

Pollution and Environmental Concern in Rural China

By

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## **Abstract**

In the last decades, China has become equally known for her high economic growth rates and the increased environmental pollution that came with the economic change. Although the central government has taken steps to mitigate environmental pollution, a large proportion of China's population still lives in rural areas where national environmental laws are often not implemented, and where environmental pollution can be quite serious. Thus, it is important to understand how China's rural population perceives and responds to environmental pollution. This thesis examines the factors shaping environmental concern in rural areas in China. It focuses specifically on the potential influence of the central government, the local government and the media. By using case studies of environmental pollution incidents during the time period of the Eleventh Five-Year Plan and a unique dataset, "the China Survey",<sup>1</sup> this thesis assesses both qualitatively and quantitatively these three actors along with other possible factors. The results suggest that all three actors do influence environmental concern among rural Chinese, but that environmental concern also varies as a result of other factors like education, economic class and occupation.

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<sup>1</sup> "The China Survey is a project of the College of Liberal Arts at Texas A&M University in collaboration with the Research Center for Contemporary China (RCCC) at Peking University".

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## 1. Introduction

40 When I was little, the water from the Ding River tasted very good, it was a little sweet.’ Ming Tang (a pseudonym) who lives in Shanghang County told the reporter. He is now years old and is a salesperson in mineral water. ‘Now, you cannot use the water for cooking or drinking. This is all because of the pollution from Zijin Mining’. He said angrily, ‘The pollution is too serious, nobody dares to drink this kind of water, and you only use it to bathe and to flush the toilet.’<sup>2</sup>

The personal experience of the deterioration of environmental quality described in this short narrative is just one example of the well-known environmental problems China is facing today. Air, water and noise pollution, as well as loss of (an already small amount of) arable land and biodiversity all provide strong indications of China’s dire environmental state.<sup>3</sup> Even though the current gravity of the environmental problems might be unparalleled in China’s history, China does have had to grapple with environmental problems for some time, and has had to deal with the ramifications of economic policies with disastrous consequences since well before the Reform and Opening Policy from the 1980s. The economic policies under Mao Zedong did not focus on the importance of environmental protection and, to the contrary, promoted a radical and

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<sup>2</sup> Taken from: "紫金矿业灰幕：诡异的二次泄漏 [Zijin Mining's Grey Screen: The Strange Second Leakage]." edited by 西扎.(Xi Zha). *时代周刊* downloaded from 人民网, July 22 2010, accessed July 11, 2013, <http://env.people.com.cn/GB/12223826.html> (original Chinese: “我小的时候，汀江的水真的很好喝，带点甜味。’家住上杭县城的唐鸣(化名)告诉记者，40岁的他现在是一家矿泉水代理商。’自来水不能做饭、不能喝，这都是紫金矿业污染造成的。”唐愤愤地说，“污染太严重了，没人敢喝这种水，只能洗洗澡和冲马桶。”

<sup>3</sup> For a discussion of China’s environmental issues in recent history see for example: Vaclav Smil, *China's Past, China's Future: Energy, Food, Environment* (New York: RoutledgeCurzon, 2004), 141-206; Geoffrey Murray and Ian G. Cook, *Green China: Seeking Ecological Alternatives* (New York: RoutledgeCurzon, 2002), 1-23.

extreme exploitation of natural resources.<sup>4</sup> Since 1978, the increased industrialization and the faster economic growth have led to the worsening of environmental conditions in China.

However, environmental pollution always also constitutes an economic cost. For example, air pollution can lead to increased respiratory issues, crop and material damage (because of acid rain). Similarly, water pollution can lead to crop damage and significantly affect fisheries.<sup>5</sup> Even though the exact monetary value of environmental pollution might be difficult to calculate, still it is undisputed that it impedes overall economic growth. Not being unaware of the multifaceted negative consequences stemming from both overuse and misuse of environmental resources, China's central government has in recent years embarked on a path of sustainable development that still promotes economic growth but also considers the importance of the environment.

