

# Climate change in a rural Chinese village: is the community aware? A case study in Cuandixia, using the Photovoice method

## INTRODUCTION

Villages, as an object study, have attracted the interests of many scholars, for example in vernacular architecture (Rapoport, 1969; Oliver, 1998), history (Bloch, 1931; Knapp, 1989; Jing, 1996), geography (Liu *et al.*, 2010; Haijun, 2015), or cultural heritage (Christian Norberg-Schultz, 1980; Knapp, 1992; Fang and Liu, 2008). Over the last fifty years, tourism scholars have also participated in renewed research on villages. The impact of visitors, their choice of destination and their experience speak of quite a recent phenomenon, that is, the (re)discovery of the countryside for tourism purposes. Yet, at a time when awareness of climate change is affecting almost every debate concerning development strategies, future planning, governance and action implementations, very little has been written on the impact that climate change has on villages from a communal perspective. Even less has been researched on what is called an 'urban rural village', which is a village located at the close periphery of a large urban agglomeration or city in China.

Some studies examined the environmental impact of climate change on villages (Byg and Salick, 2009), others researched, for instance, long-term historical narratives (Huang 2009). However, since many studies that are conducted on the topic of climate change tend to be structural, in, for example, providing sound analysis on policy-making, policy implementation, technological assets and uses, we were also interested in developing another aspect of the topic which is the community point of view or what we call "the voice of the people". Klopogge & Van der Sluijs (2006) have demonstrated that the inclusion of stakeholder knowledge and perspectives was not only a necessary element in reaching a more comprehensive understanding of climate change and its impacts, but also contributed to the better assessment of decision-making and preferences. Other scholars have demonstrated that the local community's expertise is relevant in leading attitude change and represents a further source of knowledge regarding climate change (Danielson *et al.*, 2005; Laidler, 2006). Some studies have been concerned with participation, or community narratives, but very few -if any- have been investigating what people actually think about climate change in urban rural villages of China and their degree of awareness about this phenomenon. This is what this paper deals with. The first part presents the context and method of the study. The second part discusses the survey and its results. The main goal of this paper is to explore whether village communities are climate change aware and to identify best practices for them to implement.

## 1- CONTEXT AND METHOD

### 1.1- Context

The context of tourism in China is intrinsically related to governmental policy and incentives, as with almost everywhere in the world. But in China, tourism has been a highly controlled space, and it is only recently that changes have occurred that, for example, modify traveller opportunities such as the right to independent travel, both inland and overseas (Xie, 2010). Changes in the Chinese tourism sector concerned not only the way one travels but also one's destinations. Late urbanisation brought up

massive changes such as territorial transformations, economic depletion and rural exodus. Government used new destinations as a lever to maintain rural population on site (Zhang *et al.*, 2008). It is in this context that rural tourism was developed.

Of China's three hundred million villages, today, approximately one percent remains in their traditional form, while the others have lost their forms and culture during the country's urbanisation (Luo, 2014). To promote economic growth and increase farmer income, the majority of the remaining traditional villages underwent tourism development (Tian and Min, 2014). This phenomenon has attracted growing interest from both academics and tourism professionals, due to its potential as a development tool for rural communities. Some researchers have discussed the relationship between tourism development and traditional villages from, for example, the different perspectives of stakeholders' experience (Wang and Pfister, 2008; Devesa *et al.*, 2010; Waayers *et al.*, 2012; Komppula, 2014; Park *et al.*, 2015). Problems caused by tourism development in traditional villages have been pointed out along with their benefits in environmental, social and economical angles (Lin *et al.*, 2015). For example, tourism is a contributor to carbon emissions and the industry's various components such as transport, accommodation and hospitality, and consumer activities all contribute, to a different extent, to climate change. It is estimated that the tourism industry contributes to 4.6% of global warming in terms of radiative forcing (UNEP & UNWTO, 2008).

In China, because the country is the place of two third of the world's twenty most polluted cities and of numerous incidents of chemical spills, flash floods, sandstorms and droughts (Liu and Diamond, 2008), it has a long-lasting image of not fully engaging with the issues of climate change, despite the fact that policy and real-life actions have been implemented. For example, the country was one of the first to ratify the Kyoto Protocol in 1998 (UNFCCC, 2017) and the Communist Party of China quickly confirmed its willingness to engage, not only locally but also at the global scale (Soromenho-Marques and Bina, 2008). Besides, most of the studies and research that were reported in China have been too often concerned with medium, large or ultra large size urban communities (towns, cities and megapolis). Fewer studies have engaged with villages (one exception is e.g. Li, 2015) and even less with their inhabitants' point of view, although the studies of the human dimensions of climate change are today quite well covered (for example, see the work of Davidson *et al.*, 2002; Ford *et al.* 2012). Therefore we were interested in addressing this gap.

