

LINH NGUYEN

Cancer Villages in China

In recent decades, China has achieved rapid growth with an annual increase in GDP of 8 to 9 percent, turning this country into one of the biggest and most powerful economies in the world (World Bank, 2007). However, this process of rapid industrialisation was also developed at the expense of nationwide environmental degradation; from the smog in big cities to land and water chemical contamination. Furthermore the benefits and profits of industrialisation are mostly reaped by a small urban population while at the opposite end of the spectrum, are “cancer villages” with some of the most helpless populations in China.

This study will serve as one of the first investigations into cancer villages in the migration field and provide an initial understanding of the combination of environmental, economic and political factors that influence the aspiration and action of migration/non-migration of the concerned populations. It does so while noting that migration is not a long-term solution for cancer villages as it does not solve the problem of pollution. Instead, migration can be considered as a kind of short-term pain-relief for vulnerable groups while waiting for the clean-up process to be realised. Understanding migration/non-migration aspects of cancer villages contributes to the understanding of strategies and reactions of the local residents and helps policy makers to provide support structures for both migrants and non-migrants to reduce the short-term and long-term impacts of environmental destruction.

Part 1 will deal with the cause and development of the “cancer village” phenomenon. Part 2 gives arguments for considering this phenomenon as a migration issue; villagers are divided into different groups based on their aspiration and ability to migrate. Part 3 will focus on the group that aspires to move, and explore the economic and political factors that limit people’s capacity to do so.

1. THE “CANCER VILLAGE” AS A RISING PHENOMENON

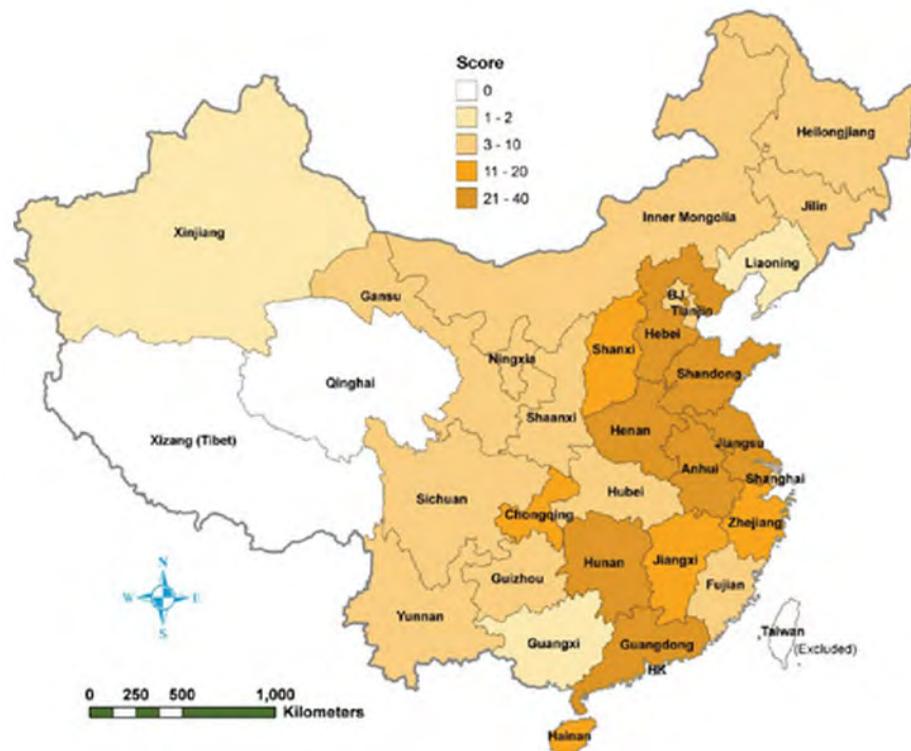
There is no official definition and scientific diagnosis of a “cancer village” due to the lack of data and research (Yu and Zhang, 2009). With the increasing concern and interest in this subject, the typical definition of such a phenomenon is simply: communities with greater rate of cancer than the expected rate (e.g. Liu, 2010; Lora-wainwright, 2015a; McBeath et al., 2014). Cancer villages are considered to be a result of the “grow (pollute) first, clean up later” approach of Chinese leaders without considering the environmental and social impacts such as health, poverty, equality, and justice (Liu, 2013b). This development strategy is embedded in the famous and debateable theory of the environmental Kuznets curve (1955), which claims that pollution rises during the initial industrialisation period and automatically falls as a country reaches post-industrial levels due to a change in the composition and techniques of production (Grossman and Krueger, 1995). This theory has been criticised as it would undermine policy makers’ focus on environmental law, which may lead to serious ecological and social damage (Dasgupta et al, 2002; Panayotou, 1997). China is not the only example proving the failure of this theory; such crises have also been experienced in many other countries during their development process such as Eastern European States and republics of the former Soviet Union or some Asian economies like Malaysia, Thailand and Korea (Economy, 2004; Perout, 1995).

