NEW ECONOMIES OF LANDSCAPE AND ITS NEW URBAN FORM - ECO-TOURISM AND ECOLOGICAL URBANISM AS A NEW APPROACH TO REDEVELOPMENT IN POST-DISASTER RECONSTRUCTION IN SICHUAN PROVINCE, CHINA

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ABSTRACT: This paper will investigate new economies of landscape as a "critical new model of urban form and development practice for urban design and planning" as being applied in post-disaster reconstruction in Sichuan province. Specifically, ecological urbanism through the lense of the reconstruction of resettlement villages and master planning will be investigated through two precedent studies, in addition to design research from the outcome of a collaborative studio between USF SACD and Tongji Urban Planning students held in July 2009.

KEY WORDS: Eco-tourism, ecological urbanism, post-disaster reconstruction, economies of landscape, cultural landscapes, urban-rural, compact cities, design strategies, urban sustainability

INTRODUCTION

The earthquake that occurred in Sichuan province in China, May 2008, in many instances permanently transformed the physical landscapes of the affected areas.

Both natural landscapes and ecological systems were impacted, as were the urban and physical infrastructure systems. One of the cities located closest to the earthquake, Dujianyan City, has part of the region's sophisticated system irrigation works and dykes running right into its center. Many of the Dujianyan Irrigation Works' buildings resemble the traditional Chinese wood temples that occupy a significant part of the cultural landscape. Their presence is particularly symbolic of the cultural landscape and identity of the region, since the irrigation system was built 2,300 years ago during the era of the Warring States. The system made Sichuan the richest agricultural area in China. Although declared a World Heritage City for tourism in 2000 by the Chinese government, the region up until the earthquake remained primarily agricultural.¹

Aspects of the current design strategies being implemented in the post-disaster reconstruction area are ones of the changing of the area's economies of landscape, and thus generating a new urban form, one that is generated by the valorization of the environment and integration of ecological urbanism principles. This new urban form, based on a new urban economy which integrates ecology, is sympathetic with a pre-Mao feng-shui consciousness and a symbiotic relationship between man and the environment implicit in traditional Chinese planning practices. This is in opposition to Mao's focus on economic development through the industrialization of cities and rural landscapes.

In Sichuan's post-disaster reconstruction, previous land use patterns have shifted from those of predominantly agricultural ones, into those based on eco-tourism and the valorization of cultural and vernacular landscapes. As part of the larger New Social Village policy of the Chinese government, farmer's land is being re-designated in use as farmers are relocated and re-housed in the city. As they transition from rural to urban dwellers, their jobs also change to the new eco-tourism industry from farming. More sustainable land use patterns are being implemented, such as those of compact cities and urban aggregation models. Additionally, ecological and landscape systems are preserved and not allowed to be redeveloped

¹ The body of the discussion is adopted from an article written by the author featured in Topos International Landscape and Urbanism Magazine 66-Landscape Strategies, March 2009, "The Wolong Masterplan".

upon. How might this strategy of shifting the economies of landscape serve as a new model of urbanism for other new cities in China and the world where urbanization is rapidly occurring as she continues to urbanize at an unprecedented rate? What strategies might be employed in order to recalibrate the redevelopment of these areas which minimizes the urban footprint on the landscape within the framework of ecological urbanism? How can ecological tourism and, subsequently, urbanism and infrastructure, manage precious natural resources through land use patterns that minimize the disruption to larger landscape systems and ecologies? How might ecological systems be implemented across a spectrum of scales of urbanism and economies of scale in the landscape from the scale of the master planning and infrastructure to the design of the housing in these resettlement villages and new cities?

