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**PERI-URBAN LAND USE RELATIONSHIPS –
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**Report on enhanced
planning strategies
and decision making for
urban fringes: Hangzhou
report**

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Abstract

The deliverable synthesizes the results from the Hangzhou case study which was chosen to study the specific processes of rapid peri-urbanisation in a large Chinese city region. The Hangzhou case study was selected as a complementary case to the European case studies because it gave insights into the challenges for peri-urbanisation in China and how these have been addressed by planning within a political and legal context fundamentally different from the European cases. In particular, the Chinese situation is characterized by the combination of strong top-down planning with a free market economy. Hangzhou was also interesting as the city has a reputation within China of advanced planning and development of innovative land use strategies. The final report of the Hangzhou case study draws conclusions of the findings from the previous analysis (report 1, Deliverable D3.3.7) and assessment of strategies (report 2, Deliverable D3.3.14) for development of peri-urban areas in Hangzhou.

The Analysis and Assessment Reports revealed the overall challenges of urban development in general and peri-urbanisation in specific in Hangzhou. Fuelled by strong economic growth, rapid urbanisation in China has led to unprecedented challenges for planning. In Hangzhou, a metropolitan area located in the Yangtze delta, of 290km² and 3.13 million inhabitants in the city proper in 2005, each year between 50,000 and 100,000 new inhabitants need to be accommodated. This population growth has led to the quick expansion of the urban territory. According to results from our study, the city core increased almost seven times, and the peri-urban zone expanded by 4.5 times in surface area between 1988 and 2004.

The challenges of this rapid urban expansion include, to name some of the issues studied in our case study, consequent loss and fragmentation of farmland and natural structures, and pressures on the environment. Urbanisation is also challenging from social and economic perspectives.

The case study explored the processes of peri-urbanisation at level of the city region and in-depth in three subcases. Therefore, the report draws:

- Generic conclusions on strategies for sustainable development of peri-urban land use systems based on the results from the Hangzhou case study.
- Specific conclusions on the strategies employed for the sustainable development of peri-urban land use systems in the three selected sub-cases: Zhuangtang, Xixi and Binjiang.

The cases were selected to study in detail the character of peri-urbanisation in different landscape and socio-economic settings within the peri-urban area of Hangzhou. Moreover, the cases represented distinctive strategic approaches to the management of peri-urbanisation:

- Culture & landscape restoration, tourism and residential development – case study area of Xixi
- Ecological conservation and controlled urban growth - case study area of Zhuantang
- High technology & economic development – case study area Binjiang

Overall, the development of compact and efficient urban spatial structures for the entire city region is among the major challenges encountered by planning. This requires containment of low density urban developments (“sprawl”). Urban sprawl is partly driven by municipal governments who sell land in order to increase local revenues. Reform of the taxation system is therefore recommended to benefit from land added values and economic development for the whole city. Moreover, coordination between spatial planning and development policies needs to be enhanced. Establishing efficient governance is a great challenge in peri-urban regions. The structure of local and municipal governments needs to be streamlined for this purpose.. Also, bottom up initiatives should be encouraged and granted the right of hearing in planning processes. (Involving the public needs to be a comprehensive process throughout the planning and decision making process.) Furthermore, disadvantaged groups need to be identified and fairly involved in the respective processes.

Within the peri-urban areas adequate provision of services for the new population is a particular challenge. Another major challenge is the protection of farmers’ rights and living standards in the process of conversion of land to urban uses. Agriculture greatly contributes to a balanced development yet is a weak player in terms of financial power. The compensation system for land lost farmers should be reformed. At the same time, creative strategies are required to assist farmers in the transition process from rural to urban life style. Finally, the embedded case of Xixi wetland park, a large wetland area that has been restored as a future green space of the expanding city, shows that protection and careful management of landscapes in the peri-urban areas will be of prime importance for their sustainable development.

In conclusion, the Hangzhou case showed that peri-urban regions are open for new developments, but only when guided by strong planning, the new developments can really add to local communities. The embedded cases revealed some encouraging examples how this can be achieved, but they also highlighted some of the current limitations to develop more sustainable land use patterns. The report will make suggestions for further improvement and discuss wider applicability of the strategies adopted in Hangzhou in other Chinese city regions.

1 Introduction

PLUREL aims to identify strategies for sustainable land use relationships of urban-rural regions and to develop tools in support of these strategies. This report presents the summary conclusions from the Hangzhou case study. Hangzhou, a rapidly developing city region in the Yangtze delta south of Shanghai was chosen as a complement to six European case studies, in order to study the process of urbanisation in the Chinese context. The Chinese situation differs in almost every respect when compared with European city regions. In China, urbanisation is extremely fast in comparison to European cities where population is even in decline in many cities. Another major difference relates to the political and the planning system. In China, a socialist government and strong top-down planning combine with an economy that is in transition towards free markets. The European cases, on the other hand, are characterised by democratic governments and market economy. The number and role of actors in planning is considerably larger than it still is in China.

Did it make sense then to include a Chinese case study in the PLUREL project? The answer is no and yes. No, because framing conditions are so different and therefore potential to directly transfer results either way is very limited. However, including a Chinese team and case study provided an opportunity for joint learning and mutual knowledge exchange, for instance on policies and modelling tools. Yes, because the conditions are so different and contrasting these can lead to interesting reflections on the potentials and limitations of either approach. Moreover, and this was the main reason why the European Commission was interested in adding a Chinese case to the PLUREL project, urbanisation in China affects us all, either directly or indirectly, be it in terms of economic or the environmental consequences. Therefore, it seems to be very important for Europeans to gain a better understanding on what happens currently in China, what are the specific challenges of urbanisation and to study how problems in Chinese city regions can be resolved. The PLUREL project gave also Chinese researchers the opportunity for research in a field where there is a large deficit in knowledge.

The Chinese case study was prepared in collaboration between Chinese and European teams: The Chinese Academy of Forestry, Zhejiang University, Irene Burkhardt Landschaftsarchitekten and the Technical University of Munich. The latter was reinforced by temporary collaboration of Chinese research students which contributed in particular to this final report. The team consisted of urban planners, landscape architects and planners.

The collaboration between the Chinese and European partners was challenging at times, not least due to language barriers but also the different modes of working and difficulties to access data. Due to the latter, it was not possible to develop and apply a scenario modelling approach as in the European case studies. Instead, the final report of the Hangzhou case study consists of a synthesis of the findings from the previous analysis (report 1, Deliverable D3.3.7) and assessment of strategies (report 2, Deliverable D3.3.14) for development of peri-urban areas in Hangzhou.

The Analysis and Assessment Reports revealed the overall challenges of urban development in general and peri-urbanisation in specific in Hangzhou. The challenges include, to name some of the issues studied in our case study, overall strong urban growth, consequent loss and fragmentation of farmland and natural structures, and

pressures on the environment. Urbanisation is also challenging from a social and economic perspective. The urban population benefits from economic progress but migrant workers are in a precarious situation as they have no citizenship and hence no right to access social services. Farmers are another group at risk. During urbanisation they lose their land and thus their basis for living. While compensation is given to farmers, it is difficult to integrate them into urban areas as they mostly lack the skills to find employment. The three selected sub-cases in Hangzhou also showed that the development pattern can be very different in the peri-urban areas, which creates social and economic inequalities.

Planning is also challenging in peri-urban environments. In principle, the city holds strong powers to determine the future pattern of urbanisation. However, reality can be very different from what is shown on strategic plans and it is influenced by factors such as the land ownership and the tax system.

Hangzhou has adopted strategies to address these challenges and promote sustainable development of urban and peri-urban areas. The three selected sub-cases of Zhuangtang in the south-west, Binjiang in the south and Xixi in the west show specific strategies are applied to solve local problems. The objective of this final report is thus twofold:

- To draw generic conclusions on strategies for sustainable development of peri-urban land use systems based on the results from the Hangzhou case study. The report highlights the conditions, potentials and barriers for such strategies.
- To draw specific conclusions on the strategies employed for the sustainable development of peri-urban land use systems in the three selected sub-cases: Zhuangtang, Xixi and Binjiang.

