Emerging third tier metropolises in central China
Sustainable, educated, niche, clean, aesthetic
A recipe to build and sustain their gravity to balance urbanization in China?

Stefan Rau

Landlocked third tier metropolises: crucial for harmonious & balanced urbanization

By 2030 it is expected that 300 million rural residents will move to cities and megacities in China. To manage this process and to mitigate the enormity of the growth of the three primary coastal megalopolises and the negative impacts of their additional urbanization, the author suggests among other measures to distribute the population by 1. minimize the reasons for residents to migrate by creating "attractive rural eco-territories" (Rau, Stefan; 2009) and 2. create powerful third tier metropolises in China's inner land as successful attractors and retainers both of population as well as second and third sector industries.

But how can this be achieved within the realities of an almost "free choice of location" a "free flow of capital" and an increasingly ubiquitous access to transportation and information in the contemporary economic environment?
The currently emerging third tier regional Metropolises away from the coastal regions and away from the second tier cities grow from market towns and regional administrative centers to metropolises with one to three million residents by 2020. The source for this growth is migration from the rural surroundings with their slow modernization and mechanization of the farming industry. The two primary challenges for this development are:
1. To *attract* a few anchor companies and a number of second and third sector industries creating enough diversity and critical mass to sustain the fluctuations of regional and world markets. Supply chain constraints and limited local market demand are the main factors for companies to avoid remote locations and settle in or near the main industrial centers, even if they get an attractive deal and cheaper labor in remote locations.
2. To *retain* the population of these new metropolises in light of opportunities residents may see in the bigger megalopolises and second tier metropolises and move away as a second step - as can often be observed today. Especially young graduates from these cities seek to build their careers in Shanghai, Beijing, Guangzhou, Shenzhen etc. It is fairly easy to fly in a CEO at a high pay, but it is a major challenge to attract and retain the middle management employees and skilled labor in these cities.

But what could realistically become their economic basis and what other factors may contribute to a sustained success of these metropolises? How can they become competitive and/or complementary in China's new economic geography? In order to attract people and jobs, is it enough to create local value from endogenous resources, locate vocational training and universities and build a cluster in an economic niche tapping into endogenous potentials (see Schaetzl, Ludwig; 1992)? Could stimulation of building a cluster of these industries be successful in such locations (see Porter, Michael; 1998)? Could it become a strategic advantage to develop an environmentally clean image through high environmental quality standards, beautiful landscaping and urban design? Can clean production and renewable energy industries become a strategy to develop these cities and realize a future of clean industries in continental China? We know how difficult this "push" is against the "pull" of the rules for the "new economic geography" (Krugmann, 1991) from experiences in western countries. And also in China even if its overall economy is continuing to grow, we will observe the growth of regions while simultaneously others decline. Still, China is a special case.

The framework for communication, transportation and energy infrastructure to access and supply the peripheral regions developed by the Beijing government under the leadership of Hu Jintao and Wen Jiabao is excellent and will be extremely supportive for the success of these metropolises. However it is crucial that regional and local administrations as well as private entrepreneurs and citizens recognize the need for concertated, integrated, multidisciplinary actions to take on the "hard" and "soft" opportunities at hand.

The author, in cooperation with Prof. Huang Tianqi of Chongqing University as advisor, produced a masterplan for the city of Nanyang in Henan province for 100 skm that attempts to create a beautiful city image centered around a wide river with a large and connected ecological and recreational open space system. In that plan pairs of centers turn their face to the river vis a vis bridges and create activity nodes and a rhythmic skyline. A university cluster, a patenting center, a "SOHO" district for university spin-offs and an R&D center ought to support product development and innovation for the industries and supply qualified white collar workers. A system to plan, implement and monitor the overall development for Nanyang as an eco-efficient city has been refined and promoted with the local government.