This paper will investigate the new economies of landscape as a "critical new model of urban form and development and practice for urban design and planning" as being applied in post-disaster reconstruction in Sichuan province. Specifically, this new economy and new urban form will be examined through two case studies. Finally, design research leading to the development of a new model of urbanism will be discussed. The first two case studies are urban strategies that are currently underway in Sichuan, in different states of implementation. All three examples share the common thread of employing a new approach towards redevelopment which is based on the changing of the economies of landscape, as well as being models for a new urban form and new urban economy. Eco-tourism and its alternative form of urbanism can be adopted by both China at large and in other parts of the world currently undergoing the massive pressure of urbanization. First, the Wolong Masterplan strategy will be discussed within the framework of ecological infrastructure applied in master planning strategies for reconstruction. Secondly, the planning and development of an entire new city, "New Beichuan" will be examined. A model sustainable city or "New Harmonious (Green) Social Village", the construction and design of Beichuan is currently being overseen by the Chinese Academy of Urban Planning and Design (CAUPD). Here, ecological infrastructure takes on the new urban form as ecology and the environment are prioritized as part of the new urban economy. Finally, the paper will examine the outcomes of a collaborative studio held between the University of South Florida (USF) School of Architecture and Community Design (SACD) in collaboration with Tongji University planning students from the College of Architecture, Urban Design and Planning, and the director for the Dujiangyan Studio for the Wenchuan Earthquake Relief and Reconstruction plan held in the early part of July 2009. Three schemes by three teams of students propose the development of a new model for urbanism that is a rural-urban integration which valorizes ecology and the environment.

1. WOLONG MASTER PLAN -A "NEGATIVE APPROACH"

The Wolong area was one of the most impacted by the earthquake with its close proximity to the earthquake's epicenter. The term "wo-long" means "crouching dragon", which is an allusion to the sacred Dragon Hills that provided security for numerous villages in China. The villages in the area were permanently erased by the land and mudslides that occurred after the quake. The Wolong Nature Reserve for Giant Pandas, established in 1963 by the Chinese government, was also heavily impacted by the earthquake. The nature reserve houses more than 150 highly endangered giant pandas. Much of their habitat, bamboo, was destroyed by mud and landslides. Currently, the master planning for a large resettlement project for the Wolong villages is being implemented underway. Additionally, the giant pandas in the nature reserve have been temporarily relocated with strategies planned for the restoration of their habitat.

Each province has been charged by the Central Chinese government with the financial responsibility to fund the redevelopment and the rebuilding of a particular affected area. The Wolong area redevelopment and the Giant Panda Nature Reserve restoration are being funded by Hong Kong. The master plan is being planned by Peking University and the Chanan Academy and Center for Ecological Research and the private firm of Turrenscape. The redevelopment takes an ecological urbanism or a "negative approach" to urban growth and form by identifying and designating space for ecological infrastructure and natural systems first, an inversion of current urbanization practices in China which put the projection of population and the planning of civil infrastructure, roads and gray systems first and the planning for landscape and ecological

The phrase "negative approach" has been coined by the firm Turrenscape and Kongjian Yu.

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² Paraphrased from Charles Waldheim in the Landscape Urbanism reader.

systems last. The scheme ascribes value to ecological remediation and landscape as a placeholder as a new urban form, resultant from a new form of economy. The negative approach has its roots in the pre-scientific planning practices of feng-shui which "gives priority to the natural patterns and processes of Qi (breath). This is a significant inversion to the planning and urban schemes put forth and instilled in national consciousness during the Mao Zedong Era. Mao declared the pre-scientific feng- shui and the more spiritual and symbiotic relationship of nature over man as counterrevolutionary and backward thinking. Much of the Soviet-style planning conducted during Mao's era was linked the industrialization of cities and rural landscapes and included no development of ecological infrastructure or sustainability. In the context of postdisaster reconstruction, the scheme takes the opportunity to re-assess and, ultimately, to retool and reconfigure prior development patterns in the area, including the unplanned and informal urbanization in the mountains. The strategy mitigates the impact of the building footprint on, and valorizing economies of ecology as a redevelopment and reconstruction strategy. The master plan scheme aggregates urbanization by designating core areas that are not allowed to be rebuilt upon, thus permitting natural processes to occur that, in turn, remediate damaged ecologies and landscape, specifically for the Giant Panda habitat. This aggregate approach consolidates several of the villages into larger resettlement areas, relocating farmers into larger housing blocks. The economies of landscape shift as the area transitions from one of agriculture to ecotourism focused on the Giant Panda habitat. Re-urbanization is focused on protecting the local culture and vernacular landscape, including reconstruction that uses local materials. The redevelopment of the urban and natural landscape is divided into three zones:

- Core Area the primary habitats for the giant pandas.
- **Buffer Zones** the areas around the core, which are potentially important for protecting the core habitat and creating linkages that connect two or more of the sources.
- **Eco-tourism and resettlement areas** the most urbanized areas, which will house the region's human population.