But laws decided at the center are only as effective as their implementation on the local level and their success thus depends on local officials' willingness to uphold them. Especially in rural areas far away from the reach of the central government and seemingly dependent on industrial opportunities both for local officials' power and for the livelihoods of the local population, the need for environmental protection might not be as obvious as it seems from the perspective of the central government. As has been well established in the literature, in order to maintain stronger economic growth rates, local officials often neglect their responsibilities regarding pollution control and neither enforce nor make known national pollution standards.<sup>6</sup>

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<sup>4</sup> For a discussion on environmental effects under Mao Zedong, see: Judith Shapiro, *Mao's War against Nature: Politics and the Environment in Revolutionary China*, ed. Donald Worster and Alfred W. Crosby, Studies in Environment and History (Cambridge, UK: Cambridge University Press, 2001).

<sup>5</sup> The World Bank together with the State Environmental Protection Administration of China and described and assessed the cost of pollution in China. "Cost of Pollution in China: Economic Estimates of Physical Damages," World Bank, downloaded August 1, 2013, from: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGTOPENVIRONMENT/0,,contentMDK:21252897~pagePK:34004173~piPK:34003707~theSitePK:502886,00.html>.

<sup>6</sup> See for example: Shui-Yan Tang, Carlos Wing Hung Lo, and Gerald E. Fryxell, "Governance Reform, External Support, and Environmental Regulation Enforcement in Rural China: The Case of Guangdong Province," *Journal of Environmental Management* 91(2010): 2009; Benjamin Van Rooij, "Implementation of Chinese Environmental Law: Regular Enforcement and Political Campaigns," *Development and Change* 37, no. 1 (2006); Bryan Tilt, *The*

Thus, even though the central government has realized the negative consequences of environmental exploitation and has increasingly put environmental protection laws into practice, the current environmental situation in China is not determined solely by the official party line. The underlying environmental perception and attitudes of the Chinese people (and of local bureaucrats) are at least as important for explaining the current state of environmental pollution in China.<sup>7</sup>

Given the urgency of many of China's environmental problems, in the last decade, Western and Chinese researchers have tried to identify the factors shaping a Chinese environmental consciousness.<sup>8</sup> However, as Harris points out after reviewing existing Chinese language survey-based research on environmental perception, environmental values vary greatly in China depending on a multitude of different demographic and socio-economic factors.<sup>9</sup> One general consensus seems to be that urban citizens with a higher level of education show more concern for the environment as compared to rural, less educated people<sup>10</sup>. Some studies focus exclusively on the more educated group, such as Stalley and Yang,<sup>11</sup> who find that even despite the individual student's personal background (urban vs. rural), Beijing University Students exhibit a high level of environmental concern.<sup>12</sup> Other researchers have compared gender differences in pro-environmental behavior of urban Chinese citizens as compared to their

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*Struggle for Sustainability in Rural China: Environmental Values and Civil Society* (New York: Columbia University Press, 2010), 22.

<sup>7</sup> Paul G. Harris, "Environmental Perspectives and Behavior in China: Synopsis and Bibliography," *Environment and Behavior* 38, no. 1 (2006): 6.

<sup>8</sup> See for example the review of existing literature: Yok-shiu F. Lee, "Public Environmental Consciousness in China: Early Empirical Evidence," in *China's Environment* (Armonk, NY: M.E. Share, Inc, 2005); Paul G. Harris, "Green or Brown? Environmental Attitudes and Governance in Greater China," *Nature and Culture* 3, no. 2 (2008).

<sup>9</sup> "Environmental Perspectives and Behavior in China: Synopsis and Bibliography," 8.

<sup>10</sup> Ibid.

<sup>11</sup> Phillip Stalley and Dongning Yang, "An Emerging Environmental Movement in China?," *The China Quarterly* (2006).

