

## **Theme: 2. SOCIETY: Community and economic development; Sustainable cities & communities**

### **Bamboo Village (Baoxi/Longquan) and Earth Clusters (Yongding/Nanjing): The use of bamboo and earth materials as symbols of rural sustainable development in China**

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The last two decades of reform have transformed the economic environment in China. Productivity in rural China has increased, with sophisticated agricultural biotechnology, with rising food exports. Rural income has risen considerably and poverty have been targeted through many policies for economic development in rural China, aiming for a labour shift from agriculture to services and industry. Yet, millions are expected to continue leaving rural settlements (in particular the young) in search of more prosperous standards of living in cities. The rural population is now essentially formed by the elderly and very young children (left-behind) and the focus for the government is on continuously reducing poverty, while pushing towards modernization at a very fast pace in rural areas. One such initiative is the modernisation of rural villages, under the banner of 'eco-architecture' using raw materials such as bamboo and earth. This paper discusses strategy for rural economic development in two Chinese provinces: Fujian and Zhejiang. Baoxi (Zhejiang) or as it is known locally 'the Bamboo village' hosted in 2016 the 1<sup>st</sup> Bamboo Bienalle in China, which is meant to happen again in 2018 and 2020, delivering a total of 30 architecturally designed buildings in the area. Earth Tulous (Fujian), is home to a number of the historical Earth buildings. Magnificent constructions, the Tulous have been built from 12<sup>th</sup> – 20<sup>th</sup> centuries as defensive constructions, and since it has been declared Unesco World Heritage back in 2008, surrounding villages have seen much transformation of its environment and economic development over time. To what extent such touristic approach on 'Eco-Architecture' are mainly economical and marketing tools rather than a commitment to environmental protection and rural sustainable development has been the key for discussions held with locals, and investigations conducted through fieldwork, published and unpublished materials.

### **Bamboo and Earth as 'Eco-Architecture Tourism' in Rural China: the visual start-ups for eco-economy rural models**

China's rural-urban divide and inequality has reached its peak in 2005 as stated by NBS (2005) with real income per capita being no more than 39% of real urban income per capita. The situation has been improving since than given the rural development policies implemented by the Communist Party in the last decade. Such drive has been derived towards the attempts to reduce the massive rural-urban migration that if from one side, contributes towards urbanization and modernisation; it also is a source of concern towards provision of services and standards of living in cities (Chan and Hu 2003). While committed to reach the highest possible levels of urbanization in China, reclassification of rural areas into urban areas has been seen as a short-cut on this process of achieving urbanization goals (Knight et al 2006; Eastwood and Lipton 2004). Reclassification reduces rural and urban mean incomes,

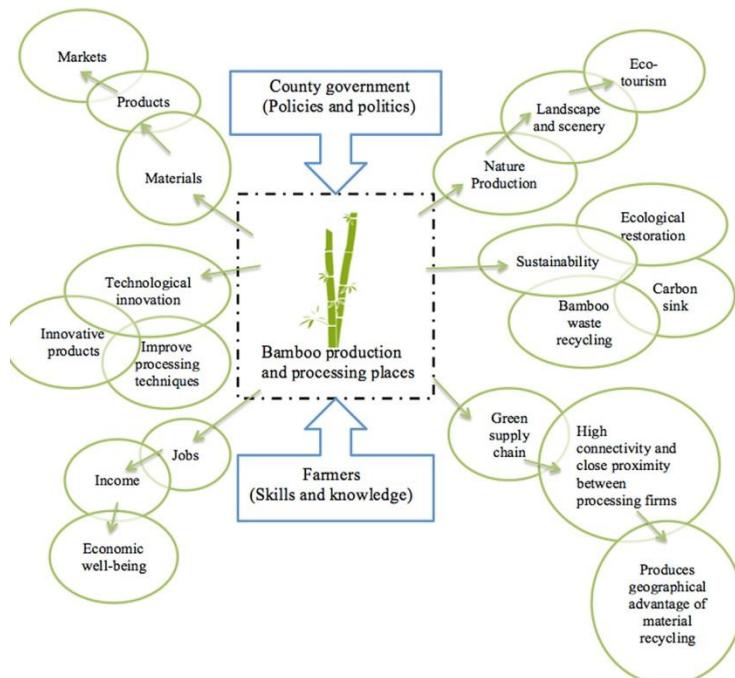
which consequently reduces the rural-urban gap. The main idea is to reclassify the most economically developed areas from rural to urban and to relocate rural villagers to such areas that are showing more economic potential. Urbanisation with such induction schemes for modernisation happens at a much faster pace, and the government is able to concentrate investments on infrastructure, industry and services while restricting the movement of people to larger 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> tier cities across the country, relaxing the Hukou system beyond such larger cities at reclassified urbanized communities (Dwayne et al 2008).