Despite the positive forecasts in its growth, traditional village tourism, as is the same with all other tourism categories, is facing uncertainties due to climate change. so specifically for this study, we wanted to know whether the traditional tourism villages have adapted themselves to climate change and what steps have been taken by their villagers to respond to it. In this paper we use the definition provided by the United Nations Framework Convention on Climate Change (UNFCCC), which defines the concept as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". This definition emphasises human involvement in the climate change process.

We took consideration of the climate change theory and tourism's relation with the climate when designing this study in order to emphasise the importance of utilising traditional cultural assets to develop tourism in rural destinations while taking preparation of the predictable and unpredictable environment of uncertainty and challenge. But the main innovation is in the chosen method: Photovoice.

## 1.2-Method: Photovoice

Photovoice is a visual research method which combines preliminary data collection and initial analysis processes. It was invented by the American Chinese researcher Dr Caroline Wang from the School of Public Health at University of Michigan in the late 1990s (Wang, 1999) and is based on several contributing theory foundations such as education for critical consciousness, feminist theory, documentary photography and participation theory. Photovoice engages image based research methods for empowering communities to work as groups to “identify, represent and enhance their community” in regards to a specific social or environmental issue that has occurred in the local area (Wang and Burris, 1997). For example, Wang and Burris (1997) first tested the method through a Ford Foundation supported project named Yunnan Women's Reproductive Health and Development Program in China, for which the main goal was to enable women to record their everyday health and work realities. By capturing images in first place, rather than words, the two researchers demonstrated that not only the collected data were more relevant but also showed more overall engagement from the participants.

The method mainly consists of four phases: (1) identifying community issues and questions, (2) engaging community members to answer those questions with photographs and captions, and then (3) to discuss in groups their contributions, before (4) reporting the results to a wider audience. The critical reflection components of the Photovoice methodology occur while taking photos, during group interaction, and during the presentation of photos, and contribute to a re-evaluation of one's experience and social learning (Baldwin and Chandler, 2010). These consequent components make contributions towards participatory needs assessment.

Photovoice allows community group members to actively participate in enhancing their communities by giving them a chance to tell their own stories and have their voices heard (Baldwin and Chandler, 2010). It is relevant to our aim of hearing, understanding, and communicating local voices about values and concerns of local tourism development in a place where tourism is a driving force of regional growth and local economic success. Therefore, for this study, we chose Photovoice to explore this local rural community and the perceptions of its visitors and tourists regarding tourism development in traditional villages in line with the challenges of climate change; similar to those faced by many cultural tourism destinations in rural villages. This paper presents the study conducted in one specific village, namely Cuandixia.

The questions were crafted to assess local knowledge and perceptions, in approbation with the political representative of the village. Specifically, although the Climate Change scholarship shows the complexity of the concept and participants were briefly lectured about it during our introduction meeting, our aim here was to introduce the concept only at the very last question to capture what the participants understood from it. The first question is to assess the participant perceptions of the village's attractive features. As such, it sets up a background for the survey which does not rely on guiltiness, as it is too often the case with climate change research participation. The second question concerns the perception of the relationship to the symbolical external world (the tourists) and should help the participants to dissociate the tourist practices from their own. The third question introduces the relation between tourism activities and its impact, with a focus on the resources as they are one of the most vulnerable elements in the rural context. At last, the fourth question seeks to unveil the level of climate change awareness and to finish on the positive side of what already exists. Obviously

there are some limitations in the way the questions have been framed, but the research is also conducted as a pilot-study to evaluate the transferability of the Photovoice method to another discipline. The questions are the following:

- Q1: why do you think tourists come to your village?
- Q2: what do you think tourists are bringing to the village?
- Q3: what is the impact of tourism development on the natural environment of the village?
- Q4: what are the good practices your village developed to combat climate change?

Fieldwork was conducted on the 30<sup>th</sup> of September, 2015, which represents the peak of the tourist season in Beijing suburbs.