Core Area. The Wolong Nature Reserve itself and its associated giant panda habitat and travel corridors have been identified as the Core area and has now been designated as an ecological recovery area. Its restoration will be the first phase of the overall landscape master plan. The area will be returned to its natural ecological processes, enabling the restoration of the forest, natural vegetation, and bamboo that are critical to giant panda survival. In this core area, human intervention will be eliminated and vegetation restoration will occur. Villagers will not be permitted to be re-build in this core area. Only those with special permits for giant panda research will be allowed to travel into it. The current research facility and clinic within the core area will be moved to the city of Dujianyan.

Buffer Zone. A buffer zone will be placed between the urbanized resettlement area and the core area. While the main Giant Panda Protection Research Center and Disease Control Clinic will be relocated to Dujianyan city, seven smaller centers will be rebuilt within this buffer zone, in addition to new observation centers.

Eco-Tourism and Resettlement Area. The area outside the buffer zone will be used for resettlement of local villagers. An aggregate approach to urbanization will consolidate several of the villages into larger urban resettlement areas. Villagers who were previously farmers (particularly those living in the upper mountain villages) will have their farming lands reclaimed by the government and will be relocated into apartment blocks in the new resettlement. Such land reclamation and aggregation and farmer relocation is in keeping with the Chinese government's larger "New Harmonious Social Village" policy. Corridors where mud and landslides would be likely to occur during a future earthquake will be set aside as no-development areas. A Nature and Earthquake Museum, with a major component dedicated to the giant pandas will also be built. By laying down ecological infrastructure as the fundamental building block of the master plan, natural processes are allowed to occur which remediate, in addition to acting as placeholders that can have an alternative use as evacuation corridors in case another earthquake is to occur. The scheme likewise begins to re-establish the interdependent relationship between man and nature implicit in traditional Chinese planning practices.

2.NEW BEICHUAN-THE "NEW HARMONIOUS (GREEN) SOCIAL VILLAGE" AND ECOTOURISM

Background

The former city of Beichuan, capital and the seat of government of Beichuan County, was the city located in the earthquake epicenter and thus completely decimated and permanently erased by the May 2008 earthquake that occurred there. Yuli was the former capital of Beichuan county before the 1950ies and the launching of the People's Republic of China. The area is a historic one which has historically suffered from a lack of land due to its mountainous location. Beichuan consisted of scattered urbanization and informal settlement in its mountainous regions. Planning and accelerated implementation are currently underway for the construction of the new and relocated city of New Beichuan. The population and city of old Beichuan is being relocated to a location further removed from the mountain where there is more land. The previous model of old Beichuan's urbanism was decentralized and scattered across the landscape and of lower density. Farmers lost their farming land and houses after the earthquake. Loss of housing numbers between 1000-5000 which included peasant's land. The whole county of Beichuan is trying to resettle as a whole area. The resettlement village is agglomerating their land in a compact centralized scheme similar to the strategy being employed in Wolong. The new city will be for 50,000 inhabitants and proposes a compact city scheme that is an urban agglomeration of the several destroyed villages, into a compact city scheme with greater intensity of density. The province of Shandong is funding the project. Construction of the city is occurring and its accelerated implementation has a completion date slated for two years time. Additionally, an international competition for a new government building, library and earthquake memorial park is currently underway which is transformative to the region and that contributes to the shifts to the new urban form being driven by the new urban economy of tourism which necessitates the prioritization, valorization, and subsequent remediation of the environment.

Chinese Government Policy the "New Harmonious (Green) Social Village" "Green Leap Forward" 4