In order to meet these objectives, the analysis and assessment reports were reviewed and discussed between the Chinese and European research teams in a workshop held in May 2010. On this basis the final report was prepared. Involvement of two Chinese research students at Technical University of Munich added valuable additional information and depth to our study, in particular in reflections on the Chinese planning system as well as land ownership and tax system.

2 General Conclusions

Hangzhou is undergoing rapid urbanization, during which the city core, the peri-urban areas and the suburban areas are undergoing fast development. The economic, social and land use structures in the peri-urban area are facing dramatic change. Effective urban development strategies and spatial planning are required to guide and regulate peri-urban development. The evaluation of the planning strategies for the three case study areas –Xixi, Zhuantang and Binjiang – helped to indentify the following challenges and to draw lessons for promotion of sustainable land use in the peri-urban areas.

(1) Enhancement of the relationship between peri-urban regions and city core.

Human livelihoods and inhabitants in the peri-urban mainly fall under two categories: rural which are based on agriculture and urban which are based on manufacture and services. In the peri-urban region these two types blend. This transitional zone is generally considered as the extension of urban areas with limited functions and activities.

The expansion of built space in the peri-urban areas and the growth of population and industries make the coordination of development activities and the clear division of functions within the overall context of the city region urgent. Establishment of a performing urban transport system to ensure the operation of the city, on one hand, and creation of good working and living environments on the other hand, are particularly important.

Another major aspect of the development of peri-urban areas is the future role of agriculture and landscape functions. Until very recent agriculture in China has been viewed almost exclusively from the angle of food production. For a more sustainable development of urban agglomerations in general and peri-urban areas in special it is crucial to understand and bring forward the manifold functions of the agricultural landscape. Even if food production can be described as the primary aspect, the functions as an important landscape element, space for recreation, fresh air production and circulation, natural replenishment, retreat area for plants and animals in a more and more urbanized area cannot be estimated high enough.

Therefore, the planning of peri-urban regions needs emphasising the development of relationships between the entire city region and a clear positioning in terms of functions, construction scale and rational spatial development patterns.

A real challenge here is to understand the intrinsic characters of peri-urban regions. Each peri-urban area should be analyzed and studied carefully, so that the relative advantages of each area can be appropriately considered in planning. Building on the culture and character of each peri-urban area will benefit the entire city.

The three study areas investigated in Hangzhou show that, by adopting appropriate strategies, peri-urban regions can take more functions and serve the city region as a whole. The Xixi Wetland Protection project serves as a scenic and entertainment spot in combination with the protection of the natural environment; Zhuantang is a tourism attraction zone and also a drinking water protection zone for the whole city as

well as a scenic attraction and it contributes to the improvement of environment; Binjiang is a high-tech industrial district and functions as a economic engine for the whole city. It greatly helps to reduce land use pressures of the city proper. Recently, efforts were made for more integrated development of a new city including urban services. Commercial and residential areas.

(2) Improvement of regional equity

A part of the of wider discourse on “social harmony”, regional equity has emerged over the past decade as in planning as an objective to combine economic competitiveness and social fairness. In western countries, regional equity focused more on poverty issues while in China, regional equity has been interpreted as equal opportunity for economic development.

Inequitable development strategies can lead to serious problems as the case of Zhuangtang has shown. Protection of the natural environment as well as designation as a drinking water protection zone put severe restrictions on urban development. This has strongly limited Zhuangtang’s economic growth. Consequently, local people have suffered from lower income and fewer working opportunities and, there is an enlarging gap between Zhuangtang and other areas.

However, it should not be impossible to balance environmental restrictions with economic growth. Hangzhou’s government took its first shot by locating the School of Visual Art of China Academy of Art in Zhuangtang in order to develop creative cultural economy in Zhuangtang. However, the scale was too small to really benefit local economy. In addition, the government has also promoted the creative economy in White Horse Lake of Binjiang District. The competition between these two regions will limit the benefits of the creative cultural economy developed in Zhuangtang. The same problem is happening in other Chinese cities since the government has strong power to designate the role played by each area (reference).

(3) Control of sprawl and protection of farmland

Urban sprawl is widely considered to lead to inadequate accessibility to essential functions such as housing, jobs, and public services and it can have strong negative impacts on cities, such as long driving distance, high infrastructure costs, insufficient facilities, and high car dependency with related heavy air pollution. Importantly, urban sprawl encroaches farmland. Therefore, most cities, especially in developed countries, need to pay special attention to control urban sprawl. However, findings from the three cases studied in this research lead us to the conclusion that there is still a lack of effective strategies to manage urban sprawl. All three cases witnessed rapid and large scale disappearance of farmlands. Unlike western countries where urban sprawl has mainly been driven by market forces, urban sprawl in China has partly been caused by government management.

After the reform of the tax-sharing system in 1994, central government has acquired more power to take most tax benefits from local governments. At the same time, local governments had to take over more responsibilities to serve the city, like providing infrastructure, public facilities and other services. As a result, there huge financial deficits have developed ,Local governments realized that selling lands is an efficient way to increase local revenue. In some cities, the income from selling lands accounts for half of their financial income (Xiaoying Wang, 2007).As a consequence, farmland

and open space were sold and developed for commercial use at a high speed and cities have quickly been sprawling outward. Moreover, large areas of the sold land have been held back from development by land speculators thus further reducing land use efficiency.

Moreover, all China's current land-related taxes, like farmland tax, housing tax, real estate tax, are not continuous taxes. That means all the revenues are only generated at the time when the land is sold. Therefore, local governments have to sell more and more lands to increase their revenues.

Therefore, current taxation system needs urgently be reformed to reduce incentives for local governments to selling lands. New tax types, like property tax, should be introduced so that local revenue has a continuing connection with the sold land as well as the benefits generated from them. This will encourage local government to use sold lands more efficiently and better preserve farmlands.

It is also suggested that the role of farming in peri-urban areas urgently requires a rethinking. At present, its role as a provider of food and other produce (e.g. silk, flowers) is considered whereas its potential role to provide ecosystem services (e.g. to mitigate the heat island effect, provide fresh air and clean water), biodiversity conservation, as a space for recreation for urban dwellers in cultural landscapes seems not to be fully recognised in planning. Adopting concepts of multifunctional agriculture may make farming less vulnerable to pressures of urban development in the future. Thus, agriculture should not be considered only as providing land for urban development but also as a valuable element of the urban green space system. In cases such as Binjiang, also concepts of urban agriculture as a temporary use should be considered. At present, large expanses of empty land can be observed in Binjiang due to land speculation. Through temporary agreements, these areas could still be used for farming and thus provide food and other services to the local residents. Not least, such concepts would help to integrate farmers into the city.

(4) Protection of the rights and benefits of farmers

During the development of peri-urban areas, the farmers are the group most directly impacted. This impact is particularly serious in China's farmers do not own the land. Therefore, various policies should be employed to guarantee farmers' livelihood when the government acquires land. This is a challenging work that concerns the social stability and long-term development.

It is argued that the current level of compensation is too low and does not properly reflect the land property right of farmers. The compensation rate in our three cases is higher than the national standard. However, compensation should reflect to a certain degree the value of land and not, as is presently the case, be based solely on its agricultural value. Therefore, the land compensation system should be reformed.

Assisting land-lost farmers' transition to urban life style is also a difficult but crucial task. In general those farmers are poorly educated and have little employment skills. Therefore, it is difficult for them to find employment which at the same time secures them social and medical insurance. The Xixi and Binjiang cases showed creative strategies to solve these problems, though too small in numbers of land lost farmers being placed in new jobs. Land-lost farmers in Xixi are preferentially employed in Xixi Wetland Protection Park. Binjiang district established a minimal livelihood security system to support land lost farmers' daily lives. In addition, both of Xixi and Binjiang

provide employment skill training programs. However, local government should make firmer commitments for implementation of these measures.