## 2- CUANDIXIA SURVEY

### 2.1-Small introduction to Cuandixia

The classification of 'Chinese Historic and Cultural Village' is one important part of the Chinese historical and cultural heritage protection system. In this system, the government has issued, every two years since 2003, a list of villages that have traditional features. The selected villages are protected by the Regulations on Protecting Historical Famous Towns and Villages. Cuandixia was one of the first villages to be nominated as a Chinese Historic and Cultural Village. It lies in the northwest of Zhaitang Town in the Mentougou District of Beijing, about 90 km from the capital (Figure 1 and 2). It was built about 500 years ago when the Ming army troops garrisoned there; all the villages were originated by Commander Han (Dai, 2015). Historically, Cuandixia was a travelling relay station on the West Beijing Path and it was the western centre of trade and merchandise distribution between the Hebei Province and Beijing. Since the early 1990s, tourism has rapidly developed and has become a pillar industry in Cuandixia. This is the direct consequence of political change and the incentive to rediscover nature-based leisure destinations in the proximity of large urban centres (Dai, 2015).

Figure 1: The location of Cuandixia, near Beijing.

As Cuandixia is situated at the remote Taihang Mountain Canyon and surrounded by rolling green mountains, the landscape features combined with the vernacular architecture are quite unique. The village, in the form of a shoe shaped ancient gold ingot, displays traditional stone houses with inner courtyards cascading from its hillside and oriented so to take maximum advantage of sunshine and heat. The village covers an area of 6.6 hectares with less than one hundred permanent residents who represent thirty five families. As of today, about 76 courtyards and 656 buildings have been preserved (Liu and Yu, 2012).

## 2.2-Narrative of process

Research projects which involve participants frequently require careful preparation and a good network. In this case, the project benefited from the previous research experience of one of the authors within the village, as well as the trust between the international team that conditions would be to the standards of each member. After a last minute meeting, it secured the participation of nine locals, of which four were living in the village and five who came for outside the village but in very close proximity. This number represents ten percent of the population living in the village. Two other Chinese locals from the city of Peking joined the experience, one grouping with locals, while the other joined a group of five overseas tourists who agreed to participate. Overall there were fifteen persons, aged 15 to 67 years of three different nationalities (Chinese, Finnish and French), which were divided in three groups. The level of the participant's education varied from primary education to postgraduate studies (doctoral level) with a slight majority of male participants (eight out of fifteen).

Regarding the material aspect of the project, basically, the Photovoice method requires little of it, but flexibility and adaptation proved to be necessary. The presentation of the project was performed using a PowerPoint presentation prepared by the team one week prior to the survey. The local representative had booked one room where everyone could gather and where computers and printers could be powered. Participants were offered cameras but, unlike other Photovoice experiences conducted elsewhere by the research team, they decided to use their own devices, often their own mobile phone. This aspect of the project proved to be the weaker part in the survey process, because due to the diversity of devices and the difficulty of downloading all the pictures, it took more time than expected.

From the start, the survey time limit had been set at three hours, which comprised of: (1) approximately one hour of presentation and explaining the goals of the research, the main concepts, introducing the questions and forming the groups, (2) one hour of taking pictures on site, (3) one hour of internal group discussion, group presentations and wrapping-up the experiment. Overall steps (1) and (2) were conducted without much problem but, as said previously, step (3) took longer than expected because of the picture downloading process. During step (3), participants were asked to select only three to four pictures per question and to discuss them together and to select one emblematic picture per question that they would present to the other groups, with a brief summary of its meaning. It is also to be acknowledged that more time is usually given to step (2) but since the village is relatively small and the survey was conducted during the peak of a tourism high-season (30<sup>th</sup> of September: the start of the Chinese national day), it meant locals were extremely busy. Nevertheless, all participants engaged cheerfully and actively, which is reflected in the results gained as they showed interesting insights into the participants' reflections of the research questions.

## 2.3-Results

Overall, and irrelevant of nationality or being local or not, the Photovoice survey shows evidence of a consensus of answers regarding the four questions. Of course, in detail review we see some nuances which are presented in the following lines. For easiness of reading the illustrations, each answer to the questions are presented as a plate of pictures where the first choices are systematically circled in red. Group 1 included

mostly villagers, Group 2 included local officials, tour bus drivers and tourists and Group 3 constituted five overseas tourists and one research assistant from Peking.