The predominant focus has been on the reconstruction of the area and of homes with a shift from on an economy driven by industrialization and degradation of the environment to one which valorizes the environment and whose master plan seeks to remediate it. Head of State and Chairman of the Peoples Republic, Hu Jintao, has proclaimed that Beichuan, as the city worst impacted by the earthquake, will be rebuilt as a model city of sustainability, serving as a precedent for the rest of China. The implications of this policy shift towards the environment are particularly significant if one considers the impact of effective implementation of large scale urbanization by the power of a top down, centralist communist authoritative government can have as can be evidenced across China in light of its rapid urbanization. This beginning of a shift in Chinese policy and urbanization strategies towards a new urban form and thinking is coined by Tsinghua Fullbright scholar Julian Wong as the "Green Leap Forward" or the" Chinese Green Revolution". As Wong describes on his blog, the term is a play on the Great Leap Forward, the "economic and social plan used from 1958 to 1960 which aimed to use China's vast population to rapidly transform mainland China from a primarily agrarian economy dominated by peasant farmers into a modern, industrialized communist society, now widely seen, both within and outside of China, as an major economic (and environmental) disaster". 5 He contrasts the Green Leap Forward as "an emerging movement to harness and combine the powerful forces of smart policy, sustainable finance and green technologies to steer China's red-hot economy onto a more ecologically and socially sustainable path." Eco-cities have a relatively short history in China beginning with Dongtan and Huangbaiyu. Dongtan, a city for 500,000 people, lying to the north of Shanghai on the island of Chongning, was designed by Arup and spearheaded by the Shanghai Industrial Investment Corporation and Huangbaiyu designed by William McDonough have both been perceived as unsuccessful urban models and failures. While construction on Dongtan was halted due to the arrest of the mayor of Shanghai on corruption charges, Huangbaiyu has been perceived as a failure as it is not integrative into the daily lives of the end users, additionally, the existing ecological structure and urban form that has been imposed upon it does not address the local economies of the area. There are other more promising eco-cities such as the Sino-Signaporian collaboration for Tianjin City eco-city for 300,000 people.

Green Design Strategies across a spectrum of scales and Green Systems

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⁴ This term has been coined by Tsinghua Fullbright scholar Julian Wong.

⁵ Julian Wong

⁶ IBID

Beichuan's urban form is organized around ecological urbanism principles across a spectrum of scales. The policy towards redevelopment of urban form which preserves the local cultural and vernacular landscapes, in addition to valorizing and subsequent remediation of the environment, is the basis of its new urban economy. Other cities are reconstructing "heritage areas" or vernacular urban form modeled after the Qing vernacular- an ethnic minority indigenous to the area. Current economies of industry are transitioning to those of light industry, agglomerated and centralized, as opposed to their current decentralization across the landscape. The new urban form and economy are interconnected and transformative as the new urban form valorizes the economies of landscape. The master plan integrates a dedicated green system located on the principle river spine which travels through the city and that interconnects to a network of green corridors or "green fingers" to a system of park systems which run north-south throughout the city in provide corridors for wind cross ventilation, a tenet of traditional Chinese planning principles. Housing is 5 stories high with an FAR of 1.4. Houses share common yards and have access to green fingers which connect them to park systems that are within walking distance and accessible as opposed to private yards. Several of these green systems have the dual ability and purpose of acting as dedicated evacuation corridors and open space place-holders in the event of another earthquake. Strong green transportation policies are being implemented, including green buses as well as dedicated bike infrastructure. While car ownership is a status symbol of the emergent Chinese middle class, there will be some limitation made on using cars in Beichuan. The new city is built further from the mountains on a new site which is deemed safer in the event of another earthquake.

Deindustrialization and "Green Branding"

Historically, Sichuan was part of the so-called "Third Front", a designated division given by Mao Zedong in the 1960ies to the rural hinterland and interior of southwest of China. China at this time was divided into three fronts which ascribed a massive Chinese development of industrial bases and military complexes in the rural southwestern hinterland due to its strategic interiorized condition. The "First Front" was located along the eastern coastline and was the frontline with the Soviet Union who the Chinese feared attack from and possibility of. The current implications for this are the presence of a number of these complexes in the area which are to be addressed in the new urban form and the new urban economy. As part of the long-term master plan, the existing heavy industry will be de-industrialized and effectively decommissioned as the region has been determined as not suitable for polluting as it is being retooled as a tourist site. The master plan valorizes the economies of ecology-valorized due to tourist potential. The scheme looks at the implementation of a zero carbon neutral footprint with the energy that is expended being 100% renewable. The idea of a "carbon neutral footprint" serves as a "branding" for the entire county of Beichuan, and the concept that each county will have a different "green character" or "green brand" is seen to have a huge potential for generating income from tourism. Current reform to energy strategies include forbidding the use of coal and the harnessing of hydro power generated from the river which now comes through the city. In the case where hydro power does not generate enough energy, heating will be generated using biomass through the use of crop residue and of forest waste. The cleaning up of water systems is deemed critical as is the treatment of current wastewater systems and the disposal of solid wastes. Significant to this project, and unlike the Wolong master plan, the Beichuan scheme begins to integrate the "negative approach" across a spectrum of scales, including that of housing. Houses are to be built to Green Building standards. A number of traditional materials are used such as bamboo, rocks, and local bricks. While the province has a staple of natural resources of bamboo, it is deemed not an appropriate material to use for more than two stories. Architects such as Japanese architect Shigeru Ban and his colleague, Beijing based Japanese architect Hironari Matsubara, initially researched and made some proposals for housing using reclaimed paper tubing disposes of by the Sichuan factories making cloth. Several vernacular prototypes of housing are being integrated albeit with greater density, such as that of the courtyard which has a natural cooling quality to it.