In this context of modernization and urbanization, rural areas are meant to become active national contributors for economic development, otherwise it cannot survive. ‘Eco-Architecture Tourism’ has been an initiative promoted by local county governments to boost local economies and enhance environmental awareness and protection. In rural areas in China, since the 1980’s there has been a trend in promoting the use of raw materials such as earth and bamboo, in connection with rural settings, with broaden initiatives that encompasses fully developed Eco economies (e.g. case of Anji-Zhejiang province) or parts of it (eco-tourism/eco-architecture parks- Bamboo Village and Earth Tulou). Awards, international recognition, policy and incentives for production, industry and services processing and management, eco-tourism all are part of the construction of eco-economy rural models.

Anji (situated in Zhejiang province) has received numerous environmental awards for its industries and products related to bamboo, and is considered top in the country for its contribution towards exports and the national economy. Today bamboo and Anji are synonymous of one another, and of sustainability and economic prosperity. Anji has taken over 40 years to build its reputation and industries (as a bamboo town), and there is clearly a model that is being followed across China in rural areas to boost their economic contribution to the national market while being portrayed as examples of environmental awareness and protection through eco-materials (e.g. bamboo, earth). It is true that Anji’s economic contribution has been exponential and extremely successful as a model for development, but questions lie on its environmental management and focus on intensification of production to meet increasing demands from local and international markets (Zhu 2006).

Bamboo and earth are materials are natural, can be extracted and mixed easily (earth) or grown rapidly (bamboo), with almost no or limited waste. On top of that, earth materials and bamboo are biodegradable. However, depending on local contexts, on the way crops or quarries are handled both bamboo and earth, can be scarce. It is important to understand therefore that as stated discussed by Flynn et al (2017), sustainability of a material can be both time and place specific. Agnew(1987) argued about the concept of place in three ways: location (as a physical relationship), a sense of place (as a subjective relationship to place) and locale (an element for social relationships). This is important for us to understand that what we can see in places like Anji (well established with continuous policies and governmental initiatives) and we are starting to see in Baoxi and in

Nanjing/Yongding, are images of bamboo and earth being constructed as part of a discourse that informs societal norms of sustainability (Flynn et al 2017) and reinforcing the image of bamboo/earth and place-making. Marsden et al's (2011) was able to offer a concept on how a place-based bamboo production models (and we here extend it to earth production models) can be constructed and operated in response to economic needs and environmental concerns. The idea is that in a long term, the place based bamboo/earth production models focuses on the 'interrelationships between historical contexts, spatial patterns of socioenvironmental processes and the governance of the bamboo/earth processing industry', and the objective is in reality 'how bamboo (and earth) are co-constructing sustainability, economic activities and material-wellbeing for both humans and nature' (Flynn et al 2017). Bamboo (and earth) production and processing not only 'produces a cluster of production and consumption spheres but it also supports places for foods, eco-tourism, biofuel and materials for processing'. In this sense, Anji, like other similar ecoeconomies projects in China, as noted by Zhang (2002) has been exploring all such venues for development of an its development model, to produce 'social capital, increase regional competitiveness, and improve the livelihood of local residents'. Local people are conceptualising on the process, and 'co-producing a place based rural sustainable development model from its inception'. (Figure 1, Flynn et al 2017). The figure explains how key analytical themes around materiality, meaning and governance co-construct how sustainability is realised in bamboo in Anji. A similar understanding can be expanded towards earth and other raw materials as ecoeconomies, as in the two cases described here (Baoxi village and Tulou clusters).