"Hard opportunities" for economic development of "peripheral" metropolises in China

There is a series of opportunities to successfully that in concert help to develop these continental Chinese emerging metropolises, we want to highlight a few only:

- Reshuffling the workbench: factory relocations from south & east to west & north
A tremendous opportunity for the economic development of continental China is a trend of relocations of manufacturing away from the traditional centers due to a series of factors such as increased production cost. Successful manufacturing centers experience difficulties retaining their workforce at the current conditions, with more and more migrant workers are unwilling to stay far away from their homes. This may present a real and hard opportunity for the economic development of the periphery. A wave of factory relocations can be observed in China - from south and east to west and north. Also entire new industries are newly being located in central, northern and western China.

- Regional City Networks
Certainly: it is impossible for inner land cities to compete with "Beishanguang" (Beijing & Bohai Rim Region -BRR , Shanghai and Yangtze River Delta - YRD , Guangzhou & Pearl River Delta - PRD).
In order to be successful as a whole, cities and regions in continental China ought to combine their strengths and resources and connect themselves via communication lines and form regional city networks strongly connected with High Speed Rail and Highways competing with but more so complementing each other with specialized economic profiles and shared facilities - similar to German examples developed by the Federal Bureau of Spatial Observation and Research where regional city networks cooperate (BMVBR, BBR, 1999)

- High speed transportation connections
In China now the high-speed rail networks develop at a very fast pace and it will mitigate spatial disparities and create opportunities for regional cities and cluster-development. Like it is already happening in Beishanguang - Beijing -Tianjin is 30 minutes, Shanghai-Nanjing was just cut to 70 minutes etc.

- Local and regional markets grow with urbanization
Christaller's theory of central places is popular with Chinese scholars and according to this theory, it is to be expected that consumer markets and markets for services and infrastructure in third tier regions will grow with urbanization and with maturing urban economies and labor differentiation. With the urban population rising, chances to attract locators to the city will

increase. At the same time we have to be aware that the new economic geography slightly shifted rules and won't follow econometric models of minimizing distances to optimize the effectiveness of infrastructure, with the hope that economic subjects would follow the pattern of public investments done accordingly.

- Young professionals recognize advantages of second tier cities - and move - hasn't reached third tier yet though

Within these megalopolitan regions it can be observed that especially younger professionals move to second tier cities such as Hangzhou and Suzhou in the YRD or Zhuhai in the PRD and Qingdao and Qinhuangdao in the BRR. Competition for jobs is less, housing and living expenses are significantly lower and lifestyles are more laid back with access to green and to leisure areas more convenient. These advantages for them outweigh the generally lower wages to be achieved in these cities. In Chinese this trend is called "Ba ling hou ren tao li ShangGuangBei" - people born after 1980 move away from Shanghai, Guangzhou and Beijing. Some 81 per cent of the young people living in these three cities now say they will leave if they can find suitable job opportunities elsewhere. So far it cannot be observed that a significant population of young professionals stay in or move to *third* tier cities...

- Industrial overcapacity and the central government's urbanization promotion

Announcing the development strategies at the end of the annual three-day central economic work conference, Hu said government would focus on urging the rural population to work and live in small and medium-sized urban cities while boosting further the spending power of workers and low-income groups. He ordered new investment in industries with excess capacity to be halted and to address underutilized plants . This indicated that domestic demand is lagging behind expectations. A study reports that 21 out of 24 (!!!) industries experience excess capacity in 2009.

- Lifestyle and leisure value - shopping, entertainment attractive - combine urban quality of life with smaller city advantages - greener with green surroundings

For highly educated white collar workers and young professionals it is a draw to move to a city that offers modern urban lifestyles with attractive shopping venues carrying the fashionable brands, offer entertainment facilities, cultural institutions, sports facilities and outdoors experiences. For businesses it is crucial to have a few high-grade hotels to entertain guests. Third tier cities will have to catch up fast to create that kind of modern urban attractions.