(5) Balancing development with protection of ecosystems and development of green infrastructure

The conflict between land development and the protection of ecologically important areas and the ecological functions these provide is perhaps the most prominent one during development of peri-urban areas, and it has gradually intensified. In order to reduce the pressure on natural resources, there is a particular need to increase land use efficiency and to maintain a good environment through spatial planning and development policies.

Xixi Wetland Protection Project provides a successful model to restore sensitive ecosystems in peri-urban regions at a large scale. The essence of the Xixi model is to actively protect and restore a natural and cultural environment and establish site adapted utilisation, to achieve this goal. Xixi wetland restoration was made possible through strong intervention by the city government. It needs to be highlighted though that local residents, in particular farmers had nothing to say in the decision making process.

The Zhuantang area, on the other hand, suffers from a number of restrictions. The protection of the environment and natural resources severely conflicts with local interests. Hangzhou government needs not only to initiate eco-friendly economic activities, like creative cultural economy but it needs also to increase their viability and economic success by expanding their scale.

Overall, the Hangzhou case provide evidence that the “ecology” and “green city” discourses are considered as very important for the sustainable development of Hangzhou and the peri-urban areas. This could be noted in the different measures taken in the case study areas such as the Xixi wetland park but also creation of greenspace corridors in the Binjiang district. However, as regards the latter, provision of green space quantity and visual appeal appeared to be the most important concerns whereas still less consideration had been given to promote ecosystem services and social and cultural values even though these are frequently mentioned in planning documents. For instance, large expanses of highly manicured green spaces are located along roads, where they are of little use and likely also have little ecological value. Therefore, it is recommended to implement concepts of multifunctional green infrastructure as currently promoted in countries of the western world to improve the quality of urban and peri-urban green space systems. These should be based on comprehensive assessment of the entire green resource (including farmland, s.a.) with their ecological, social and economic functions.

(6) Establishment of efficient government structures

The three studied cases show three different approaches to government. Zhuantang area is governed by three units, all at local level: Zhuantang town government, Zhuantang Economic Development for Science and Technology Co., Ltd, and Zhijiang National Tourism District. These three governing bodies overlap with respect to some functions but they do not share the same interests. In addition, each of them has little power. Thus, the decision making process is usually complicated and inefficient. Binjiang District, on the other hand, exerts all the functions of an independent

administrative body and enjoys strong power to make its own decisions. Therefore, the decision-making process is relatively independent from others and is very efficient. Xixi Wetland Protection Project is another example for efficient governance. The project is managed under West Lake District and Hangzhou city. The decision making is efficient since West Lake District needs to follow the ruling of the city. Furthermore, the leading groups of the project benefits from a strong power granted by the city.

This comparison revealed some basic features of efficient governance specific to peri-urban regions. Firstly, the local government should have a clear structure. Peri-urban regions keep changing all the time. So the government structure needs to be streamlined to make quick decision. A government with multiple governing bodies at the same level is difficult to understand, monitor and hold accountable. Secondly, local government should have relatively more power as they will be more creative to solve local problems. Binjiang is a good example for establishing a creative social welfare system to benefit land-lost farmers.

Finally, but not less importantly, local government should make more commitment to protect the rights and interests of its citizens. In peri-urban areas, especially land speculators may try every means to get the land. Here, local government should be more concerned with protecting the rights of local people than short-term economic gains.

(7) Encouraging bottom up initiatives

In the planning process, planners will make a survey and ask for comments and recommendations from interested groups. Later, citizens are invited to comment on the plans but the possibility of the public to engage is still very limited.

Bottom up initiatives should be encouraged throughout the whole planning process. In other words, it should be a comprehensive process which involves the public when important decisions are made. Currently, the voice of the public is missing during the process of defining community character, choosing alternative strategies, implementation surveillance, etc.

Furthermore, the voice of disadvantaged groups should become better heard. At present stage, disadvantaged groups, such as ethnic minorities, farmers, migrant rural workers and people living in poverty, do not have a voice in decision making. A plan without participation of disadvantaged groups will not take their interests into consideration. The future development will inevitably broaden the gap between those disadvantaged groups and other social members if current trends continue. Therefore, there much more efforts need to be taken to consider disadvantaged groups.

(8) Making flexible plans to cope with future changes

Peri-urban areas are the most dynamic area within the urban-rural continuum. The potential for changes is one of the most important characters of these regions. The driving forces of urban change dramatically compete with each other. The result of this competition largely relies on it regional context, namely, economic growth, government administration, natural conditions, climate changes, etc. Some of these regional factors are unpredictable which adds uncertainty to the dynamics of peri-urban regions. Therefore, it is unreasonable to assume the growth of peri-urban regions will follow the same trend and plan for it.

The current Chinese planning is a typical top-down process with little public participation and limited role played by private investors. What may happen if the role of government changes from supervisor and manager to service provider and shepherd? Will the public make wise decision themselves in developing sustainable land use? Will the investor dominate the land market? What may happen if the current fast economic growth is impacted by the global recession or the competition from other countries? Will the land use pattern change accordingly? What may happen if necessary actions must be taken to cope with global climate change, like global warming?

The PLUREL project supports using scenarios to explore the consequences of rapid and unpredictable change in urbanizing societies. Scenarios provide a tool for the investigation of and communication over possible future conditions and trends, risk and opportunities. Chinese planning is strongly recommended to adopt the strategy of scenario planning, complemented by empiric means and methods. This way the cities are able to better adapt to future changes.

(9) Use of financial tools and initiatives to guide preferable development

Peri-urban regions are particularly dynamic and open for new developments. A serious question does then emerge: how to attract preferable developments while blocking undesirable ones? This question becomes more challenging when Chinese market economy is right on its way while the power for intervention of government is decreasing. Similar questions are also asking for answers in many EU countries. In the Chinese context, Binjiang District may be a good example for the use of creative financial tools to guide desirable developments.

Binjiang High-Tech Zone strongly supports development of high-tech industry. Tax rebate policy for software industry stipulates that investors engaged in software industry can get a tax rebate directly for the excessive part beyond 3% of actual payment of value-added tax. Moreover, high-tech foreign enterprises enjoy 70% off the differential land rent. Furthermore, they enjoy lower thresholds for project examination and approval though it must be added that these policies may have negative impacts on the quality of the project as well as on the environment. Nevertheless these strategies result in a concentration of high-tech development.

There are, at the same time, various financial tools that peri-urban regions can employ. The financial tools and incentives prove to be effective instruments to keep new developments abiding by planning with little government intervention. Therefore, peri-urban regions should take advantage of those tools and be more creative to make their own toolkits.

(10) Plan monitoring and evaluation of implementation

Developing effective strategies is only “half the battle”. Getting them implemented is the other, and generally, the much more difficult half. An important part of the implementation is monitoring. This is another common problem for all three cases and it is also safe to say that this is a common shortcoming of the Chinese planning system.

Chinese planning needs to realize the importance of developing mechanisms to monitor and evaluate the implementation of strategies. Firstly, it helps to track the

actions taken and check whether they conform to the plan; secondly, it serves as an early warning system, which provides opportunities to communicate how the plan is implemented, where the risks and opportunities lie and what has changed.

Then, a series of a monitoring and evaluation system should be established, from scheduling of adopted strategies to evaluation of the achievements. Finally, actions should be suggested for different evaluation results, such as fully implemented, half implemented, or not implemented.

(11) Development of transport and other public infrastructures

Conflicts related to infrastructure (roads, water and sewage networks, waste management, etc) are a major concern of both rural and urban households. Typically, infrastructure improvement lags behind building construction. Households in peri-urban areas may spring up rapidly, but it may take several years to secure funding for new roads, public mass transit lines, police protection, recycling programs, etc.

Zhuantang area is a typical peri-urban area which has suffered from low-quality public infrastructures. In recent years, more and more developers are interested in Zhuantang because of its good natural environment. However, the insufficient public infrastructures kept developers away. Therefore, the development of infrastructure has become a serious potential risk for Zhuantang's economic development.