**Figure 1**

## The Bamboo Village: Xitou village of Baoxi in Zhejiang

Xitou village of Baoxi is a rural settlement, located in Zhejiang province China. Famous for its production of clay based porcelain “Longquan Celadon”, back in 2016 it hosted the 1<sup>st</sup> Biennale for Bamboo Architecture. Funded by local government bodies, 18 buildings were designed by a number of award winning architects and built on a pre-determined village site. The architects have been chosen by George Kunihiro, commissioner of the Biennale. The choices were made based on the architect’s previous engagements with rural settlements and by their acclaimed architectural designs related to bamboo, earth and timber materials within the Americas, Asia and Europe (Kunihiro 2013). The participating architects were: George Kunihiro (USA), Kengo Kuma (Japan), Keisuke Maeda (Japan), Mauricio Cardenas Laverde (Italy), Simon Velez (Colombia), Sook Hee-Chun (South Korea), Vo Trong Nghia (Vietnam), Anna Heringer (Germany), Li Xiaodong (China), Yang Xu (China), Ge Qiantao (China).



**Figure 2**



Figures 3 & 3a

The plan has been to design and build over a period of six years, (starting in 2016) over 30 buildings that would function to become part of the local community of public buildings in Xitou village of Baoxi. The first phase in which we analyse here, is focused on the 18 buildings related to hospitality (Figures 3/3a). The main expectation by the Bienalle participants, community and local authorities has been that through investment on architectural design and bamboo, that it would be possible to activate the local economy of the village by linking its community with tourism and the bamboo industry.



Figures 4 & 4a

After one year of the implementation of the plan, Xitou Village of Baoxi have received an increased number of visitors (not substantially, official figures are not available), but not to the extent that it would have been expected by locals and officials (interviews). Neither it has brought the economic results that it would have been expected. Visitors tend to come, take pictures, stay for a few hours and overnight in other locations like Longquan, as there are no hotels in the village itself, or other touristic infrastructure. Despite that, the village has continuously been portrayed in the media as a model for sustainable rural development and it is well known today as the 'bamboo village'. This is quite surprising since despite the actual presence of these 18 buildings, there is no evidence of bamboo commerce, practices or activities by locals or in the area involving bamboo. If one would acclaim the efforts to induce bamboo

as an element of construction, and craftsmanship through the development of such bold architectural projects, there seems to have been no planning beyond the construction of such buildings, as well as policies, governance and management, and how to nurture and co-construct a culture of bamboo through the local community itself.



**Figures 5 & 5a**

During the field trip visits we have conducted to the site in 2017 (during weekdays and weekends) we were not able to enter one single building. All of such buildings remain closed to the public despite the fact that a number of such buildings are meant to be 'museums and workshops for celadon or hotel buildings'. (Figures 4,4a,5 and 5a). The site for the Bienalle is situated at the entrance of the village (Figure 2), bordering the river with the positioning of the elegantly double helix bridge designed by Ge Qiantao (Figure 10a). It is however as one crosses the bridge and goes through the information centre building that we encounter a bamboo fence (Figure 6) surrounding the entire complex. It is clearly a maintenance and security issue due to the fact that the site is indeed unoccupied, but one that reinforces the idea of a 'tourist park', mostly alien to those around it and therefore wasting an opportunity to transform and engage with the landscape, functions, services and day-to-day life of the village.



**Figures 6 & 6a**

Just across the fence (Figure 6a) there is a clay factory, run by locals that operate out of a very narrow site across the river. It is puzzling to see that no such activities are actually based within the buildings of the Bienalle site, despite so much resources that have been put into its design, construction and

maintenance to this date. While reading the flyers distributed at the entrance information building to the biennale, at least 2 buildings were meant to host ceramic factories and workshops, but none of such activities were found at the actual Bienalle site.

## The Tulous' Earth Clusters: Fujian Province

Nanjing, Yongding and Nanxi (Fujian province) host a number of Tulou clusters (over 35,000), majority of these are non UNESCO World Heritage Cultural sites . Only a reduced number of clusters were declared Unesco World Cultural Heritage back in 2008 (46 Fujian Tulou sites). The effects of economic development however for the sites and immediate surroundings that have been declared Unesco heritage have been well documented (Wang 2012). A surge on ‘eco-tourism’, as Tulous have been converted into hotels, informal shopping malls, museums and restaurants under the banner of historical and sustainable livelihoods and communities of Earth construction flourished. With a direct impact on economic development for the region, due to its scale and regional presence, its historical, environmental, cultural and architectural significance recognized by UNESCO, the Tulous’s influence (in particular environmental) remain as a part of China’s past, present and future (UNESCO 2008).