<sup>12</sup> "An Emerging Environmental Movement in China?," *The China Quarterly* (2006): 13.

counterpart in Western countries and more generally, the influence of demographic factors on pro-environmental behavior or environmental concern, mainly focusing on urban citizens.<sup>13</sup>

Often, China's philosophical traditions, such as Confucianism and Daoism, are consulted by those in search of societal environmental values that might differ from Western traditions and that might provide indigenous solutions to current environmental problems. In the literature on the tradition of environmental values and attitudes in China, Confucianism and Daoism are continuously attributed with providing a strong sense of an embedded position of humans within nature<sup>14</sup>. Regardless of the validity of such an attribution, as Tilt has described with a focus on rural China, it is doubtful that these traditional values survived the centuries and constitute the foundation for environmental behavior in modern China.<sup>15</sup>

A second potential foundation of contemporary Chinese environmental values, Western influence and the promotion of industrialization in the 20<sup>th</sup> century, might provide insight in order to better understand the current state of environmental degradation in China.<sup>16</sup> However, that does not necessarily contribute to an understanding of how current environmental views in rural China are shaped.

The Chinese population has followed the global trend of increased urbanization, but according to the National Bureau of Statistics of China, only in 2010 have the urban population

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<sup>13</sup> See for example: Chenyang Xiao and Dayong Hong, "Gender Differences in Environmental Behavior in China," *Population and Environment* 32(2010); Xiaodong Chen et al., "Effects of Attitudinal and Sociodemographic Factors on Pro-Environmental Behaviour in Urban China," *Environmental Conservation* 38, no. 1 (2011); Chenyang Xiao and Dayong Hong, "Gender and Concern for Environmental Issues in Urban China," *Society and Natural Resources* 25(2012).

<sup>14</sup> See for a summary for example: R. Edward Grumbine and Jianchu Xu, "Creating a 'Conservation with Chinese Characteristics'," *Biological Conservation* 144(2011): 1348-49. And for a historic overview of China's environmental traditions see: Elizabeth C. Economy, *The River Runs Black: The Environmental Challenge to China's Future* 2nd ed., A Council on Foreign Relations Book (Ithaca & London: Cornell University Press, 2010), 27-57.

<sup>15</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 87-88. Tilt's argumentation is mainly focused on his case study area of Futian village, but the rejection of traditional values under Mao was important for China as whole.

<sup>16</sup> Paul G. Harris, "'Getting Rich Is Glorious': Environmental Values in the People's Republic of China," *Environmental Values* 13(2004): 153-54.

and the rural population almost been equal,<sup>17</sup> implying that a large part of the Chinese population still living and making a livelihood in rural areas. Their livelihood does not depend solely on traditional rural occupations such as farming and animal husbandry, but increasingly depends on industrial work as well. Ever since the reform and opening policy under Deng Xiaoping started in the 1980s, industrialization of the countryside through the investment of local governments in small scale, labor intensive industries has not only decreased rural poverty but contributed strongly to the environmental degradation that the Chinese government has been willing to accept in return for economic growth.<sup>18</sup>

Furthermore, according to the World Bank and the State Environmental Protection Administration (SEPA)<sup>19</sup>, the economically less advanced regions are more adversely affected by environmental pollution than the economically more advanced regions. This also holds true among the rural population (with regards to access to pipe water)<sup>20</sup>, worsening the situation for an already potentially disadvantaged segment of society. And, to aggravate the situation, in rural areas, polluted drinking water seems to be a problem.<sup>21</sup>

Hence, since a large percentage of the Chinese population lives in rural areas, facing problematic environmental health threatening conditions, and since due to China's focus on economic growth, rural areas have become more and more industrialized without necessarily putting the proper environmental protection into place, it is important to understand how the environmental consciousness in these areas can be enhanced or shaped. As several case studies have demonstrated, the rural population is not unaware of environmental pollution and the

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<sup>17</sup> National Bureau of Statistics of China, "Communiqué of the National Bureau of Statistics of People's Republic of China on Major Figures of the 2010 Population Census [1] (No. 1)," accessed May 25, 2013, [http://www.stats.gov.cn/english/newsandcomingevents/t20110428\\_402722244.htm](http://www.stats.gov.cn/english/newsandcomingevents/t20110428_402722244.htm).