To the question “why do you think tourists come to your village?” two groups pictured the village as a whole in its natural environment (“It looks so beautiful. It is the most well preserved traditional village in Beijing”- Group 1, “beautiful combination of landscape and village” - Group 3), while the last group insisted on the architectural and traditional characteristics of the village by photographing an old building (“a unique mountain courtyard style building”- Group 2). As such, there is no doubt that the cultural aspect of the village, both in its heritage and built features, as well as in its environmental setting, is recognised as valuable. This is underlined by the choice of runner-up pictures that show heritage artefacts (the grain mill, the temple, carved timber), a variety of stones (with carved calligraphy “Cuan”, street pavement and old ruins) and old buildings (Figure 2).

Figure 2: photographs for question 1

The second question “what do you think tourists are bringing to the village?” brought unanimous responses regarding business and hence money/economic development, but the negative side effects were also immediately expressed. For example, the local group positioned a picture of rubbish amongst a flower bed as their second choice (“tourists should collect their rubbish”- Group 1). In the same way, Group 2 detailed the destruction tourism brings to the village:

*“[picture 1] shows that a historical relic is partially destroyed by tourists. Tourists broke off the wooden relic and stole it. As a whole it had archaeological value. Unfortunately, the damage caused by tourists is beyond repair. It is a wood carving. The second picture shows a courtyard which used to have great archaeological and research values when it was not used for group dining. Now stone tiles are worn out by tourists and the entire unique layout pattern of the courtyard is disturbed”.*

In detail, business related photographs show local product being sold in stalls, restaurants as well as a zoom on a locally produced natural honey product. One picture discusses the implemented strategy: “These sheets all had the “Cuan” characters printed on them. They are customised for the village. There is not much agriculture in the village. The major source of income is tourism. Tourism development brings economic benefits to the village”. As such there is no doubt that the positive economic side of tourism is acknowledged with a note of caution (Figure 3).

Figure 3: photographs for question 2.

“What is the impact of tourism development on the natural environment of the village?” brought a one hundred percent unanimity in picturing plastic rubbish in first position. Other pictures display air pollution brought in by cars or waste burning and about physical damage produced by the tourists on the built environment: “this staircase is getting destroyed by tourists, too many of them” (Figure 4). However, the fact that the car picture was taken by the tourist group might evidence some differences of interpretations regarding this element. The tourist group explained they had witnessed the rise and fall of cars in the villages of their own country, while the current circumstances in China give the car a different status. Currently some scholars have

already argued it is mostly seen as a representation of success or power (Zhu, 2012; Cullinane, 2002) and as such might not be perceived as detrimental. It also raises the question of the financial governance, for development priorities might not be the same between the government and the villagers. Another aspect about this question that was left unaddressed is the topic of water. The fact that the village is emptied of its inhabitants in the winter season, which corresponds to the low season, might explain this fact.

Figure 4: photographs for question 3.

For the last question “what are the good practices your village developed to combat climate change?” there is a general agreement on the topic of energy, whether that be about its conservation and control (during the day and by each individual) or its clean production (solar panels), but position varies amongst the groups. Positioned first by the local group was the economic development of the area; the tourist group chose solar energy production while Group 2 pictured energy control: “Auto-controlled street lighting devices with timers are introduced to the village to conserve energy. In the old days street lights were controlled manually. Sometimes the lights were left on for the whole day if the person in charge forgot to switch them off. This picture shows energy control.” Timber burning was also considered as a good practice from the tourist group’s perspective, as well as the hiding of the sewage system under lily flowers as stated by Group 2 (Figure 5). Therefore, despite the awareness of all participants on energy conservation as a means to decrease climate change, it seems there is no clear understanding of what the concept entails, since the main means to reduce emissions have not been invoked. For instance, there was no mention of transport –and tourists come in large numbers by bus–or direct mention to heating and cooling. In the same way, there was no allusion to the treatment of water or waste. However, it is to be underlined that Group 1 was quite critical and displayed some awareness of long-term effects: “tourism brings economic benefit but we are not fully aware of how much garbage we are producing every day, we need to take action now so that we can still have a blue sky in a decade or two”.

Figure 5: photographs for question 4.

### 3- DISCUSSION & CONCLUSION

#### 3.1- Discussion

So what can be learnt?

