of the pond, interspersed single-storey brick houses and the outwardly tilted roof of an old temple lining the small path along the water complete the picturesque impression. “Little Venice” as one visitor from Europe exclaimed spontaneously. There is indeed a very attractive visual quality to this place and some other similar locations in Zhu Village. Appealing are not so much single characteristics, but the combination of features that defines the qualities of these places. Upon closer inspection, the temple roof needs repair, the edges of the pond are laced with more bottles, cans, paper wrappings, and cardboard floating on the brackish water.



Fig. 14) Old village center with pond



Fig. 15) New 4-storey houses “disturb” the building structure of the old village parts



Fig. 16) Historic buildings are scattered throughout the village...



Fig. 17) ...places where people like to linger

**Village History and Traditions**

Zhu Cun has a long and proud history. First established in the Southern Song Dynasty (1131 AD), the village has been inhabited by three family clans, the Zhong, Pan, and Chen clan. Pan Wenzhi (1882-1949), an important navy commander of the Guomindang Party, was a native of Zhu Cun. After 1924, when the Communist Party cooperated with the Guomindang, Pan Wenzhi's family often hosted Jiang Kai-shek and soviet consultants in the village.<sup>31</sup>

The citizens/villagers in Zhu Cun today still either belong to the two branches of the

Zhong clan or the eleven branches of the Pan clan. Every branch occupies an area of the village. The different branches still have their own clan temples, ancestor halls and shrines in their territory. Traditional culture and colorful customs live on in the worshipping of the North God or the lion mask dances held on special occasions. Once a year, a big Guangdong opera is performed in the center of the village. Dragon boat races, tug-of-war competitions, and soccer contests between different villages enrich the daily life and promote communication between the inhabitants of Zhu Cun and other villages.



Fig. 18) A clan's ancestor hall with its genealogical tree in the background



Fig. 19) The clan's dragon head waits for the next boat race in a corner of the clan temple



Fig. 20) Dragon boat race with lots of spectators



Fig. 21) Young and old watch how the village team is doing

<sup>31</sup> The parts on Zhu Cun's history and economy are based on the English translation of the research report "AGS and Guangzhou International Cooperative Project of Urban Sustainable Development: Planning and Research of Residential Environment Improvement of Zhu Village" (Guangzhou, November 2001).

### *Village Development and Economy*

Until the early 1980s, the village remained a traditional agricultural community. Transformation started, when Guangzhou's expansion accelerated as a result of new national economic development policies. Small factories and warehouses were established which soon dominated the agricultural activities. The villagers were given the status of citizens, establishing their rights vis-à-vis the migrant laborers who started to move in. With the rapidly continuing growth of the city, demarcations between land use for rural activities and urban construction became further blurred, intensifying existing conflicts. By the year 2000, agricultural activities had been relegated to one part of the village in the hills to the north, while the majority of villagers were working in production facilities, in the service industry or lived off the income from rental housing.<sup>32</sup> The annual income per capita had increased 7 times since 1990, amounting to about 1500 US\$, double the average annual income of a Guangzhou farmer.

The total population of Zhu Cun was about 11'000 in the year 2000, double the number of 1990. While the native population had grown by annually 1.9% only during this time period, the non-native population had increased by seven times, making up 55% of the population in 2000.<sup>33</sup>

The remaining thirteen traditional clan branches are organized into so-called economic units,<sup>34</sup> financial organizations under the administration of the village heads. The economic units use their resources to build factories and storehouses, the latter are then leased out. Factories are involved with the production of clothes, shoes, fishing rods, indoor equipment, and leather processing. Profits from rental or sales of collectively owned properties, (i.e. warehouses or land sold for city construction) are distributed among the members of the economic units according to a complicated

system or used for investments in infrastructure (parks, temple renovations, etc.). The loss of the agricultural land (sold to city government) leaves a lot of villagers unemployed. As their education level is low, employment is hard to find. The financial compensation that the villagers receive for selling their land is usually invested in the construction of a new family house in one of the village's expansion areas. While the family moves to the new house, the old building is rented (mostly to migrant families). Some families own more than two buildings or rent out parts of their newly constructed house. This regular income leads to a relative wealth of the former agricultural villagers, ironically transformed into private landlords.

Unfortunately, the new prosperity seems to offer little incentive to promote a good education or vocational training for the villagers' offspring. Compared to the educational standard of the city, the education level in the village remains rather poor. Lack of employment and meaningful activity among the village youth created previously unknown social problems, e.g. an increase in illegal gambling or drug abuse.<sup>35</sup>

The village level government consists of the village Head (Mr. Pan Zhonghai) and a 7-member village committee, elected by the villagers. The village Head is also the legal representative of the village vis-à-vis the town, district, and the municipal government. There are 2 vice-chiefs, one in charge of agriculture, the other in charge of hygiene/urban construction and development. There is also a branch of the Communist Party in Zhu Village with a party secretary, 2 vice secretaries and 2 members, which together make up the party committee. Initiatives for investments and infrastructure development can come either from the village Head and/or members of the village committee or the party branch committee and can be submitted to the town government for funding. It appears

<sup>32</sup> In 2000, industry, real estate, commerce, and service constituted the village economy. Agriculture only counted for about 5% of the economic output, mainly consisting of vegetable farming and livestock raising. While the agricultural output increased by only 19% from 1990 until 2000, the industrial output increased to 143 times its size.

<sup>33</sup> According to calculations based on the research report "AGS and Guangzhou International Cooperative Project of Urban Sustainable Development: Planning and Research of Residential Environment Improvement of Zhu Village" (Guangzhou, November 2001).

<sup>34</sup> Economic units (also economic societies, economic committees) have existed since 1958, when the Chinese villages and towns were reorganized into different units. Ever since, Chinese names of these units have been changed often while the areas usually stayed the same. In the 1958 system, Dongpu Town corresponded to a people's commune (first level), Zhu Cun was a production brigade (second level), and the economic groups corresponded to the production teams (third level). The areas of the economic units correspond to the traditional areas of family clans (Interview with Pan Zhonghai, Director of the Village's Committee of Zhu Cun, Vice Chief for Urban and Village Development, June 2001; Interview with He Xiao Biao and Chen Nabo, doctoral students at the sociology department of Zhongshan University, Guangzhou, July 2001).

<sup>35</sup> (Interview with He Xiao Biao, Chen Nabo, July 2001; Interview with Jia Beisi, Professor at the Department of Architecture, University of Hong Kong, November 2001).

that infrastructure development projects, like parks, canals, etc. are funded through several sources (village, town, district and municipal government funds). The (Dong-pu) town government provides some guidelines, also owns some factories and some land. The town government is also coordinating infrastructure issues like sewage clean-up that affect several villages.

***Spatial Characteristics of Zhu Cun:  
A Village with Three Faces***

Most of the built-up area of Zhu village extends between the Guangzhou-Shenzhen/Hong Kong Expressway and railtrack to the north and the 4-lane Zhongshan Avenue representing the southern village border. The northeastern section of the village consists of some forest, but mostly agricultural and grassland. Just barely a couple of kilometers away from the village center, one finds oneself in the different world of backward rural China. Fish ponds with oxygen pumps to mitigate against the apparently heavy phosphate load, partly laced with a water plant fed to pigs, point to some of the sources of livelihood of the village farmers here. Primitive one-storey wooden sheds with different compartments seem to house people as well as pigs side by side (figures 22-25). Once again, the physical proximity of clashing worlds - so often encountered in China - amazes the visitor. Rows of large storehouses separate this part of the village from the core residential areas and the heart of the village.

The two other faces of Zhu Cun reflect the urbanization process of the past two decades that not only has changed the socio-economic conditions of the villagers, their lifestyles and values but is also represented in the two distinctly different patterns of the built-up area of the village. Figures. 26 and 27 show the major changes that occurred in the spatial expansion of the village over the short period of 10 years.



Fig. 22) Fertile village agricultural area where vegetables and fruit are grown



Fig. 23) The farming area next to a pond where fish is cultivated



Fig. 24) Pigs live door to door with villagers



Fig. 25) Water plants – fed to the pigs – sheds for animals and people – part of the rural microcosmos



Fig. 26) Zhu Village before 1990



Fig. 27) Zhu Village around the year 2000

<sup>36</sup> The traditional Chinese courtyard house is surrounded by a wall. All houses face inwards onto the courtyard as the private outdoor space. They usually have only one floor. The walls of the old houses are made of traditional grey brick. The old buildings are covered by traditional Chinese style roofs with the typical tiles and eaves details.

A good number of old houses and temples have been placed under protection by the Municipality of Guangzhou. Unfortunately, the money needed for proper maintenance or even a careful renovation is usually hard to find. Therefore, a lot of the old buildings are in a poor condition (Explanation by Dr. Liu Hui, Department of Architecture, South Chinese University of Technology, June 2001).

The criss-crossing alleys of the old village parts are clearly identifiable in the map, distinctly different from the grid patterned wider streets of the new residential areas and warehouse sections. The historic part of the village consist of predominantly small-scale structures with a mix of buildings varying in quality, age, and maintenance status. Curving roads and narrow alleys make it hard to get one's bearing, were it not for narrow creeks to be followed and the two centrally located fish ponds in open areas. About one quarter of all buildings in this section are historic, most of them traditional courtyard houses<sup>36</sup>, some of them

more than 100 years old. 27 clan temples and ancestor halls can be found situated in dominant positions facing either a pond or a little square. Depending on their age, building height varies from 1 to 4 1/2 storeys. A variety of restaurants, small shops selling food, spare parts for bicycles and motorcycles or providing other basic necessities of daily life are readily accessible from the streets, partly expanding into them, like the tailor who has set up her sawing machine in the alley. Small squares in front of the temples, around the ponds and under old Banyan trees are places where villagers gather to talk or play.





Fig. 28) The market at the village entrance



Fig. 29) Small shops and restaurants in the old village part



Fig. 30) Motor cycle repair shop



Fig. 31) Places in the old village part where villagers gather

Over time, spatial gaps have been filled and many old houses have been replaced by new construction. In the mid 1990s, the old areas became too small for further expansions. In the same period, the demand for new development areas grew with the wealth of the villagers due to compensation payments for sold land and leased out land-use rights. Surrounding the small-scale central village parts, areas for new construction were allocated to the different economic units of the village. Here, families who could afford it started to build new houses. They usually are owned by one extended family (consisting of 3, sometimes even 4 generations). In some houses, the ground floor is rented to other people or used for commercial purposes. While the new village parts are mainly inhabited by local villagers, many of their old houses are rented to migrant workers. These houses

are often neglected, lacking modern sanitation facilities and basic amenities.

The recently constructed new areas are in sharp contrast to the old village parts. The building density is in part extremely high; space is used to the maximum extent. The buildings are arranged in rectangular layouts with a monotonous appearance. Most of the facades are finished in white or pink ceramic tiles. The streets appear gorge-like due to the height of the buildings (3 to 5 storeys) and the narrow distances between them. Except on main connecting streets, the distance between houses might be as little as 0.5 meters leading to bad ventilation and lighting. In contrast to the old village parts, the public space lacks amenities such as places to sit, ponds or trees (figures 32 and 33).



Fig. 32) Buildings in the new housing sections – almost touching each other



Fig. 33) New buildings inserted in old village parts "crowd" and disturb the historic spatial structure

### ***A broad assessment of the qualities and problems of Zhu Cun***

The old, central part of Zhu Cun has many historic, social, economic as well as environmental/spatial qualities and potential for development. At the same time there are serious problems also (lack of toilets/running water, bad conditions of old buildings, waste and wastewater disposal problems, etc.) that led city officials to propose the village as a place for planning and intervention in conjunction with the AGS project.

The village has retained some unique aspects of community culture, reflected in its traditions and much valuable historic architecture such as beautiful ancestor halls and temples. The continuing existence of a sense of community and pride in its history is reflected in the renovation of the largest temple of the village that was undertaken in 2003. It was very much a project of community solidarity, inasmuch as all economic units and many individuals made financial

contributions so that the endeavor could be successfully undertaken and completed in a short time. The inauguration was celebrated with a big festival to which the whole village was invited.

Some of the spatial arrangements in the old part of the village – the tree-lined squares outside of the temples, the public pathways along ponds and creeks along with the varied and mixed use (restaurants, shops, etc.) on the ground floor level of many buildings are very attractive and encourage a variety of activities and interaction in these high quality public places.

