Conjugate Ecological Planning: a New Urban Planning Approach Linking up Sustainable Development with Creative Economy

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As an emerging megacity in developing China, Beijing is suffering from ecological degradations and pressures derived from intensive economic growth, increasing population and rapid urban sprawl. Hence Beijing has begun to re-think its traditional philosophy of urban planning towards a more sustainable one. How to address those acute problems but still keep the pace with our achievements at the same time? Here came an opportunity: to revise the previous 10-year Urban Master Plan of Beijing while analyzing threads and chances synthetically. The fruit of revision shows that, Beijing can improve its capability of long term development, by means of rational planning.

1. Dilemma of the Urban Planning in Beijing

a) Outcomes of the Previous Master Plan

In recent years, Beijing was always commented as a 'City of the Rings' (**Fig. 1**). The reason can be traced back to the previous 1993 Urban Master Plan. That Plan proposed a centralized, circle shaped city pattern. Through 'two green belts' and 'ten satellite towns' in urban fringes were also declared clearly in the same planning, they all failed to hold back or alleviate the urban sprawl. Difficulties of implementation, parts from institutional management and parts from economic driving forces of developers were all causations. Parts of the city merged into another. Most of the areas proposed for the inner green belt, and almost 40% of land considered for the outer green belt, has already been consumed by built up areas inch by inch[1]. The area of the two green belts, particularly the outer one, was not defined by clear borders. The defence of landscape against intrusion by new real estate projects was too powerless. While the grid of main roads (rings) was a very strong and strict pattern, the other main elements - green rings and satellite cities - turned out as rather weak in reality. Finally the satellite towns began to sprawl like the inner one, too. The concept of ten satellite towns, embedded in the green landscape area of the green belts, was rather a fiction than reality (**Fig. 2**).

Extending the grid-and-ring-based settlement structure even into the countryside, it leaded to the pancake-like layout of the city by adding rings of settlement. There were no any serious limitation and diversification to this extension. The coupling among spatial growth of

built up area, urban functions, public transport network, and green system was not sufficient. The vast majority of new residential and commercial development areas had no access to rapid high capacity urban public transport. Dependency on private cars grew, as well as traffic congestion and air pollution by motorized transport. Further deficits of the current Beijing development pattern were the over-centralization of the city centre, and the weak standing of the satellite towns. It resulted in a lack of own functional and formal characteristics. Last not least, the scheme did not consider aspects of climatic exchange and the system of water streams. Modification of the pattern and diversification of the elements performing the urban landscape was always requested.