First, the origin of people does not seem to be an important factor in this survey. The degree of awareness about climate change appears equal for all participants. There is a large consensus on the heritage value of the village (question 1), the economic benefits of tourism (question 2) and its negative impact on the environment because of the increase of waste (question 3). Similarly, participants all mentioned good practices relating to energy use (question 4). However, the study also evidences a gap between the village’s recognised cultural value and the actions to be taken to decrease carbon emissions. Commonly there was a lack of diversity in the list of good practices. Besides, in detail, the chosen good practices showed some lack of comprehensive

management. For example, electrical boards were pictured as a good way to control energy, but they are not installed in a way that hides them: rather they are located in places that seem boldly more convenient. As such, old walls are perforated without concerns of protecting them, preserving neither the general aesthetic or heritage value of the village (G1 Figure 5). One suggestion would be to take more consideration of the built heritage of the village while reinforcing anti-climate change actions. This is already in place with the cleverly designed lamp posts that are in place all the way up until the village: incorporating traditional Chinese symbols with photovoltaic panels that have been integrated to the design. But maybe, most importantly, the results to question four show that the full complexity of climate change is not quite grasped by the variety of participants, hence underlining the gap between general knowledge and personal understanding.

A second result that emerges from this research is that the cultural background of the participants does nevertheless matter for the decoding of perceptions and attitudes. The tourist group (Group 3) referred to its experience regarding the cars as a major nuisance and shared knowledge on mistakes that were made in other countries in order for the Cuandixia village to avoid repeating them. It is not known whether this discussion had an impact on the local stakeholders and if it changed their thinking about cars afterwards. Yet it confirms that the symbolic system of values needs to be understood regarding a community's perception and knowledge of climate change, for other findings can be falsely interpreted. Hence it is extremely relevant to have respondents discussing their choices of pictures.

The third finding concerns the Photovoice method itself. It is clear that the small number of participants and the recruitment strategy consisted mostly of the village's local officials; this might have introduced bias. Yet, the on-site preparation phase allowed us to recruit new participants, as well as bringing in a few from Peking. Although findings cannot be generalised to all villagers or tourists visiting Cuandixia, they are congruent with other studies conducted on the same topic with the same method (Xu *et al.*, 2015; Xu and Dupre 2015). Further studies conducted with other groups at different times of the year might help to confirm results and develop their transferability.

Another aspect relates to the rich visual and oral data collection generated by the method. There is no doubt it was a means of expressing community feeling. For example, even if there is always one quieter person in each group, most people fully engaged with the pictures and, for the positive ones -such as heritage features-, participants were very proud to contribute more rather than simply saying why they took the picture. Others would quickly add to the story. By unfolding stories behind a picture, it is evident that the Photovoice method allowed the diffusion of shared knowledge/awareness, critical dialogue and community pride. Yet, at no time were there questions of using this type of data to generate action-making or policy changes. The data is meaningful for the researcher but it is not evident whether it has become a tool of empowerment for local stakeholders, or is understood as a resource to build on. The lack of follow-up interviews or study is another limitation that prevents from establishing whether there was any effect from the study.

### 3-2. Conclusion

The urban rural village of Cuandixia, near Peking, is today facing a great challenge: it needs to insure its transition from a semi deserted village to a successful sustainable



tourist destination. The aim of this study was to evaluate whether the village community is climate change aware and which are the best practices it can identify for itself. Using Photovoice, a picture-based method, this research demonstrated that the village community is climate change aware and that, both visitors and hosts shared common analysis on tourism interests, impacts and current actions regarding climate change. Age, level of education or origin did not interfere and it shows a common awareness on the effects of climate change. It confirms our structural assumption that local and expertise knowledge are complementary.

Regarding the best practices, several were identified and they mostly concern energy (electric boards to control energy use; auto-controlled street lighting devices with timers to save energy, photovoltaic panels). As they were implemented by the province or the state institutions, it reflects more a top-down commitment than a real engagement from the community. Typically, where the institutions fail to implement good practices, for example concerning the solid waste management (with no real strategy as of today), the community does not show pro-active attitude and engagement to fight this issue. Yet, by praising the production of local agriculture, it shows awareness which is anchored in local knowledge. In the same way, the fact that the hiding of the water system to preserve the aesthetical beauty of the village was cited as a good practice is interesting because it is fully relevant to discuss the human dimensions of climate change. Actions to develop further water management in a rural tourism village—and it could concern every other improvement—should consider the identity of the place, its *genius loci*. However, if the study showed some practices to combat climate change, the question remains on how the community will do so in the future.