"Soft opportunities" for economic development of "peripheral" metropolises in China

Beyond the "hard", physically evident indicators, cities have a broad palette of possibilities to promote their economic development. There are a great number of opportunities these cities can champion to win an edge even over second tier cities as to the quality of life they can improve for their residents and their corporate citizens. To point out a few:

- Image of modern, forward-looking, cultural, "trendy" city - target informal media

What people read and see and hear of a place in media and from others is what creates their image and opinion of a city. In an age of abundance of formal but increasingly influential also informal media coverage, shaping a positive image of a city is of extreme importance. To attract a target group a city has many means of communicating the message in various kinds of media. TV, radio and even magazine and newspaper advertisements are costly - but if strategized well may be effective with the groups targeted. Second tier cities like for example Yiwu in Zhejiang province running ads in local and English-speaking TV programs put themselves on the map successfully and market themselves as culturally rich and trendy while promoting industrial sites. And yet, cities also more and more may consider activating the informal media following communication, networking and consumption patterns of the young, media savvy generation. Facebook entries, twitter, a city website, blogs and the chinese

networking groups especially "QQ" prove to be popular among the younger and middle aged professionals.

- Operation & management - software of a city needs to be vital - clubs, festivals, events

To make a good plan and create a favorable physical environment is a prerequisite for a good, livable and vital city - but it is by far not enough. The daily life and the specific culture of social interaction and how it is displayed in the public realm of a city, the popular and institutionalized arts and the multitude of activities of administrations, institutions, cultural facilities and civic groups is what makes a city a great and vibrant place - or not. It is not enough to build a museum and an opera house, it has to be operated and managed well becoming truly public activity centers. Parks and field houses, sports amenities, public squares can be programmed and enlivened. Stimulating people with activities and enabling citizens to interact with each other can be promoted by administrations, institutions and civic groups in cities. Instigating the foundation of clubs for activities like sports, the arts, literature, music, dancing, performance, martial arts, nature observation etc. organizes people with the same interests and may become an integral part of a socially active life in a city.

- Being perceived as & being really beautiful & unique, green & clean - strategic advantage over polluted, "look-alike" cities

This is a soft *and* a hard opportunity as perception and reality of being beautiful, unique, green and clean may differ. But what is beautiful? In aesthetics theory it is hard to find eternal laws for what is universally considered as beautiful. However, a green city and street trees maybe among the few undisputed elements people perceive as beautiful universally (Rau, Stefan; 2004). But appearance may be deceiving. It has become popular to add green buffer zones along streets which are very visible passing by, but not necessarily useable for citizens. Having actually accessible, attractive green spaces for everybody to use adds to the quality of life of a city. Every city today should be equipped with a good solid waste management and good sewage treatment infrastructure. The city of Nanyang (see below) is famous for its excellent landfill site. However solid waste can be seen randomly in the cities and in the rivers. Many cities now pay attention to a clean appearance and employ cleaners on roads, in parks and on rivers and lakes.

- "Development" versus "Growth" - western paradigm of modernism & post-modernism not enough for China's future

Watching numbers go up mostly for GDP, industrial output, logistical throughput, completed infrastructure, consumption, urban population etc. is a great sport and for sure will make the crowds cheer. But by no means it is enough to follow the western *growth* model without stronger consideration of what quality *development* for cities might look like. Yes, it is necessary for a municipality to cash in a substantial amount of corporate income tax. And the artform of how to spend it and how to report public investments and returns ought to be judged by how the quality of life for the civic society is being improved sustainably. Cultural and social activity, public space, public transit, public health, quality education equity, social harmony, affordable housing, environmental quality etc. are to be championed by the public administration and progress monitored publicly.

- Rich endogenous potentials of China's inner land, labor and capital

China's inner land's diversity and richness in culture, landscape and economic activities in the author's opinion has yet to be "discovered" as a true potential for the modern economy. A tremendous traditional richness in adaptation and shaping different landscapes along with lifestyles, products, foods, clothes, culture and vernacular cottage industries is waiting to be developed into modern day products and processes. Universal "sameness", economies of scale etc. bear in themselves the potential for success of harnessing the potentials of "economies of small scale" and "mass-customization". Vernacular traditions and their

differences will become true treasures of a new kind of industry and differentiated demands - after the first saturation wave of mass products will have passed.