As a result of the land compensation regulation, the village itself and many of its inhabitants are comparatively wealthy. Due to the recent building boom, the housing situation of the majority of the villagers has greatly improved; floor space available per person is relatively large compared to the standards set by the government. The

basic infrastructure in terms of public services is reasonably good: there are schools, kindergartens, a health service station, small shops as well as a larger indoor and outdoor market. There are also recently built parks in the newer parts of the village, which, however, because of their distant location from the village center (and one might suspect because of their somewhat sterile design) appear to be little used compared to the public places inside the village that are bustling with life.

With the thriving real estate business as a part of the rapidly expanding economy of Guangzhou and the cultural, social, economic, and environmental/spatial qualities characterizing Zhu Cun, there is great potential for renewal and development. There are, however, many problems, some more visible than others that threaten to destroy or diminish the social qualities of the community and its physical environment.

The relative wealth of the farmers who became high-income earners more or less overnight by selling and renting their land-use rights, brought a new lifestyle into the village. Yet the new resources are not, it seems, put to very productive use. The educational quality of village schools in comparison to other schools in the city is still described as being relatively poor. Having enough money for a comfortable life, there appears to be little incentive to foster further education of the young generation or to try to generate employment. With the shrinking agricultural land, traditional employment opportunities are lost, and young villagers have difficulties finding good jobs in the city. Some have opened small shops or started a motorbike taxi service. Yet many of them seem to hang around with little to do; illegal gambling and drug abuse has increased in recent years.<sup>37</sup>

New housing construction and the “rental economy” has also led to various forms of social and spatial segregation. While the

middle-aged villagers and their children move to their newly constructed houses in the development areas at the edge of the village (or even out of the village if they can afford it), many old people stay in the old houses. They prefer the neighborhood they have lived in their whole lives.<sup>38</sup> Many of the old houses left behind in the central village area are rented out to poor migrant families from other parts of China in search for cheap housing in “villages inside the city”. For the “landlords” there is little incentive to repair and maintain those old houses. Thus a process is in motion, in which the traditional central part of Zhu Village is increasingly populated by old people and poor migrant laborers or migrant families, with even less education than the villagers and no means to improve their situation. As the number of immigrants already exceeds the number of villagers living in Zhu Cun by a ratio of 1.2 to 1, existing social tension and conflicts are likely to further increase.

The income potential of the house renting economy has encouraged led to the construction of so-called illegal buildings, buildings constructed too high or too close together, violating safety standards and planning regulations. The building density in the newly constructed areas of the village is about twice the recommended standard of Guangzhou. While the village population, including immigrants is about 11'000 people, the already existing housing capacity is for about 30'000 people, with many of the newly constructed houses in the high density areas still awaiting tenants.

While the ponds and creeks in the older part of the village lend it a picturesque quality, the water quality is extremely poor, as the older parts of the village have no sewage system and waste water is directly discharged into the creeks. In order to avoid the bad smell on hot days and the unpleasant sight, many of the smaller canals have recently been covered, without however,

<sup>37</sup> He Xiao Biao, Chen Nabo, Interview July 2001; Jia Beisi, Interview November 2001

<sup>38</sup> Pan Zhonghai, Interview June 2001



Fig. 34) Polluted canal



Fig. 35) Even village fish ponds are not spared all kinds of floating waste

addressing the problem at the source. As these water bodies are not currently perceived as having visual or recreational value they are also used as garbage dumps, with all kinds of household refuse floating on the surface.

Another environmental problem is related to the fact that some households (especially in old buildings) still use coal for cooking, producing smoke and soot with bad effects on people's health.

The stadium for the Ninth National Sports Games, held in October 2001, and other facilities in the neighborhood of Zhu Cun was hoped to help accelerate the village's economic development. Yet the impact appeared to be small.

## 7. Zhu Village Project Organization and Project Development

Project phases - changing actors - products - assessment

### 7.1. Phase 1

**The charge given – attempts at a joint problem definition – the not so happy result**

As mentioned earlier, the topic of each subproject selected was to be based on a proposal by the city of Guangzhou regarding an existing problem related to sustainable urban development. Following earlier meetings in May of 2000, where the basic principles of the cooperation were established, a memorandum of understanding was signed in November 2000 specifying the topic, goals and the parties' roles and responsibilities for each of the subprojects to be undertaken. The signing of the Agreement on "The Improvement of the Residential Environment in Zhu Village" was based on presentations and discussions on the occasion of the preceding conference on November 21-23 and a site visit to Zhu Village.

#### ***The Memorandum of Understanding for the Zhu Village project***

The general goal of the project as proposed by the Chinese project team was to "implement a pilot project in Zhu Village to cope with the real demand for sustainable development in the local region". More specifically, the wording of the memorandum read: "The objective of the project is to improve the currently dirty, disordered and backward situation of the village in accordance with the reconstruction planning of 'villages in the city' (...). The ultimate goal is to develop a clean, beautiful, safe and comfortable architectural and ecological residential environment for the local people, to improve the construction level of 'two optimizations' in Zhu Village and to provide valuable experiences and examples for

solving similar problems to the development of 'villages in the city' in a wider area of Guangzhou." The main activities of the research project were described as follows:

- implementing an overall investigation, research and scientific analysis of the existing buildings, the ecological and social environment of Zhu Village in order to work out a reconstruction implementation strategy;
- according to the requirements of improving the residential environment, developing a rational plan on improving the building environment and constructing the community environment
- verifying and amending the planning program through the participation of the public and through professional consultation, submitting it for approval according to the law, working out the detailed design and coordinating and directing the construction
- through the way of combining governmental guidance with villagers participation, taking part in the decision-making process of improving the residential environment of Zhu Village and in the meantime examining and controlling the implementation results
- summarizing working experiences and submitting the report of the research achievements.

The role of the AGS team was defined as follows:

- rendering information about the relevant successful cases and new technologies, new methods and new thoughts about carrying out the research
- conducting the necessary technological exchanges, training and methodical guidance
- taking part in the decision-making consultation and achievements verification of the planning and design program; and

- reviewing and assessing the implementation process

The tasklist of the Chinese party was to include the following:

- application of the methodologies developed and information provided by the AGS team
- carrying out the investigation, study, planning and design of the project
- participating in the whole implementation process of the project and taking on the responsibility for the findings of the research work.

The Chinese project team was to be headed by Mr. Gao Dianying, the Deputy Director of the Municipal Planning Commission. The immediate responsibility for project planning and coordination in Guangzhou was with Dr. Li Min, a landscape architect working as project director in the Landscaping Department of Guangzhou. In addition, high-level representatives of the Guangzhou Urban Planning Bureau, the Guangzhou Environmental Protection Bureau, the Guangzhou Municipal Administration and Gardens Bureau as well from the Tianhe Pilot Zone of Sustainable Development in Guangzhou (the city district where Zhu Village is located) were to be part of the project group and signed the agreement. Much of the actual research and planning work was to be carried out by the Architecture Department of the University of Science and Technology of South China in Guangzhou, and Guangdong International Engineering and Architecture Design Ltd., a private architectural firm, whose owner was at the same time a doctoral student at the Department of Architecture.

The AGS team consisted of Professor Alexander Henz (professor for architecture and planning at ETH Zurich) Dr. Margrit Hugentobler (a sociologist who also served as the project coordinator for the overall partnership project and for the Zhu Village

project), Ms. Susanne Gysi (a lecturer of social work and adjunct faculty at the department of architecture), Ms. Tanja Lütolf (architect and post graduate student at the ETH Wohnforum), as well as Prof. Jia Beisi (assistant professor at the faculty of architecture of the University of Hong Kong).

The memorandum of understanding also specified how the project was to be financed, with the AGS group responsible for funding their own expenses and the city of Guangzhou paying for the time and expenses of the Chinese group.

#### *The original work plan*

Following the Guangzhou meetings in November, the coordinating Landscape Architecture Bureau of the city of Guangzhou in late November had drawn up an ambitious work plan for the local team:

##### **December 2000 – February 2001:**

Investigate and report on the current condition and history of the social and economic development of Zhu Village and its architectural and ecological environment as a basis for a renovation plan.

##### **February – May 2001:**

Identify renovation targets, complete environmental design for key blocks, suggest detailed policies for the reconstruction planning of “villages in the city”. Submit a tentative plan to the Tianhe District Government for approval after consultation with villagers.

##### **May – October 2001:**

Implement the approved renovation plan leading to a remarkable improvement in the built environment of Zhu Village, enriching the material and spiritual life of the local people, and meeting internationally acknowledged standards.

##### **May – December 2001:**

Document the project and develop methodologies, advanced scientific and practical strategies for the social, economic and architectural environment of Zhu Village development, and perfect the sustainable construction plan for Zhu Village.

### ***Project meeting in Guangzhou in late February 2001***

On February 16/17, Prof. Jia Beisi of the University of Hong Kong visited Guangzhou for an update meeting on work in progress. A first meeting involved all the architects working on the project. The work appeared to be well under way, the architectural survey was to start the same week, and the social and economic survey was supposedly almost finished. The leading architect, Prof. Zheng Lipeng indicated his intention to use the five categories of sustainable development proposed by the ETH Wohnforum's framework (see Appendix 3.2.). The local project director, Dr. Li Min suggested to focus on cultural, social and environmental issues, which was in accordance with our ideas.

Prof. Jia, representing the AGS team, raised some question as to the work plan outlined above, noting that this would give the AGS team in Zurich little time to react and give feedback. He also raised concerns that the impending National Sports Event in November might lead to quick decisions at the expense of careful planning. Additional meetings also involved Mr. Pan Zhonghai, the village Head of Zhu Village who explained the social, economic and administrative situation of the village. Further meetings were held with representatives of Tianhe District Government. It was discussed that this project should be a show-piece or model for an eco-village which could be achieved with international cooperation and local government support.

### ***Project Progress and Preparations for a meeting in Guangzhou June 2001***

As a visit of the Chinese project group to Switzerland, originally planned for the month of May, had to be postponed until the fall, the AGS team proposed to visit Guangzhou in June. A status report dated late April noted that the Guangzhou team had conducted a preliminary analysis of the situation in Zhu Village as the basis for developing a plan for short-term improve-

ments that could be completed before the National Sports Games in November, held in a newly built stadium near the village.<sup>39</sup> The ETH team had received some information – mostly maps of the village by that time. Information about additional data collected in Guangzhou and proposed improvement measures had not been translated yet.

An e-mail correspondence from Prof. Jia in mid May suggested there might be some misunderstandings as to the purpose of the project. The meetings in Guangzhou had given Prof. Jia the impression that the architects on the project team had a very limited understanding of what a more encompassing ecological approach to Zhu Village improvement might be. He had therefore prepared a paper as a basis for discussion with the project team in a meeting in May. This paper contained a wide variety of potential objectives for a model sustainable village (see Appendix 3.3.). As Jia had spent considerable time as a post doctoral student at ETH in Zurich he was very familiar with the AGS team's approach to sustainable development which was reflected in his paper. Furthermore, concern was raised that the money allocated by the Municipal Planning Commission for the work of the Guangzhou project team had already been spent, and that the project team thus might consider its task to be accomplished without much concern for long-term improvements or the actual implementation of measures proposed.

The AGS team in Zurich, with little information or proposals from Guangzhou to respond to, tried to prepare for the visit in Guangzhou in June by suggesting a structured detailed approach for how one might go about developing a systematic assessment, work plan and time schedule for addressing a range of topics suggested in Jia's list of potential objectives for sustainable development (for examples see Appendix 3.4.).

<sup>39</sup> The National Sports Games to be held in the vicinity of Zhu Village were one reason, why the project was undertaken. It was hoped that some short term improvements of the village appearance would make a good impression to visitors from all over China.

**Workshop in Guangzhou in mid June, 2001**

A three-member AGS team visited Guangzhou between June 15-20. Following a 1/2-day field visit to Zhu Village, also including a lengthy interview with the village Head, Mr. Pan (see information on the history and the social, economic situation of the village above). Subsequently, several meetings were held with the architectural project team. In trying to explain their work up until now, the project team mentioned a number of problems they had identified, such as the amount of illegal building construction going on (exceeding building standards and proposed density guidelines) which would create difficulties for “regular” planning. They had not received any feedback from the municipal government or the Tianhe district government on their plan yet. Furthermore, the city construction department was also carrying out renovation work (new canal) that was not coordinated with other comprehensive planning ideas. Although maps and a 4-step renovation plan had been developed, and substantial information had been collected about the socio-demographic characteristics of the village population, about building structures and locations, etc. much of the research that had been done had not (yet) been translated, making it difficult for the AGS team to understand the premises on which the plan was developed.