The study also showed that demonstrating cultural sensitivity and acting more effectively towards reducing carbon emissions can be difficult and still remains to be seen. This also raises the question of architectural values and opens the debate about strategies for conservation, preservation and development. Since the village's latest trend is to keep itself alive as a means to fight rural migration to the cities (Zou, 2005) by opposition to village museification, one cannot prevent the apparition of modern appliances and technologies to improve the conditions of its living inhabitants. However, a fine balance still needs to be found to preserve the village heritage values and its sustainability in face of mass tourism. Although the Photovoice method was developed as a means of empowerment, this study cannot prove its role as such. Further investigations would be necessary. Yet, the workshop itself proves the participants' readiness to spend time on the climate change issue, to develop critical thinking and discussion in several languages, to analyse and hierarchise data, to communicate to others, and to allow their stories to be known to a much wider audience: this is definitely a strong form of engagement and it confirms the transferability of the Photovoice method to other disciplines (Figure 6).

Figure 6: the participants in Cuandixia, photograph by KD.

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#### REFERENCES

- Baldwin C and Chandler L. 2010, "At the water's edge": community voices on climate change. *Local Environment: The International Journal of Justice and Sustainability* 15(7): 637-649.
- Bina, O. 2011 Responsibility for emissions and aspirations for development. In *China's Responsibility for Climate Change: Ethics, Fairness and Environmental Policy* (Ed, Harris, P. G.) Policy Press, Bristol, pp. 47-69.
- Byg A. and Salick J. 2009. Local perspectives on a global phenomenon—Climate change in Eastern Tibetan villages. *Global Environmental Change* 19(2):156-166.
- Bloch M. 1931. *French Rural History: An Essay on Its Basic Characteristics*, tr. Janet Sondheimer. London: Routledge & Kegan Paul, 1966.
- Cullinane S. 2003. Attitudes of Hong Kong residents to cars and public transport: some policy implication. *Transport Reviews: A Transnational Transdisciplinary Journal* 23(1): 21-34.
- Dai L. 2015. Problem, issues, and sustainable tourism development of traditional villages in Rural Beijing: The case study of Chuandixia Village. *Tourism Planning & Design* 17: 50-57. [in Chinese].
- Danielsen F, Burgess N. D. , Balmford A. 2005. Monitoring matters: examining the potential of locally-based approaches. *Biodiversity and Conservation*, 14(11): 2507-2542.
- Davidson D. J., Williamson T., Parkins J. R. 2003. Understanding climate change risk and vulnerability in northern forest-based communities in *Canadian Journal of Forest Research*, DOI: 10.1139.x03-138, 33: 2252-2261
- Devesa M, Laguna M, Palacios A. 2010. The role of motivation in visitor satisfaction: Empirical evidence in rural tourism. *Tourism Management* 31(4): 547-552
- Fang Y G , Liu J S. 2008. Cultural landscape evolution of traditional agricultural villages in north China: Case of Qianzhai Village in Shandong Province. *Chinese Geographical Science* 18(4): 308-315.
- Ford J. D., Bolton K. C., Shirley S., Pearce T. Tremblay M., Westlake M. 2012. Research on the Human Dimensions of Climate Change in Nuvavut, nunavik, and Nunatsiavut: A literature Review and Gap Analysis in *Arctic*, Vol. 65, 3: 289-304.
- Haijun Y. 2015. *Yabian Report: A Record of the Fractures in Rural China*, Beijing: Peking University Press.
- Huang C C & Hongxia S. 2009. Climate change and Zhou relocations in early Chinese history. *Journal of Historical Geography* 35 (2): 297-310.
- Jing J. 1996. *The Temple of Memories. History, Power and Morality in a Chinese Village*, Stanford (Calif.): Stanford University Press.
- Kloprogge P & Van der Sluijs J . 2006. The inclusion of stakeholder knowledge and perspectives in integrated assessment of climate change. *Climatic Change*, 75: 359-389.
- Knapp R G. 1989, *China's vernacular architecture: house form and culture*. Honolulu: University of Hawaii Press.
- Knapp R G. 1992, *Chinese landscapes: the village as a place*. Honolulu: University of Hawaii Press.
- Komppula R. 2014. The role of individual entrepreneurs in the development of competitiveness for a rural tourism destination. *Tourism Management* 40(1): 361-371.
- Laidler G. J. 2006. Inuit and scientific perspectives on the relationship between sea ice and climate change: the ideal complement? *Climatic Change*, 78: 407-444.
- Lin Z, Chang J, Liu J, & Tian M. 2015. Integration and reconstruction of traditional villages under the influence of tourism development. *Modern Urban Research*, 6: 32-38.[in Chinese].
- Liu, J. and Diamond, J. 2008. Revolutionizing China's Environmental Protection, *Science*, 319, 37 - 38.

Liu Y, Liu Y, Chen Y, Long H. 2010. The process and driving forces of rural hollowing in China under rapid urbanization. *Journal of Geographical Sciences* 2(6): 876-888.