Challenges for economic development of "peripheral" metropolises in China

- Attracting & sourcing middle management & skilled workers - hard for third tier cities
"The most critical shortages will be global managers followed by sales people and engineers. Many multinational companies have their eyes on the secondary or tertiary cities and that's where the critical shortages have become a problem. This new trend is because in China, the coastal cities, the tier one cities like Beijing, Shanghai, Guangzhou, Shenzhen are pretty developed and the costs are rising. A lot of manufacturing based companies are moving their facilities further inland to the second tier cities and that's where the shortages of professionals are found." A July 2009 Manpower report noted that while workers are willing to relocate in order to get better job opportunities, pay, and career development, they still prefer to stay in at least second-tier cities.

- Relocating factories tend to stay in "Beishanguang" regions
Factories located in the three major megalopolitan areas "Beishanguang" tend to relocate to reduce cost, but they typically do so *within* their regions as transportation has become much more efficient over the past years (High-speed rail and highway system) and prices rose in the prime locations. They are very reluctant to move too far for reasons of supply chain management. Nearly 85 percent of China's total FDI's went into coastal areas in the last years, indicates that while companies are looking outside of the core areas, there are limits as to how far they would move away to cut costs of production. Especially the lack of established supply chains and logistics services but also lack of direct market access keep them near the major centers.

- NEG: strengthening of regional disparities with stronger centers & weaker peripheries
New Economic Geography (NEG) theory states that disparities between centers & peripheries grow stronger as manufacturers seek demand-driven locations to produce nearby consumer centers. According to Hering and Poncet "a core-periphery structure is clearly emerging within China" based on observations of income disparities. Reasons are given as transportation cost efficiencies with better market access. To overcome that pattern is a great challenge and both the central and local governments need to be coordinating their investments in technical, educational and social infrastructure.

- Fierce competition for the same industries and the same anchors
Virtually all emerging cities in China are targeting the same industries at the present time: clean energy, software development, auto- and auto components manufacturing. To be successful a city has to be aggressive, strategic and comprehensive in offering a proposal and in packaging the deal. The first question a city should answer is: which specific industry should we target based on our strengths and on what we already have? A specific profile with the right kind of supporting infrastructure, educational institutions might attract the right anchor company which in turn will attract a whole series of smaller companies to supply them. A famous case in China recently has been the location of Intel's semiconductor production in Chengdu - in central China away from "Beishanguang", to employ 1,200 skilled workers. According to a June 25 report by Global Sources, a major factor in the move was that salaries for engineers are about one third of those in Shanghai. Chengdu, of course is a solid second tier city, but not every city needs an anchor that prominent. Another strategy could be targeting those companies nobody wants, like Changshu in the YRD that clusters chemical processing quite successfully.

- Accessibility, education & trained labor pool disadvantages still hard to overcome
Obvious challenges will be hard to overcome for some time to come. Accessibility and logistics infrastructure, establishing supply- and distribution chains, trained and experienced labor and building reputable universities will take time and is an uphill battle for third tier cities.

"Eco-Metropolis Nanyang" - Vision for an ecologically efficient, clean city focused on its river - an attractive option for progressive companies and qualified personnel?

From a market town to a regional metropolis: Masterplan for a City by the White River

The ancient municipality of Nanyang is located in the center south of Henan province and covers a total of 26,600 skm, 10 counties and has a total population of 10.1 million of which 4 million are urban. Among the 18 provincial municipalities in Henan Province it is the largest and most populous. It is located at the base of the Nanyang basin. Nanyang can be considered a special place in China unifying the "best of China": North and South, East and West, Hot and Cold. The drainage system locates between the Yellow River (Huang He) and Yangtze Rivers with the Bai He river draining into the Yangtze. Precipitation level is between wet and dry, land cover between dry- and wetfield areas. In the 2020 plan the city is anticipated to grow from a compact city north of the river with 900,000 residents to a large metropolis with the Baihe in the center and 1.2 million by 2013 respectively 2 million residents by 2020.

According to the CPPCC conference of Nanyang at the 2010 and the previous year's sessions the city's primary efforts are focused on 1. developing a transportation hub, 2. creating an industrial cluster with a diversity of industries, 3. harmonious urban and rural development, 4. enhancing the education sector with growing and adding universities, curricula and student enrollment, 5. developing the service and tourism industries 6. modernizing the agricultural sector etc. The conference highlighted that ecological and cultural development ought to play a key role to build an image that would be stimulating the overall economic development.