Following these more informal meetings, an official meeting was held, in which the Village Head, and representatives from

the town and Tianhe district government as well as the AGS team participated. The Guangzhou research group presented the 4-step improvement plan, involving a lot of open green spaces and new buildings (see fig. 36). In essence, at completion of phase 4, very little of the original village structure and lay-out would be left. The architectural and spatial solutions proposed met with considerable criticism.

On the part of the representative of the Tianhe district government, the detailed and systematic research that had been carried out was appreciated, yet the plan itself was not considered feasible for implementation, and also too expensive. It was said that the plan was too “theoretical” and did not take the social/economic development of the village into consideration, that neither did it specify the actual steps of renewal nor did it address the water pollution problem. Mr. Pan, the Village Head, said that the village was not rich enough to carry out this plan, that an implementation plan was missing in terms of the timing of the four phases and that the decision-makers would have to develop policies. He added, that the proposed plan would require to use land of the villagers, lots that had been allocated to them already and that it would be hard to change that and to tell people how they needed to build. He reiterated that his priorities were to preserve the local, cultural characteristics, such as cleaning up the creeks and ponds, temples and

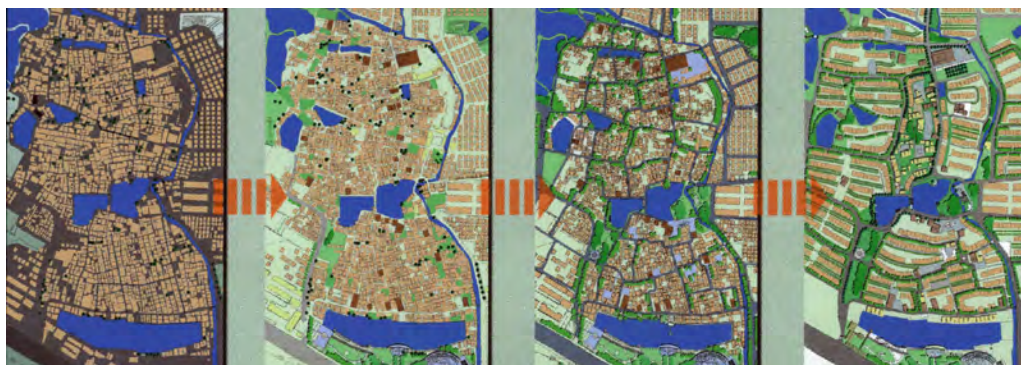


Fig. 36) 4-phase spatial development plan of Zhu Village proposed by the chinese project team



ancestors halls and the original footpaths. Land plots should be exchanged if they were too small or in bad locations, illegal buildings should be dismantled and traffic and sanitary conditions should be improved. He reiterated that he would like this to be a high profile project, but that policy and financial support from the city and district government would be needed for that. Similarly, the AGS team suggested that the proposed plan would destroy much of the current and historical village qualities and was exclusively focused on design issues, not taking into account the cultural, social and economic situation of the village. The Chinese research team responded by saying that they would like to have or see more detailed examples, suggestions, case studies in order to understand how they might improve upon the plan presented.

Following the discussion about the 4-phase plan, the AGS team in a short presentation highlighted again, what kind of questions might have to be asked, if the project was to become a model for sustainable urban renewal (see Appendix 3.5.).

In a separate follow-up meeting between the research group and the AGS team (which was severely hampered by lack of good translation), it was proposed on the part of the AGS team that the team should be complemented by other professions, like sociologist and biologists and that a more concrete and modest plan should be developed as to where to start with changes. It also became clear that this project was somewhat unusual for the way in which things were normally done. While Prof. Zheng working with a group of students had considered it as a kind of an academic exercise, Wang Yuwu, the owner of the architectural design and planning company (at the same time a doctoral student at the university), had already invested some of his own money and his people's time in the project, and was looking for a "client".<sup>40</sup> It was agreed that the planning visit of the Guangzhou research group to Switzerland

later in the year would focus on processes of citizen input in the planning process and the visit and discussion of successful urban renewal projects in Switzerland.

The assessment of the AGS team at the end of the visit to Guangzhou was:

- The situation of Zhu Village is more complex than originally anticipated.
- The process used to arrive at the proposed plan is an architectural analysis, not addressing the renewal and improvement challenges that Zhu Village presents (including social, economic and environmental issues).
- The proposed time frame for implementation is way too short.
- The financial resources provided are not yet sufficient.
- The agreed upon consulting role by the AGS team has not been utilized as previously agreed.
- The goal of developing a plan for the sustainable renewal and development of Zhu Village has not yet been reached.

#### ***First delegation visits – June and November 2001***

On the occasion of the November 2000 meeting and the initial project planning, it was decided that a delegation of the Chinese project team would be invited to visit Switzerland in spring. An invitation was sent to the head of the Municipal Administration and Garden Office in late February.

The following goals were proposed for the one-week visit:

- To use the opportunity of having an extended time period to update each other on project development and to outline a detailed plan for the cooperation.
- To familiarize Chinese visitors with issues and projects around sustainable urban development in Switzerland in order to create a more common ground for mutual understanding.

<sup>40</sup> In a pre-meeting with the local project coordinator (a landscape architect with the Municipal Department of Administration and Garden Design) he had mentioned that this project was not conventional practice in China, but rather a new way of doing urban planning, as there was not (as usual) a client (investor) involved.

The suggested program was to familiarize the Chinese group with some policies and practices of the city of Zurich in organizing public transportation, water management and sewage treatment, and the planning and ecological management of green spaces in the city. In addition, examples of historic monument preservation in the context of the renewal of old urban neighbourhoods (villages that were incorporated into the city some one-hundred years ago) were also visited in Zurich to provide a basis for discussion of the renewal of Zhu Village. The delegation also was to meet with city officials and planners in Zurich and would thus be familiarized with the Swiss political system of decision-making at the communal level.

In late May/early June a high-level delegation of Guangzhou city planning department heads visited Boston and Zurich. A visit of the Chinese project team to Zurich had to be postponed until November. This was somewhat unfortunate, as a closer cooperation early on in the project stages might have influenced the 4-step-proposal produced by the team of Chinese architects.

The Chinese project delegation visiting Zurich in mid November 2001 consisted of six members: two high level representatives of the Guangzhou city government (Directors of the Urban Planning Bureau and the Municipal Landscape Bureau); Prof. Zheng Lipeng and Wang Yuwu, the owner of the Architecture and Engineering Design company, the two main authors of the 4-step proposal; the Zhu Village Head, and Jade Li, a very skilled interpreter from the Municipal Landscape Bureau. The delegation spent 6 days in Zurich which, in addition to the various site visits and meetings with urban development experts and Zurich policy makers, offered time for some in-depth discussion about some of the past difficulties in the collaboration and the different approaches to planning in Switzerland and

China. These productive meetings resulted in the following conclusions suggested by the leader of the delegation:

- Lack of communication and misunderstandings had made it difficult to reach common ground earlier or to agree on a methodology of project continuation. The project organization in Guangzhou was not optimal. Comprehensive organization and planning needs to be strengthened through the establishment of clear and strong leadership with specific targets and tasks for each stage.
- Additional funding will have to be allocated to the project which means that the Vice Mayor and top member of the Guangzhou planning commission need to be informed and asked for an allocation.
- Support of the top leadership in Guangzhou is essential if the project is to influence the development of "villages in the city".
- An understanding of the methods of the AGS work in the past has now been reached as a basis for good future cooperation.

At the end of the meeting, the Chinese delegation suggested that a letter should be sent to the Vice Mayor proposing a meeting before or after the December 2001 Conference in Guangzhou. The letter summarized the development of the Zhu Village project and suggested the following agenda items for discussion:

- Determination of priority areas for short-term and long-term interventions;
- Establishment of a Chinese steering committee for the project representing different types of expertise and the respective city government representatives to provide direction and political and financial support;
- The role of the AGS team and know-how in the continuation of the project.

## 7.2. Phase 2 Changing actors – changing roles – a new improvement plan

On the occasion of the 3-day International Seminar in Guangzhou in early December 2001, the findings of phase 1 for the three AGS subprojects were presented by the American, Japanese and Swiss research teams jointly with the Chinese counterparts each team had been working with. The Seminar was co-sponsored by the Department of Architecture of the University of Hong Kong from which several faculty also made presentations. The Conference was opened by Vice-Mayor Li Zhuobin, and Deputy Director General Gao Dianying of the Guangzhou Planning Commission. The main topic areas addressed in the presentations and follow-up discussion were transportation policy and management, water management, and the ongoing investigation of the Zhu Village renewal project. The emphasis was on rather specific policy choices available in the context of the challenges to sustainable development faced by the city of Guangzhou. Members of the city government administration departments who had been working with the AGS teams in turn presented their plans and visions for the sustainable development of the city.

### ***Commitment by the Vice-Mayor – set-up of a new project organization and development plan***

Following the International Seminar, Vice-Mayor Li Zhuobin invited the ETH project team leader for a breakfast meeting, as had been suggested in the letter to the Vice-Mayor in November. Expecting a small group consisting of the Vice-Mayor and our project partners, we were surprised to find ourselves in a large group of almost twenty people. Many new people we did not know were present, introduced as high level staff from various city government departments as well as party officials. Also present were a number of representatives from Tianhe District, the new downtown business

center district (also called the Tianhe Experimental District for Sustainable Development), at the periphery of which Zhu Village is located.

After a warm welcome, the Vice-Mayor asked us to present our assessment and propositions about the continuation of the project. We reiterated the potential that the project presented to develop a model for sustainable renewal of “villages in the city”. This would be supported by the fact that Zhu Village was located in the Tianhe District which has been selected as an experimental site for sustainable development. With the two-year project extension that had been granted by AGS, the work could continue. We emphasized that if the project should have model character for sustainable urban renewal, it would need to involve a plan for the overall village development, including buildings, green space, water management, economic development and also social and cultural aspects. If this was agreed upon, the existing Guangzhou project team would have to be expanded to include all the relevant actors from city and district planning departments. Furthermore, a strong steering committee would have to be established in order to secure the necessary financial and political support. A public private partnership could be set-up, involving city officials, university experts as well as representatives from private architecture and planning firms. Good coordination would be needed. We again interpreted our role as providing input and expertise, and if necessary, find additional Swiss experts for areas in which the existing ETH team had no specific expertise (i.e. water issues).

The Vice-Mayor agreed with this proposal and reiterated his support and interest for developing a model village that could inform the planning of the renewal of other villages in the city. He instructed the officials present to set-up such a steering committee that was to meet with us the next day.

The following day, a meeting was held that was chaired by Mr. Gao Dianying (City Planning Commission) and Mr. Zhang Zai Xiang, the Assistant Head of the Tianhe District Government, under whose direction the next project phase would be implemented. The main responsibility for project guidance and support was thus moved from the city government to the district government. This appeared to be a good sign, as it moved the project closer to agencies responsible for planning in Zhu Village and the district, as a rapidly growing business area of the city, seemed to have ample resources at its disposal. The meeting was again attended by around fifteen people, representing different departments of the city, district, town and Zhu Village government.

The meeting was to address the following three issues proposed by the meeting chairpersons:

- ETH team perspectives of the future development of project planning in general;
- a definition of the working relationships to be established among the various units involved;
- decisions about the next steps and activities related to the government authorities.

In the very promising discussion that followed, city officials proposed that project planning and implementation should involve city planners/experts in urban planning (at the district scale), traffic management, sewage treatment and waste recycling, landscape design, preservation of historic buildings and residential habitats, education, and the labor bureau (employment training). The project team was still to include the two architects Prof. Zheng Lipeng and Mr. Wang Yuwu (owner of a large architectural and planning firm) who had been in charge of drawing up the first proposal for improvement of Zhu Village. The role of Prof. Jia Beisi from the Architecture

Faculty of the University of Hong Kong was confirmed as that of an expert in housing adaptability and ecological design. As Tianhe District Government now was to take on the responsibility for the project and also promised financial support, a new liaison person to coordinate with the ETH team was designated, Mr. Zheng Ben, director of the sustainable development office of the Tianhe District. Mr. Zhang Zai Xiang also stated that education of the village population on the topic of sustainable development would be very important to support the project. The ETH team suggested to get Prof. Li from Chinese Normal University in Guangzhou involved, a teacher training university participating in a school education project for sustainable development, supported by a pilot project between the WWF and the Chinese Ministry for the Environment.