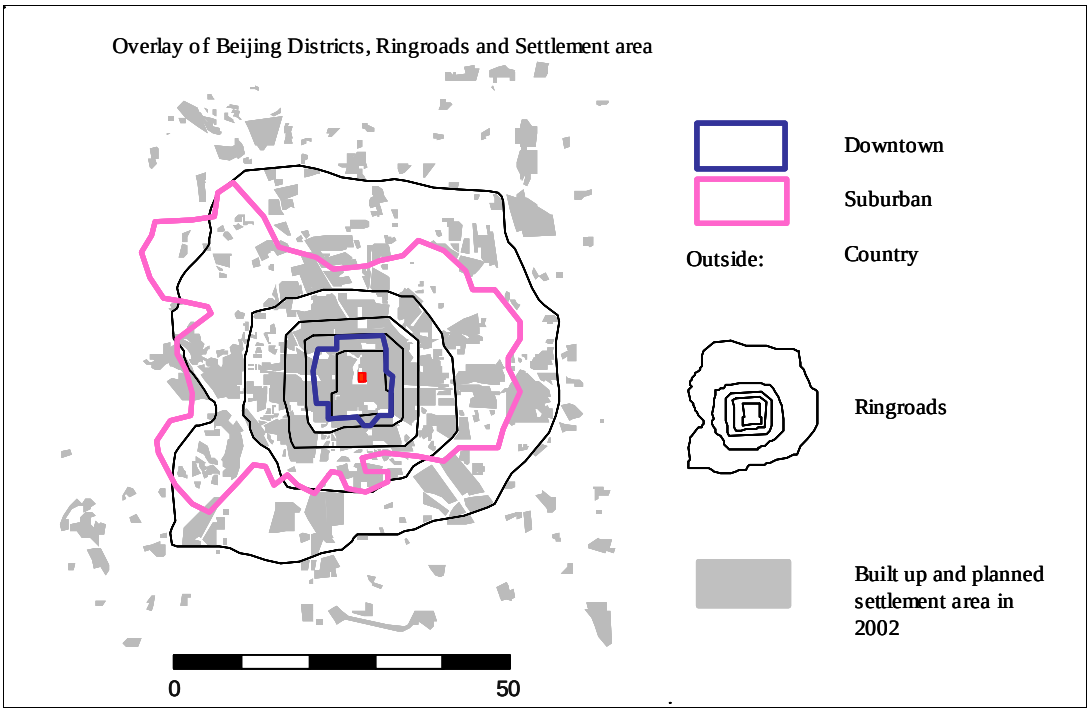

Fig. 1 Six Ring Roads around Beijing

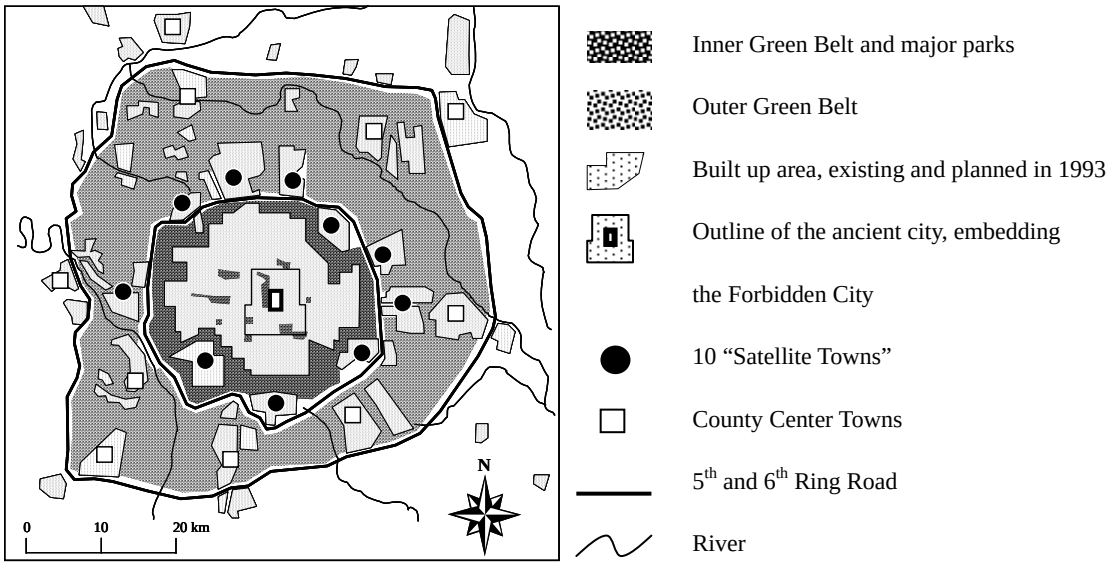

Fig. 2 The Ideal Basic Pattern (Source: 1993 Urban Master Plan of Beijing, redrawn by Juergen)

Moreover, with the increasing immigrating population from other places[2]; roads never meet the needs of new cars thus traffic congestions never disappeared. In most prospective estimates of ineffective regulations or controls, the carrying capacity of Beijing is not far away from its limit.

2. Conjugate Ecological Planning

a) Concept

As a primary theoretical basement of adaptive Ecopolis management, Social Economic Natural Complex Ecosystem (SENCE) theory takes full-scale consideration of cities' development and determines three backbones of Ecopolis: Eco-Landscape, Eco-Industry and Eco-Culture[3] (**Fig. 3**). After evaluating the ecological carrying capacity of the whole greater Beijing area[4], an integrative and multi-level ecological urban planning was accomplished. That is Conjugate Ecological Planning (CEP).

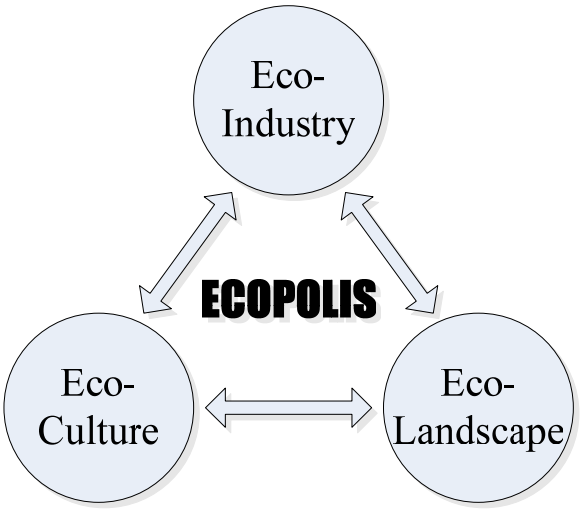

Fig. 3 Three Backbones of ECOPOLIS

The philosophy of Conjugate Ecological Planning[1] is to use synergy and balance power. Following up the ancient Chinese cognition of 'human and the earth', and being benefited from modern ecological knowledge, CEP reveals itself as a planning method designed to harmonize and/or compromise the relationships of contradictory elements in current urban planning atmosphere. They are environmental and economic development; social and natural services; physical and ecological infrastructure; local and regional development; historical and future contexts; tangible and intangible, positive and negative ecological impacts.

We also need to recognize the meaning of 'ECO-'. Based on the initial definition: relationship between 'human and nature', it has been largely extended and cover with the ones between 'parts and whole', 'past, present and future', 'local, regional and global' and 'inputs and outputs'

In this way, we are constantly looking for a proper planning paradigm for Beijing.

(1) **Meta-level planning approach**: combine town planning with regional/watershed/hinterland planning to promote sustainable exploitation, use and maintenance of the five natural elements of water, fire, wood, soil and mineral;

(2) **Opportunity planning approach**: combine restrictive control planning for ecologically sensitive, fragile and nature conservation areas with eco-services inducement planning of the Feng-Shui (wind corridor and water artery), ecological web, urban agriculture etc., combining red line control with green corridor cultivation.

(3) **Socio-ecological approach**: combine population quantity planning with life quality planning; combine cultural heritage conservation with ecological texture, social arteries and veins, and human ecological integrity;

(4) **'4-color' spatial planning approach**: combine built up area (red space) planning with none-built up area planning (green, blue space and gray corridors and patches) to develop a comprehensive eco-service management business from urban agriculture, forestry, gardening, wetland to wastes regeneration (**Fig. 4**);

(5) **Multi-dimensional planning approach**: switch two dimensional land use planning to three dimensional eco-landscape planning including underground and aboveground physical space and ecological carrying capacity (water/air/heat/ green) planning;

(6) **Holistic water systems approach**: combine water use for human consumption and production with water use for natural ecosystem maintenance; water treatment planning and hydro-engineering planning with water ecological engineering and productive wetland restoration.

(7) **Holistic energy systems approach**: combine intensive energy exploitation and utilization planning with extensive energy dissipation and renewal energy use planning; and pollution control and treatment planning with eco-service conservation and development to reduce heat island effect, pollution effect, greenhouse effect and citizen disturbance effect;

(8) **Eco-artery approach**: combine supply oriented urban metabolism and traffic planning with eco-artery planning for wastes recycling and regeneration and eco-sanitation planning;

(9) **Planning management approach**: switch traditional vertical and tree-shape institutional planning to eco-web, horizontal coupling, comprehensive decision making, system supervision, information feedback and capacity building planning.

b) Hierarchy and Levels

CEP of Beijing is a Multi-level urban planning. There are three main spatial levels (top-down):

- Regional/watershed-scale, including Beijing City, Tianjing City and Hebei Province;
- Beijing Bay (plain) Area scale, and

- Urban eco-arteries development scale.

The first two levels are focusing on regional co-operation and resources co-sharing, related to ecological infrastructures, land-use management and so on. They also provide information on natures and industries for the solution addressing pancake pattern at the last and bottommost urban level.