<sup>18</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 2-3.

<sup>19</sup> SEPA was established in 1988; in 2008 it earned ministry status and became the Ministry of Environmental Protection (MEP).

<sup>20</sup> "Cost of Pollution in China: Economic Estimates of Physical Damages", xv.

<sup>21</sup> "Cost of Pollution in China: Economic Estimates of Physical Damages", 6.

consequences arising from it but awareness alone does not necessarily encourage rural Chinese to act upon it.<sup>22</sup>

One of the reasons for “accepting” the pollution could be that the need for economic development often takes precedence over environmental concern. This is further aggregated by the varying population groups living in rural China. In recent years, China has experienced increased rural-to-urban migration. This migration pattern also exists within rural China. Local industries attract migrant workers, whereas the local population might still be engaged in agriculture.<sup>23</sup> These different economic dependencies clearly also create different incentives regarding the willingness for environmental protection.<sup>24</sup>

Still, in order to see how environmental concern could be enhanced even in the face of the need for economic development, it is crucial to be aware of the current values and attitudes, and which (outside) factors and equally important – which actors - might shape them. Even though in recent years, this question has attracted more academic interest<sup>25</sup> there remains a need for further explicit analysis on the factors, particularly influencing environmental concern in rural China. Thus the research purpose of this thesis is to assess whether the central government, the local government and the media increase environmental concern in rural China.

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<sup>22</sup> See for example: Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 105-06; Anna Lora-Wainwright et al., "Learning to Live with Pollution: The Making of Environmental Subjects in a Chinese Industrialized Village," *The China Journal* 68(2012); Yanhua Deng and Guobin Yang, "Pollution and Protest in China: Environmental Mobilization in Context," *The China Quarterly* 214(2013).

<sup>23</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 88-91.

<sup>24</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 100-05.

<sup>25</sup> See for example: *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*; William P. Alford et al., "The Human Dimensions of Pollution Policy Implementation: Air Quality in Rural China," *Journal of Contemporary China* 11, no. 32 (2002); Xingmin Shi and Fei He, "The Environmental Pollution Perception of Residents in Coal Mining Areas: A Case Study in the Hancheng Mine Area, Shaanxi Province, China," *Environmental Management*(2012); Shixiong Cao et al., "Impacts of the Natural Forest Conservation Program on the Livelihoods of Residents of Northwestern China: Perceptions of Residents Affected by the Program," *Ecological Economics* 69(2010). Anan Lora-Wainwright, "Of Farming Chemicals and Cancer Deaths: The Politics of Health in Contemporary Rural China," *social Anthropology* 17, no. 1 (2009). And the recent paper on protests based on pollution: Deng and Yang, "Pollution and Protest in China: Environmental Mobilization in Context." And in the context of policy implementation: Kate E. Swanson, Richard G. Kuhn, and Wei Xu, "Environmental Policy Implementation in Rural China: A Case Study of Yuhang Zhejiang," *Environmental Management* 27, no. 4 (2001).

In order to do this, the thesis starts from the underlying question of whether environmental concern exists in rural China, and will then specifically look at the potential (positive) influence of the central government, the local governments and the media<sup>26</sup> in rural China. Chapter 2 provides the overall framework for the analysis, discussing the history, the standpoints and the frames which the three actors portray. Based on this framework, Chapter 3 analyzes three distinct pollution incidents in three economically different provinces. In particular, it compares the effect and the behavior of the three actors of interest. Chapter 4 then ties all three actors together in a quantitative analysis based on survey data. Chapter 5 concludes. Both the case studies and the quantitative analysis show that the three actors all have the potential to affect environmental concern in rural China but other factors such as demographic variables and economic development could be influential as well.