In Binjiang District infrastructure was used to lead development. In 1996, the High-tech Tech Industry Zone was officially established, and the government invested largely to construct urban infrastructures. The analysis of the changes of Binjiang's built-up areas showed that its transportation network was the first to take shape. Then various developments were established around the grid-shaped road network. Furthermore, other public infrastructures, such as water and sewer pipelines were well connected. As a result, these high-quality infrastructures helped to attract a large number of investors and Binjiang District has become the most vigorous area. Comparison between the infrastructure of Binjiang and Zhuantang can reveal how important the public infrastructure, especially transport network, is for peri-urban areas. However, it should also be noted that at present the transport network in Binjiang appears to be overdimensioned for current land use demands and oversized in terms of road capacities. Binjiang is still characterised by large areas of vacant land which are already fully serviced by the grid like road system laid out over the entire territory. Given current urbanisation rates, there can be little doubt that the vacant land will be filled at some time but a more cost effective and adaptive development strategy might have been to concentrate urban development in nuclei instead of spreading them out over the entire territory. Moreover, motorized transport was clearly favoured over public transport in the beginning. Only at the time of writing, a metro line is under construction which will connect Binjiang with the city core of Hangzhou.

3 Conclusions for the three case study areas

3.1 Binjiang District

High-tech industry development is the primary objective in the Binjiang District. The development strategies and measures adopted there can be used as a reference by other cities which aim to develop high-tech industry.

Firstly, the preferential policies covering taxation and land use specifically formulated for the High-Tech Development Zone provide advantageous conditions for investment in high-tech industry. Binjiang creates a space as well as a good environment for the development of urban high-tech industry by establishing a High Technology Industry Development Zone.

Secondly, the good use of industry development environment in the High-Tech Development Zone in combination of the development of creative culture industry in light of natural, historical and cultural conditions provides some experiences for Hangzhou and other cities in China to develop emerging industries. Confronted with the financial crisis, Binjiang takes advantage of its rational industrial structure, i.e. some proportions of secondary industry and real estate industry with a focus on domestic market instead of only processing industry for exportation, to lessen the impact of the financial crisis to some extent.

Thirdly, in terms of how to resettle the land-required farmers, Binjiang gives an interesting example of an integrated approach which includes the construction of farmers' apartments, social security mechanisms and employment training. The development of Binjiang rapidly facilitates urban development, while the large-scaled conversion from farmers to citizens also contributes to the success of this process.

Fourthly, in terms of planning and construction, Binjiang has adopted comprehensive overall planning and advanced construction of infrastructure, which supports the development of industry and construction of the new town. The development of Binjiang plays a prominent role in the spatial layout of Hangzhou. Industry development and construction of urban infrastructure, attracts more people to live in the new town, which alleviates the pressure on the functions of the old town caused by population growth. The sub-civic center newly constructed in accordance with the planning promotes clustered development of multiple centres.

Planning for Binjiang is a part of the master planning of Hangzhou. Its guiding thought is that the components embraced in the overall urban development objective should avoid the spatial sprawl by realizing the target of regulating and controlling urban form development through spatial planning. At the same time, the size and speed of farmland conversion to construction land should be restricted by putting in place a strict farmland requisition system and a landuse plan. Moreover, farmland protection requires improvement of the land use efficiency in Binjiang by increasing intensity of investments and a compact urban development. Only when construction land is saved, can the speed and size of urban spatial expansion be reduced and farmland better protected.

In order to realize sustainable development, Binjiang needs to expand industry scale, reinforce industry's competitiveness and construct a more rational industrial structure on the one hand, and accelerate and promote the transition from primarily industrial development to a new town with all the qualities of a civic centre. Therefore residential development must be combined with the development of public transport, especially to the city core; meanwhile the livelihood service infrastructure should be ameliorated to enhance the attractiveness to people so as to increase the balance between employment and residence.

The continued and strong demand for land development in the city, put the protection of natural landscape into a huge pressure. Therefore, during the rapid development and construction, the spatial planning should design a better network of ecological spaces that should be reserved, and retain at an utmost effort enough nature landscape space. The government must take a stronger and more robust planning and policy measures for nature landscape protection.

Besides, in terms of compensation and employment assistance of land-required farmers, more exploration should be made for more coordinating and stronger policies and measures.

Positive and negative elements of identified strategies

Strategy 1> Promoting the high-tech industry with the preferential policies

(1) Positive aspects and factors

Firstly, the preferential policies specifically formulated for the High-Tech Industry Development Zone creates many good conditions for investing in high-tech industry such as good land and reduced taxation. Binjiang provides a space for the urban high-tech industry development, and the established High-Tech Industry Development Zone creates a good environment for the industrial development. At the same time, the high-tech industrial development in combination of the culture & creative industry development based on the natural, historical and cultural characteristics provides some experiences for Hangzhou and other cities in China to develop the emerging industries. Now, Binjiang has developed into the most influencing technology innovation and high-tech industry base as well as a rapidly growing economical area, where the software industry base, integrated circuits design industrialization base, oversea student entrepreneur base, animation industry base and electronic communication industry base have been upgraded to national-level industry bases one after another. At present, there are more than 5000 enterprises located in Binjiang, with 445 enterprises from 32 countries such as the USA, the UK, Japan, Korea, etc.. The total investment amounts to 2.7 billion Yuan.

Secondly, as for the planning and construction, the planning objectives should adapt to the construction criteria of the High-Tech Industry Development Zone, which stress the advanced design of the master planning and advanced infrastructure construction to provide a better supporting condition for industrial development and the construction of the new town. The development of Binjiang features serious planning with special focus on ecological environment and landscape characteristics. At the beginning of the setup of Binjiang, the guiding thought of "environment based development" was defined, and environment protection manifests itself in everywhere

in the planning and construction with all efforts to work on pollution treatment, industry orientation, environment greening, etc. Now, Binjiang is symbolized by “blue air, green water, greenness and quietness”.

Thirdly, the development of Binjiang plays a proactive role in the urban spatial pattern in Hangzhou. The special development model like High-Tech Industry Development Zone adapts to the demand of the development of emerging industry in the city. Binjiang develops the urban facilities to attract people to work and live here by taking advantage of the industrial development zone so as to alleviate the pressure posed by population growth on the functions of old city core. The formation of a civic sub-center promotes the clustered development of Hangzhou.

Besides, the special policies for the development of a high-tech industry zone have promoted innovations in terms of urban construction and management models.

(1) To form a virtual cycling in terms of fund raising and investment system for urban construction the Infrastructure Investment Co. Ltd and Economic & Technology Development Co. was set up as the main fund raising corporation. Its task is to, construct and achieve the fund balance with the methods of market-based funding so as to realize the virtual cycling of accumulated development as well as raising funds for loans in the field of urban construction.

Based on the principle of “Who invests, benefits”, the urban infrastructure construction is completely open to attract funding in multiple ways from the fund for urban construction. In such context, the public biddings for bus line rights, the naming of bridges and roads, and the management right of outdoor advertisement are implemented. Furthermore the greening, tending, road cleaning, installing of lights and transport signs are completely pushed to the market.

(2) To establish an effective administrative system. According to the idea of “small government for a large range of services”, the condensed administrative setup can simplify the approval procedure and create an effective system environment. The attention is paid to support the key industries and enterprises in the new town in order to reduce their burden. The fee collection is completely cancelled to transform the new town into a “fee-free town” improving the attractiveness of the new town for intellectuals, funds and enterprises. The international practices are followed to integrate urban management into the track of regulation-respecting, systematic and market-based development to form an open system framework with connection to the world economy.

(3) To formulate the flexible and effective land use system. This should adopt strategies for a balanced urban development and then satisfy the demand of economic-social development in the new town. The struggle for national construction land quota should be combined with land use adjustment and intensive land use to improve land use efficiency, e.g. by establishing the unified demolishment and resettlement system.

(2) Aspects and factors waiting for improvement

First, the district needs to improve its land use efficiency. Some developers stocked up lands for future use. This caused a considerable waste of land resource. Therefore,

land use planning should encourage compact developments and efficient land use. This can also help to control urban expansion and protect farmlands.