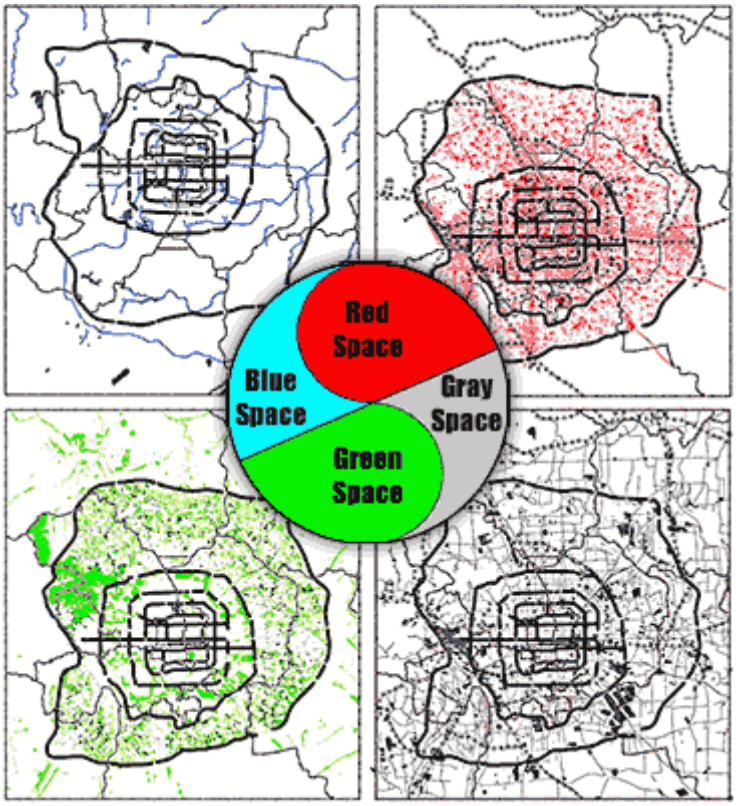

Fig. 4 Spatial Analysis on Four-Color Space of Beijing City

c) From 'pancake development' to 'star-development' : a New Network Development

In company with the revision of the Urban Master Plan and the implementation of 'Eco-Masterplan', a revision of the spatial concept in necessary. Currently, the pancake pattern is problematic as it results in excessive sprawl, lack of green space inside the city, 'heat island' effect, and extraordinary concentration of air pollutants in the inner city. In case of Beijing, the increase of traffic jams all over the city seems even related to the pancake structure: the fast increasing motorized road traffic spreads all over the city. Even though the share of private households or car is still rather low, compared with other capitals, the traffic congestion has recently become a major dispute in public discussion (**Fig. 5**).

Fig. 5 Traffic Congestion at Inner Beijing on a Common Day

Unlike the pancake urban model, CEP advocates the star-shaped structure allowing green spaces to be located more closely to the city center. The 'star' is performed by several longitudinal axes, which meet in the city center. High density settlement structures are concentrated along the axes. This model is appropriate to introduce efficient linear public urban transport systems lines like metro and light rail, then a spread out form. Newly built urban transport lines can firstly serve the most densely populated axes pattern. The ideal 'star' settlement structure, combined with green wedges, is the basic pattern for many large cities all over the world. It can shape a good urban form and has advantages of evacuating traffic, controlling urban extension, providing more green space, reducing 'heat island' effect and air pollution. In practice, the ideal scheme needs adoption to the specific local situation.

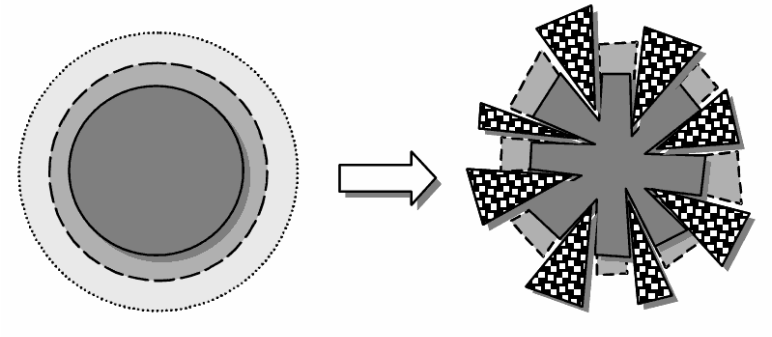

Fig. 6 Cutting out Pancake with Star-Development Pattern

Furthermore, improved public transport network would be effective to reduce the dependency on cars and other bad consequences induced from it. A more integrated PTN was suggested (**Fig. 7**): Add some characters like 1)more radial lines in harmonization with targeted settlement development, 2) a ringline at 4th ringroad, and 3) high quality interlinkage hubs, e.g. a new central railway station at southern 4th Ring Road.

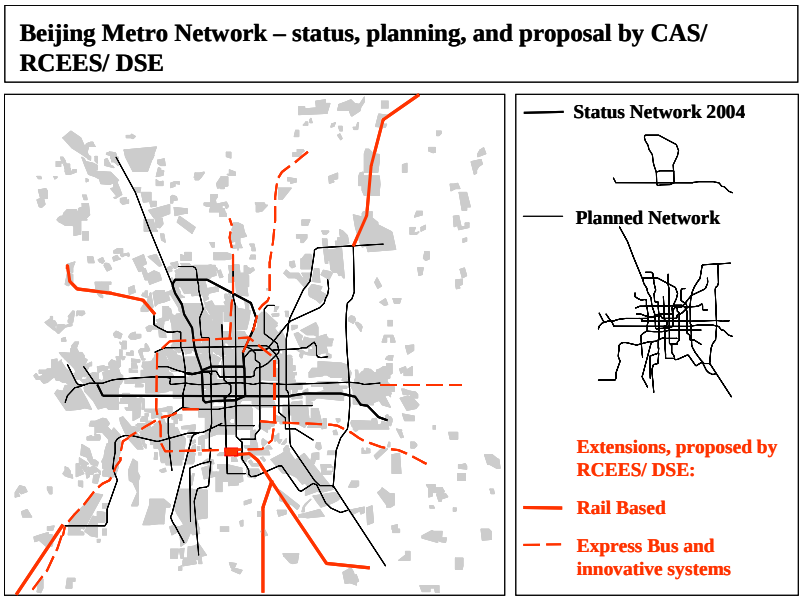

Fig. 7 Adjust the public transport network

After all, from a view of higher Beijing Bay level, the anti-pancake was finally decided by these following steps.

- Decide the location and direction of axes;
- Configurate green wedges and settlements along with axes;

Northwest-Southeast direction on 'Main Eco-Axes'

Before employing Star-development, major ecological elements should be understood based on analyzing the local physical structure. Integrating the main wind directions, the water flow, and other space-related aspects of Beijing area, a specific direction can be identified as very typical and common: the Northwest-Southeast direction (NW-SE-direction). This direction even can be named the main 'Eco-direction' or 'Main Eco-Axes' (**Fig. 8**).