Research and reports on cancer linked to pollution in China started to emerge in the 1970s but it was only from the end of 1990s and early 2000s that cases of

cancer villages, such as Shangba or Xiaojizhuang, caught the attention of media and NGOs (Liu, 2010; McBeath et al, 2014; Watts, 2010; Watts, 2008). Cancer villages are mostly linked with the chemical industry, paper factories, or resource extraction and processing (Lora-Wainwright and Chen, 2015). Since available official information is rather limited, there have been varied attempts by researchers and activists to map the cancer villages such as those undertaken by Deng Fei and Lee Liu (Watts, 2010; Liu, 2010). Their maps show a concentration of cancer villages lying in Eastern China, with a strong correlation between the high percentage of cancer villages downstream and large industrial activities upstream.

One famous example is the Huai River Delta, home to tens of thousands of small factories, which freely dump their waste into the river causing large-scale health issues, damage to fisheries and crop failures, thus affecting the lives of over 150 million people in Henan, Anhui and Jiangsu Provinces (Economy, 2004). In Huangmenying village along the Huai River, around 80% of young people are ill all year round (Liu, 2013a). The problem is worsened by the poor management of dams and reservoirs along the river, creating flooding and limiting the river’s capacity to dilute the pollutants (Economy, 2004). Heshan village in Hunan Province is another example: the water is heavily polluted by arsenic, listed as carcinogenic to humans by the World Health Organisation, from mines and chemical plants (Lee, 2014). In the past two decades, 157 villagers have died of cancer and another 190 have developed cancer due to arsenic poisoning out of a population of about 1,500 (Lee, 2014). Water and soil contamination also destroy local agriculture. Rice can no longer be grown and other plants also die when rain washes airborne pollutants into the fields (Lee, 2014). Longling villagers suffer from air pollution from nearby fertilizer and steel

Figure 1. The cancer village phenomenon by province, China, 2009. (Liu, 2010)



factories (Liu, 2010). With a population of 154, only four out of thirty families have not had a cancer victim while cancer killed four entire families (Liu, 2010). In Dongjing village, where a chemical industry is located, which produces phloroglucinol and o-chlorophenol, villagers stated that “the air became smelly, thick and unbearable, fish and prawns died, the water tasted strange and turned red” (Lora-Wainwright and Chen, 2015, p.16). The water tests showed that the amount of chloride was as high as 2000 times above the safety standard (Lora-Wainwright and Chen, 2015).

After years of public speculation by local populations, international media and Chinese activist groups, the Chinese government first acknowledged the existence of the cancer village phenomenon in a report of the Ministry of Environmental Protection in 2013 (MEP, 2013; BBC, 2013). The report stated that the toxic chemicals have caused many environmental emergencies linked to water and air pollution and there are even some serious cases of health and social problems like the emergence of cancer villages in individual regions. However, two months later, health and environmental officials of China refused to validate the report’s wording, claiming that the acknowledgement of the environmental ministry was a mistake and restricted the usage of the “cancer village” term in local media (Kaiman, 2013). Yet, the government continuously displays efforts to address the pollution problem. In April 2014, the first amendments to the country’s environmental protection law in 25 years were passed, promising greater power for environmental authorities, harsher punishment for polluters and encouragement of non-government groups in environmental management (Kaiman, 2014; Bloomberg News, 2014). However, the gap between government policy and its implementation will still prove a major challenge for China over the coming years due to the top-down policy design, lack of political will, lack of capacity at the local level, and civil society’s limited power to speak out.