The meeting ended on a very optimistic note and the following next steps were planned:

- The Chinese partners would develop a detailed plan for who should be participating in the extended project group in order to establish the project organization and ensure the necessary financial support.
- The ETH team would respond to the proposed improvement plan in more detail and would - in response to the request of the Chinese project leadership and team - develop some specific suggestions related to the preservation of historic buildings and sites and to approaches for low-investment biological water clean up strategies that could be implemented without waiting for the construction of a large scale water treatment plant for the area.
- A visit to Switzerland of a Chinese delegation with representatives of the new project leaders would be planned for 2002.
- A new memorandum of understanding

describing the roles and responsibilities for project phase 2 would be drafted and signed by the Swiss and the Chinese parties.

### ***Changing Roles: Analysis and Proposals by Swiss Experts***

There was little communication from the Chinese side to Zurich in the early months of 2002. As the previous two years of collaboration had shown, the project would usually move forward on the occasion of direct interactions during visits of the ETH team in Guangzhou or delegation visits in Switzerland. A planning visit to Guangzhou thus followed in May of 2002.

Based on earlier requests by the Guangzhou project leaders, in this phase some input from Swiss experts was to be given in two main areas:

- an analysis of the urban structure of Zhu village from an urban planning and historic preservation point of view, and
- analysis and development of ideas and scenarios for a sustainable use and development of the water bodies and the water system in Zhu Village.

For this purpose, the ETH project coordinator recruited two Swiss experts who seemed to be particularly suited to take on these projects. Both of these experts had already been involved in projects in China in other contexts, thus being familiar with urban settings in China and with some of the particular difficulties of different working styles and cultural differences in perceptions. The planning meeting in May served to specify the way in which the Swiss experts would collect and analyse data, planning logistics and the time frame for the next steps.

Following the planning meeting in May, a new memorandum of understanding for the cooperation in this second project

phase was drafted and submitted to the Chinese partners. It described, among other things, the roles the different parties would play in this phase:

The role of the ETH project team was to be as follows:

- to provide input regarding how a model project for sustainable development of Zhu Village could be approached (content and planning process considerations);
- to organize expertise in the areas of historic conservation, biological water treatment and ecological housing design and renovation;
- to provide access to “good practices” projects in the context of a Chinese delegation visit to Switzerland;
- to consult on plans and projects subsequently proposed by Tianhe district government.

The role of the Tianhe project partners would be:

- to study and react to the proposal made by AGS team, by selecting goals, setting priorities and ensuring the necessary support by city government for the development of specific intervention plans;
- to facilitate access of the visiting research team and accompanying experts to the respective decision-makers at Tianhe district level and to provide information required for their work;
- to supply – where needed – local technical expertise (conduct local research) for the planning and implementation of the priority projects selected for intervention;
- to implement the prioritized projects;
- to provide professional, highly skilled translation (English-Chinese and vice-versa) in all meetings held between the Swiss and the Chinese parties (Mutual understanding is the very foundation on which a productive collaboration rests!).

The memorandum also specified new financial support by the Chinese party, which would from now on pay for the lodging expenses on the occasion of Swiss visits to Guangzhou. It also specified assistance to the Swiss team in terms of translation, access to computers, etc.

A next meeting was held in Guangzhou in mid August. The memorandum of understanding was discussed but not signed yet. The Chinese partners suggested some changes to which we agreed, and the document was subsequently to be mailed to Switzerland. One of the difficulties that hampered the meeting was that the new person in charge of coordinating the project on the Chinese side was very busy and had little time to attend the meetings. Also the project steering committee with representation from different planning areas of city government had not been established. Yet a meeting with the person in charge of the project from the Tianhe District Government left us optimistic that things would progress. As this was also the kick-off point for the work of the Swiss team on historic preservation, Mr. Zhang Zai Xiang granted all the support necessary for the team. Furthermore, the district government committed itself to finance 50% of the work of the Swiss water treatment expert, who could not be wholly funded out of the AGS budget.

**Project 1)**  
**Preservation of the historic qualities of the Zhu Village central area**

The first planning task involved the collaboration with Dr. Werner Stutz, an art historian from the historic preservation unit of the urban planning department of the City of Zurich. He was assisted by a German architect experienced in historic monument preservation and a small team of the Tianhe District planning department in the development of an inventory of the qualities of the old village center and a resulting proposal for how these qualities might be preserved. The most important elements

identified as a focus for preservation were:

- the water system of the village involving ponds and open canals/brooks
- the historic temples and ancestor halls
- the trees located near the waterfront and in public meeting places (in front of temples, ancestors halls)
- the urban structure of the old village center with 1-2 storey traditional houses and narrow streets

Using the very detailed inventory of buildings, water bodies and street layouts of Zhu Village, completed by the Chinese project team from the Faculty of Architecture in 2001 as a starting point (see fig. 37), a proposal was developed that encompassed a set of recommendations for how important qualities might be preserved and what buildings already existed that were disturbing the spatial and historic qualities of the old village center.

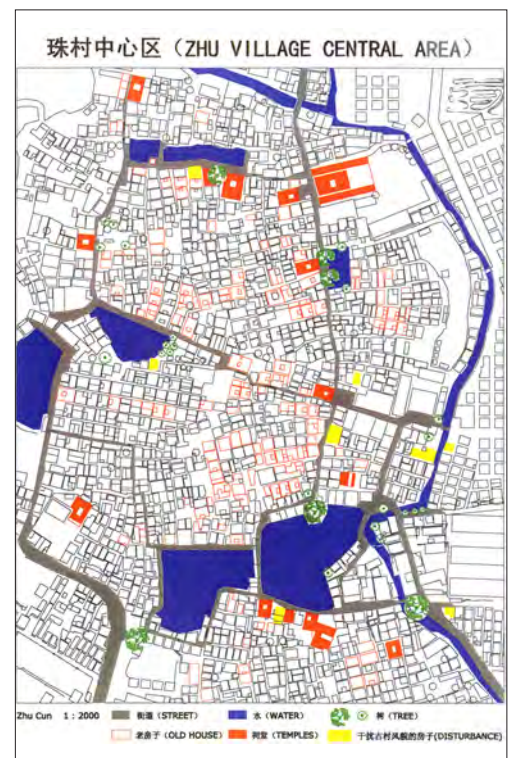


Fig. 37) Inventory of the Zhu village central area with open spaces, water, trees and historic temples as important elements to be preserved

In order to preserve the harmonious interplay of these elements, the following goals for development were suggested for discussion: 1) to restore the temples, 2) to activate life on the waterfront, 3) to connect the temples and the ponds and to improve the sidewalks along the water bodies, and 4) to retain as much of the historic urban structure as possible (old, 1-storey houses, narrow alleys). To support these goals a set of planning regulations was proposed that would prohibit:

- the destruction of temples and old houses surrounding the waterfront and the public spaces
- the construction of new 4-5 storey houses in the old village center
- the construction of new buildings interfering with the dimensions of existing public and open spaces along the canals and ponds

Implementation of these guidelines would involve the following measures: regulation of building height, volume and density; the use of construction material in line with the traditional materials (brick or plaster; no metal or tiles); preservation of the old pavement of alleys and restoration where necessary. For the preservation of the high qualities of public places the existing ponds, brooks and canals would have to be cleaned and in some parts dredged, trees should be protected and cultivated in public spaces and along the open water bodies. Temples and ancestor halls, the main witnesses of historic building substance and the cultur-

al history of the village, should be restored (or at least preserved with basic maintenance measures such as fixing leaks, etc.). It was noted that the know-how about restoration methods was available to the village, as reflected in the restoration of the biggest temple in Zhu Village that was ongoing at the time of analysis. Furthermore, the original and typical character of the old village could be made visible through the preservation of some coherent areas of old 1-2 storey housing in traditional shapes with courtyards, small gardens and trees. Figures 38-45 show some of the qualities addressed in the proposed guidelines and suggestions for preservation.



Fig. 38) Old house with courtyard



Fig. 39 and 40) Lively public places along the ponds, canals lined with historic buildings



Fig. 41 and 42) Attractive water bodies if cleaned up



Fig. 43, 43a) Reconstruction in progress of the largest village temple



Fig. 44) Historic temple with open space



Fig. 45) Traditional village center alley with brick buildings



In addition, the analysis also identified some examples of “eye-sores” in the village center areas, illustrating what might happen if no planning guidelines were implemented and measures taken. The report by Mr. Stutz suggested that some of these buildings should be eliminated or reconstructed (fig. 46 – 49).

The work resulting in the above mentioned analysis and recommendations was completed in late August of 2002. It ended with a presentation and discussion of the findings with representatives of Tianhe district government, and was to be taken up again at a later more official meeting in December.



Fig. 46 and 47) Buildings sticking out like sore thumbs in the historic village structure



Fig. 48 and 49) Buildings that obstruct the view or extend across open canals

**Project 2)**  
**Improving the quality of the water bodies in Zhu Village**

For the second charge given to the Swiss team, a proposal for how to improve the water pollution in Zhu Village, the ETH group asked Dr. Johannes Heeb, an environmental scientist and expert on biological water treatment systems to provide his expertise. Mr. Heeb visited Zhu Village on the occasion of the August meeting for an assessment of the problems. It was agreed that he would prepare a report with findings and scenarios by October, and that the report would be discussed on the occasion of the next meeting.

The report gave an overview of the functions that water bodies have in urban areas, such as drainage, mitigation against floods and droughts, preservation of biodiversity, water purification, recreational value, aesthetic beauty and stimulation. It then listed the possible objectives for water body development in Zhu Village and illustrated the objectives with examples of interventions to address these objectives (fig. 50 – 58):

Furthermore, complementary measures were suggested such as installing water saving toilets in new buildings, separating “blackwater” and “greywater” at the source and “recycling” or composting organic waste. The final recommendation was for Zhu Village to develop a 3-step action plan that would entail 1) a water development plan, 2) an implementation plan, and 3) an information and awareness creation program for the village population.