Our masterplan develops and strengthens the city's goals and invents some new aspects to make Nanyang stand out among the third tier cities in central China. Especially in its aspects of integrating urban planning, city design, ecological landscaping with civic, economic, cultural and educational development and creating a favorable, memorable and marketable image. We are trying to utilize the above opportunities while addressing the challenges. Starting out by improving the soft location factors, the city of Nanyang cuts a strategic edge over comparable places as quality of life, education, culture and leisure environment which are critical to attract and retain higher qualified workers and middle management. The Bai He River dams, the riverfront road and waterfront green has been a smart step. Now further enhancement and developing the urban systems are critical next steps.

Birdseye view of future Nanyang: City at the Bai He River looking north. Copyright Stefan Rau.

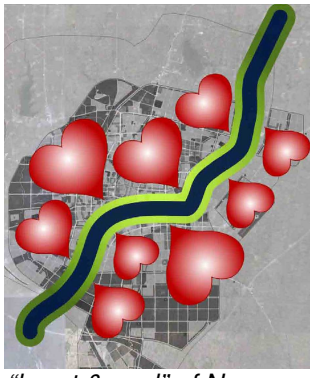
Green & beautiful & vital city image initiatives

- A beautiful city with a pleasant setting in a leisure landscape with great urban districts, shopping & culture
Attracting the young and old, the uneducated and skilled, the overall image of the city is being developed as a great place to live and work and play.

- Clean image, eco-image, culture and lifestyle image etc. help
Ensure the city's environmental standards are being raised will prove to be a great competitive advantage over other cities in the region.

- Four rubber dams turn Nanyang into a waterfront city - and create real estate value
In light of inter-regional competition for locators, a few years ago the city leadership had four rubber dams installed in the Bai He River to create a wide body of water throughout the entire urban area. The width of the river rose to between 700m and 1,000m. While this creates some problems of separating the historic northern from the developing southern part of the city and while it is a challenge to maintain a good water quality, Nanyang became a city with water as a predominant feature. This is a rather bold strategy in changing a city's image and when experienced it is impressive. That move created a lot of prime waterfront property which is now starting to be developed.

- The wide river and the riverpark becomes the heart and soul of Nanyang
In our masterplan we develop the vision that Nanyang will be a beautifully landscaped city centered around the White River (Bai He) with a substantial ecological, recreational and cultural public park system. We widened the park by relocating the riverfront road in some parts and we added riverfront parkland with soft edges and a series of islands.



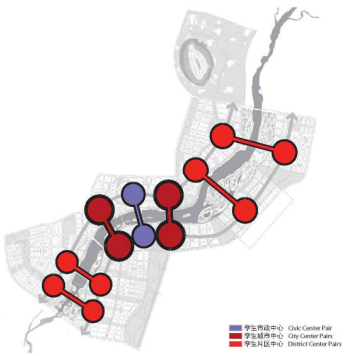
Riverpark becomes the "heart & soul" of Nanyang. Copyright Stefan Rau.

- A skyline conceptualized like a visual symphony along the waterfronts

We highlighted the opportunity to create a unique, rhythmically structured and layered skyline with a green base. Together with Prof. Huang Tianqi we developed the concept of a visual symphony for the skyline with melodies, tact, rhythm, tonality, themes and variations. Special buildings related to the history of Nanyang ought to tell the city's stories. Cities like Hongkong, Chicago, Sydney, New York, Shanghai, Vancouver etc. generate their postcard images from across water (www.skyscrapercity.com). The value of the skyline for tourist attraction and to enhance civic pride can hardly be quantified, but certainly enhances the attractiveness of a city and the city's marketing image.

- Pairs of centers on both sides of the bridges

We aim to make a legible city with distinct places along the 25km stretch of urban river. We extend the city center to both banks with concentrations of commercial and civic functions on both sides of the bridges. North and south of the city center we plan pairs of centers on both sides of the river such that along the river there is a clearly legible structure of high points where tall buildings are next to the river and between these centers residential neighborhoods are mid rise and/or set back from the river.