2. THE NECESSITY OF CONSIDERING CANCER VILLAGES AS A MIGRATION ISSUE

There have been studies on the possible impact of migration on the creation of cancer clusters (e.g. Contreras, 2008; Admin et al., 2010) but none of them has analysed the influence of cancer clusters on the residents’ migrational aspirations and ability to migrate. In the case of cancer villages in China, resident relocation is often briefly mentioned as a solution alongside pollution mitigation, factory relocation and alternative sources of natural resources, which in most cases is drinking water (e.g. Yu and Zang, 2009). Clearly, reallocation is not the first choice for the government due to its costliness, the complication in planning for the relocation itself as well as supporting a post-relocation programme and the risk of other villages demanding similar treatment. Additionally, it is fair to say that relocation is only a short-term measure, as it does not solve the root cause of problem in a way that environmental restoration and environmental policy enforcement would do. However, it is hard to ignore the existing and urgent demands of residents in cancer villages to be relocated, especially where alternative distribution of critical resources such as farming soil, clean water or clean air is difficult. Furthermore, the involuntary migration of villagers, without support from the government or other parties, usually lacks the capacity and skill to help people to sustain themselves financially. This will create a social burden and instability in the destination. This is especially true for many villagers in cancer villages, who were previously farmers with limited education. Yet, there are also villagers who do not move despite suffering from environmental hazards, due to their lack of capacity to migrate. Considering the scale and the possibility of an increase in the number of cancer villages, both cases are undesirable for the long-term development of the country. As a result, cancer villages and migration issues require better understanding by policy makers in order to provide appropriate

support structures and to minimise individual (both migrants and non-migrants) and societal costs.

In slow onset cases of environmental degradation in cancer villages, populations can be categorised by their willingness and their ability to move, which is the result of various factors involving their economic and political situation (Bates, 2002). Aspiration for resettlement does not only depend on the pollution level but also on their perception of the possibility to win over polluters, which is largely based on the support of government and non-government actors such as the media, NGOs, educated leaders as well as the economic reliance of villagers themselves on the industries in question (Lora-Wainwright et al., 2012; Yang and Lennon, 2010; Tilt, 2013). In cases with support from third parties and some of the leading villagers - usually involving the most educated individuals - villages actually did continuously fight to put a stop to pollution (for example, the cases of Qiugang and Shangba villages). As a result, they were more willing to stay in their polluted village with the hope of obtaining justice, and waiting for the recovery of their land. Others might decide to stay even without the hope of improving their living standards, usually older people who have an emotional connection to their homeland (Horn, 2013), or because their status and privileges in the village would drop significantly were they to relocate to a city, especially for elderly males (Carr, 2005). Such cases can be listed as “voluntary immobility”. On the other hand, previous experiences of unsuccessful protests could also dampen villagers’ faith in the possibility of state protection, and discourage their attempts to stop pollution (Lee, 2014; Liu, 2011; Liu, 2013a). Additionally, the difficulties in proving a causal link between cancer and a specific pollutant in court also motivated villagers to reframe their demands to polluting firms and the local government, shifting from demands for a cleaner environment and better health, to demands for financial compensation for losses incurred (Lora-Wainwright et al, 2012). Both cases might lead to the wish to move as an escape from pollution.

However, the aspiration to migrate does not necessarily lead to the act of migration due to differences in the ability to move from villager to villager. Migrants from cancer villages can be categorised as one type of environmental refugees: “people affected by the gradual deterioration caused by anthropogenic alteration of their environment” (Bates, 2002 p. 473; El – Hinnawi, 1985). Two categories of environmental displacement can be discerned: temporary displacement due to disasters or permanent displacement due to drastic environmental changes (El – Hinnawi, 1985). Among cases of migration from cancer villages, resettlements were mostly self-organised and rarely received any state support. Meanwhile, remaining cases, who “wish to move but remain in situ”, find themselves in a situation of “involuntary immobility” (Jónsson, 2011, Black and Collyer, 2014). According to Bates (2002), the poor are normally the most vulnerable to environmental disruption which leads to migration. In many cancer villages, the poorest and most vulnerable groups are usually those that do not have sufficient means to relocate, locking them into a downward spiral of poverty and health crises.

3. STRUGGLING TO MOVE

3.1 Environmental refugee: the absence of official reports

Large-scale centrally organised evacuation due to a toxic environment has been recorded in other countries as well as in China. In the U.S., 950 families in Love Canal were permanently relocated using government funds due to toxic waste disposal in 1980 (Brown, 2011). More recently, the 2,000 or so residents of Tuzköy have been re-settled by the Turkish government since 2010 due to widespread cancer and lung disease linked to erionite, a rare and highly toxic mineral present in local rock (Christie-Miller; 2013). Relocation due to environmental degradation in China

is rather rare and action undertaken is usually slow and belated, following years of public and media speculation and the revelation of serious consequences. In 2009, 150,00 residents in Jiyuan, Hebei Province were relocated after more than 1,000 children had tested positive for lead poisoning (BBC, 2009; Liu, 2010). In 2009, the project was expected to cost 1bn Yuan (\$146m) and was to be paid for by the lead company (BBC, 2009; Liu, 2010). However, no clear timetable for relocation was set nor any official report published on the movement provided.