The water improvement proposal was to be discussed in depth on the occasion of a

Objective 1) Improving drainage capacity

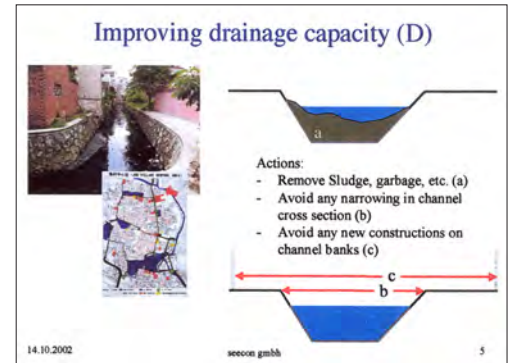


Fig. 50

Objective 2) Improving mitigation capacity

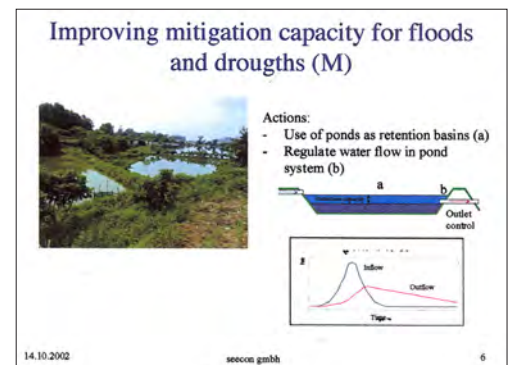


Fig. 51

Objective 3) Increasing bio-diversity

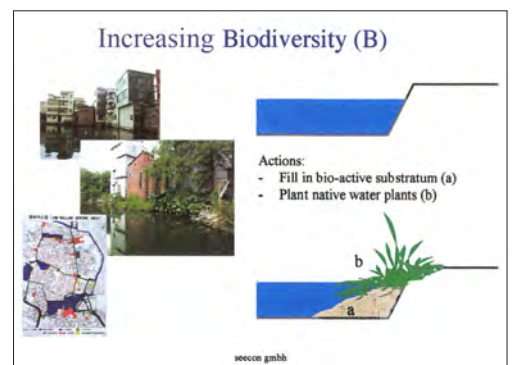


Fig. 52

Objective 4) Improving water quality

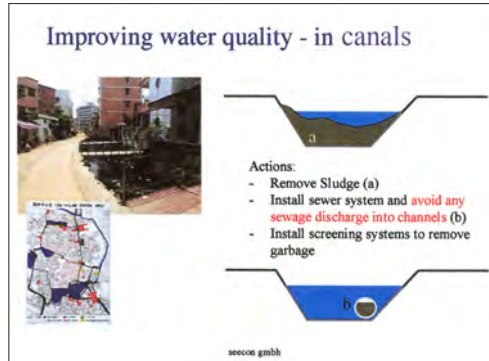


Fig. 53

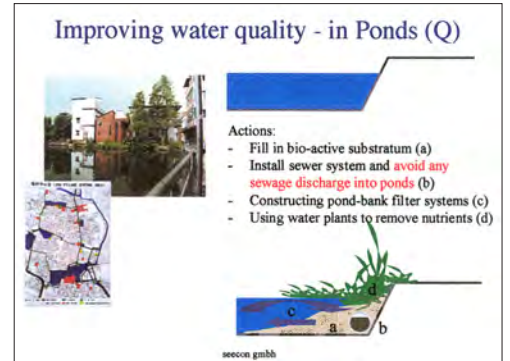


Fig. 54



Fig. 55

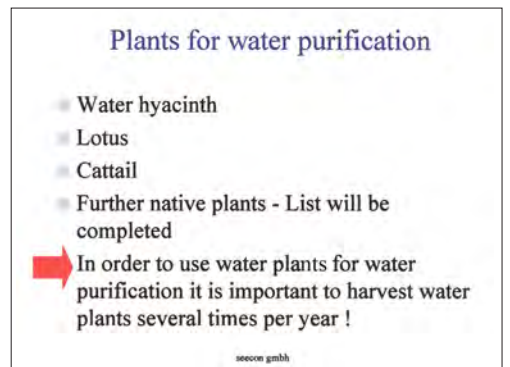


Fig. 56

Objective 5) Improving recreational value



Fig. 57

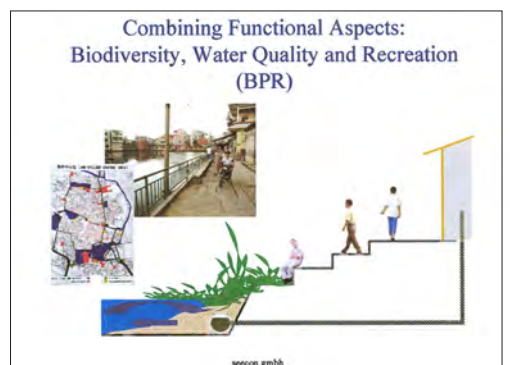


Fig. 58

next meeting in Guangzhou early in 2003. In the meantime, Mr. Gao Dianying, a high level official of the Guangzhou Planning Commission and ongoing supporter of the project, attended an international meeting of the AGS research partnership in Boston in November 2002. On this occasion, Mr. Gao reiterated his support for an ongoing cooperation. He also signed the new memorandum of understanding for the Zhu Village project.

**2003: Presentation of proposals -  
little action – SARS – the next  
improvement plan**

In January 2003, the main author together with Mr. Heeb, the water expert, visited Guangzhou again. In a meeting with the Chinese project leader, Mr. Zhang Zai Xiang, Assistant Head of Tianhe District Government, persons from various district planning departments as well as the Zhu Village government representative, the proposals by the two Swiss expert teams were presented again and discussed in some detail. Mr. Zhang Zai Xiang reiterated his goal of making Zhu Village a model project for urban renewal. He suggested that, in a next step, the ideas presented would be integrated into an overall Zhu Village improvement plan. Tianhe District would develop this plan in cooperation with Mr. Wang Yuwu of the Guangdong International Architecture and Engineering Company, who had authored the original improvement plan along with faculty and students of the Department of Architecture of the South China University of Technology in Guangzhou. This plan would be discussed on the occasion of a visit to Switzerland by a Chinese delegation of the current project leaders in May of 2003. The Chinese leaders also mentioned the importance of establishing an educational project for the villagers in Zhu Village in order to inform and convince them of the value of the project and the planned improvements.

Following these meetings, Mr. Heeb and the author also met with faculty and department chairs of South China Normal University in Guangzhou, the largest teachers education institution in South China. As mentioned above – the faculty was involved in an educational project on sustainable development promoted by the Worldwide Fund for Nature (WWF) in cooperation with the Chinese Ministry of Education in Beijing. The faculty showed great interest in conducting one of their pilot projects on “environmental education” in Zhu village schools. They suggested, that this should be proposed by us to the Tianhe Government in order to maintain the proper channels of communication between the government and educational institutions.

In a follow-up letter in late February, the author confirmed to Mr. Zhang Zai Xiang the agreed upon next steps and also – referring to the importance of educational measures – that Tianhe District Government would contact the faculty chair of the Environment Education Center of South China Normal University. The letter also contained the invitation for the Chinese delegation visit to Zurich in spring, the goals of the visit and issues about funding and logistics.

Soon after this letter was sent, SARS became an impediment for people from China to travel abroad, and the Chinese delegation visit was postponed until fall. Finally a convenient date in October was fixed. By then, visa requirements for Chinese travelers had become less stringent, and the Chinese partners thus proposed a relatively short visit in Zurich with a continuation tourist visit to the Swiss mountains, to Geneva and to Austria. While the desire of the Chinese partners to use the opportunity for sightseeing in Europe was certainly understandable, it also suggested that this project had limited relevance for them.



Fig. 59) Old village center bridge, separating the two ponds

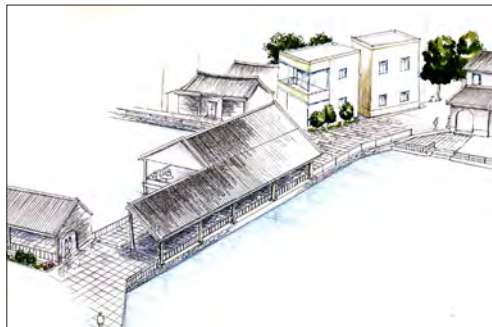


Fig. 60) Proposed plan for the new "corridor bridge"



Fig. 61) Newly designed square on the East Side of the central ponds



Fig. 62) Newly designed street

### Third Delegation Visit – A New Improvement Plan

The Tianhe District delegation arrived in Zurich with a colorfully illustrated volume on the "Improvement Project of the Residential Environment of Zhu Village", authored by the International Architectural & Engineering Design Company of Mr. Wang Yuwu, who had been involved in the project from the beginning. Looking through the large-sized book with many plans and drawings and very little text, our curiosity rather quickly gave way to disappointment. In contrast to the initial Zhu Village development plan prepared in 2001 – the new planning document did not propose a complete change of the current village structure, but rather focused on specific locations of the older village part. Yet, the proposed re-design of these areas – with few exceptions (fig. 59 and 60) envisioned mostly new buildings, new squares with different spatial arrangements paying little attention to the historic spatial layout or the qualities addressed in the proposals of the Swiss team (fig. 61, 62 and 63). In fact, the main difference between the New Improvement Plan and the earlier rejected proposal of 2001 was that the new plan contained more detailed propositions



Fig. 63) Removal area proposed by the Chinese Plan

and drawings for the development of some central village areas and that it omitted phase 4 of the earlier renewal plan (see fig. 36) which had foreseen a total change in the traditional spatial structure of the neighborhoods.

There was no mention in the document of the analysis and options proposed by the two Swiss experts. This was even more difficult to understand, as the Chinese project partners had specifically requested these contributions. The document also focused exclusively on building, street, and open space re-design. Other aspects discussed in conjunction with the objective of developing a model village (i.e. environmental concerns related to water clean-up, social, educational and economic issues or the cultural/historic qualities of existing buildings and public spaces) were not addressed. It also appeared that the members of the delegation, including high level district representatives and members of the district planning department, were not really familiar with the document and did not take much ownership in it.

The following day involved meetings with planners of the Zurich city government who outlined the city's planning strategy in terms of monument preservation and open space planning. The meetings were followed by a site visit of Zurich Albisrieden, a neighborhood at the fringe of the city, where some of the old farmhouses and buildings from a hundred years ago had been preserved and carefully renovated. The successful integration of old and new allowed for the historical village structure still to be visible. The delegation appeared to be very interested in both the meetings and the site visits and asked many questions.

The final day of the visit was to address our feedback to the improvement plan and decisions about next steps. The delegation

leader stated that he had learned a lot and was very impressed by the approach to environmental and historic preservation, the green spaces, and the brooks that had been brought back to the surface in various city neighborhoods. He added that Zhu Village was a kind of an exception with the many historic buildings, that it was important to protect them and that new buildings could be constructed in other areas.

In response to our critical feedback, Mr. Zhang Zai Xiang proposed to pass our concerns on to the authors of the Zhu Village Improvement Plan, and to ensure that the propositions related to the preservation of historic qualities (buildings, spaces) and water clean-up issues would be integrated. The result would then be discussed by the Chinese project group and first steps implemented. Mr. Zhang also emphasized that acceptance by the villager would be very important. Finally, it was agreed that we would summarize our feedback in writing and send it to China within the following weeks. This was done in a letter to Mr. Zhang Zai Xiang three weeks later. The letter re-emphasized what other aspects would need to be considered if the project was to become a model for urban renewal of villages in the city. Once again, we proposed the establishment of a project team in China involving expertise from different planning fields prior to submitting the revised plan to the decision-makers. A follow-up meeting in Guangzhou was proposed for January 2004.

There was no response to this letter and an inquiry in early January indicated that the follow-up meeting would have to be postponed until March. Also there was no interest expressed in a final seminar that we had proposed for late spring or early summer 2004 as an official closing event for the project. This seminar would have involved the final presentations of the work of the MIT and University of Tokyo group

(the collaboration on a water management research project with the Japanese team was still going on at that time; see chapter 5.2.)

In a final meeting in March 2004, the main author and the water clean-up expert, Mr. Heeb, met in Guangzhou with Mr Zhang Zai Xiang and one of the contact persons in the Tianhe district planning department; Ms. Wang. Ms. Wang had also been a member of one of the delegations invited to visit Switzerland and had been very interested in the project. We defined this as a final meeting with the goal to look back and evaluate the collaboration of the last 2 years with the Tianhe district government. Shortly after the meeting started, a person from the Guangdong International Architecture and Engineering Design Company arrived to present us the newly revised Improvement Plan. It contained essentially the same plans and renewal projects of the version discussed in Zurich, yet some pages had been added. They addressed:

- objectives of Zhu Village residential environment improvement, mentioning ecological concerns related to air and water pollution, green spaces as well as social concerns related to population control, education, employment, social services, etc. The themes listed were not formulated in terms of objectives but rather as issues that would need to be addressed in order to establish a “modern ecological urban living environment”.

- The need for the development/clean-up of the water bodies, describing some of the problems to be solved. The introductory section was followed by the functions of the village water bodies, objectives for addressing the problems and possible interventions as proposed by the Swiss water expert (see section 7.2. project 2)

No mention was made in this revised document of the proposals made by the Swiss monument preservation expert, Mr. Stutz, although his suggestions had met with great interest and approval in earlier meetings. Instead, the new document contained additional sketches suggesting that the central village areas around the ponds should “gradually be transformed to pleasant waterside space... in order to create a modern living space, alter the lifestyle of the village people and guide the transformation from the village to an urban space”. (fig. 64 and 65)

If at all, in what ways, and when some of the measures proposed in the document might be implemented, could not be ascertained in the meeting. Ms. Wang mentioned that she had made a presentation to upper level district officials about the brook project in Zurich, that had brought some 20 km of previously covered waterways back to the surface. She added that she had made a request to integrate the Zhu Village Improvement Plan in the government report of the Tianhe district for 2004.



Fig. 64 and 65) Sketches of the waterfront area that bear no resemblance to the historic spatial layout

A brief meeting with Wang Yuwu, the owner of the Guangdong Architecture and Engineering Design Company, a rather young architect who had been a member of one of the Chinese delegations visiting Zurich, indicated that he had not personally been involved with the revisions of the final plan. It also became clear that the reports by the Swiss experts had not been passed on to the Architecture firm for inclusion in the planning document presented in Zurich. Rather than a result of ill will, this seemed to have been a misunderstanding due to a lack of coordination and communication.

A final visit to Zhu Village made it painfully obvious, that the rapidly changing appearance of the central village area would hardly follow some of the recommendations discussed in relation to building height and density. Although the Village Head proudly announced that some of the illegally built structures had been eliminated, he had no explanations for some towering 5-storey buildings going up in the historical area near the ponds (fig. 66 and 67). Apparently the prospect of increasing potential rental income had been successfully translated into a strategy to get the local officials “to look the other way”.