Pairs of centers on both sides of the bridges. Copyright Stefan Rau.

- Cultural beacons reflecting in the river
As the river has become so vast, there is an opportunity to locate cultural buildings right by the water to activate the waterfront and to create icons for the city image and focal points of the skyline. Comparable to the Sydney opera, Hongkong's conference center, New York's statue of liberty, Chicago's Museum Campus or Bilbao's Guggenheim, Nanyang will have some iconic building(s) mirroring in the water in front of the city skyline.

- Historic landmark protection & museum campus
The Nanyang Historical and Cultural Park creates a system of open spaces that are linked with the Baihe River. The campus celebrates Nanyang's grand history with Wolong Park - built to memorize the great Zhuge Liang historic general and philosopher, a Han museum, a museum axis & a Han culture park. Expanding on the existing parks and institutions this will be a major anchor for Nanyang's new south of the center area.

- Eco-, urban-, cultural-, historic-, "red"- & landscape tourism along river and in vicinity
The historic areas in the city center and the historical and cultural park will become a part of a tourist program offered to visitors. Outside the city there are beautiful mountain and lake resorts for eco-tourism. In our plan we conceptualized the Bai He River corridor as a regional bike- and horseback-riding and white-water tourist trail.
Water transportation on solar-ferries along and across the Baihe river in the city will cater to tourists and complement the public transit system with a pleasant and efficient way to get around. Especially ferries across the Baihe will efficiently connect the corresponding centers with each other. Docks are located in all centers and important access points to the riverfront park system.

Economic development initiatives - aiming for a "green economy"

A bio-industry center - TCM center in China - building on endogenous potentials
Industrial synergies as conceptual base for developing industrial clusters has been a requirement by the government of Henan province for about two years now. We advised the city on integrating process and production cycles for a bio-/medical industry cluster, building on Nanyang's strength in Traditional Chinese Medicine (TCM). A new curriculum for medicine has recently been added at a Nanyang university and TCM pharmaceutical companies have been attracted to the city and existing ones have added capacity. The new city image with the water and the park and the surroundings with mountains lakes and a strong agricultural base helps Nanyang to be a convincing setting for the bio-industries and to become the TCM center of central China - so our vision.

- High Tech industry allocation - industrial synergies
Based on Schumpeter's theory, "Technopoles" (Castells, Manuel & Hall, Peter; 1996) have been built in the western world since the early 1980's to instigate technological innovation and thus spur economic development. In China economical and technological development zones have been successful since the mid 1980's. In Nanyang the Henan Nanyang Hi-Tech Industrial Zone has been assigned on 5-10 skm in the year 1995. Its focus is on biotechnology/pharmaceuticals, electronics assembly & manufacturing, instruments & industrial equipment production as well as R&D.
Our consultations targeted 1. strengthening and completing the clusters to create critical mass and synergetic relationships and 2. the analysis of inputs and outputs of the various industrial processes and strategizing industrial synergies by adding industries and processes that use byproducts and waste as resources.

- R&D & mixed use district at the river
Nanyang's creative production center is where product ideas are being developed into prototypes and small production series are tested. The different existing companies and many

new industries are drawing from the human resource pool of the city of wisdom from the universities. Agricultural research, traditional Chinese medical research, pharmaceutical-, chemical, metallurgy and machinery, energy and renewable resources products research are benefiting from the creative synergies that will transform Nanyang's knowledge into economic prosperity and innovation. The R&D and production is coordinated as a circular economy both for the research and for the production. Ideas emerging on one industry may inspire ideas in another industry. In production industrial synergies are created. "Waste" and by-products of one company become the resource for another company.

- Industrial Area - clean factories producing eco-friendly products
South of the R&D boulevard the manufacturing center will enforce high environmental quality standards limiting pollutants of soil, water and air. Eco-friendly production and eco-friendly products are encouraged and supported by research from the universities. Industrial synergies are being conceptualized to utilize all oversupplies of energy and materials and use waste and byproducts as resources for other processes. A residential communities and a commercial node at the riverfront integrates the manufacturing area with other urban functions.