Second, protection of the ecosystem and farmlands needs to be improved. On the one hand, the ecosystem and farmlands should be protected for long term food safety and environmental values; on the other hand, industrialization and urbanization needs more lands to expand. To solve the conflicts, land use plans and development strategies should improve land use efficiency. At the mean while, urban spatial planning should reserve green and open space to develop ecological networks. Furthermore, governments should enforce their regulations and laws in terms of the protection of natural environmental and farmlands.

Third, the occupancy rate of Binjiang's residential developments is currently very low. This is mainly because the transport network is not well connected with the city core. This led to a waste of time especially in rush hours. Low occupancy rate also resulted in the difficulty to form related daily services, such as grocery and restaurant. Therefore, Binjiang needs to improve its transportation and public services to balance residential developments with industrial developments, so that the District will transform from an industrial centre to an urban centre with complete urban functions.

Strategy 2> Assist land lost farmers.

(1) Positive aspects and factors

To accommodate land lost farmers, Binjiang District built several farmers' communities. It also made great efforts to provide land lost farmers with skill training as well as welfare and insurance. These measures benefited urbanization of peri-urban areas.

In building farmers' communities, traditional farmers' houses were replaced by multistory departments. This was reported to save up to 40% of lands in comparison with traditional single story buildings. The saved lands were sold by governments, the profits of which were used to compensate the construction cost of those communities so that farmers can buy them with much lower price. Governments also provided farmers' communities with sufficient public services.

Binjiang District included land lost farmers into urban employment and welfare systems. The district offered them free skill training programs. These programs were designed according to the needs of job market. Therefore, the program trainees had good chances to find jobs. The welfare and insurance system provided land lost farmers with monthly living allowance, endowment insurance, and cooperative medical care.

All those strategies worked well to help land lost farmers to make transition into an urban life style. But there is still further demand especially for higher qualification. On the other hand there is a lack of information how landlost farmers consider their situation after the loss of their former life style. Especially the dramatic change of living conditions from fairly small rural communities to high rise dwelling deserves a closer sociological investigation.

Strategy 3> Establishment of White Horse Lake Ecological and Creative Zone

(1) Positive aspects and factors

First, the planning concept represents a good model for balanced development between the economic development and the protection of ecosystem as well as local culture. It prioritized environmental protection and the protection of local culture. Local economy would depend on cultural and creative economy. The development goal was to improve quality of life of local people.

Second, the development of White Horse Lake helped shaping physical environment of Binjiang District. The Zone has made great efforts to improve local natural environment, including water body, hills. It also invested in public infrastructures. Modern urban functions were weaved into local rural characters to enforce its sense of place. Therefore, the Zone is not only an economic powerhouse of Binjiang District. Its landscape aesthetics distributes to the urban aesthetics of the District.

Third, the industrial development pattern is a creative model. a. new leading industries were based on the developments original industries. The connection and mutual support among all industries and the environment were reinforced; b. local culture was protected and acted as a foundation to foster new culture; c. the zone encouraged “harmonious undertaking”, which balanced urban development and industrial incubation with local environment and culture. It also tried to balance interests on multiple levels: city and villages, individuals and collectives, government and the public, opening up and self innovation.

(2) Aspects and factors waiting for improvement

Although there were various values attached to the establishment of White Horse Lake area, its success was not guaranteed, since there was no experience to learn from. Therefore, the development process should be associated with further research to ensure the scale and schedule of the developments. Special attention should be paid to avoid developing the zone as a usual industrial park, which would damage local environment and culture. Furthermore, more measures need to be taken to reemploy land lost farmers.

3.2 Xixi Area

The protection of Xixi Wetland is a successful case in terms of protecting high-value nature in an urban context. From the case, Hangzhou as well as other cities can learn how to protect valuable natural and historical/cultural spaces during the development and construction.

The positive significances of Xixi wetland protection are:

- (1) Planning decision requires a mandatory reservation of wetland space against construction.
- (2) In view of the special natural and residential environment in the wetland and the villages there, the protection is featured by the combination of the population migration, natural wetland landscapes protection, the tapping of wetland eco-culture and residence history/culture and the development of leisure tourism. Xixi wetland is neither a pure tourism project nor a pure environment improvement project but a comprehensive protection project. The determination and practices with which Hangzhou protects Xixi Wetland can provide some reference and successful experiences for the protection of other urban wetlands, i.e. how to make choices between development and protection as well as how to achieve a balance between protection and utilization.
- (3) The ways and policies of how to resettle land-required farmer have been successfully accepted by farmers, which ensure the planning of wetland protection. The experiences in this field are beneficial.
- (4) The valuable landscape resources in the wetland have been fully used. The development of leisure tourism as well as residential and business real estate improves the residential and business environment and also increases the economic value of the wetland park.

Xixi wetland area is not severely impacted by the financial crisis as it mainly relies on sectors focussing on the domestic market like recreational tourism, culture and business and residential real estate development.

The development of the Xixi Wetland Park alleviates the pressure caused by a growing recreational population on the West Lake, the traditional famous scenic spot of Hangzhou. At the same time, the construction of Xixi Wetland Park provides a large natural ecological park for the western part of Hangzhou, optimizes the residential environment there and promotes the sensible deployment and layout of urban functions.

From the perspective of sustainable development, the model of Xixi, on the one hand, needs to explore the effectivity of long-term measures regarding the balance between wetland protection and tourism in order to improve the park management. A long-term management mechanism with balanced fund input should be established to decrease the financial input by the government. To this end, more studies will be conducted in terms of improving market management in order to lessen the conflicts between ecological protection and fiscal support.

On the other hand, the conflicts between development & management, ecological protection and wetland space conservation should be better addressed to avert the

encroachment of wetland space by urban development. Therefore the area of the wetland park should be strictly protected. At the same time, in the surrounding urban area the ongoing construction process should avoid any activity which might endanger the environment and ecosystem of the wetland park. Instead the urban planning should center on Xixi Wetland as a focal point in the western part of Hangzhou.

Moreover, attention should be paid to the transition of land-required farmers from rural to urban citizens. Here, some sound and more effective policy measures need to be developed.

Positive and negative elements of major identified strategies

Strategy 1> Establishment of Xixi Wetland Park

(1) Positive aspects and factors

Firstly, the positive significance of the construction of Xixi Wetland Park is the mandatory preservation of wetland space to protect the area from the encroachment of construction land. Confronted with the rapid urbanization and growth of urbanised area, natural landscape resources are hard to be effectively protected. There have been many occurrences of a large decrease of urban natural environment and historical/cultural relics. The construction of Xixi Wetland Park protects proactively the valuable eco-space, i.e. endangered secondary ecological wetland space and wetland biodiversity.

Secondly, Xixi Wetland Park is constructed to curb the sprawling trend of urban space toward the western part of Hangzhou by making use of the wetland with its specific landscape value, which contributes to optimizing the overall spatial layout and structure of the city. The development of the park alleviates the tourism pressure on the West Lake, the traditional famous scenic spot of Hangzhou. In the meanwhile Xixi provides a large natural ecological park for the western part of Hangzhou, creates a good living environment, and promotes the sensible deployment and layout of urban functions.

Thirdly, the construction of leisure facilities in Xixi Wetland Park and its surrounding areas upgrades the recreational tourism function of the west of Hangzhou, while improving the popularity of Hangzhou on a national and international scale, fuelling the further development and upgrading of the tourism of Hangzhou.

Fourthly, in view of the particular natural and living environment of the wetland and adjacent villages, the protection model combines population resettlement, natural wetland landscape protection and restoration, the display of cultivated landscape, wetland nature, cultural heritage and the development of leisure tourism..

The determination and practices in terms of the protection of Xixi Wetland implemented by Hangzhou Government can provide some successful experiences for any city to protect its urban wetland, i.e. how to make a choice between development and protection, and how to achieve a balance between protection and utilization. The Xixi model is not only about development and protection of urban wetland, but also about innovation in urban planning and spatial management, i.e. how to protect valuable natural resources in urban sprawl. Therefore the idea of sustainability must be specified to the local conditions, applicable indicators must be identified and a

matrix containing economic, social and environmental goals must be set up to develop comprehensive solutions.