Fig. 66) Access area to pond in August 2002



Fig. 67) The same area nine months later



## PART III

### 8. Critical Reflections

A critical assessment of outcomes and processes should mark the conclusion of every research and cooperation project. In light of the many facets of this particular endeavor and its ambiguous results, it seems appropriate to give some thought to what might be learned or what might be done differently. China has become a country of great interest, not only to foreign investor, but also to the research community around the world. Studies on China are proliferating and research collaborations spring up everywhere. The experiences described and lessons learned might also be helpful to colleagues embarking on joint projects. Needless to say, that the observations reflect our perceptions and culturally biased interpretations. An assessment on the part of our Chinese project partners might reveal important aspects that we are not aware of.<sup>41</sup>

#### 8.1. Learning from the Zhu Village Project

The project was founded on the perception of Guangzhou city government that the development of “villages in the city” is an urgent task requiring an interdisciplinary approach and therefore special considerations on the part of policy makers. With a careful renewal of these villages, the government intended to make a contribution to sustainable urban development. There also was to be a clear division of labor: Local data would be collected and village development plans generated by an interdisciplinary team of Chinese architects, planners and sociologists. The role of the ETH research team and other Swiss experts involved was defined as a consultation role, generating data and recommendations on specific issues requested by the Chinese party. That the Zhu village project was not to be just a theoretical exercise, but a prac-

tical example that was to serve as a model for other village renewal projects was a commendable objective.

The collaborative project on the renewal of Zhu Village thus embodied a variety of characteristics typical of an action-research process.<sup>42</sup> Among them are 1) an attempt to arrive at a joint problem definition, 2) the collection and analysis of data by both sides, partly in close collaboration, partly in separate processes, 3) an ongoing evaluation of the project steps/products (i.e. the reports prepared by the Chinese and the Swiss teams), and 4) objectives that were to go beyond the presentation of research findings and policy papers, but would involve actual interventions towards a sustainable renewal of Zhu Village.

In order to arrive at a joint problem definition, a mutual understanding of the interests and objectives of each party is a prerequisite, along with a clear definition of the expertise, the time and the financial resources each party can bring to the project. On this foundation trust can be built which takes time and a certain amount of direct interaction. While this is true for relationship-building within the same culture, it is much more true for cooperations in a cross-cultural context, particularly if the mindset, the rules of interaction, the history, the political environment and structures, the approaches to planning and implementation are as vastly different as they are in China compared to the European context.

Research projects, typically funded for two-years, thus may generate interesting findings for books and other publications, but may be unlikely to impact policy decisions in another cultural context. The AGS Guangzhou partnership project was originally conceived for such a 2-year period. The meetings held, and the research pa-

<sup>41</sup> Our Chinese colleague and collaborator Jia Beisi has summarized his insights about the project in the foreword.

<sup>42</sup> Peters and Robinson, 1984: 113-124; Elden, 1981.

pers, master's theses produced by the end of this period provided the basis for an interesting conference and the formulation of new research questions to be pursued jointly. Some mutual understanding and trust had been established that appeared to make the second project phase more fruitful, as luckily a project extension for another 2-year period was granted by AGS.

For the Zhu Village project, the visits to Switzerland of three different delegations of Chinese partners between 2001 and 2003 turned out to possibly be one of the most important aspects of the collaboration. While we were a bit reluctant at first to allocate too many scarce project resources to this type of "tourism", the Chinese proverb "to see with one's own eyes is better than to be told 100 times" proved its point. The same was certainly true for the visits of the ETH team to Guangzhou. These visits helped both sides to get to know each other better in formal and informal settings. More importantly, the visits let the Chinese see and understand the way in which we approach sustainable urban renewal and development, the way in which policies are generated and projects implemented. Thus while they might have returned to China with Swiss chocolate as well as with many misunderstandings about "how things work here" - as we surely still have about "how things work in China" - the visits had strengthened the basis for mutual understanding and attempts to develop a shared definition of which problems might be approached in what ways.

Another lesson learned was how important excellent translation is in the local cultural setting, preferably by someone who not only speaks English and Chinese very well, but has some knowledge of the different cultural contexts the partners come from. Beyond the translation of words and sentences, what is really required is a "cultural interpreter", a person who is able to grasp the intent of what is said on either side and

to "interpret" it for the other party in its meaning rather than in its "text". A person, who is also capable and willing to help the foreigners understand the rules and procedures important to be followed in the local cultural setting. Furthermore, all important documents generated should be available in the language of both parties. This helps to reduce misunderstandings and forces both parties to be as short and concise as possible.

And yet, "being in the same cinema... but seeing a different movie", remained an impression that accompanied us throughout much of the project. The more interactions we had with our Chinese partners, the more relevant this question became, reflecting our growing awareness of and respect for the cultural differences that made this project both very interesting, but also difficult. Had we set too ambitious a goal for the collaboration on the Zhu Village project: to exchange ideas, to start with the perspectives of the partners, to let them collect and analyze data, to draw up a proposal for village renewal, to provide input where requested, and to use this as the basis for engaging in a dialogue about what sustainable development might look like? In hindsight, there were various stages in the project when goals were defined which, for different reasons were not realistic. Being more specific about what might be done by whom and when, and re-examining progress made in regular intervals, might allow for necessary adaptations and ensure that all parties can save their face.

A difficulty that characterized the first phase of the project in particular, is the gap that exists in China between research institutions, government administration and actual policy making. Policymakers in Western democracies use research findings (at least sometimes) to support and justify proposed policies, and this process is usually channelled via administrative agencies. In China, findings from university

based research, and, more astonishingly, even the work of government planning agencies seems often quite disconnected from the political decisions made. Our AGS group had suggested at the beginning of the collaboration that university counterparts from Guangzhou universities should be involved in the projects. It became clear rather quickly, however, that their role would be negligible when it came to decisions about which policies to implement.

Luckily, we had access, from the beginning, to an influential member of the city planning commission, the Vice Mayor and to political decision-makers at the district, town and village levels. Without their interest and support, the project would most likely never have come off the ground at all. The Zhu Village project thus benefited from the benevolent interest of a senior member of the city's planning commission and a relationship of trust that had developed over time. It was this person who stirred the project to the Tianhe district level, where he knew resources might be available and policies at the village level within the district might be influenced. That the vice mayor in charge of planning was an architect himself (and had, with a group of other architects, visited the Zurich team during a trip to Europe), helped ensure the project continuation, as he publicly stated his support on the occasion of the breakfast meeting in late 2001. And yet, in terms of project management and implementation, a "champion for the cause" was missing, a person with sufficient interest and influence on the Chinese side to move the process forward. The two persons assigned as project coordinators during the first and the second phase had other interests close to heart and played their role reluctantly, without taking much initiative.

Looking back, more resources should have been invested in direct person-to-person communication, more time should have been spent in Guangzhou on our part

or vice versa. Whenever we were there, progress seemed possible, things could be arranged on short notice. Yet letters and proposals made in writing often remained unanswered, steps agreed upon were sometimes followed-up and sometimes not. The extent to which some of our ideas, proposed procedures and requests might have violated Chinese customs was difficult to determine. That the patterns of interaction at times tried our patience and created some frustration was a reflection of our culturally determined expectations.

Urban development and change, especially in the cities of South East China is a transformation phenomenon occurring at a mind-boggling speed that stands in stark contrast to the time frames typical of processes of urban planning, policy development and implementation in Switzerland, for example. If a study is to be done in China, the data is collected quickly, if a plan is to be made, it is made quickly, and if a building is to be built, one can virtually see it go up over night.<sup>43</sup> Thus while we were still reviewing and discussing the revised "Improvement Plan for the Residential Environment of Zhu Village" the village core around the two ponds had already lost some of its attractiveness, as some 5-6 storey high tile buildings were under construction, distorting the village center appearance as a historically grown structure. Though thwarting our hopes that the statements made by some of our Chinese project partners in relation to the desirable preservation of the visual and spatial qualities of Zhu Village might translate into actual policies, it was not a complete surprise. Given the transformation of the previous farmers and workers into landlords, living on rental income, and the more the better, who could blame them for trying to build as many apartments as possible, in the absence of enforced planning guidelines.

As researchers we are only human, not less likely than others to want to wave

<sup>43</sup> This is true even more for illegal buildings that violate some planning guidelines. Once there, a „fact“ is created, and if it was created with the implicit consent of local authorities, it might well remain.

the magic wand – to see successes rather than failures. And many research projects are thus “successfully” completed: We got the research funded, we collected and analyzed the data, we reported it back and wrote some articles. How often do we ask ourselves, what difference did it really make? How often do we “go back” to see if anything happened differently as a result of our efforts. And even if we go back, there is usually no “control group”. If anything happened or will happen differently in Zhu Village as a result of this joint process, of the discussions about more sustainable options for development, is hard to say. What we know for sure is that for all of us in the AGS teams it was an enriching cross-cultural learning experience, and for those of us, open and critical about our own way of doing things, an opportunity to reflect on our personal way of doing things and on our planning, living, working cultures.

Trying to assess the objective impact, it can be noted that, compared to the originally developed “improvement plan”, the second “improvement plan” and added revisions reflected a different awareness as to the existing historic and social qualities of the

village layout and structure. Some of the key recommendations developed related to the preservation of water bodies and buildings structures had been integrated in the objectives outlined. Asked about his insights concerning the project, Mr. Zhang Zai Xiang, the Chinese project partner for the Tianhe District government, said: “We have been introduced to new methods; we have come to learn about different views. You protect the environment in your country. This is more difficult here, as we are still relatively poor. We need to educate the villagers.” And in response to a question about what he thought might happen, he added: “Zhu Village wants to protect its ponds. The village leaders and the mid-level government want to stop the construction of illegal buildings. This is the result of our visit to Switzerland and the work of Mr. Stutz on the preservation of historic village qualities (...) Overall it was a good cooperation, but there are cultural differences, and the communication could have been better. Some things we think can be implemented, but others can’t.”

We will want to go back and see!

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#### Research Products

##### *Journal Articles and Books*

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## Appendix 2

### Chronology of Events (meetings, conferences, workshops, Chinese delegation visits)

#### 1999

- January Meeting of ETH Zurich team with Prof. Jia Beisi in Hong Kong  
First introductory visit to Guangzhou: Meeting with Mr. Wu Jinzhang, Deputy Director, City of Guangzhou Urban Greening Department / Dr. Li Ming, landscape architect and colleague of Prof. Jia Beisi.  
*Discussion of the initial idea to develop an AGS project with Guangzhou*
- May Meeting of AGS Future Cities teams from MIT, University of Tokyo and ETH Wohnforum to discuss the idea of a project in Guangzhou. Presentation of Prof. Jia Beisi about the challenges faces by Guangzhou in terms of sustainable development.  
*Decision to submit a proposal for a 2-year project to AGS in October 1999*
- December *Proposal accepted by AGS with funding granted for 2 years (2000/2001)*

#### 2000

- May Initial 3-day meeting of principal investigators from MIT, University of Tokyo, ETH Zurich, Prof. Jia Beisi with city officials, planning staff, selected business representatives in Guangzhou to discuss possible topics for investigations and forms of collaboration, budgets and funding available  
*Decision to continue, further detail topic areas and meet again in August*
- August Meeting in Guangzhou to prioritize research areas and establish a project organization under the sponsorship of Vice-Mayor Li Zhuobin and the selection of a local project leader to work with each of the AGS teams  
*Decision to hold a kick-off conference in November in Guangzhou*
- November Kick-off Conference in Guangzhou to officially establish and publicize the partnership. Presentation of research methodologies of relevance to the cooperation by AGS teams; presentation of issues related to sustainable development of Guangzhou by Chinese partners. Participants: AGS teams, 30 Chinese city government and planning staff members; selected faculty and students from Guangzhou universities. Format: Presentations, workshops in subgroups, site visits related to selected research areas  
*Decision to pursue 3 specific research projects; signing of a memorandum of understanding for each project*

#### 2001

- February – October Meetings of AGS project teams with Chinese partners according to individual schedule in Guangzhou or Boston, Tokyo and Zurich respectively
- May/June Chinese leaders delegation visit to MIT Boston and ETH Zurich
- October Submission of a project continuation proposal to AGS for 2 more years expanding the research focus on Pearl River Delta regional issues.
- November Visit of Chinese delegation on Zhu village project team in Zurich  
Visit of Chinese delegation on water resource management project in Tokyo
- December International Seminar on Guangzhou Sustainable Development in Guangzhou, co-sponsored by the Faculty of Architecture of the University of Hong Kong. Presentation of research results from phase 1; presentations of “best practices” from other Chinese cities and other countries.