- Flexible building types as a strategy for building commercial buildings before the market is mature but built-in adaptability - saving resources
Nanyang in its current state of development may have limited capacity to absorb much high quality office space and high quality retail space. However it may be desirable in the mid- and longterm to have a structure of primary and secondary centers on both sides of the river, distributing commerce and businesses and developing Nanyang's identity as a City by the River. To achieve this goal we propose to develop mixed-use centers with building types that can easily be adapted to change between uses such as from office to residential or commercial to office etc. Examples of such concepts are reuses of historic warehouses into "Loft" buildings used as galleries, offices, shops and apartments or "Soho" developments for live and work.

Education and innovation Initiatives

- Education, education, education = location, location, location ?!
The future belongs to the places with good education. It is suggested that Nanyang builds and operates a solid elementary education and a broad system of educational institutions for medium level vocational training and higher learning and elite academic institutions. Formal and informal insttitutions and schools that educate people of all ages in all kinds of fields - to make the fit for independent academic research and to build Nanyang's personalities.

- University town as clusters of campuses down the river
Nanyang's southern central District is the university town with expanding universities and colleges and new universities. Five campuses are focused around the university river each are centered around their quadrangles that are all linked with green avenues to the university river. A ring road throughout the university town connects all campuses in their centers.

- Linking education - R&D - production: SOHO district & patenting center for startups and spinoffs from the universities also facing the river
The "Soho" district in the south is a creative live and work district in an "urban garden" setting. University graduates, postgraduate students and professors find a beautiful place to live and work in an inspiring environment and foster their knowledge and ideas. Spin-off businesses are intended to come out of this place and "transferred" along Nanyang's "Creative and Productive Corridor" across the river to the R&D Boulevard and finally to the production centers of the manufacturing zones.

Networking initiatives

- Regional high-speed transportation networks may create powerful peripheral* regions - city-network regions
Nanyang has ways to go to be well connected with high-speed rail. Soon there will be good linkages with its neighboring cities Zhengzhou, Xian, Wuhan both by train and via tollway. This will make Nanyang a well accessible place and together with these cities the region as a whole will be more attractive with these logistics services connecting suppliers, producers and customers.

- Coordinated marketing of regional industry parks to create a differentiated meta cluster consisting of locally specialized clusters
The number of cities surrounding Nanyang and the regional network of cities are suggested to look at a joined promotion of their industrial parks and their region as a whole. Complementary strengths may add up to building a reliable and substantial supply chain that as a whole can be attractive to industries seeking to locate or move inland.

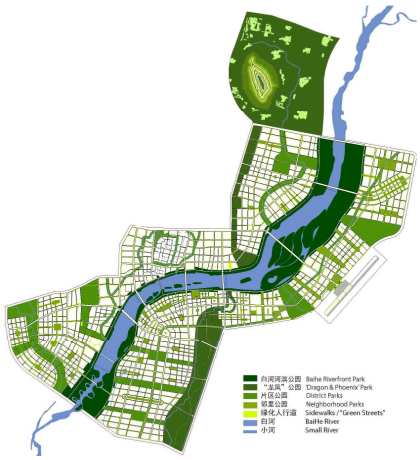
- Aiport City - welcoming, conferencing, exhibition, logistics
In our plan we expand the airport and its capacity. We plan a new district next to the expanded airport. The airport city is the gateway for visitors, friends and business partners of Nanyang. They are being greeted with grace with a beautiful welcoming park and commercial plazas, conference and exhibition center, hotel, entertainment along the Sky-boulevard. Graceful residential communities are centered around neighborhood parks opening to the Baihe grand wetland park. Canals with green corridors, the commercial boulevard and the green avenue link the neighborhoods and the center.

Urban ecology initiatives

- Eco-City planning, implementation and monitoring guide
For this project a previously developed system to plan, guide implementation and organize monitoring has been refined and applied. Eco-efficiency indicators have been discussed and proposed. This multi-sectoral effort includes many departments from the local and provincial governments to coordinate as proposed.