**Figures 7 & 7a**

Tulou in Chinese literally means earthen buildings. Constructed from the 12<sup>th</sup> to the 20<sup>th</sup> century by the Hakka people, these were fortified constructions mostly for residential and defensive purposes. Designed in different shapes (rectangular, circular or a combination of both), the Tulous have very thick load-bearing rammer earth walls (1.6-1.8m thick) on the outside and interior timber framed structures on the inside. The idea was to house extended families, or clans, under the same compound without any social hierarchy. Some Tulous have been built as high as five stories and housing up to 800 people (Knapp 1986). The residential structure is one of equal rooms, same size, decoration or openings, where families would occupy from ground to top floors (one vertical unit). The rammed earth walls are a mix of compacted earth, stone, wood, and other available agricultural materials, and reinforced with a combination of clay, lime and sand, along with horizontal bamboo strips for lateral binding. As stated by the UNESCO (2008) during the nomination process as a World Heritage Site,”

*“The importance of the Tulous lies not only on its magnificent architecture, but on its communal living and ‘harmonious relationship with the environment’.”*



**Figures 8 & 8a**

The communal aspect of the Tulous is of particular importance, as residents used to farm communally, share services and facilities (e.g. washrooms, weaponry, bathrooms, ceremonial halls and water wells). This division served well before and after 1950-60's during the people's commune period, as families remained together under the division of public and private property and services for the clans. Nowadays, with the migration into cities and the modernisation within rural areas, such as adjacent to the Tulous, the communal living and harmonious relationship with the environment has not necessarily survived. As people have moved out of the Tulous in search of modern facilities, most of the residential units within the Tulous are either empty or have transformed their uses. There is however no proper standards or regulations to refurbish Tulous (e.g. fire safety, energy efficiency, waste management). Figures 8 and 8a, demonstrate the new uses found for the Tulou clusters, given the touristic demand (e.g. Tulous as markets (Figure 8) and Tulous as hotels (Figure 8a).



**Figures 9 & 9a**

The issues however that have risen with the touristic demand in these sites is the relationship with the environment. Forestlands and agriculture has been disappearing, to give space to modernisation and urbanization within rural areas. Reclassification is allowing such prosperous economical developed rural areas to be transformed into urban areas (Chun-Chung and Henderson 2006), thus allowing for

extended construction in former areas designated for agriculture and forestlands (Figures 9 and 9a). With the lack of public investments on infrastructure/services and facilities for temporary residents (e.g. tourists) the pressure on the natural environment and resources has been exponential, not to mention on the disruption and reduction of the Tulou clusters to its central architectural element (The Tulou House) disassociated to its extended context of production and self-sufficiency of farmland. The reality is that tickets are sold to enter the Tulou clusters, the architectural buildings. Visitors are allowed into these constructions (which are now informal markets) and there is indeed very little offered to the visitor on the way such communities lived or how they engaged with their immediate and local environment. Tickets range from 60-150 Rmb per person, and it is unclear the official figures in which local villagers, counties and provinces share such resources or how it gets reinvested into these communities. From the interviews and discussions conducted during the many field visits from 2014-2016 in the region, it was apparent the lack of transparency and governance, and the discrepancies on standards of living from the areas surrounding the Unesco Heritage clusters (46 clusters) and the ones that were left outside the inscription zone.

With no active economies, a shrinking population, no public investments and a migrating trend towards larger cities, these intricate and complex communities are disappearing. Those still living in Tulous, are surviving as if living still 40-50 years ago, dependent on subsistence agriculture and cultivating the land around them, without connected services or electricity, waste and water in some areas. The population in these Tulous are either the very young and/or the elderly and with that, the burden of not having the strength of a clan to support exchange, maintenance and continuity amongst members. The intactness of farmed and forested landscape found in these almost abandoned Tulou clusters, are truly offset by the emptiness of communal and environmental relationships.