Identified aspects:

- green corridors
- water way
- air corridors
- main direction to the sea

Ecological Corridor System

Eco-corridors support the ecological service of a city in manifold way. In case of the highly dense inner built-up area, a diverse system of eco-corridors should be implemented, using any available way and niche. Outside of the 4th Ring Road, most of the proposed Eco-corridors follow the main 'Eco-direction' of Beijing, the Northwest-Southeast -direction. Inside of Second Ring Road, in the area of the former old city, the Eco-corridors are adjusted to the historic rectangular grid. After all, between 2nd and 4th Ring Road, the eco-corridors follow the natural direction as much as possible. Partly they are adjusted to the already fixed rectangular grid. Additionally, some recommendations for practicing are listed below:

- Implement a system of Eco-corridors
- Restrict building-height
- Regulate inner city car transport.

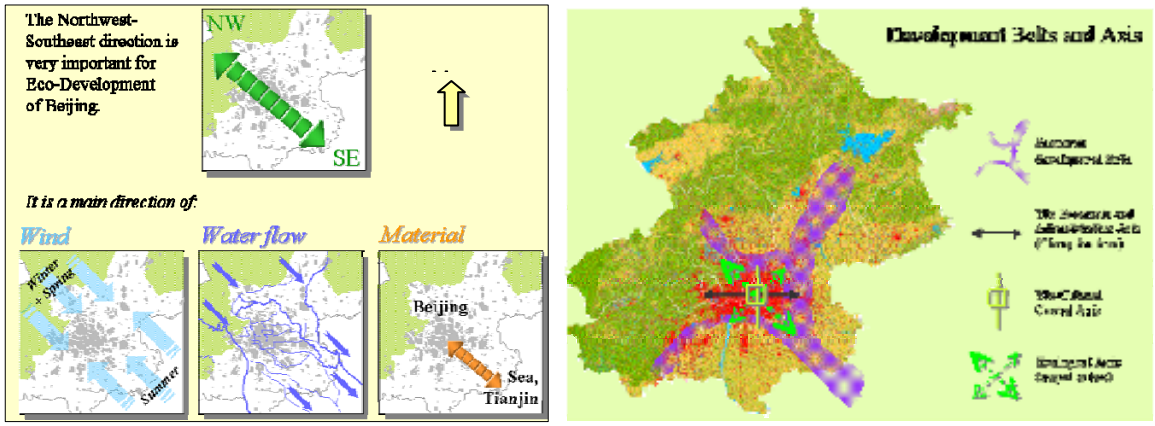

Fig. 8 Northwest-Southeast - the main 'Eco-direction' of Beijing Bay (plain) Area and Development Axes Decision

A New Settlement System for Star-Development

To coupling settlement development, transport, and green system to a whole one network, the comprehensive strategy of 'star-development' is focusing on:

- Re-organizing of settlement system and city expansion according to development axes analysis above,
- Establishing a comprehensive landscape system including,
  - Green wedges,
  - Corridors,
  - Protection areas landscape, nature, water,
- Diversifying and strengthening of new sub-centers in the periphery of Beijing,
- Coupling public transport, settlement development, and urban green space development organically.

Considering the future spatial structure of Beijing urban agglomeration and the relationship between settlement, green space and transportation, three basic patterns for the star-development pattern can be identified in line with traditional Chinese preference: 1) Rectangular grid of the inner urban areas; 2) 'Tang Hu-lu' settlement pattern of the rural areas along with axes and/or 3) 'Grape' pattern of the suburban areas (**Fig. 9**, **Fig. 10**).

The rectangular grid is the basic pattern of Beijing's inner urban area. Considering the above mentioned disadvantages of the grid. In the grid, all modes of passenger transport should be balanced. Car transport plays a minor role. And some improvement can be proposed:

- Introduction of linear elements, like riverside walks, connecting isolated parks.

- Improvement of convenient minor routes for pedestrians and bicycles inside the major blocks
- Regulation of parking and car use

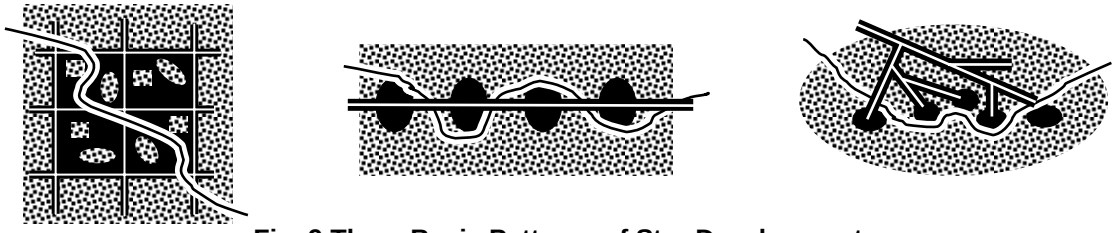

Fig. 9 Three Basic Patterns of Star-Development

'Tang Hu-lu' is a popular Chinese sweet: ball shaped red fruits on a spit (strung sausages). It can be used as a pattern to organize Beijing's suburban and peri-urban development, performing settlement axes along the tracks of high quality public transport systems. Appropriate public urban transport systems to serve the axes should be high standarded, e.g.: rails, light rails, metros, and high standard express bus systems. Private cars using along the axes are going to be reduced. 'Gateways' to the inner city regulate car inflow in the morning, in order to prevent or reduce traffic congestion in the inner city.

The green buffer zones between the settlements are appropriate to be developed as green landscape recreation areas, connected by convenient public transport.

The 'Grape' pattern of the rural area. It also occurs at the end of a development axes, meeting natural landscape areas with low population density. Appropriate modes for passenger transport are: buses, mini-buses, taxes, private cars and bicycles.