This thesis employs both qualitative and quantitative methods to address the research question, using primary sources in Chinese, such as newspaper articles, as well as secondary sources (mainly) in English, and survey data from the “The China Survey<sup>27</sup>” 2008. The description and analysis of the case studies presented in Chapter 3 are based on Chinese newspaper articles discussing pollution incidents, as well as – to a small degree – Chinese academic articles. This information is complemented by newspaper and academic articles in English. Chapter 4 uses quantitative regression analysis to examine data from “The China Survey” regarding environmental awareness. As will be discussed in further detail in Chapter 4, two studies on environmental perception and awareness in China have previously used these data.<sup>28</sup>

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<sup>26</sup> There clearly exist more actors that could influence environmental concern, such as Non-governmental Organizations. However, since individual effects are difficult to discern, this thesis will limit itself to the three actors.

<sup>27</sup> “The China Survey is a project of the College of Liberal Arts at Texas A&M University in collaboration with the Research Center for Contemporary China (RCCC) at Peking University”.

<sup>28</sup> Samantha Lee-Ming Chiu, “Going Green? Urban Vs. Rural Residency and Pro-Environmental Attitudes in China” (Senior Scholars Thesis, Texas A&M University, 2009); Todd Shields and Ka Zeng, “The Reverse

Still, given that this thesis focuses exclusively on rural China, whereas the previous studies did not, more insight can be gained from the analysis in this thesis.

The following provides a few definitions and descriptions necessary for the analysis of this thesis.

### **1.1.Environmental Concern**

This section briefly introduces the main underlying concept for this thesis - environmental concern – and how it will be used. According to Dunlap and Jones, numerous studies across various disciplines assess environmental concern, and, taken as a whole, they do not provide a coherent theoretical background or even a simple definition.<sup>29</sup> The question on the conceptualization and measurements for environmental concern has not been resolved. However, according to Dunlap and Jones, there are two main analytical approaches to (environmental) concern: attitude-related and policy-relevant.<sup>30</sup> Attitude-related studies base their definition on attitude theory, that is, on “the tripartite conceptualization of ‘attitude’”<sup>31</sup> Dunlap and Jones take it a step further and add to the classical components –cognitive (beliefs and knowledge), affective (emotive) and conative (commitment) – the behavioral (actual actions) expression of environmental concern.<sup>32</sup> Hence, the attitude-related approach is focused on the individual, the

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Environmental Gender Gap in China: Evidence from "the China Survey", *Social Science Quarterly* 93, no. 1 (2012). Chiu also looks at post-materialist issues, which will be described further below.

<sup>29</sup> Riley E. Dunlap and Robert Emmet Jones, "Environmental Concern: Conceptual and Measurement Issues," in *Handbook of Environmental Sociology*, ed. Riley E. Dunlap and William Michelson (Westport, Connecticut; London: Greenwood Press, 2002), 482-85.

<sup>30</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," in *Handbook of Environmental Sociology*, ed. Riley E. Dunlap and William Michelson (Westport, Connecticut; London: Greenwood Press, 2002), 489-92.

<sup>31</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 490.

<sup>32</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 490-91.

micro-level, whereas the policy approach, as the name suggests, focuses on a macro-level.<sup>33</sup> The policy approach focuses on social and governmental institutions, how citizens view their role with regards to environmental pollution and who they blame for increased environmental degradation.<sup>34</sup>

For the purpose of this thesis, the definition of “environmental concern” is taken from Dunlap and Jones, from environmental sociology, where it is considered to refer to “the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solutions.”<sup>35</sup>

Furthermore, this thesis will mainly focus on the first part of the definition, the awareness of environmental problems, and will also focus only on one specific environmental problem; environmental pollution. Still, the second part of the definition, the willingness to solve problems, will play a role in Chapter 3 in the analysis of the case studies and specifically of the reaction to pollution of the local population.