3. REDEVELOPMENT OF DUJIANGYAN AND JUYUAN DISTRICT-THE LINPAN AS A NEW MODEL OF URBANISM

The final precedent examines the design research on an integrated urban-rural urbanism model and outcome of a collaborative studio held between USF SACD and Tongji CAUPD held during July 2009. The

studio was a Sino-American collaboration between urban design and planning students from both schools. Three teams composed of both American and Chinese students were asked to design a new model of urbanism for the proposed new city, Juyuan District, south of Dujiangyan City. The objectives of the studio were to prepare an analysis of the current conditions, as well as to provided a new vision by creating a new rural-urban model of urbanism and provide a new vision by creating a new model, the "Dujiangyan model" as a viable new urban spatial model that could possibly be adopted by the Chinese Government. This new urban model could possibly be implemented in the same spirit as various other alternative urban models that have been implemented by the Chinese governments with unique spatial conditions and new urban forms such as the "Village in the City-Shenzhen" (VIC) urban model where the farmland is maintained at the center of the city due to the farmers' land rights and the high density of the towers that surround the city

Tongji University Design Institute is currently charged with the master planning for the redevelopment of Dujianyan City and a new city to the south of this, Juyuan district, which is to be connected to Chengdu by a high-speed rail infrastructure currently under construction which will link the two locations in a strategic corridor development. The design strategy for its new urban form prioritizes ecology and the environment as its new urban economy and a generator of new urban form. Tongji Institute held an invited ideas competition last year for the design and redevelopment of the area which included entries from 9 international teams plus one team from Tongji. The schemes focused on post-disaster reconstruction through a range of lenses including: urban-rural integration; urban agglomeration strategies; compact and centralized city planning; water systems and disaster prevention through ecological planning.

Ecological unit-the linpan urbanism model

Students were briefly introduced to the body of work regarding the earthquake and its impact on the area, in addition to the general situation of disaster relief work and reconstruction plan of Dujiangyan City. Students examined an ecological urbanism approach as applied to the model of urbanization in the 11 day workshop that they participated in. Students were asked to consider their intervention across a spectrum of scales, including creating a new regional identity of the new city, in addition to its "green branding" as a strategic eco-tourism node ecotourists visit the protected giant panda reserves and panda breeding research base, in addition to the UNESCO world heritage site of Dujiangyan and its Irrigation System Works. Students also understood the scales of landscapes and territories of the province and, historically, its interdependent relationship to the pattern of the individual settlements Sichuan is a province whose staple was and spatial relations. traditionally that of agriculture based on the integration of a sophisticated system of irrigation channels.

The landscape plain is dotted by irrigation canals and small settlements. Settlements occur in an aggregated "linpan" form which is dotted across a patchwork and forested landscape. The "linpan model" is an agglomeration of 4-5 vernacular farmhouses per ecological

unit. The linpan unit has its landscape and territory is delineated by irrigation channels cut around the urban agglomeration that delineates land tenure and land use. One single stalk row of corn delineates a fence around this territory. The workshop began from the premise of developing a new urban model for possible



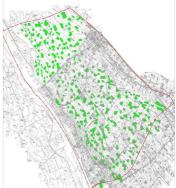






Figure1 Reg. map of Dujiangyan **City and Juyuan District**

Figure 2 Linpan distribution.