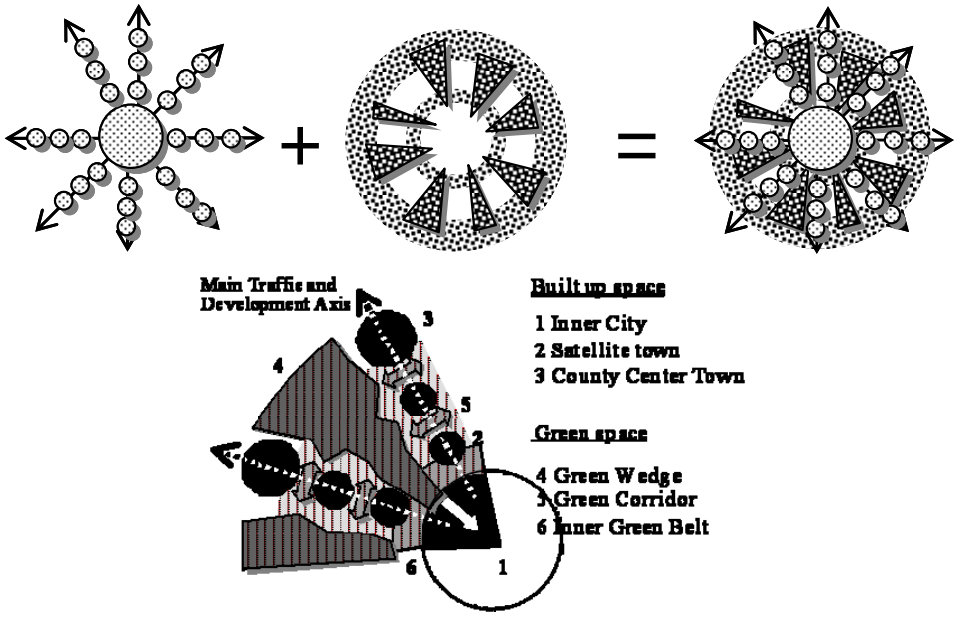

Fig. 10 Basic Spatial Scheme for Combining the 'Tang Hu-lu' Pattern with Urban Green and Urban Transport Systems

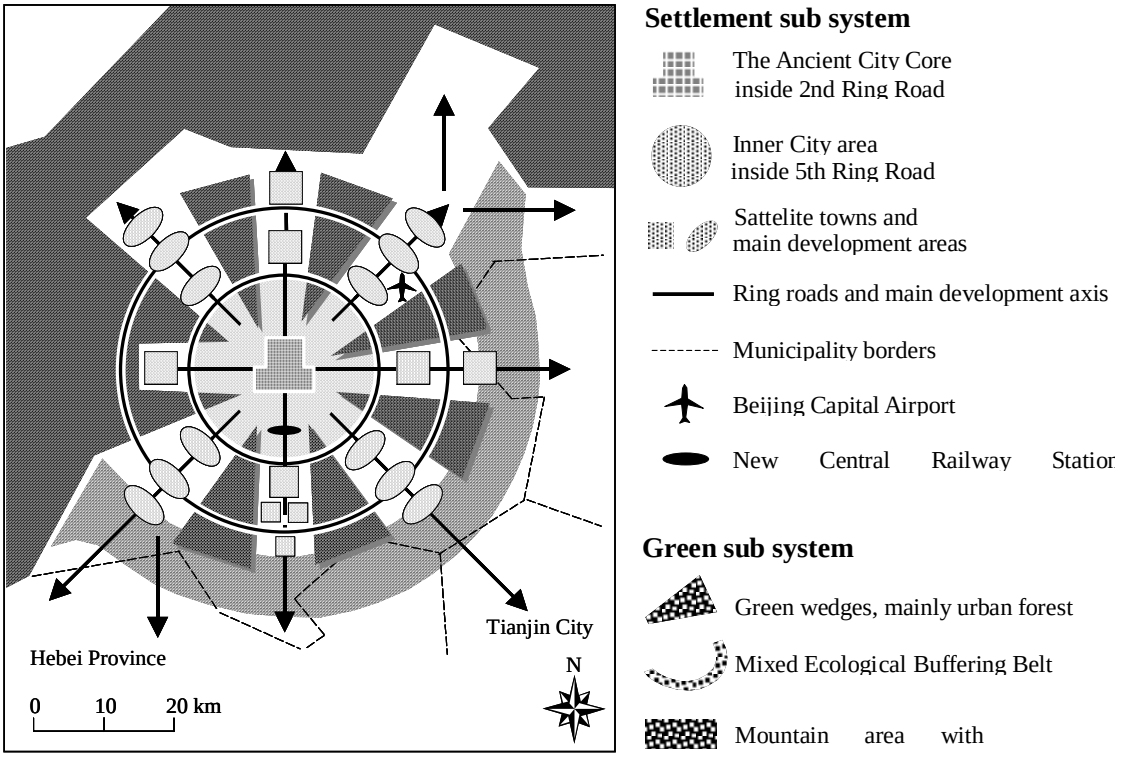

Fig. 11 Conceptual Scheme of Beijing City with Star-Development

Proposed combination of settlement and green structure of Beijing is one urban center from where several traffic arteries radiate (**Fig. 11**). The settlements follow these traffic lines. The green space is composed of two greenbelts, several green wedges, some parks and corridors. The green wedges are located between the traffic axes. The green wedges and corridors are connected with greenbelts to form an ecological network system, including parks, greenways, farmlands, rivers and wetlands.

The 'star' system consists of 'Tang Hu-lu' axes. Each 'Tang Hu-lu' axes consists of a number of basic elements, the 'Eco-Town'. According to the basic green scheme and the need for green space to balance urban development, each Eco-Town should be surrounded by its own 'mini-green-belts' in order to be distinguished them from the projected large green belts of Beijing.

For further determination of the 'Tang Hu-lu' pattern, the following aspects are relevant:

- Number of axes: According to the basic scheme, eight axes are to be developed,
- Length of each axis. Measured from 4th ring road to outside, the length should not extend 20km,
- Number of Eco-Towns per each axes (already existing satellite towns are to be integrated),
- Resulting total number of elements,
- Average size of an Eco-Town, mainly determined by number and density of population,
- Average distance between two Eco-Towns,

- Public transport system, backbone of the axes,
- Available space to develop the entire system.