Liu P & Yu H. 2012. Study on the AHP Model of Rurality Inheritance in the Ancient Village of Tourism Development : A Case Study of Chuandixia Village, Mentougou District, Beijing, *Scientia Geographica Sinica* 32(11): 1304-1310. [in Chinese].

Luo D. 2014. The Establishment of Chinese Traditional Villages. *World Architecture* 6: 104-107. [in Chinese].

Norberg-Schultz C. 1980. *Genius Loci: Towards a Phenomenology of Architecture*. Rizzoli: New York.

Park D B, Nunkoo R & Yoon, Y.S. 2015. Rural residents' attitudes to tourism and the moderating effects of social capital. *Tourism Geographies* 17(1):112-133.

Oliver P and Mires P. 1998. *Encyclopedia Of Vernacular Architecture Of The World*, Cambridge University Press.

Rapoport A. 1969. *House Forms and Culture*. Prentice- Hall.

Soromenho-Marques, V. and Bina O. 2008. Engaging China on Climate Change: Opportunities and Challenges, <http://www.viriatosoromenho-marques.com/Imagens/PDFs/VS-M%20and%20OBina%20On%20China%20March%202008.pdf>, accessed 30 September 2016.

Tain M & Min Q. 2014. Protection and Exploration of Traditional Villages of Beijing Under the Background of the New Urbanization, *Proceeding of the 16th Annual Meeting of China Association for Science and Technology*, 1-6. [in Chinese].

UNEP & UNWTO. 2008. *Climate Change and Tourism- Responding to Global Challenges*, WTO, Madrid, Spain.

United Nations Framework Convention on Climate Change (UNFCCC), [https://unfccc.int/kyoto\\_protocol/status\\_of\\_ratification/items/2613.php](https://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php), accessed 30 October 2016.

Waayers D, Lee D, Newsome D. 2012. Exploring the nature of stakeholder collaboration: A case study of marine turtle tourism in the Ningaloo region, Western Australia. *Current Issues in Tourism* 15(7): 673-692.

Wang C. 1999. Photovoice: A participatory action research strategy applied to women's health. *Journal of Women's Health* 8: 185-192.

Wang C and Burris M. A. 1997. Photovoice: Concept, Methodology, and Use for Participatory Needs Assessment. *Health Education & Behavior* 24 (3): 369-387.

Wang Y and Pfister R.E. 2008, Residents' Attitudes Toward Tourism and Perceived Personal Benefits in a Rural Community. *Journal of Travel Research*, 1: 84-93. [in Chinese].

Xie B. 2010. Analysis on the existing problems in the development of Chinese DIY tour and their countermeasures. *Journal of Qingdao Hotel Management College* 2(4): 33-56. [in Chinese].

Xu B. & Dupre K. 2015. 'The impacts of climate change on a tourism destination: Voices from the local community on the Gold Coast in Queensland', in *Australian Cities Conference Proceedings*; Urban Geographies workshop, Institute of Australian Geographers, 27 March, Melbourne.

Xu B, Wang J. & Dai L. 2015, 'Traditional village tourism in Australia under the pressure of cultural heritage protection and climate change: A case study of Mossman in Queensland'. *Tourism Planning and Design* (Special Issue: Historic Villages: Protection and Rejuvenation), 17: 98-107. [in Chinese].

- Zhang X, Wang P, Liang Y. 2008. Study of Rural Tourism' s Impact on its Destination:Take Bolitai Village in Pinggu District of Beijing as an Example. *Journal of Capital Normal University* (Natural Science Edition), 29(4): 94-99. [in Chinese].
- Zhu C. 2012. Perceptions and aspirations for car ownership among Chinese students attending two universities in the Yangtze Delta, China. *Journal of transport geography*, 24: 315-323.
- Zou T. 2005. On the development pattern of rural tourism in China. *Tourism Tribune*, 20(3): 63-68. [in Chinese].