2) Aspects and factors waiting for improvement:

From the perspective of a sustainable development model for Xixi, there are still some deficits to mention:

(1) Up to now, there are still no longterm experiences at hand if the concept of a high-value-nature-sanctuary blends well with a tourist attraction on the same spot. Effective countermeasures need to be worked in case the balance between wetland protection and tourist attraction is disparate. A long-term effective management mechanism in terms of fund balance should be established to lessen the burden of the government in financial input. Thereby, researches should be carried out if more market management could lower economic support without jeopardizing the ecological protection.

(2) The conflicts between recreational tourism, leisure industry development & management and wetland space protection should be better addressed to lessen the impact of the park management on the wetland ecosystem and avert the threat of a subtle urbanization of the park fringes. In such sense, the land in the wetland park should be strictly protected from seizing and efforts should be made to coordinate the landscapes surrounding the park.

(3) As for the newly developed areas surrounding the wetland, the planning should better contribute to the maintenance of the overall wetland environment and the coordination of urban landscapes, in order to form a specialized urban fabric in the western part of the city with Xixi Wetland as the centre point.

(4) More attention should be paid to the protection of the biodiversity of the wetland park and its integration into a network of natural open spaces. Otherwise the wetland park is in danger to be enclosed by surrounding urban construction, becoming an isolated island in the city.

Strategy 2> Planning and construction of New Jiangcun

(1) Positive aspects and factors

The positive factor for the urban planning and construction of Jiangcun Area is the urban construction model: real estate companies take over tasks which have been hitherto carried out by the government. They actively develop residential areas and improve the living conditions of citizens, which is a successful experience in shifting from a government driven plan economy to a company based market economy with several players. It adapts to the change in the demand for urban housing. The government's input in the development process is to build the corresponding infrastructure in the area, which contributes to a good supply of public services.

The planning of the New Town of Jiangcun makes up for the insufficient public services and urban functions of the commercial area of Jiangcun, improving the quality of life of the constantly growing population in the western part of the city. The

planning also fosters the orderly development of the peri-urban area and promotes a sustainable land use of the peri-urban areas with the planning-oriented model.

(2) Aspects and factors waiting for improvement

The problems which occurred during the development of Jiangcun area have not been solved completely. Still urban planning by the government lags behind the housing development by real estate companies resulting in a lack of urban public spaces. Another problem is that urban planning lacks overall planning control. Thus the initial spatial layout of urban functions was not properly carried out and the area developed some imbalance in terms of infrastructure and public services. In the future, extensive landuse development should be avoided as well as a monofunctional development focussing on residential housing only. Besides, more attention should be paid to importance of establishing public facilities and services as a regulatory function of sustainable urban development. Limiting residential development by the government to the corresponding infrastructure could help to better guide and coordinate the development of the respective peri-urban area.

At the beginning of the development, problems arose from the administrative delineation in the peri-urban area of Hangzhou. It restricted the integrated planning between the city core and the peri-urban area in terms of developing infrastructure and public services covering transportation, communication, power and water supply, drainage, etc. As a result, the integrated planning and construction and spatial inter-linkage of city core and peri-urban areas was severely affected. In order to adapt to the regional scale of the city development, more attention should be paid to the urban-rural space, and administration delineation should be coordinated with urban development.

Strategy 3> Compensation and focus to land-required farmers

(1) Positive aspects and factors

The measures and polices for farmer resettlement have been accepted by most farmers, which ensures the planning of the wetland protection project. The experiences in these terms are beneficial. This becomes manifest in the sound and complete resettlement measures for the land-required farmers, including compensation of the required land, housing resettlement after the demolition, preferred reemployment arrangements, inclusion into citizens' health care and social security etc., which basically solve the problems land-required farmers might be confronted with.

The local labor authorities also provide a series of employment trainings, such as plant cultivation, gardening, greening, welder etc.. The specialized training courses have been provided for farmers whose land was required in the phase 2 of Xixi Wetland Project to help them acquire the necessary skills for there future jobs in gardening, greening and plant maintenance. Other training courses focussed on gaining skills in driving battery carts and scenic spot explanation.

(2) Aspects and factors waiting for improvement

Attention should continue to be paid to the social circumstances of the land-required farmers as they are a socially vulnerable group with low education background, a lack of professional skills and an age disadvantage. These are serious handicaps in the urban employment market. At the same time, the financial compensation and spacious housing enables them to live on the rent and bank interests. Therefore, the government needs to develop sound action plans and more effective policy mechanisms to guide and ensure the long-term living conditions of the land-required farmers and their offsprings to really integrate them in the urban society.

3.3 Zhuangtang

The Zhuangtang area is typical in terms of development strategies for the protection of natural landscapes and surrounding eco-systems, and therefore can be viewed as a specimen case for other areas with same conditions. Firstly, under the precondition that drinking water and ecological landscapes are protected at the upper region of the city, an appropriate development strategy is proposed to generate economic benefits for local people, i.e. the strategy shifts from a pure protection angle ignoring the demand for local economic development to a proactive measure of “development in protection and better protection in development”. This measure plays an important role in balancing the social and economic development by meeting the objective of ecological protection as well as improving the economic conditions of local people. Secondly, recreational tourism is developed through the establishment of tourism resorts, and in the meanwhile, higher education, creative art industry as well as the tapping of local agricultural potential prompt the environmentally friendly development in the area and improve the economic situation. This strategy provides experiences also for agricultural development in line with local conditions. Thirdly, the layout is focused on large-area protection and small-size yet concentrated development, aiming to conserve natural and landscape conditions and lower the impact of urban development on the environment and the landscape.

To limit the impact of the financial crisis, the countermeasures taken by Zhuangtang are based on strengthening local advantages for the development of various types of industries contrary to the risks caused by a development solely based on the tourism industry.

The strategy in Zhuangtang emphasizes the protection of natural landscape, landscape tourism areas and drinking water source in line with the requirements of Hangzhou urban master planning for the overall spatial layout. This is of important strategic significance for developing an international scenic tourism concept with the West Lake as the core area and offering answers how to conserve a valuable ecological environment in the urban fabric of a megacity.

The Zhuangtang case typically demonstrates how to coordinate and balance the demands between city government and district government as well as between government and residents during the strategy development, taking into account the multiple and partly disparate interests of the actors in the decision making process.

In order to realize a sustainable development, Zhuangtang needs to examine and monitor the actual effect of the development model in the first place. This requires the coordination of protection and development. Therefore the related industries' impact on the environment must be detected on the one hand and their positive effect on the local development on the other. This could result in identifying more effective countermeasures for industrial development in environmentally sensitive areas. Secondly, the planning and implementation of green open spaces should be an integral part of urban planning. It is necessary to strictly limit the spatial scope of urban development, and to maintain a good urban spatial layout with as little impact on the environment as possible. At the same time, the infrastructure in terms of sewage and pollution treatment should be reinforced. Thirdly, more attention should be paid to the socio-economic change of land-required farmers in the long run. Fourthly, the administrative governance system needs to be streamlined to coordinate the functions of planning, construction and management carried out by the

Development Zone and Zhuantang Street. Furthermore the relationship between the whole city and the local interests should be better coordinated to integrate the development objectives of both sides and shape the development strategy as the basic requirement for protection. Fifthly, the real estate development scale should be strictly restricted and public participation in planning and construction decisions should be encouraged.