Similar to the multitude of (underlying) definitions of environmental concern, there also exists a multitude of measures for it.<sup>36</sup> The choice of measurement could be important to identifying the factors influencing environmental concern.<sup>37</sup> As will be described in Chapter 4, various measures for environmental concern based on the survey will be employed in the quantitative analysis. These measures coincide with the four measures identified by Klineberg in the literature on environmental concern: potential tradeoffs between focusing on the environment or economy, how the survey respondent perceives pollution, survey respondent pro-

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<sup>33</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 492.

<sup>34</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 489.

<sup>35</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 485.

<sup>36</sup> See for example: Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 493-511.

<sup>37</sup> For a discussion on different measures and the effect of demographic factors on environmental concern see: Stephen L. Klineberg, Matthew McKeever, and Bert Rothenbach, "Demographic Predictors of Environmental Concern: It Does Make a Difference How It's Measured," *Social Science Quarterly* 79, no. 4 (1998).

environmental behavior and questions concerning the global environment.<sup>38</sup> Even though these measures might be problematic (as could be the case with others as well)<sup>39</sup>, the first two are still used in Chapter 4. Furthermore, with regards to China and the measurement of environmental concern, one recent study by Xiao, Dunlap and Hong<sup>40</sup>, is especially important in the context of this thesis as it shows that there is indeed, though perhaps surprisingly, a “relatively coherent environmental belief system”<sup>41</sup> in China which, to a certain degree (even though they left out the most rural areas), validates the use of environmental concern for this thesis.

Aside from varying definitions of environmental concern there also exist competing theories on which factors influence environmental concern across countries and over time and thus explain varying individual environmental concern. As already mentioned above, this thesis does not aim to provide a rigorous theoretical background. Still, since the range of case studies in Chapter 3 and some of the variable choices in Chapter 4 are partially motivated by one of the underlying theories to explain environmental concern, a very brief overview should be given.

Inglehart developed a “post-materialist” approach to the study of environmental concern, showing that environmental concern is generally higher in advanced industrial societies where economic struggle is no longer prevalent and the need for survival is not the most daunting problem.<sup>42</sup> Inglehart included the argument of higher pollution levels and greater issues of

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<sup>38</sup> Klineberg, McKeever and Rothenbach, "Demographic Predictors of Environmental Concern: It Does Make a Difference How It's Measured," *Social Science Quarterly* 79, no. 4 (1998): 736-38.

<sup>39</sup> Dunlap and Jones, "Environmental Concern: Conceptual and Measurement Issues," 500-01.

<sup>40</sup> Chenyang Xiao, Riley E. Dunlap, and Dayong Hong, "The Nature and Bases of Environmental Concern among Chinese Citizens," *Social Science Quarterly* (2012).

<sup>41</sup> Xiao, Dunlap and Hong, "The Nature and Bases of Environmental Concern among Chinese Citizens," *Social Science Quarterly* (2012): 17.

<sup>42</sup> See for example: Ronald Inglehart, "Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies," *Political Science and Politics* 28, no. 1 (1995); "The Silent Revolution in Europe: Intergenerational Change in Post-Industrial Societies," *The American Political Science Review* 65, no. 4 (1971).

environmental degradation in his explanation for varying levels of environmentalism.<sup>43</sup> This “post hoc explanation”<sup>44</sup>, however, has been criticized for being overly simplistic.<sup>45</sup>

A second theory that does not contradict the post-materialism approach but similarly sees a positive relationship between environmentalism and wealth has been empirically tested by Diekmann and Franzen.<sup>46</sup> It views the environment not only as a public good but as a normal good (meaning that demand for the good is positively correlated with income). In other words, those with higher income demand a better environment. Additionally, when a nation faces a budget constraint, in order to increase consumption, environmental quality will have to be sacrificed. With increasing income, the nation will be on a higher overall budget constraint and can thus have a higher level of consumption as well as a higher level of environmental quality.<sup>47</sup>

The post-materialism theory has come under criticism.<sup>48</sup> Dunlap and Mertig refute the idea of an overall strong environmentalism in richer nations and show that affluence might even have a negative impact on environmental concern.<sup>49</sup> Brechin takes a closer look at Inglehart’s so-called Objective Problems – Subjective Values explanation<sup>50</sup>, objective environmental problems and subjective post-materialist values, by using data from the Gallup Health of the Planet Survey

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<sup>43</sup> Inglehart, "Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies."