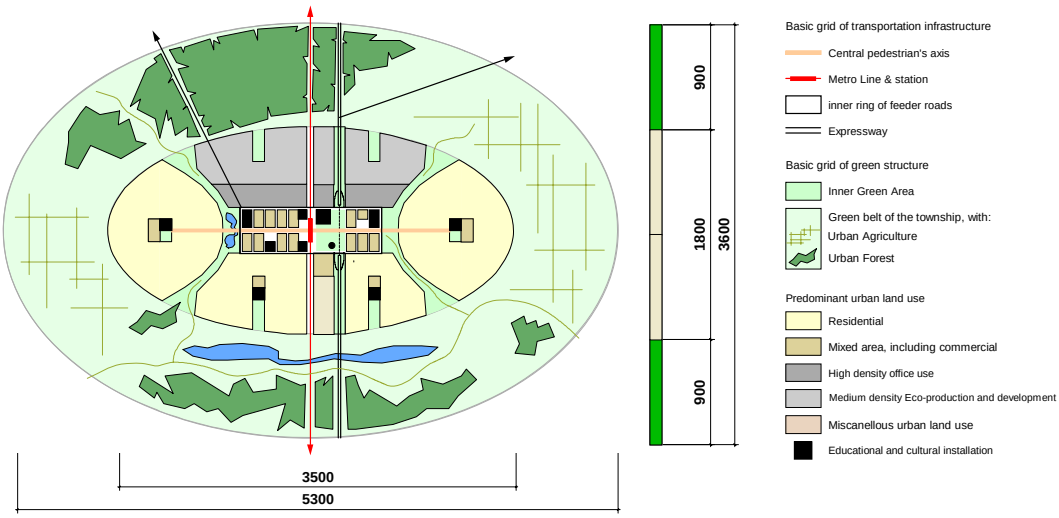

Fig. 12 Conceptual Layout of Land-Use and Functional Zoning for Creative Industry in Eco-Town (Refer to 3.C below)

Estimating 50,000 inhabitants per average Eco-Town, 2-4 Eco-Towns per axes, and 8 axes around Beijing, a total number of approximately 1.2 million people can be settled, living in 24 Eco-Towns. With bigger size, other figures can be realized. Note: in this case, the inner structure and the relationship between settlement and landscape are to be readjusted.

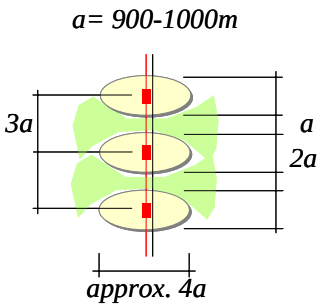

Fig. 13 Spatial Relationship of Eco-Towns

The average distance between the towns is determined mainly by the average width of the towns and the attached green belts, in the section of the axes. In the ideal case, the distance between the centers of two Eco-Towns is 2700 meters: two times half the minor diameter (900m) plusing the width of the green belt (900m). In the model case, 2700m is the distance between two high speed light rail stations.

In order to emphasize the main goals for further spatial development and to provide a base for planning, a 'model Eco-Town' has been projected. Main features of the model Eco-Town are listed below.

Tab. 1 Overview Table - Some Spatial Key Figures of Eco-Town Model

1. Shape and dimension of the Eco-Towns	
1.1 Outer shape	oval or rectangular with rounded corners
1.2 Proportion width (w) : length (l)	between 1:1.5 and 1:2
1.3 Appropriate width and length time to move from the center to the green edge: maximum distance from the inner to the edge: resulting maximum width: resulting maximum length:	 max. 15 minutes slow walk / 4-6 minutes by bicycle 2 km 4 km
1.4 Settlement Area in case of oval (preferred): in case of rectangular:	 5 sq km 8 sq km
1.5 Surrounding Green Area ('Mini-Green-belt')	Two times the settlement area
2. Inner structure of the Eco-Town	
2.1 Population number and density Population density of settlement area: Population density of entire area including green belt: Population of a model town with 5 sq km settlement area	 10,000 inhabitants per sq km 4,000-6,000 inhabitants per sq km, (due to overlapping of green belts) 50,000 inhabitants
2.2 Land use mix and functional balance	
2.3 Employment Estimated employment rate in total population Rate of employment by local employers Number of commuters, mainly towards city center	 50% of 50,000 = 25,000 30% of 25,000 = 7,500 12500
2.4 Area request for local commercial use	Approximately 75,000 sqm GFA
2.5 Area request for education, culture, and local administration	4% of 500 ha = 20 ha
2.6 Area request for Business Park and Eco-Industry-Park Average density of working places Employments to provide in Business- and E-Industry-Park Resulting area request Area reserve for increase of local employment rate	20% of 500 ha = 100 ha 100 employments per ha at least 6,000 60ha 40ha
2.7 Area request and density Residential	4% of 500 ha = 20 ha
2.8 Land use share of an average Eco-Town	See separate table!
2.9 Recommended building types and structures residential	Diverse and mixed structure
3. Basic layout of an Eco-Town	
3.1 Distribution of functions	See overview scheme!
3.2 Basic dimensions	See overview scheme!

Moreover, what kinds of industries do people need in the Eco-Towns locating at each ends of the star pattern? The development via investment driven has been transformed to a development via innovation driven. Eco-Towns could compose a new sustainable community for new industry based on knowledge, information and creative whose labor working remotely. Several Eco-Towns also can approach to Creative Industry Clusters.

3. Creative Economy and the Vision of Beijing

a) Review on Creative Economy

The world becomes more and more globalized. Capital, information and resources are all re-allocated to explore better driving forces. Industrialized countries also begin to find their ways of evolution. Creative Economy, a whole set of impacts from the new Creative Industry, provides one possible solution. By Howkins[5], 'Creative Economy' is the economic sectors whose products are protected by the laws of intellectual property, worthing more than $2.2 trillion worldwide. The UK is the first country to promote Creative Industry via national policy. They held 'Creative Industry Task Force' and published annual reports and action plans. So far, the production value from Creative Industry has become the 2nd largest sector which is accounting for 8.2% of the annual GDP in 2001 and supplying 1.9 million employments in the UK[6].

The major feature of Creative Industry is not only some cultural products such as books, music, movies and advertisements, etc,. but also the original creative ideas giving births to them. For example, the design departments of a machine factory could be operated by themselves and sell their ideas and designs as products to the follow-on manufacturing department or other clients. As a result of industries' refining and stormy market, qualified products without excellent or distinctive design will have difficult to succeed. Thus high additional values could be achieved only from headstream creative designs. Creative Industry holds a higher status across the chain of value producing, which could re-allot and re-compose the lower industries. If not, those lower industries take on a trend of increasing volume of business but decreasing values and profits.