The positive and negative elements of identified strategies

Strategy 1> Vigorous protection of natural high value environment

(1) Positive aspects and factors

Firstly, an active protection strategy should be adopted under the general idea of natural ecological protection, i.e. a sound development strategy is proposed for the economic development of the local population under strict consideration of the protection of drinking water sources and ecologically valuable landscape. The previous lopsided protection policy neglected the economic development of local people and has been shifted to more proactive measures under the guideline of “developing in protection and better protection in development”. Secondly, some specific protection measures have been adopted:

- (1) Accelerate the construction of infrastructure network as part of the urban public service network, to lower the pressure of economic development on the environment.
- (2) Realize the rational spatial pattern through planning. The spatial pattern featuring “small-area development and construction but protection in a larger area” is proposed, i.e. the concentrated construction in a certain spatial scope is carried out based on the Zhuangtang Township to actively guide the aggregation of industries and services in the township. The spatial pattern can actively cultivate township functions on the one hand and limit the urban development in a particular area on the other hand. This can reduce the impact of the development and construction on the environment and landscape by protecting a large area for natural ecological and landscape preservation and compatible tourism.
- (3) Choose carefully the range of industrial development. The mining sites and the industries that impose great impact on the environment should be shut down and replaced with “green and recycling industries” to meet the target of coordinating economic development and ecological environment protection. Through considerate construction of tourism resorts leisure tourism can be developed. Higher education and creative art industry can be introduced and the potential of the local agriculture with high cultural value like tea plantations can be improved. The vigorous development of green agriculture and farmhouse leisure tourism with organic food as the main part will boost the development of environmentally friendly economy in the area and thus improve the economic conditions.

(2) Aspects and factors waiting for improvement

Firstly, the planning and implementation of nature protection should be enhanced and made compulsory along with the strict limitation of the spatial scope of developments as described above. Secondly, the infrastructure development should

concentrate on drainage and pollution treatment. Thirdly, the regional development strategy aiming to protect natural ecological environment should be consistently implemented to prevent unsustainable development, especially large-scale real estate development in Zhuangtang area. Since the scenic spots are located in the peri-urban area of Hangzhou, different urban functions compete for the land in Zhuangtang, including Zhijiang National Tourism Resort, Lingshan Scenic Spot, Longwu Scenic Spot, Zhijiang Campus of Zhejiang Industry University, the campus of Chinese Academy of Art, Wangjiangshan Convalescent Hospital, Shangcheng Jail and so on. At the same time the metropolitan spatial framework and the implementation of the strategy of “Tourism Westward” designate Zhuangtang as a hub of important transport infrastructure for external and ring roads around the city. This means there is a conflict with preservation functions such as greenbelt forests and water source protection. Here there are still considerable difficulties to overcome in terms of a lack of planning and coordination, poorly concerted governance and a lack of streamlined planning, which obstruct an optimized future landuse layout of Zhuangtang.

Besides, supporting agriculture with high cultural value is an important means to successfully promote the natural ecological protection in Zhuangtang.

Strategy 2> The development of tourism

(1) Positive aspects and factors

Zhuangtang is both an important ecological belt outside the city, and an area of various landscape and tourism resources. As the planning facilitates the ecological protection and supports environmental conservation, much effort should be made to further develop the ecological and cultural tourism industry and to promote Zhuangtang as a major ecological and cultural tourism area of Hangzhou. In 1992, Hangzhou set up the Zhijiang National Tourism Resort, which enjoys the preferential policies of a development zone. Special tourism attractions and leisure facilities have been developed here to establish the resort as a brand and leisure tourism in general as the development direction. The government gave the financial input to build two theme parks (Song Town and Future World), and one golf course (West Lake International Golf Club). The scenic spots including Lingshan and Longwu Scenic Spot have been gradually developed, including the construction of tourism service facilities with sound functions and appropriate layout. A batch of public buildings have been constructed, including the five-star Yunqi Resort Hotel, Yangminggu Resort, Jiuxi Rose Resort, and besides some up-market residential communities have been shaped, such as Jiuxi Rose Park, Yunqi Butterfly Valley, Menghu Mansion and the more. At the same time, the projects for the theme parks of Ice World and Polar Sea, Zhijiang Tennis Center, Conventional Center, Conventional Resort, Flower Expo Town, Coin Museum and the others were under gradual construction.

Besides, the tourist attractions in the agricultural sector featuring tea and aquatic cultivation should be actively supported to form a sustainable development model combining recreation, industrial and agricultural development and ecological protection.

The development of tourism and recreational industries can promote the protection and maintenance of natural landscape and ecological environment. Thus, the

protection of tourism scenic spots has become an effective approach to achieving ecological landscape protection. The development of an environmentally sound tourism and recreational industry therefore is crucial for a sustainable development in Zhuangtang.

(2) Aspects and factors waiting for improvement

Environmental protection in tourism areas should also restrict population growth. On the other hand limitations in urban and agricultural development like prohibiting housing construction by local farmers impose an impact on the livelihood and productivity of farmers. Therefore coordinating measures should be adopted to balance the nature conservation and the development of tourism areas on the one hand and supporting measures for or local agriculture and resettlement of farmers where necessary. In this way tourism development can contribute to a sound local economic development rather than negatively impact local inhabitants. Finally, the badly connected administrations of Zhijiang National Resort and the local township government result a lack of coordination, which obstructs the development to some extent. Therefore, the administrative management of the development zone and Zhuangtang Street should be streamlined and coordinated in respect to planning, construction and management. At the same time the interests of the overall urban development and local development should be better coordinated in terms of common objectives to fully implement the strategy of a compatible tourist and local development. Moreover, some exploration should be conveyed to establish a transfer and compensation system of public finance, e.g. the compensation mechanisms can be established between Zhijiang National Tourism Resort and the local villages to achieve interest sharing through tax transfer.

Strategy 3> The development of creative industry

(1) Positive aspects and factors

Creative industry is the emerging strategic industry of the city and moreover it is a resource-saving and environmentally friendly industry. Its development fits in the objective of natural ecological landscape protection that Zhuangtang attempts to achieve. Thus, the creative industry provides a suitable industry type for Zhuangtang to achieve local development and ecological protection at the same time. The art design industry makes use of abandoned old factory buildings and mining sites as well as the housing resources to realize the industry transition of such buildings and form a new culture & art landscape. The art design industry rents farmers' houses, thus generating an income for these farmers. The creative industry in Zhuangtang also includes the development of education and scientific studies. Based on the excellent natural environment in Zhuangtang, some universities and professional schools have chosen to be located there with the Xiangshan campus of the Chinese Academy of Art and the Zhijiang Campus of Zhijiang Industry University as the representatives. The education & scientific research base has developed well in the meantime. The base facilitates the development of the culture industry on the one hand and promote the development of service industry and improve the employment rate on the other hand.

2) Aspects and factors waiting for improvement

The land use area for urban development in Zhuantang is not large, as ecological landscape protection is the primary land use function. So, universities and the creative industry are constrained in their development. In such sense, the large-scale housing development should be avoided, i.e. the scale of industrial development cannot be very large but with high industrial benefits. In the meanwhile, the development of the creative industry should enhance the participation of local inhabitants to promote employment transition of the local inhabitants from rural to industrial jobs.

In order to achieve sustainable development, Zhuantang needs to test the actual effect of the coordinating development model with the equal focus on protection and development. It also needs to test the environmental impact of the local industries as well as the effect on the urban development in order to explore suitable measures for a balanced overall development.

Three issues in terms of the sustainable development common in the three peri-urban areas.

(1) Balance between development and ecosystem protection

China is now undergoing a continuous rapid industrialization and urbanization, and a large amount of land is required by industrial development, population agglomeration and urban infrastructure construction. The strong demand for land poses a challenge to peri-urban areas as agricultural land is constantly converted into construction land. Thus farmland is under constant pressure. This is the key strategic problem China faces. Up to now, the government has resorted to strengthened farmland protection planning to control the conversion process by a strict review and approval system as well as a land use quota system. Yet, in the context of balancing urban development, construction and generating economic benefits vs. protection of farmland natural ecological space there is a constant disproportion in favor of urbanization, resulting in urban sprawl and constant decline of farmland and farmers. The key to resolve such a problem is a change in the interest mechanism, i.e. to improve public and professional awareness in terms of farmland and natural ecological protection. There is a strong demand for land-saving industries and urban development models as well as for a wide discourse about the limits of urban development and the minimum of protective areas. Therefore, the eco-space planning should be strengthened in terms of elaborating development and planning strategies, to safeguard the rational urban spatial layout and structure and to develop a strict standard for natural landscape pattern protection and ecological infrastructure construction.