In the cases specifically related to cancer villages, however, there are no official reports relating to relocation. This may be due to the sensitivity and widespread nature of the issue. As 499 villages have been identified as “cancer villages”, clearly relocating each and every member of the affected communities is an enormous challenge for the government (Liu, 2010). Furthermore, the relocation of one village may lead to increasing demand for similar treatment from other villages, which would potentially increase existing tensions and social instability. Such reasons may motivate the government to refuse to acknowledge the problem of cancer villages and prevent related information from being published. Many media outlets, researchers and NGOs reporting on cancer villages mention the obstruction of the local governments regarding their efforts to approach villagers and collect data (e.g. Yang and Lennon, 2010; Brown, 2012).

Another challenge for data collection related to environmental refugees from cancer villages is that, due to the lack of a centralised relocation programme, most of the movement is self-organised. It can be either totally self-financed by villagers, or partly financed by the government or by compensation from polluters in cases where villagers successfully gained government recognition of pollution or launched a successful lawsuit, even the amount of such compensations is usually extremely low (such as the case of Qingpuling village – Li, 2014; Liu, 2010). In the context of slow onset environmental degradation like the situation in cancer villages, environmental hazards largely influence local economies, especially for farmers whose livelihoods are more sensitive to natural conditions. This also infers difficulty as to data collection since the decision to move will rarely be exclusively due to environmental factors, but also due to economic reasons (Bates, 2002). Moreover, the rapid and unprecedented process of urbanisation in China has attracted a large flow of labour from rural to urban areas, which makes it extremely difficult to distinguish between environmental and economic factors leading to migration. This difficulty is especially true for the young and educated groups, who usually have a greater ability to move and are the most likely to move irrespective of the pollution issue. In the case of Heshan, where the environment has been intoxicated by mines and chemical plants, young individuals have moved out of the village while old and retired people remained (Lee J., 2014). On the other hand, in the cases of farmers who are forced to leave their hometown without the necessary transferable skills to find employment in their destination, such relocation may provide a better living environment, but it is unlikely to elevate migrants out of poverty. Unplanned large-scale rural-urban migration due to environmental issues will add to the existing tension around urbanisation issues such as food security, health, education, already facing China (Chen, 2007; Gong et al, 2012; Quan, 1991).

Finally, the absence of data might reflect the absence of relocation itself, suggesting the existence of a broad category of involuntary immobility.

3.2 Involuntary immobility or the “cancer village” dilemma

The lack of migration flows in the context of a heavily polluted environment raises the issue of involuntary immobility. This phenomenon is not only an environmental health problem but is also deeply rooted in social, cultural and political issues. People are trapped in a toxic and hazardous living environment due to their poverty, their lack of power to speak out and the deep-seated inequality in the fast developing

economy. Tragically, the three factors are both initially the cause of the cancer village phenomenon and also the reasons that lead to the prolongation of the issue. These self-propagating problems have locked cancer village victims in a downward spiral of poverty and health crisis without the ability to relocate. The following sub-section will analyse the different barriers and constraints that prevent people from having recourse to migration. It is important to mention that these barriers are rarely separate but rather intertwined and have a cause and effect relationship.

Poverty and social inequality

Poverty in rural areas coupled with the socio-economic policies of the Chinese government, which deepen social inequality, partly cause the widespread pollution in villages. The imbalanced environmental policy and clean-up programmes which focused on protecting citizens in cities and the lax implementation and monitoring of pollution in rural areas created the movement of toxic plants from the municipal districts of modern cities to nearby rural areas (Liu, 2013a; Watt, 2010). Liu (2013a) described how the 1996 “Developing Model Cities Programme”, introduced by the Chinese government as a response to the environmental crisis, did not stop pollution but instead drove the movement of polluting factories from urban to rural areas. The thirst for development of both local government and residents and the lack of monitoring capacity allowed for an extremely limited enforcement of environmental regulation in villages (Lora-Wainwright and Chen, 2015; Liu, 2013). This enabled factories to pollute and avoid investment in waste management. When the consequences of their pollution are revealed, local governments have their hands tied due to their dependence on industrial tax revenues, while the residents struggle with health problems, lose their livelihoods, and thus suffer from increasing poverty (Lora-Wainwright and Chen, 2015; Liu, 2001). In some cases, the livelihoods of local villagers also greatly depends on the polluting plants, either directly through employment, or through compensation, which will be discussed in greater detail below (Lora-Wainwright and Chen, 2015; Van Rooij B. et al, 2012). These factors also discourage victims from taking action to either stop pollution or relocate.