Figure3 Vertical Linpan integrated with vertical urban agriculture

Figure 4 Linpan patchwork

implementation by the Chinese government, one which addressed the design of a new urban-rural integration model of urbanism. The linpan was introduced to students as a viable spatial organizing unit for a new urban model for the city, an urban ecological unit directly derived from the local vernacular land use, interconnected together through an interdependent relationship between the economic and ecologic conditions. Students were encouraged to look at more efficient land-use typologies in their new development. They began from the linpan as the basic organizing unit for the city. Linpans as an urban model, lend themselves to centralized urban agglomeration and the creation and managing of a buffer zone between the linpan with transportation, including a dedicated bike infrastructure linking the linpan or urban clusters together. In China, the division between rural and urban was historically 80-20%, government policies during the Mao period maintaining it as such. In what is being called largest migration in world's history, it is projected that by the year 2020 that figure will have flipped to be 80%-20% urban-rural. It is significant that, up until a few years ago, China was self-sufficient in its food production. With its unprecedented urbanization and the eating up of valuable agricultural land, China was forced to begin importing food for the first time in its history.

Students Schemes

All three teams schemes' proposed a new way of living that provided a continuum and that was integrative between ecology, environment and habitat, and in opposition to the current dialectic of rural vs. urban, proposing, instead, a rural-urban model. The new economic model and urban model, would be one of agri and eco-tourism. The linpan was proposed as a basic ecologic unit and urban model intrinsically linked to the local economy, related to the area's agricultural spatial history.

All three schemes seek to minimize the urban impact of the new development on the site through the development of a new rural-urban model based on maintaining the structural and ecological unit of the linpan, which is to integrate it into the strategic economic development of the new city. Students looked at local landscape economies which could be integrated into the master planning such as dedicated bamboo reserves (providing food to the giant panda eco-tourism economy), as well as other landscapes of local economies.

The new urban-rural model is derived from that of the linpan unit, integrated efficiency, in addition to compact, centralized planning with green buffers that are maintained between the linpan and which are based on its inherent vernacular model. It is hoped that this new form of urbanism can provide a new model and an effective integration between the rural-urban model, serving as a precedent for efficiency, compact planning and productive landscapes.

The Vertical Linpan

One scheme investigated the concept of the "vertical linpan", which integrated the concept of urban agriculture into a vertical urbanism, with an intensity of concentrated, compact density in towers located on the footprint of the linpan, separated by the natural order of green buffers provided by the linpan model. Another scheme integrates the concept of "habitat", one which seeks to blur the line between architecture, urbanism and landscape. The urban ecological unit of the linpan combines the space of living, working and relaxing.

Conclusions from the Workshop

In conclusion, based on the findings presented by the three different teams at the termination of the workshop, it was determined that a new urbanism model for China can emerge- the "Dujianyan model" or "ru-buranism", one which is an integrated urban rural model and one that put puts landscape and ecology first. Integrated is the concept of the environment and ecology as a new currency and new economy and new urban model. The urban model and new urban form is informed by the unique regional, rural and cultural landscapes of the area, including the irrigation works and local traditions that still speak of the local and regional identity. Productive vernacular landscapes are to be integrated into the urban design, as are local economies and economies of landscape. The linpan functions as an urban or ecological unit which offers the ability for urban clusters that have concentrated land uses and functions, which are connected together by a series of networks of transportation separated by green spaces acting as buffer zones for possible urban agriculture. These green buffers or corridors can also serve a dual purpose of evacuation routes in the case of future earthquakes, as they can also serve as corridors for animal habitats.

OVERALL CONCLUSIONS

In conclusion, it is believed that within the context of the rapidly urbanizing China, that a new urban form can be interdependent on the new economies of landscape which valorize the environment as "a critical new model of urban form and development and practice for urban design and planning". The case studies examined in this paper are being applied in post-disaster reconstruction in Sichuan province and serve as useful precedents towards this implementation across a spectrum of scales. It is hoped that the new urban economy of eco-tourism, and thus ecological urbanism, will serve as a useful precedent and model for the development of an alternative urban form that can be adopted both by China at large and in other parts of the world currently undergoing massive pressures of urbanization at unprecedented scales which are predominantly unsustainable and whose design strategies do not yet address its impact on natural landscapes and ecological systems. The new policy shift towards the "Green Leap Forward" can be both top down and bottom up. The implementation of the New Social (Green) Harmonious Village can retool local economies into new economies and new urban form that valorize the environment its remediation and preservation. New urban models such as the integration of the rural-urban dichotomy, in addition to looking at alternate models of urbanism or prototypes such as the vernacular linpan model and the integration of eco-tourism are useful precedents. These models begin to address the critical issues such as maintaining local identity and traditions with the new needs of urbanization in a new spatial form which mitigates the impact of the urban footprint on the environment.

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