Though the Creative Industries in Asian counties get off the mark later than occident ones, they obtain a miraculous growing speed due to the strong supports from their local authorities. Generally, the Creative Industries in Hong Kong keeps ahead in Asia. Creative Industry not only directly promotes HK's economic development, but also brings creative ideas into other industries and enhances their profits. Gradually, Creative Industry comes into being the soul of modern urban economy.

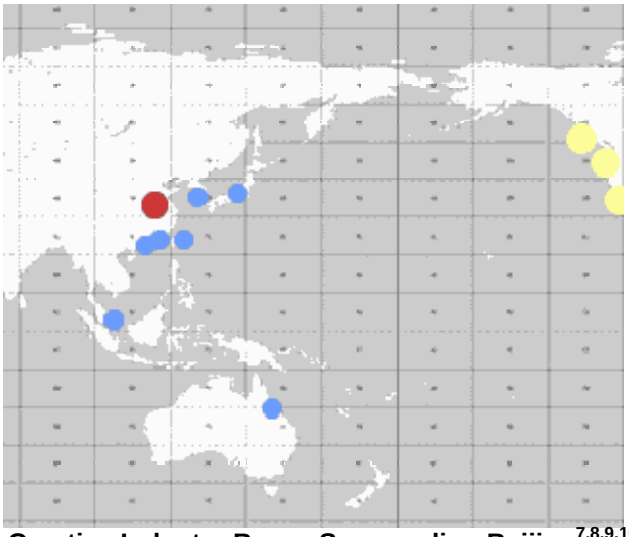

Fig. 14 Creative Industry Bases Surrounding Beijing[7,8,9,10,11,12,13]

China also has started its task on Creative Industry. As the largest developing country for the time being, the progressive steps of China are more oppressive. The obstacles are complex. Pressures from economic development and eco-environmental problems are standing in the way at the same time. Although China has got a comparative advantage on labor, we can not purchase those low value products by exploiting exhausted nature resources. This is one of the reasons why a steep rise of scale of exporting in China comes with a changeless level of labors' wage. Fortunately, uses of international experience and technology also provide China a chance to realize *frog-leaping* development. Creative Industry is a fruit of turn-over-to-think from post-industrialized countries and regions. It could be introduced for China to do a step further from its current status as the world manufacturing factory to a hopeful one in a smart way.

Four kinds of resources are essential for the Creative Industry to guarantee the core competitive advantage: patent, copyright, trademark and design[4]. Practically, in China, people now have to combine sustainable development with Creative Industry before leaping. However, as a physical groundwork, a sustainable and creative urban planning turns to the best choice for many appropriate cities, such as Beijing. Stakeholders from government, research, law and urban management/planning sectors can co-operate for affording the new urban economic driving force during its infant phase.

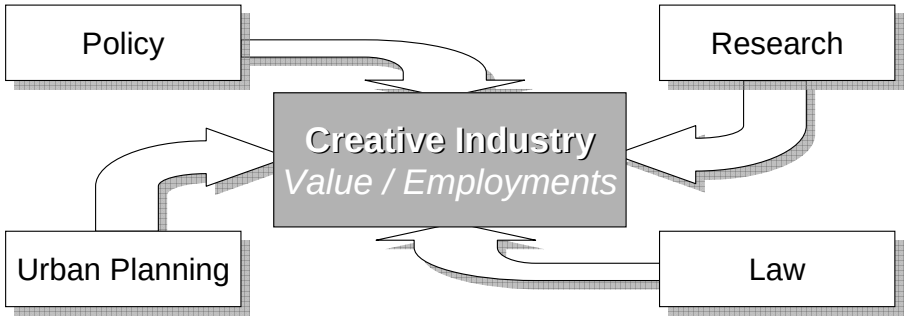

Fig. 15 Bases for Creative Industry

b) Possibility of Adoption in Beijing

Along with the ongoing reform, the annual GDP of Beijing is continually increasing[2]. In this rate, Beijing will achieve an annual GDP per capita between 5,000 to 7,500 USD within next five years. According to international experience, the cost of business affairs and human resources will remain much higher after the annual GDP per capita exceeding 5,000 USD. On the other hand, the major industries promoted by last master plan, such as car manufacturing industries are deeply resources-oriented, which are not the perfect choices for the status of capital of China and one of the centers in Eastern Asia. The industries within Beijing urgently need a upgrading for better city image. As mentioned above, the new CEP has demarcated out where the heavy industries could use and where are strictly conserved based on the analysis of local carrying capability.

In the views of environmentalists, the Creative Industry is a renewable and pollution-free industry, for the main power behind it is human resources and intellectuality. In additional, unlike the traditional 3rd industry, Creative Industry dose not need to get together in crowded downtown areas. The products and staffs of Creative Industry can easily fulfill their works remotely, via information technology and networks. Thereby, 'Tang Hu-lu' pattern of the scattered settlements along main arteries turns into many right places for accommodating Creative Industry.

Beijing has got its comparative advantage for Creative Industry. The price of land rises quickly and pulls down many tradition industries. Intellectuality-based economy becomes the fittest. And there is the largest number of higher education and research units in Beijing, most advanced information infrastructures and most active flows of capital. Inimitable urban grade and historical context also become sources of attraction. If only we could plan and build up suited settlements for employers involving in Creative Industry, a sustainable and creative Beijing comes into the world.

In general, upgrading Creative Industry could provide Beijing with a new urban energy, higher additional value of products from limited manufacturing sites and solution to the spatial crisis of pancake city, by means of CEP and rational settlements configuration.

c) New Eco-Towns: Homes for Creative Economy on Human Dimensions

What are the demands of creative talents? They study and create new ideas endlessly. Their work turns human intelligence into a more individualized level; and turn people's lives better than ever at the same time. There is a new class in society called 'creative class' becoming a key issue in creative time in future[14]. They live on their creativity in a vast of fields. They also begin to influence other people's attitude to living and working, composing the next wave of mainstream and regionally driving forward aspects of our society: economy, culture, work and leisure.

The Creative Industry is not about information and the information society. It is about more basic matters, what we humans want and what we are good at. Managing creative talents will be fundamental to business success in the next century. They put the concept of Creative Industry into realistic effects.

Obviously, people belonging to creative class need more autonomy and flexibility towards their jobs. Not invariably stick to regular calendar but realize their ideas at every possible moment. They should do different works at the same time to inspire themselves while sportful working. The reason is that, we can not set setup timing to open or close creative ideas. Creativity is a bizarre mixture of jobs and amusements.