The ramifications of pollution have also weakened the financial capacity of villagers to relocate. Commonly, a high proportion of residents in cancer villages were farmers whose income suffered significantly in the polluted areas as their agriculture resources, such as water and soil, were destroyed (Liu, 2015). These residents are also most exposed to pollution due to their lack of knowledge, their limited financial capacity to protect themselves – for instance by buying clean water, or migrating given that their daily life requires more contact with contaminated water and soil. In many families, cancer victims were the main source of income, a fact which significantly reduced household incomes and was exacerbated by the need for expensive treatment and extra care from others (Philips, 2015; McKenzie, 2013; Wolf, 2014; Horn, 2013). The cost of treatments can amount to the equivalent of several years’ income for villagers, forcing them to sell land, borrow money or use up their savings (Liu, 2015; Watts, 2010; Lee, 2014; Brown, 2012). Even comparatively wealthy households experienced financial difficulties after paying for their family members’ treatment, leaving them with no ability to pay back debts, and thus facing the risk of having to sell their property (Brown, 2012; Lee, 2013; Watts, 2010). Due to the lack of medical care, sanitation, financial wherewithal, and environmental awareness in rural areas, many victims are diagnosed with cancer at a very advanced stage, which increases both medical costs and the mortality rate (Liu, 2013a; Yang and Fang, 2006). Health damages coupled with financial crises deepens households’ poverty levels. Furthermore, residents in rural areas are also less likely to have formal education and skills that can be transferred to other sectors, which could enable them to find jobs in cities. Their illness, serious poverty and lack of transferable skills in turn magnify their vulnerability to environmental deterioration without the capacity to relocate (Black and Collyer, 2014).

Little power to speak out and a lack of government support

Villagers that are struggling to finance their relocation also face challenges in gaining acknowledgement and support from the government as well as from polluters to facilitate their relocation to a new area. This is firstly due to the lack of knowledge and difficulties in providing valid scientific evidence that would demonstrate the correlation between pollution and health problems. As previous studies show, villagers' data collection methods are rather simple: listing the number of deaths diagnosed as being due to cancer, keeping pictures of their dead livestock and crops, collecting samples of contaminated water and soil (Lora-Wainwright and Chen, 2015; Sant, 2013). Such practices were described by Lora-Wainwright and her colleagues (2012) as being of a politically sensitive nature which serves to attract attention and demand redress, and which earns villagers attention from the media and activist groups and, in turn, provides them with a degree of political capital which they otherwise be unlikely to have. However, they have no scientific evidence that links the illness to pollution, which is a major obstacle for villagers in gaining recognition by the government and the courts (Lora-Wainwright et al, 2012; Phillips, 2015). Furthermore, the villagers also face the problem of collecting data from industrial sites. In Dinbang, for example, villagers are not legally entitled to enter the factory or to demand full records of a factory's emissions (Lora-Wainwright et al, 2012).

Identifying which pollutants lead to cancer, and the factories from which they are emitted in regions where there are multiple polluters, is yet another challenge for villagers. Huai River is an extreme example where there are tens of thousands of factories along the river basin freely dumping both treated and un-treated waste into the river (Economy, 2004). This makes it extremely difficult to identify specific cancer-causing agents in amongst the various disease-causing agents (Yang and Zhuang, 2014). Similarly, Wuli village in Zhejiang province, the centre of China's textile industry, and Xinglong village in Luliang County, both suffer from waste dumping by more than one polluter (McKenzie, 2013). The challenge of proving the correlation between cancer and a particular pollutant is not only faced by villagers but also by scientists and professors. Song Weimin, a specialist in environmental health at Fudan University in Shanghai, has stated that as the list of physical, chemical and biological factors continues to grow, the connection between cancer and pollutants has become, against all obvious logic, harder to prove (Horn, 2013).