The natural landscape protection planning and development strategy implemented in Xixi Wetland and Zhuantang area represents the above intention. Be it the construction of urban development zones or new towns / subcenters like Binjiang the proportion of eco-landscape spaces and the construction of eco-landscape network and the spatial structure that can contribute significantly to the long-term urban development should therefore be maintained and optimized.

The second issue is how to protect farmers' rights and interests. Peri-urban areas are under the pressure of rapid urbanization, and the constant transition of farmland to urban construction land goes along with the conversion of farmers to urban citizens. Though the trend is launched by the overall economic development a majority of

farmers living in peri-urban areas are willing to leave behind their rural living conditions. As urban land is owned by the state and rural land by village collectives in China's land ownership system, individuals are not permitted to own land but can acquire land use rights. During the peri-urbanization, the government adopts land requisition to buy land from rural area and transfer rural land to urban land (state-owned land). In the case of Hangzhou, most farmers feel satisfied with the compensation and resettlement policies since they get better living conditions. After having become urban citizens, the former farmers are often wealthier than averaged citizens. In the meanwhile, the government also developed some policies and measures to ensure the long-term livelihood of landlost farmers such as health care, education, etc.

However, there are some problems in the process. Firstly, the problem how to allocate the rights and interests in the land use conversion process needs to be openly discussed. As this issue is related to China's land ownership system equal attention should be paid to the interest of citizens and farmers. Employment is the second problem. As a matter of fact, the employment market in China is open to everyone. Basically no different treatment is exercised to citizens and farmers, and the market-based employment system offers jobs due to skill and competitiveness. This is a major problem at present as landlost farmers generally do not perform well on the job market. They are disadvantaged by their limited capacity in job-hunting (such as educational background, vocational and professional skills, employment willingness, etc.). The government needs to guide and support landlost farmers in seeking jobs to a certain extent (actually farmers living in peri-urban areas have given up farming activities as their main source of income and many of them now are engaged in non-farming activities). The third problem is the allocation and management of community assets after farmers have become urban citizens. Some good experiences have been drawn for the insurance of farmers' long-term interests and more explorations have been made.

The third issue is about planning governance, public participation and evaluation implementation. China has a hierarchical top-down planning system. The government has its own authorities at every level of administration and the general feature is that local governments and lower-level governments must conform to upper-level government. Anyway, the basic trend of the reform is decentralization. Moreover, in the past the planning decisions were mainly developed by government authorities. In such sense, the public participation has been weak. Along with the deepening of the reform and the reshaping of the planning system, some conceptions and practices about public participation have been gradually introduced. In recent years, the implementation of "planning under the sun" nationwide required to request public opinions in making planning decisions, stipulating publication at every phase of the planning decision making process, and different opinions should be requested to some extent. In the planning process, government authorities at different levels, the local community building(?) associations and external experts participated through investigations to reflect the interests of different stakeholders. For example, the Xixi Wetland Protection Project was firstly proposed by experts and citizens and then attracted the attention of the government who then organized and implemented the project. This is a comprehensive decision process by combining the top-down and bottom-to-up process. The development strategy of Xixi therefore is based on how to balance government, developer and public interests.

What are the advantages and disadvantages of "radical" implementation strategies like Binjiang and Xixi compared to "soft" transmutation of the status quo like

Zhuantang? Strategic decision making plays an important role and imposes a great impact on urban development. This is because the government formulates policies and invests in infrastructure according to the strategic decisions made. Decisions depend on how positive the outcome is regarded both in terms of development & construction as well as in natural landscape protection & eco-infrastructure. The strategic objectives for the development of different areas differ in terms of the respective construction model, development process and pace. For example, Binjiang and Xixi have seen a far quicker development while Zhuantang suffered a relatively slow development with transportation and infrastructure lagging behind.

Besides, along with the gradual introduction of market-based investment for urban construction, investors and developers have acquired a stronger impact on planning decisions. This widens the investment channel for industrial development and urban construction on the one hand, and induces conflicts between investors' interests, public interests and long-term interests on the other hand. To solve the problem, a concept for interest balance and public interests protection should be improved.

Of course, in the Chinese governance system public participation should be strengthened and deepened. There is still a long way to go in terms of developing a model fit for best practice.

Currently, there is a discrepancy between idea and reality. As for the assessment of decision making and implementation, the measures developed by the state in order to enhance the assessment have not lived up to the expectations. For example, there is no effective feedback evaluation system in place. So, more work should be done to complete the assessment.

4 Outlook

The case study of Hangzhou has proved that within the peri-urban area of Hangzhou you can find development strategies with sustainable approaches aiming at locally adapted solutions. Three of them have been described and characterized. Hangzhou is well recognized in China as a city with a keen sense of its rich environment and a progressive planning system. Great efforts have been made to protect and restore sensitive ecosystems, such as the outstanding cultural landscape of the West Lake area but also the Xixi wetland. Six green belts, one of which includes the Zhuantang area, were planned to leave more space for the natural environment and farmlands. Furthermore, the city government tried to make a transition to economic patterns with low environmental pressure. In the Zhuantang area and the White Horse Lake area within Binjiang cultural-creative economy was encouraged; in Binjiang District, traditional heavy industries have been replaced by high-tech; the development of tourism is another major economic theme as the Xixi and Zhuantang cases have shown. During the development process, the interests of farmers were to some extent considered by adopting various strategies, like establishing farmers' resettlement communities, re-training their labor skills, giving them employment priority in new developments, etc.

Yet even if there is a strong will to improve the planning process there are still many deficits due to administrative interferences, lack of public regards and lack of transparency. The evaluation of the strategies has produced some overall findings which can be described as follows: Strong overall planning on city-regional level is of prime importance for sustainable development of land use. The lack of unified land use administration due to the coexistence of various control forms of land use rights and the limited validity of legal planning instruments in the designated urban area comprise the main difficulties for effective management of land resource in the peri-urban area. In addition, the government driven, project-oriented development often only pursues a narrow range of goals, mainly to promote economic growth while social and environmental goals are not taken into consideration in an equal manner. This mode of planning has its origins in the experience of development in the urban core area, where economic growth is the priority. The transfer of this approach inevitably leads to conflicts in the peri-urban areas where conditions differ from the urban core areas.

However, current understandings of the so called "Green City" reflect limited adjustment of goals in view of the multiple requirements in the peri-urban area. Economic growth still plays a predominant role e.g. by promoting tourism and upper class real estate while requirements to preserve natural and cultural landscapes are subordinate. The strategy of "active protection" clearly reflects this understanding. Environmental protection is mostly restricted to implementation of quantitative standards e.g. to provide areas of green space and protect the quality of drinking water. Moreover in Zhuantang, the green industries with little environmental pressure, such as cultural creative industry, are promoted to further economic growth with little environmental impact.

Another problem still not solved is how to better integrate landlost farmers in the urban society. Though a lot of measures have been implemented such as reemployment skill training, employment priority etc., the current situation is still not

satisfying. Part of the problem is intrinsic to Chinese legislation as farmers have no voice in the transition process turning rural farmland into urban construction land. Even if most farmers seem to agree to the process, there is no alternative at hand. Financial compensation, health insurance and urban citizenship maybe material advantages but there is still a compulsory moment in the process that can't be really softened. So a lot of landlost farmers gain urban citizenship without becoming fully-fledged citizens.

Finally the future role of agriculture should be highlighted. For very long agricultural land has been regarded as nothing else but the place of food production. The remaining rural areas in the peri-urban area have come under high pressure due to the rapid urbanization. Only now a process has started to fully capture the different functions of open rural land in the peri-urban context. It is literally open, unsealed surface, capable of providing the city with regional food, fresh air and easily accessible open spaces.

Comprising the objectives for improving the planning process this list ends with the need for a better monitoring in respect to the implementation of strategies and measures. This does not only comprise regular check ups of the assets but also the creation of an independent authority.

References

Xiaoying Wang. Equal compensation for land expropriation and open markets. China Rural Survey, 2007