Breakfast meeting of AGS ETH team with Vice-Mayor Li Zhuobin on Zhu Village project  
*Decision: Commitment by Vice-Mayor to support the project; shift of project responsibility to Tianhe District; draft for a new memorandum of understanding*

*Proposal for project continuation accepted by AGS with funding granted for two more years (2002/2003)*

## **2002**

May – November

Meetings of MIT and University of Tokyo teams with Chinese partners

May

Planning meeting of ETH team with Zhu Village project group in Guangzhou;  
*Decision: drafting of a new memorandum of understanding for phase 2*

August

Planning meeting of ETH team with Zhu Village project group in Guangzhou; inventory and recommendations of Swiss expert (wW Stutz) on the preservation of the historic qualities of the Zhu Village central area (project 1); presentation of findings to Tianhe District government representatives

August

Visit Vice-Mayor Li Zhuobin of Guangzhou with 10-member delegation in Zurich

November

Meeting of AGS teams on the occasion of the general AGS meeting in Boston; attended also by Mr. Gao, Deputy Director of the Guangzhou Planning Commission reiterating his support for the continuation of the collaboration  
*Signing of the new memorandum of understanding for Zhu Village Project*

## **2003**

January

Meeting of AGS ETH team in Guangzhou; presentation of findings from project 1) and project 2) (water clean-up proposals) to Tianhe District and Zhu Village decision-makers  
Meetings with faculty/department chairs of South China Normal University, Guangzhou on pilot project for environmental education in Zhu Village schools

April -May

SARS hits China; Chinese delegation visit postponed until the fall

October

Tianhe District Chinese delegation visit in Zurich; presentation of the new “Plan for the Improvement of the Residential Environment of Zhu Village”  
*Decision: Revision of the plan and inclusion of the recommendations developed by Swiss experts (projects 1 and 2)*

## **2004**

March

Final meeting in Guangzhou of AGS ETH team project director and Swiss water clean-up expert with members of Guangzhou city government, and Tianhe District and Zhu Village government, review of cooperation

## **2005**

April

2-day visit in Zurich of a delegation of the planning department of Tianhe District Government (based on a request by Tianhe district Government)

## **2006**

Plans for a renewed project cooperation with the city of Guangzhou under discussion with new project partners at MIT and in Sweden; participation of ETH in AGS partnership officially terminated; new funding sources would have to be found.

## Appendix 3.1.

### Proposed Research and Development Topics

Topic Areas and Project Title	Brief Description	Principal Investigator(s)	Partners
<p>Topic Area: Urban Planning and Land Use (Urbanization)</p> <p>Subtopic: Housing</p> <p>Title: <b>From Housing Development to Sustainable Housing Development in Guangzhou</b></p>	<p>Adaptation and application of a systemic analysis for assessing the sustainability of housing complexes. Goals of the project are: 1) to link environmental sustainability to the psychological, social, economic, and cultural aspects; 2) to outline the preconditions, contexts, and processes that characterize successful partnerships in housing construction and management processes.</p> <p>An analytical framework developed at ETH will be adapted to the Chinese situation and used to evaluate two housing complexes in Guangzhou. Findings will be compared to a Swiss case study in order to assess the utility of applying the framework in different cultural contexts. The collaborative methodology includes both questions related to sustainability relevant outcomes as well as process issues that influence the sustainability of outcomes.</p>	<p>Prof. Jia Beisi, The University of Hong Kong, Department of Architecture</p> <p>(Prof. Jia's work on this project is funded by a grant from the University of Hong Kong)</p>	<p>Mr. Wu Jingzhang, Deputy Chief of The Municipal Administration &amp; Landscape Architectural Bureau</p> <p>Mr. Li Min, Deputy Director of The Landscape Architecture Bureau</p> <p>ETH Center for Housing and Sustainable Urban Development: Susanne Gysi, lecturer, Dr. Margrit Hugentobler, Prof. em. Alexander Henz, Tanja Lütolf, graduate student</p>
<p>Topic Area: Urban Planning and Land Use (Urbanization)</p> <p>Subtopic: Urban and Regional Water Management</p> <p>Title: <b>Sustainable Water Management in Guangzhou and the Pearl River Basin</b></p>	<p>Evaluation of the impact of the rapid growth of Guangzhou city on the water environment, identification of key issues in managing the water environment of the Pearl River, proposal for a sustainable water management in Guangzhou city.</p> <p>The project will develop a comprehensive picture of past and current water management issues and will provide suggestions for current and future water management: i.e. reduction of water pollution and usage; identification of water quality parameters most critical to the surrounding ecosystems.</p>	<p>Prof. Keisuke Hanaki, UT</p> <p>Dr. Toshiya Aramaki, Assistant Professor, UT, Mr. James Eastcott, graduate student, UT</p> <p>(this project is partially supported by non-AGS Japanese funds)</p>	<p>Guangzhou: Mr. Hao En-he, Director of the Territorial Planning Department, The Planning Commission of Guangzhou City</p>
<p>Topic Area: Pollution Treatment and Control</p> <p>Subtopic: Water Pollution Control Technologies</p> <p>Title:</p>	<p>Review of the current wastewater treatment system to identify possible problems to be solved, proposal of a method to upgrade the wastewater treatment process.</p> <p>The project will assess the performance of the current wastewater treatment process and propose ways in</p>	<p>Prof. Keisuke Hanaki, UT</p>	<p>Guangzhou: Mr. Wu Jingzhang, Deputy Chief of The Municipal Administration &amp; Landscape Architectural Bureau,</p>

<p><b>Strategy of Wastewater Treatment in Guangzhou City</b></p>	<p>which to upgrade and improve the treatment process in view of the rapid growth of the city and the expected increase in pollutant loading.</p>		<p>Mr. Wu Qianzhao, General Engineer of The Municipal Environmental Protection Bureau</p>
<p>Topic Area: Pollution Treatment and Control</p> <p>Subtopic: Policies to Reduce Air Pollution</p> <p>Title: <b>Regional Strategy for Air Quality Control</b></p>	<p>Provision of institutional arrangements on Pearl River Basin for air quality management to be put in place amongst Guangdong, Hong Kong and Macau. This regional arrangement will take advantage of the market mechanisms, regularity systems, and technological options for air quality management.</p> <p>Expected results: framework for regional cooperation</p>	<p>Prof. Fred Moavenzadeh, MIT</p> <p>Jen Uncapher, graduate student (MIT)</p>	<p>Guangzhou: Mr. Wu Qianzhao, General Engineer of The Municipal Environmental Protection Bureau</p> <p><i>Hong Kong and Macao To be determined</i></p>
<p>Topic Area: Urban Planning and Land Use (Urbanization)</p> <p>Subtopic: Environmental Management</p> <p>Title: <b>Demand Management – land use and property development</b></p>	<p>Development of strategies and policies toward land use and property development that are sustainable and consistent with the socio-economic growth strategy of Guangzhou and with its environmental acceptability. The research outcome will be based on a better understanding of the government policies toward land and property development.</p> <p>The result will be recommendations to the city of Guangzhou for demand management. Existing knowledge will be reviewed, adapted and eventually applied to Guangz.</p>	<p>Prof. Fred Moavenzadeh, MIT</p> <p>Ben Cheatham, graduate student (MIT)</p>	<p>Guangzhou: Mr. Luo Yukun, Deputy Director of The Municipal Science &amp; Technology Commission of Guangzhou City</p>
<p>Topics Areas:</p> <ul style="list-style-type: none"> <li>- Environmental Protection and Environmental Management</li> <li>- Urban Planning and Land Use (Urbanization)</li> <li>- Pollution Treatment and Control</li> <li>- Traffic Reduction</li> </ul> <p>Subtopic: Development Project</p> <p>Title: <b>Planning for and Implementing Sustainable Development in Guangzhou</b></p>	<p>The goals of this development project are: 1) to develop a concept for Guangzhou's sustainable urban development planning; 2) to identify the steps and measures necessary in order to translate the concept into action.</p> <p>Expected results:</p> <ul style="list-style-type: none"> <li>- Identification of domains of action and persons responsible within and outside the city of Guangzhou</li> <li>- Definition of required and desired measures and activities in order to make the future development of the city as sustainable as possible</li> <li>- Decision by the city government to translate the concept of sustainable development into action</li> </ul>	<p>Guangzhou: Mr. Gao Dianyong, Deputy Director of The Planning Commission of Guangzhou City</p> <p>"Guangzhou Task Force" for the preparation of a sustainable development concept, person responsible for directing the project in Guangzhou, to be named</p>	<p>Consultation based on experiences; provision of relevant materials on request:</p> <p>Research group from ETH Center for Housing and Sustainable Urban Development, possibly other members from AGS Future Cities group depending on topic</p>
<p>Topic Areas:</p>	<p>Application of a systemic planning framework for</p>	<p>Guangzhou:</p>	<p>ETH Center for Housing</p>

<ul style="list-style-type: none"> <li>- Ecology (Environmental Protection and Environmental Management)</li> <li>- Urban Planning and Land Use (Urbanization)</li> </ul> <p>Subtopics to be determined by city of Guangzhou</p> <p>Research and Development Project</p> <p>Title:  <b>Applying a Systemic Planning Frame- work for Sustainable Development</b></p>	<p>sustainable development to one or two areas of urban planning (pilot projects).</p> <p>The result will be a comprehensive plan for sustainable interventions in one or two urban planning areas – pilot project(s) – and a framework for evaluation. Lessons learned from the pilot project(s) can be transferred to other departments (topic areas) of city planning.</p>	<p>Mr. Shi Xiaoyu, Chief Engineer of The Planning Bureau of Guangzhou City</p> <p>One or several members of Guangzhou city administration (e.g. landscape architecture department)</p>	<p>and Sustainable Urban Development:</p> <p>Dr. Margrit Hugentobler, Prof. em. Alexander Henz, Susanne Gysi, lecturer, Tanja Lutolf, graduate student</p>
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## Appendix 3.2.

### ETH Wohnforum - Conceptual Framework for Sustainable Development

A preliminary definition of sustainable development can thus be derived, suggesting that **developments are sustainable if:**

- they appropriately take into account the specific characteristics of the affected systems (cultural, social/economic, human/individual, biological, chemical and physical)
- they address human learning by including perceptual and behavioral changes.

The conceptual framework at this general level does not define specific targets for urban sustainability yet, as do various indicators that have been devised by other researchers. In our perspective, selecting appropriate indicators and target values needs to be guided by knowledge about systems properties at different levels in relation to the project to be evaluated.

As a heuristic approach to planning and evaluation, a set of guiding questions to assess the sustainability of any project at the five levels was developed (where chemical and physical systems are combined as one level). The questions below are defined in a general fashion so that they can be applied to and specified for any type of project. The table below gives an overview of the main guiding question of relevance to systems properties at each level, including some keywords as to the specification for further analysis. Again, these outcome-related questions can be used either to assess the potential impact of planned urban development projects or to evaluate the outcomes of completed projects.

In order to develop a model for sustainable village renewal of Zhu Village, the goals for interventions at each system's level have to be defined, specified and agreed upon by the relevant local actors.

#### *Guiding Questions to Assess Sustainable Interventions*

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<i>Cultural Systems</i>	<i>Does the project support or enhance societal development and the adherence to or the promotion of agreed upon values and norms (national laws, international conventions, etc)?</i> <i>Keywords: innovations, knowledge generation, cultural heritage; human rights and environmental protection convention</i>
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**Zhu Village: Cultural level issues, for example**  
-> development of a model village for sustainable urban renewal  
-> preservation of cultural heritage (old temples, ancestor halls, other typical buildings, spatial structure of old village center, public places; village customs such as dragon boat races, etc.

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<i>Social Systems</i>	<i>Does the project sustain or improve the functioning of social systems and the development of social justice and fair exchange (within and between geographical entities such as neighborhoods, communities, regions, nations)?</i> <i>Keywords: distribution of access to scarce resources (i.e. income, education); division of labor and exchange relationships (nationally and internationally); needs and rights of various groups in society (gender, immigration, minority issues)</i>
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**Zhu Village: Social level issues, for example**  
-> resources available from district and city government  
-> access to education and work opportunities; decent

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housing for various population groups (i.e. women, adolescents, elderly, migrant laborers, etc.)