Secondly, victims do not always receive support from the local authorities, who play an important role in the success of villagers in claiming governmental recognition and compensation from polluters for their relocation. China has created over 100 national environmental laws and regulations but enforcement is mostly left to local officials, who are faced with a potential conflict of interest due to corruption and the tax revenues that local authorities receive from polluters (Yang and Lennon, 2010). Lora-Wainwright and Chen (2015), in their study of nine cancer village sites, concluded that the amount of government support to villagers' campaigns varies between different levels of government. For other cases, village leaders can also prevent bottom-up regulation (Liu, 2010).

In many cases, village leaders protect industries and prevent local protests due to the fear of losing tax revenue from polluting factories and in order to maintain order (Lora-Wainwright and Chen, 2015; Liu, 2001). As mentioned above, factories have moved to poor rural areas and many of them have become the main source of revenue for local governments as well as providing employment for residents. Corruption has been reported by villagers. The village leader in Tazu initially organised a joint petition to the town government complaining about the pollution from Linchang, a state-own factory; but villagers subsequently claimed that he received gifts from the factory to stop pursuing the petition (Van Rooij et al, 2012). Sometimes, village officials are owners or managers of the polluting enterprises thus creating a conflict of interest (Lora-Wainwright and Chen, 2015). At the township and county

level, Lora-Wainwright and Chen (2015) claimed that there are mostly always negative responses to the villagers' complaints at the initial stage. The most common outcome, as they pointed out, is the avoidance of responsibility and placement of pressure back on to local governments to maintain social stability and to deal with pollution. In the case of Qiugang, the village Party Secretary received an order to stop the villagers from reporting about pollution to Beijing and the protestors faced violent threats from factory owners and the local government (Yang and Lennon, 2010). Villagers' protests were blocked by the authorities and deemed a threat to the peace and stability of the community (Watts, 2010; Lora-Wainwright and Chen, 2015).

Support of third parties such as the press, NGO and researchers is an important force empowering cancer village victims to claim for compensation and relocation. Lora-Wainwright (2010) claimed that it is only when an intensive level of press coverage does threaten the status quo of a region and potentially damages its attractiveness to investors and tourists, that pressure and funding exerted from a higher level enable and require the township and counties to take action, such as in the case of Shangba and Huangmengying. There are an increasing number of reports on cancer villages in well-known Chinese media, which are mostly State-controlled, as well as in the international media, especially in the first half of 2013 after the official citing of cancer villages in the Ministry of Environment's document (Liu, 2010; Lora-Wainwright and Chen, 2015). NGOs, such as Greenpeace, also support villagers both indirectly, by running campaigns or raising awareness, and directly, by supporting data collection and defence in court. The recent victory of Qingpuling villagers in a legal battle against a local waste processing plant was achieved after 5 years thanks to continuous support from a volunteer environmental lawyer from the Center for Legal Assistant to Pollution Victims (Philips 2014). In the case of Qiugang, villagers received support and advice from Green Anhui, an NGO founded in 2003 by 17 students, to bypass the barriers and threats of polluters as well as local government and to push for the relocation of toxic plants. Cancer villages have also received attention from Chinese and foreign researchers, which helped to greatly improve the standard of research concerning the phenomenon and to bring cancer village issues into formal discussions. Researchers such as Lora-Wainwright, Ajiang Chen and Lee Liu spent years in the field to follow up different cases, collect data and bring a better understanding of cancer villages to light (Lora-Wainwright and Chen, 2015; Liu, 2010). However, such successful cases are few and far between as local governments largely prevent the involvement of third parties. Mostly all media, researchers and NGOs reporting on cancer villages talk about the obstruction from local governments with regard to approaching villagers and collecting data (e.g. Yang and Lennon, 2010; Brown, 2012). Local media was barred from reporting an accident by order of the local government (Van Rooij et al, 2012; Economy, 2004). It is especially difficult for foreign organisations or individuals to carry out research in highly sensitive cancer villages, and this has generated significant controversies (Lora-Wainwright and Chen, 2015; McBeath et al, 2014). Not only outsiders but also activists from the villages have been closely monitored by the State's and factories' security officers to prevent them from reporting to the central government or providing information to third parties. In Qiugang, villagers were not allowed to send their complaints to Beijing and a protester was violently threatened (Yang and Lennon, 2010). Famous activists such as Wei Dongying or Hou Daishan have been threatened and prevented from interacting with outsiders (Wolf, 2014; Sant, 2013).