How can we planners synchronize with the trend of creative industry? Creative class will choose their residence on the basis of personal preference. They do not need live close to the place in which could afford jobs such as downtown or CBD areas. Works and ideas could be easily transferred via information networks. It is essential that the communities should offer a common recognition to their value, to provide active and abundant living experiences as creative spring. They will assemble and contribute to a high productivity. Furthermore, pictured from 'Tang Hu-lu' pattern around Beijing, the New Eco-Towns possess of these kinds of features attracting the creative class.

As the ends of 'Tang Hu-lu', Eco-Towns are designed for accommodate creative class and the visiting consumers conformably, offering a multi-cultural, tolerant and inspiring atmosphere (**Fig. 12**). Spatially, the towns are mainly divided into five functional zones:

- Civil square and cultural exhibition: the major public space for inhabitants;
- Artists' village: resident and administrative use;
- Specialized training zone: some schools and workshops related to design, consultation, and programming, etc.;
- Integrated creative plot: cultural products markets and recreation plaza;
- Peripheral assist zones: local non-car transport system for walking and bicycling, bus stops access to main highways and other public sectors use.

According to principles of sustainability and ecology, extracting nature land and fertile land is to be reduced as far as possible. The Eco-Towns should be only settled in the fast growing urban agglomerations of the world, replacing current unreasonable patterns of land consumption. Due to the prospected global urbanization process and the encouraged urbanization, further land consumption by settlements is an unavoidable face to fact. The deciding question is: how it can be re-organized in a really sustainable way.

4. Case

Recently, the government of Beijing City has begun to implement Creative Industry. Zhongguancun Creative Industrial Base (ZCIB) just announced in May, 2005 [15] .

Zhongguancun locates at the north-western Beijing and used to be the first and largest IT R&D centre in China.

ZCIB is strong supported. There are several most famous Chinese universities and institute, hundreds public libraries including the largest national one in Asia, as well as large numbers of rising companies. Furthermore, cultural and historical context of ZCIB and the greater Haidian District is also suitable for Creative Industry. According to the plan, two university IT industrial parks, one university cultural industrial park, one animation & comic centre and one architectural design zone will play backbone role in the first phase. More than 200 companies will have entered this 7 ha ZCIB zone till the end of 2005, covering fields of consulting, software, game, music and publishing. An alliance of those creative companies has already been launched, too.

The authority of Zhongguancun also schemes to help this new industry by market cultivation, finical assistant, public infrastructure construction, open governance and other promoting regulations. In foreseeable future, ZCIB will bring forth his demonstration power to other appropriate areas in Beijing.

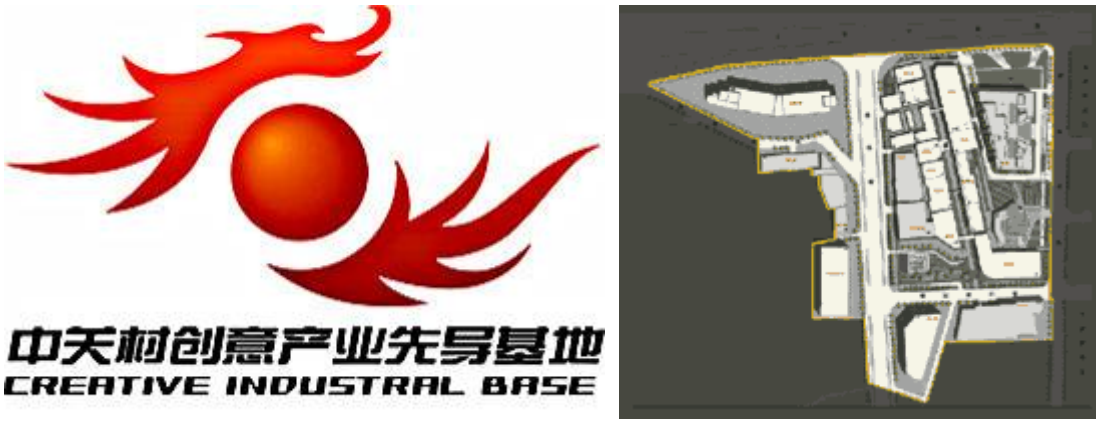

Fig. 16 Logo and Function Zoning of ZCIB (Source: Zhongguancun Administrative Commission)

However, from a view of urban planner, ZCIB is still not a perfect creative site because of the distance. Zhongguancun is rather near to the inner city to alleviate urban sprawl and pancake trend. People and capital will keep being attracted into the downtown of Beijing and aggravate the pressure towards urban environment. As mentioned above, to copy ZCIB into Eco-Towns in remote Beijing would attain better socio-ecological benefits.

5. Discussion

Nowadays people have already begun to take actions, transiting 'to conquer the nature' towards 'to reward the nature'. The final objective is to live with the nature harmoniously. We also keep eyes on cultural development. On another hand, to combine sustainable development and creative development will agree with a smart future. The creation-oriented development strategy is based on Knowledge, culture, human resources. It is a renewable internal driving strategy which holds less consumption of natural resource. People can find

new chances from themselves rather than outer environment. The outside restricts and limitations are to be surpassed on a certain extent. Human society develops with the processing of ceaseless creating.

But everything has two sides. People pay attention to biodiversity. The cultural environment also encounters a similar danger. Modern information network brings our new opportunities as Creative Industry; while the exactly uniform information sources and the channels also induce cultural convergence compulsively or involuntarily. Some scenario researches alarm that elements of human well-being associated with social relations may decline due to great loss of local culture, customs and traditional knowledge. The civil society institutions may also be weakened as an increasing share of interactions take place over the internet[16]. This is a conflict between globalization and localization.

However, we believe that the more localized cultural atmosphere of Eco-Town, the higher attraction and productivity of the creative class. We adopt featured architecture style ‘Siheyuan’ (quarter-yard housing pattern in old Beijing city) in Eco-Towns. And do the best to conserve the original ecosystems services such as vegetables, soil and waterscape, etc. there. After all, an assessment index should be designed to monitor and estimate the status of creative Eco-Town for the next step decision, synthesizing gains and losses from different aspects: ecology, economy and society.

All illustrations are drawn by the authors, in case no other source noted.

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