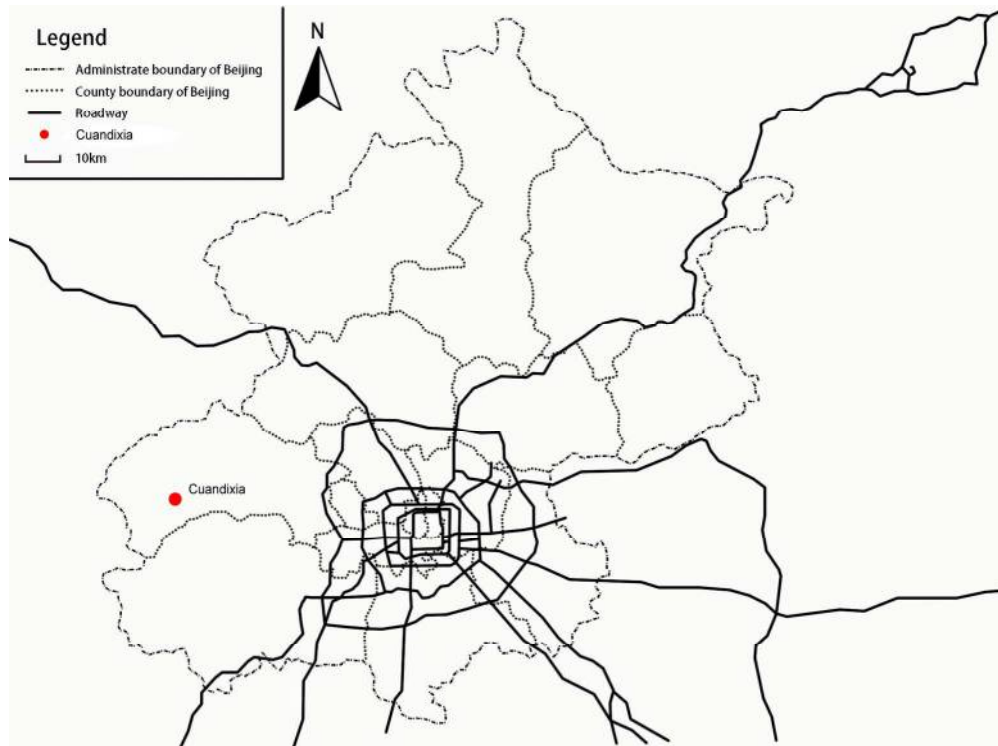


Figure 1: the location of Cuandixia

169x126mm (300 x 300 DPI)

Question 1: why do you think tourists come to your village?



Figure 2

340x254mm (72 x 72 DPI)

Question 2: what do you think tourists are bringing to the village?



Figure 3

339x242mm (72 x 72 DPI)



**Question 3:** what is the impact of tourism development on the natural environment of the village?

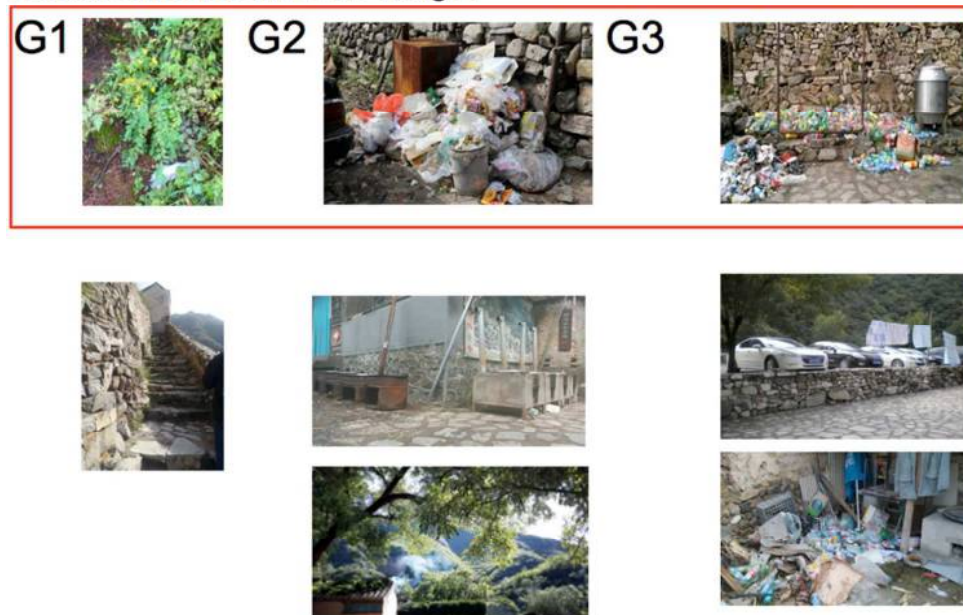


Figure 4

340x254mm (72 x 72 DPI)



**Question 4:** what are the good practices to adapt to climate changes in the village?



Figure 5

340x255mm (72 x 72 DPI)



Figure 6: Cuandixia picture

308x231mm (300 x 300 DPI)