- Connected recreational and ecological parksystem enhances ecological infrastructure functions and overall urban quality of life
In our masterplan we proposed an extensive green network along rivers and canals as a structural element in the new urban body of the new Nanyang. To convince cities of the great value of green spaces is a challenge in the context of Chinese pragmatism and materialism. The grand parks in European and US-American cities created during the industrialization process and the "city beautiful" movement, have been acts of great civic initiatives. A new model to build useable accessible and connected public park systems needs to be developed in Chinese cities.

- Wetland parks and canals upstream and downstream to clean the river like a sponge
We developed the concept of wetland parks along the river both as the water is about to flow into the city and as it flows out. The wetlands in the north and the added island park in the south act as natural water filtration plants: water flows through the canals and past the wetlands that clean and filter the water biologically. Dr. Claus Schmidt from Ecolutions, Hangzhou contributed the concept of distributed, submerged water treatment stations in the river set on the riverbed.



Connected open space network focused on riverpark. Copyright Stefan Rau.

- Solid waste management: recycling park & fermentation & incineration facility

"A city without a good concept for waste management cannot be a good city" (Claus Schmidt). In Nanyang there is a well managed landfill site and we proposed to have decentralized recycling stations, a central recycling park for special wastes such as metals, electronic waste etc. and fermenter stations for bio-wastes. We suggested to supplement with an incineration facility as co-generation plant of electricity and heat.

Eco-efficiency planning, implementation & monitoring system. Copyright Stefan Rau.

Eco-efficient lifestyle initiatives

As planners, city designers and architects it becomes inevitable to be concerned and involved in how cities are operated and how people use the city. If we want to be successful with our planning initiatives, we have to integrate feedback cycles into our planning process - as we otherwise tend to optimize our systems *assuming* certain types of behavior will occur. Our plans have to *enable* people to make eco-efficient lifestyle choices, and we should involve residents from the beginning and monitor behavior after and make our plans and cities learn

and adjust.

- Integrated eco-mobility - intermodal transportation system, prioritizing public transit and integrating bicycles
Nanyang and its riverfront districts will be served with an efficient public transit system. Every resident will be within a five minute walk of a transit stop. Efficient transit systems allow for fast, save and ecological movement. A network of electrified BRT lines are connected with city bus lines and local bus lines. A system of city buses and minibuses serves all neighborhoods. All buses and public transit vehicles are electric powered. They are running 100 % on renewable energy – from locally produced new energy products.

- Pedestrian- and bicycle friendly city
Nanyang's character as a city that is beautiful for walking and cycling is strengthened and further developed. Nanyang will be a pedestrian-friendly city and a bicycle-friendly city. The structure of higher density mixed-use centers along the river, higher density residential neighborhoods along the river and the riverfront park system and the connected open space system serves as a framework for compactness and beauty that is encouraging walking and taking the bicycle.

- Local and regional leisure activities
Nanyang's future urban, cultural and natural attractiveness is anticipated to be encouraging to residents to use the public spaces and relax in the city and its vicinity, rather than travel far for leisure. The diversity of possibilities to spend after work time will offer the right kind of activity for everybody.

Summary: No simple task, no simple recipe - but China is a special case
We know very well from our experiences in the west that there are no easy solutions to this complicated task - but many successful and less successful cases and strategies. Yet their level of success may depend on sensitive factors even down to the skills of individuals. For example the "Bilbao effect" of Gehry's Guggenheim museum as part of a larger economic redevelopment strategy of an old industrial city can hardly be transferred... Disadvantaged regions in Europe like places in eastern Germany, eastern and southern Europe or regions with declining industries (Rhur area in Germany, "Rust belt" in the USA etc.) have tried very hard to reinvent themselves as industrial centers modernizing their image and locating innovation activities like universities, high-tech incubators etc. Even sophisticated and comprehensive efforts like the excellent project of "IBA Emscher Park" in Germany's former heavy industry belt show limited success with respect to the bottom line of economic development of the region. Yet the situation in China is fundamentally different: 1. The population base with its market power and its internal dynamics has more potential for regional differentiation and 2. Political directive may be more influential, distributing economic activities and thus balancing regional disparities more successfully than in western countries. And of course we see how in contemporary China plans are being implemented with determination. We will assist and accompany the city in its endeavor to succeed and monitor the successes.

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