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*Human (individual) Systems*

*Does the project sustain or enhance the satisfaction of basic human needs (physical, psychological and psycho-social)?*

*Keywords:*

*physical needs: i.e. food, shelter, reproduction and regeneration;*

*psychological needs: i.e. information, communication, prediction, control;*

*psycho-social needs: i.e. affection, recognition, autonomy, sense of belonging, etc.)*

**Zhu Village: Individual level issues, for example**

**-> healthy, safe and pleasant living environment**

**-> participation in/information about community development**

**-> awareness about sustainable development**

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*Biological Systems*

*Is the project environmentally sustainable? That is, does it sustain or enhance biodiversity and the protection of natural habitats?*

*Keywords: preservation of eco-systems and variety of species*

**Zhu Village: Biological level issues, for example**

**-> plants, trees, connected green spaces preserved and enhanced?**

**-> biological water treatment systems; waste recycling, etc.**

**-> preservation of eco-systems in village farming areas**

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*Chemical/physical Systems*

*Is the project environmentally sustainable? That is, does it reduce emissions and the use of non-renewable natural resources?*

*Keywords: clean air, water and land use, energy use, etc.*

**Zhu Village: Chemical/physical level issues, for example**

**-> elimination of water pollution (chemicals from factories, etc.)?**

**-> land use optimization; use of environmentally friendly materials**

**-> reduce air pollution and the use of non-renewable energy sources (cooking, private transportation, i.e. motorcycles; air conditioning,**

**access to public transportatio, etc.)**

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## Appendix 3.3

### Proposed ecological planning and design principles to be applied in Zhu Village (short-term and long-term development)

(Input for discussion by Prof. Jia Beisi on the occasion of a meeting with the Zhu Village project group in Guangzhou on May 2, 2001)

1. Ultimate Goal: a city eco-village integrated into the local ecological system with a high density, high living quality and low energy consumption living and working pattern. Zhu village will be a show-piece of urban sustainable development for China
2. The village should be in compact form to save land, save energy and maximize biological natural areas and to enhance social interaction.
3. Ecological is economical
  - a. Reducing the use of fossil fuels by using solar, or other renewable energy sources
  - b. Participatory management may reduce the total management costs and provide more jobs.
  - c. Ecological ideals may attract more people to live in the village, and increase its attractiveness and market value
  - d. Using low energy and recycled materials will reduce construction costs.
4. Preserve natural ecological resources and restore eco-system of the surrounding area
  - a. Minimize the construction impact to the local environment
  - b. Increase the bio-diversity
  - c. Integrate eco-farming technology
  - d. Set up green path to connect separated water bodies and green fields
  - e. Using local plants in parks and recreational areas
5. Create a pollution free environment
  - a. Set up traffic free pedestrian paths and safe bicycle paths
  - b. Separate garbage, biologically degradable waste will be used as compost for gardens and vegetable growing areas
  - c. Using existing water ponds and construct water-recycling system with biological technology
6. Social ecological development
  - a. Support access to decent housing for less privileged village residents
  - b. Provide a wide range of housing choices to enhance different income groups living together
  - c. The village itself becomes an educational model, where the knowledge of new balance between living and energy consumption is achieved.
7. Use low energy-use and recycled materials
  - a. Natural materials, stone, bamboo
  - b. Local materials
  - c. Materials with embodied energy
  - d. Recycled materials, pottery, tiles, etc.
  - e. No aluminum
  - f. No or few decorative elements



8. Maximize natural ventilation in planning and designing, and providing maximum shading to minimize air conditioning needs.
9. Set up technology experimental zone focusing on the development of eco-technology, such as water recycling, eco-farming, renewable energy, and at same time providing jobs to village people.
10. Design and build experimental housing to study ecological technologies for housing.
11. Use flexible housing design for new building construction to maximize long-term viability of the building.
12. Preserve most of the existing buildings, not only the temples and traditional buildings
13. Remove some buildings with very low qualities and create many small parks or outdoor spaces connected by foot passageways
14. Preserve and reuse traditional buildings.
15. New buildings will be inserted by using waste and separated land in order to reduce the amount of farming land to be transformed for construction
16. Use ecological principles and criteria in the design and construction of green and open spaces.
  - a. Create parks without or with less human and energy input
  - b. Bio diversity
  - c. Use of local plants
  - d. Integration with water sources
  - e. Web pattern
17. Transform existing buildings to minimize energy use for operation
18. The gradual and piecemeal changes of the village must be planned in such a way that the village is a whole as well as unfinished.
19. Establish a multi-disciplinary planning process
  - a. Integrate people especially those from environmental science, social science and biological science in the planning process
  - b. Plan for ongoing investigation and post occupancy evaluation in the process.
  - c. Select construction companies and developer who are interested in ecological development.
  - d.
20. Ecological esthetics
  - a. Simplicity by eliminating ornaments
  - b. Integrate surrounding farming fields, water ponds, etc. into spatial design.
  - c. Maximize terrace and roof greenery

## Appendix 3.4.

### Suggestion for a workshop presentation in Guangzhou - June 16-18, 2001

#### Goal: Input on investigation and planning strategies

This presentation is to illustrate how the ETH Center for Housing and Sustainable Urban Development would tackle the investigation of the situation in Zhu Village as the basis for developing a long-term improvement plan.

The examples to show this process are taken from the planning principles of Prof. Jia Beisi presented to the Guangzhou team in early May. There will be one example for each "sustainability level". The different examples should illustrate the organization of the investigation and the development of the long-term renovation plan as detailed as possible.

The main questions that have to be addressed are the following:

- What **topic** is the investigation about (e.g. cultural / historical sites in Zhu Village, social activities, economic issues, etc.)?
- Who will lead the investigations; who are the **responsible persons**, what are **their roles** in the project, who are the **collaborators** and what are their roles?
- What exactly will be investigated? What is the **goal** of the investigation?
- What **results** do you expect; what findings could be found?
- What will be the **product** of the investigation (e.g. a written text, figures and tables, graphs, plan material, combination of some of these, etc.)?
- How will the investigations be made, the results be found? What **method** is used?
- What's the **time schedule** for this particular investigation?

#### Process

The following considerations as to a successful process that supports the achievement of the goals at the different levels should also be considered:

- Integrate experts from different disciplines (i.e. architecture environmental science, social science, etc.) along with local decision-makers in the exploration and planning process
- Select investigation teams and construction companies/developers who might be interested in ecological development

#### Example

**Social level – Area: Distribution of and access to material and immaterial resources (i.e. work, income, education, etc.)**

*Possible Goal: Provide a variety of work opportunities for different groups of the working population in Zhu Village thereby decreasing the dependence on the "rental economy", providing employment opportunities for young people and reducing the social problems (drug abuse, etc.) related to unemployment*

Overview – Plan for investigation and development:

- 1) What are the **existing work/employment opportunities** in Zhu Village?
- 2) What is the **educational and professional background** of the inhabitants of Zhu Village?
- 3) What could be offered in the future? What is the **concrete goal of the development plan**?
- 4) What **actions** could be taken to reach the goal?

- 1) To find out about existing work opportunities in Zhu Village an investigation is planned with the following parameters:

**Topic: Inventory on existing work opportunities in Zhu Village**

<b>Responsible Person, Role in the Project</b>	Ms. X, Deputy Director of Y, Principal Investigator
<b>Collaborators, Positions and Roles in the Project</b>	Mr. Z, Leader of Zhu Village, provision of data
<b>Goal, Expected Results, Form of Results</b>	Inventory on the existing number of different work places in Zhu Village, i.e. for agricultural workers, factory workers, workers in services, shop owners, as well as number of unemployed people, etc.  <i>It would be interesting to find out how many people are commuting to the city center to work and what the sectors are they work in.</i>
<b>Methods; How is investigation done</b>	- Analysis / Evaluation of statistical information on Zhu Village; and / or - Estimations by key persons  <i>If statistical figures are not available estimations can be helpful.</i>
<b>Time Schedule</b>	Aug 01: Collecting available statistical information Sept 01: Analysis and Evaluation of material, collecting estimations of missing figures of key persons Late Sept 01: Work on investigation report.

- 2) To find out about the educational and professional background of the inhabitants of Zhu Village an investigation is planned with the following parameters:

**Topic: Investigation on educational and professional background of inhabitants of Zhu Village**

<b>Responsible Person, Role in the Project</b>	Ms. X, Deputy Director of Y, Principal Investigator
<b>Collaborators, their Positions and Roles in the Project</b>	<i>It is crucial that the research team includes persons from the social science:</i>  Mr. A, Prof. for Social Sciences, University of Z, Principal Investigator Ms. B, student of University of Z, research assistant
<b>Goal, Expected Results, Form of Results</b>	Statements on grades of visited schools and school degrees reached as well as of vocational training and professional background of inhabitants in Zhu Village. The results will be presented in statistical tables and explained in a text.  <i>It will be important where people work. If they are unemployed, it will be interesting to find out the reasons (no work, working place to far away, no education or vocational training, etc.) It will also be interesting to find out the number of farmers, factory workers, workers in services, shop owners, and unemployed, etc.</i>
<b>Methods; How is investigation done</b>	- Analysis / Evaluation of statistical information on Zhu Village; and / or - Estimates by key persons - Possibly interviews with inhabitants  <i>If statistical figures are not available estimates can be helpful.</i>

<b>Time Schedule</b>	Aug 01: Collecting available statistical information and possibly making interviews Sept / Oct 01: Analysis and Evaluation of material, collecting estimates of missing figures of key persons Nov 01: Work on investigation report.
<b>Remarks</b>	<i>The results of the investigation can be arranged by different aspects, e.g. different age groups, residential and non-residential inhabitants, etc.</i>

3) To find out what working places could/should be offered in the future, i.e. to find out the concrete goal of the development plan the results of step 1) and 2) have to be studied and compared. What professional background is offered in Zhu Village, what working places are available.

The results from 3) can then lead to the formulation of measures that should be taken (e.g. incentives for specific industry or services to settle in Zhu Village).

### **Suggestion for other examples (taken from the “principles of ecological planning”)**

(These are just examples for which the plan for investigation and development could be applied as suggested for the example on the previous page).

**Priorities need to set by Guangzhou decision-makers at the municipal, district and village level.**

#### **Chemical / physical level – Area: Efficient and effective use of renewable and non-renewable resources**

Use low energy and recycled materials:

- Natural materials, stone, bamboo
- Local materials (*includes also cultural aspects*)
- Recycled materials, e.g. pottery, tiles, brick, glass etc.
- Reduce the use of aluminum (very high energy use and costs in production as well as recycling)

#### **Biological level – Area: Enhancement of bio-diversity**

Use ecological principles and criteria in garden and park construction.

- Create green spaces and parks that need less human and energy input (e.g. natural grassland instead of "artificial" flowerbeds)
- Preserve bio-diversity by creating space for a big variety of local plants and animals (e.g. integration of water systems)
- Use local plants

#### **Human / Individual level – Area: Protection of physical needs**

- The village will offer possibilities for regeneration (e.g. existence of green / outdoor areas for leisure, relaxation, low noise level, protection from visual contact).

#### **Social level – Area: Distribution of and access to material and immaterial resources (i.e. work, income, education, etc.)**

- Provide a variety of employment and work opportunities for different groups of the Zhu Village population.

**Cultural level – Area: Preservation of cultural heritage (physical structures, skills, traditions, social networks)**

- Preserve and restore traditional buildings where appropriate; buildings that reflect the history of the Village (*also includes social aspects*).

## Appendix 3.5.

### Areas to be addressed for Zhu Village as a model project

If Zhu Village is to become a model project for village renewal in the city – Zhu Village is one of 138 "villages inside the city" in the urban area of Guangzhou – we see the following areas as relevant to the sustainable development of Zhu Village:

#### 1) Sewage treatment system

- connection to the municipal sewage system
- considerations of alternative, biologically oriented local waste water treatment processes that could be established at the village level

#### 2) Ecological urban renewal

- private housing and public buildings (preservation of existing buildings worth preserving, renovation of old buildings, worth preserving, development of new housing, etc.)
- open public space (use of existing public open space, creation of additional space)

#### 3) Ecology and landscaping

- preservation of existing biological systems (trees, bushes, ponds)
- linkages between existing eco-systems (green areas)

#### 4) Traffic and transportation management

- commuting traffic (linking the village to the city (buses, light train?, private cars)
- traffic strategy within the village (pedestrian – traffic free) areas, i.e. different zones: pedestrian only, pedestrians and bicycles, open zones for cars and motorcycles)

#### 5) Economic development

- additional economic activities to be developed in the village (small factories? tourist services?) in order to create more job opportunities; incentives for companies to move to Zhu village?)
- training needs of workforce

#### 6) Social services

- provision of medical care, health counseling?
- other social services needed? (employment counseling, etc.)

#### 7) Education and Information (re. sustainable development)

- environmental education for school children
- educational programs and campaigns for adults

#### 8) Social life and cultural traditions

- infrastructure for social activities (sports facilities, other entertainment, playgrounds, activities for members of different age groups (children, adolescents, adults)
- preservation of traditional skills and crafts in the village, events (dragon boat races, lion mask dances, etc.)

**It is obvious that not all areas might be considered of equal importance and urgency for intervention. In our perspective, priority areas would be Nr. 1 – 4. However, these priorities have to be decided locally. It seems important that the planning process for the areas selected for improvements is coordinated so that proposed goals and interventions can be linked with each other.**