In cases where villagers won lawsuits against polluters, the difficulties in proving the correlation between cancer and pollutant made villagers limit their redress to only economic damages, putting aside health damages (Liu, 2011, Lora-Wainwright et al, 2012). This resulted in a very low level of compensation, which does not provide them with the sufficient financial capacity to move. In the case of Qingpuling village, for example, the successful legal proceedings against a toxic plant only led to the

payment of 6 million yuan (\$976,626) by the factory shared among 600 villagers - a mere 6,000 yuan per person - and no concrete link has been established between the villagers' illnesses and the pollution (Phillips, 2014; Li, 2014). In Zhumuzu village, the requirement for relocation of villagers after 10 years was met with a payment of 200,000 yuan from the government to each family (Global Times, 2015). However, this amount is far from enough for villagers to purchase an apartment elsewhere (ibid.). Furthermore, while such successful legal proceedings may lead to relocations or the closing-down of polluting enterprises, they do not necessarily require such enterprises to clean up the effects of pollution. The documentary on the situation in Quigang village is a case in point; after years struggling with the population and fighting against industries as well as their local government, Quigang villagers were finally successful in having polluting factories move out of their area but then faced the new challenge of resolving the problem of chemical residues, which may require a new court case (Yang and Lennon, 2010). Similarly, villagers in Heshan are still suffering from cancer and agricultural damages caused by the poisoning of water and soil by arsenic left behind by mines and chemical plants that had been operating in the area since the 1950s and which closed down in 2011 due to their pollution levels (Lee, 2014). In such cases, villagers may end up becoming increasingly dependent on the compensation provided by polluting companies as their source of income, which dampens their courage to fight to put a stop to pollution, trapping them in a spiral of health problems and economic poverty that increasingly undermines their ability to move (Van Rooij et al., 2012).

CONCLUSION

Due to the degradation of the living environment and to the lack of power to speak out, the strategies of populations in cancer villages are not a simple matter of whether to move or to stay, also including the murky issue of whether or not to continue fighting for a clean environment. Their aspiration and ability to migrate are largely formed by their expected outcomes from protest, which is influenced by the support of internal parties, such as village leaders or educated villagers, or external parties, such as the media and NGOs. Among migration groups, the respective economic and environment-related aspirations to relocate are difficult to untangle. Moreover, many environmental refugees from cancer villages are farmers whose education and skills are too limited to earn a stable living in their new destinations. The most vulnerable group is the population left behind, forced to bear the health damage and heightened poverty due to its inability either to move or to obtain alternative resources, which in turn worsens the situation of such villagers. Both cases are undesirable due to the potential to increase inequality as well as to create social strain and instability. To address this issue, integration between environmental and migration policy is critical. This means that, besides the ongoing improvement of environmental policy and its enforcement, more attention should be paid to protecting the basic needs of immobile populations in cancer villages and also to enable relocation for the most vulnerable cases while the pollution problem is being addressed. Facilitating the participation of civil society and enabling the collection, publication and dissemination of information will moreover strengthen the victims' power to speak out.

Its Reflection of Health-Related Environmental Pollution Problems. *Proceedings of China Environmental Science Society Annual Conference 3*: 880–889. [online] Available at: http://www.kadinst.hku.hk/sdconf10/Papers_PDF/p166.pdf (viewed April, 2015)

NEWSPAPER ARTICLES:

- BBC, 2009, “China to move 15,000 from smelter”. In *BBC*. London UK [online] Available at: < <http://news.bbc.co.uk/2/hi/asia-pacific/8313711.stm> > (viewed April, 2015)
- BBC, 2013, “China acknowledges ‘cancer villages’”. In *BBC*. China [online] Available at: < <http://www.bbc.com/news/world-asia-china-21545868> > (viewed April, 2015)
- Bloomberg News, 2014, “China takes on pollution with biggest changes in 25 years”. In *Bloomberg News*. [online] Available at: < <http://www.bloomberg.com/news/articles/2014-04-24/china-enacts-biggest-pollution-curb-in-25-years> > (viewed April, 2015)
- Christie-Miller A., 2013, “Turkey: End in Sight for ‘Cancer Village’”. In *eurasianet.org*. Turkey [online] Available at: < <http://www.eurasianet.org/node/66982> > (viewed April, 2015)
- Horn, 2013, “Recovery is slow in rural China’s ‘cancer villages’”. In *McClatchyDC*. Washington DC [online] Available at: < <http://www.mcclatchydc.com/2013/08/19/199714/recovery-is-slow-in-rural-chinas.html> > (viewed April, 2015)
- Jingyang L., 2013, “Study confirms cancer village fears in east China”. In *chinadialogue*. China [online] Available at: < <https://www.chinadialogue.net/blog/6551-Study-confirms-cancer-village-fears-in-east-China/en> > (viewed April, 2015)
- Kaiman J., 2013, “Inside China’s ‘cancer villages’”. In *The Guardian*. Yanglingang [online] Available at: < <http://www.theguardian.com/world/2013/jun/04/china-villages-cancer-deaths> > (viewed April, 2015)
- Kaiman J., 2014, “China strengthens environmental laws”. In *The*