*“The authenticity of the tulou is related to sustaining the tulou themselves and their building traditions as well as the structures and processes associated with their farmed and forested landscape setting. The integrity of the tulou is related to their intactness as buildings but also to the intactness of the surrounding farmed and forested landscape – into which they were so carefully sited in accordance with Feng Shui principles.” UNESCO 2008*

## Rural development driven mainly by economic rather than environmental values: visual construction of sustainable eco-models

As described earlier, Anji (Zhejiang) is considered a successful eco economy based on bamboo in China. The economic figures and the visual association of green scenery and sustainability stand as proofs of its excellence as a sustainable place making of prosperity. Nearly 60% of Anji's income is directly related to the bamboo sector (Zhu 2012) and yet the demand for bamboo products in China and overseas exceeds the production. Such high dependence on one economy is considered risky as the emphasis has been on increasing intensification to meet the demands for raw materials and to stir

away the competition. This demand has triggered policy incentives for intensification, and has encouraged farmers to extend and intensify bamboo forests. Today in Anji, over 50% of its forestland is bamboo, and of such forests, 80% is Moso Bamboo. The county is now dominated by a mono species which makes it more vulnerable to diseases. As Flynn et al (2017) describes, bamboo in Anji has been treated as an economic project. The management and manipulation to increase the bamboo industry's productivity is excessive and can become a challenge for the future. At present, the ecological practices which could maintain a good balance between 'conserving the carrying capacity and maximizing the bamboo ecosystem is insufficient' (Flynn et al 2017), given that bamboo producers are using toxic pesticides to increase production, and becoming more dependent on this vulnerable monoculture practices. It is clear that the government is very reluctant on acknowledging the contradictions and consequences of promoting ecological benefits while masking its shortcomings. For them visually and economically speaking, the landscape is fairly vibrant and the underlying environmental problems are meant to be marginalized, considering the overarching rural-urban wider issues (e.g. poverty elimination, migratory trends, and urbanisation). (Wu et al 2013).

(Flynn et al 2017) conclude:

*"Nature is used to generate economic value and to help to govern the population as farmers will remain in rural areas whilst they can be confident of high and increased standards of living. Over time, the contradictions between, production, processing and place, are expected to become more apparent and to form the making of a local model of sustainability every more challenging".*

## Conclusions

The paper has discussed the use of eco-tourism/eco-architecture as economic generators for revitalization of particular communities in two provinces (Zhejiang and Fujian) in China. The use of raw materials such as bamboo and earth has been linked to the identity of Chinese contexts and have been synonymous of nature, clean and prosperous environments. Anji county in Zhejiang has been analysed here as a reference as a bamboo ecomodel for development, since it has been recognized as a prosperous and successful model of rural sustainable development in China.

At a very different scale than Anji, since operating at the initial level of eco-tourism only, both locations described here demonstrate a main drive towards economic development rather than environmental awareness and protection of resources for these communities. Bamboo and earth materials on its own, and connected with the eco-architectural structures here displayed, have been portrayed intentionally as rural sanctuaries of clean and sustainable living, despite its disconnection with their immediate contexts and communities activities for long term sustainability. As eco-tourism depends directly on visibility, it would be expected that the use of awards (e.g. Unesco or the Bienalle) would be a primary boost towards the co-construction of an eco-model for rural development.

The reality however as observed through on-site discussions, site visits and research of published and unpublished material revealed that the strategies applied both at the Earth Tulous and Baoxi, are not meant to be followed up by comprehensive policy incentives, governance and management to improve the efficiency of the local bamboo and earth construction/manufacturing industries and productivity. The Baoxi village is at a very early stage, and it's hard to predict before the project is fully completed (expected 2020) to what extent it will receive provincial and county support as Anji and other localities have to elevate its production and manufacturing engagement with bamboo. The Tulous because of its status of Unesco Heritage, have been able to attract international and local investments to guarantee the necessary touristic infrastructure, and to secure revenues from eco-tourism that flows back into the local economy. The already mentioned issues surrounding the preservation of farming practices and forestlands is one of the many threats associated with eco-tourism practices that do not have a central level of governance ready to act on behalf of the communities and the environment.

As it stands, both 'eco-tourism projects', are being treated either as a tool towards urbanization/beatification of rural areas on its own (Baoxi village) and an economic project (Earth Tulous) without sufficient ecological checkpoints for commerce, tourism, waste and water management, preservation of forestlands and farmland, as well as environmental management of production and processes of services. The ultimate goals, (for such double-edged strategies), are to ultimately increase rural income and contribution towards the national economy, continue to control the flow of movement of nationals towards larger urban centers, and enhance urbanisation by reclassification and portraying a modernized China at a very fast pace. These goals per say are extremely fair and are to be pursued with determination. The methods and actual results are at the end

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