Guardian. Beijing [online] Available at: < <http://www.theguardian.com/environment/2014/apr/25/china-strengthens-environmental-laws-polluting-factories> > (viewed April, 2015)

- Lee J., 2014, “Arsenic pollution sows despair in Chinese cancer village”. In *Reuters* [online] Available at: < <http://in.reuters.com/article/2014/06/23/uk-china-environment-health-idINKBN0EY16S20140623> > (viewed April, 2015)
- McKenzie D., 2013, “In China, ‘cancer villages’ a reality of life”. In *CNN*. [online] Available at: < <http://edition.cnn.com/2013/05/28/world/asia/china-cancer-villages-mckenzie/> > (viewed April, 2015)
- Philips, 2015, “Inside China’s toxic Village of Windows”. In *The Telegraph*, UK [online] Available at: < <http://www.telegraph.co.uk/news/worldnews/asia/china/11416830/Inside-Chinas-toxic-Village-of-Widows.html> > (viewed April, 2015)
- Phillips T., 2014, “Chinese ‘cancer village’ scores rare victory over polluters”. In *The Telegraph* [online] Available at: < <http://www.telegraph.co.uk/news/worldnews/asia/china/11061201/Chinese-cancer-village-scores-rare-victory-over-polluters.html> > (viewed April, 2015)
- Qian L., 2014, “Villagers unhappy with toxic plant compensation”. In *ShanghaiDaily.com* [online] Available at: < <http://www.shanghaidaily.com/national/Villagers-unhappy-with-toxic-plant-compensation/shdaily.shtml> > (viewed April, 2015)
- Qian, 2014, “Villagers unhappy with toxic plant compensation”. In *ShanghaiDaily.com* Shanghai [online] Available at: < <http://www.shanghaidaily.com/national/Villagers-unhappy-with-toxic-plant-compensation/shdaily.shtml> > (viewed April, 2015)
- Sant S.V., 2013, “Wei Dongying, the ‘Erin Brockovich’ of China, says in spite of gov’t vow to address pollution, her ‘cancer village’ is still a killer”. In *CBS News* [online] Available

at: < <http://www.cbsnews.com/news/wei-dongying-the-erin-brockovich-of-china-says-in-spite-of-govt-vow-to-address-pollution-her-cancer-village-is-still-a-killer/> > (viewed April, 2015)

- Souvid Datta, 2015, “Photographs of China’s ‘Cancer Villages’”. In *Vice* [online] Available at: < <http://www.vice.com/read/photographs-of-chinas-cancer-villages> > (viewed April, 2015)
- Watt J., 2010, “China’s ‘cancer villages’ reveal dark side of economic boom”. In *TheGuardian*. Xinglong [online] Available at: < <http://www.theguardian.com/environment/2010/jun/07/china-cancer-villages-industrial-pollution> > (viewed April, 2015)
- Watts, 2010, “China’s ‘cancer villages’ reveal dark side of economic boom”. In *TheGuardian*. Xinglong [online] Available at: < <http://www.theguardian.com/environment/2010/jun/07/china-cancer-villages-industrial-pollution> > (viewed April, 2015)
- Yingying Z., 2011, “The shadow over rural China”. In *chinadialogue* [online] Available at: < <https://www.chinadialogue.net/article/4098-The-shadow-over-rural-China> > (viewed April, 2015)

VIDEOS:

- Brown A., 2012, In *SBS One* [online] Available at: < <http://www.sbs.com.au/news/dateline/story/chinas-cancer-villages> > (viewed April, 2015)
- Wolf E., 2014, In *DW* [online] Available at: < <http://www.dw.de/chinas-cancer-river/av-17371227> > (viewed April, 2015)
- Yang R. and Lennon T., 2010, [online] Available at: < <https://www.youtube.com/watch?v=NeYGHpyJKK4&list=PL87D6049346C9C735&index=1> > (viewed April, 2015)

INTERVIEW:

- 1. Lican, 2015, Discussion by email.