<sup>44</sup> Riley E. Dunlap and Richard York, "The Globalization of Environmental Concern and the Limits of the Postmaterialist Values Explanation: Evidence from Four Multinational Surveys," *The Sociological Quarterly* 49(2008): 536-37.

<sup>45</sup> Dunlap and York, "The Globalization of Environmental Concern and the Limits of the Postmaterialist Values Explanation: Evidence from Four Multinational Surveys," *The Sociological Quarterly* 49(2008).

<sup>46</sup> Andreas Diekmann and Axel Franzen, "The Wealth of Nations and Environmental Concern," *Environment & Behavior* 31, no. 4 (1999).

<sup>47</sup> Axel Franzen and Reto Meyer, "Environmental Attitudes in Cross-National Perspective: A Multilevel Analysis of the ISSP 1993 and 2000," *European Sociological Review* 26(2010): 221.

<sup>48</sup> This section only provides a very brief overview of the criticism towards the post-materialism theories. For a brief overview of the competing theories, see for example: Kyle W. Knight and Benjamin L. Messer, "Environmental Concern in Cross-National Perspective: The Effects of Affluence, Environmental Degradation, and World Society," *Social Science Quarterly* 93, no. 2 (2012): 522-26; Malcolm Fairbrother, "Rich People, Poor People, and Environmental Concern: Evidence across Nations and Time," *European Sociological Review* 0, no. 0 (2012): 2-3.

<sup>49</sup> Riley E. Dunlap and Angela G. Mertig, "Global Concern for the Environment: Is Affluence a Prerequisite?," *Journal of Social Issues* 51, no. 4 (1995).

<sup>50</sup> Steven R. Brechin, "Objective Problems, Subjective Values, and Global Environmentalism: Evaluating the Post-Materialist Argument and Challenging a New Explanation," *Social Science Quarterly* 80(1999): 795.

from 1992. He finds that even though citizens of poorer nations are more concerned about local environmental problems, he cannot identify a statistically significant difference between poorer and wealthier nations with regards to global environmental problems.<sup>51</sup> Similarly, Fairbrother cannot identify support for the post-materialism hypothesis (or for the affluence theory) using a multilevel approach to account for individual and country-level aggregated effects. Instead his results suggest that environmental concern tends to be higher in poorer countries and, within countries, higher for wealthier people.<sup>52</sup> In another more recent study, Knight and Messer derive a similar conclusion, that is, that affluence is not a driving factor for cross-national concern but rather the level of environmental quality drives this concern.<sup>53</sup>

Most articles, arguing for one theory or another, base their analysis on cross-country level data. However, as Franzen and Meyer point out, all three theories can be taken from a cross-national to an individual level.<sup>54</sup> Clearly, this thesis is only focused on one country, China, and within it on one sub-population, rural China. Even though the survey data in Chapter 4 provides some insight into a national level of the rural population in China, the case studies in Chapter 3 look (only) at three small and distinct areas in China. Still, as China is great both in diversity and geographical size, it is reasonable to look at areas that vary in economic development and industrialization. In fact, given the high degree of actual decentralization of environmental politics – on a horizontal as well as on a vertical level – the differences regarding environmental regulation and environmental pollution control between provinces and even between counties

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<sup>51</sup> Brechin, "Objective Problems, Subjective Values, and Global Environmentalism: Evaluating the Post-Materialist Argument and Challenging a New Explanation," *Social Science Quarterly* 80(1999): 793.

<sup>52</sup> Fairbrother, "Rich People, Poor People, and Environmental Concern: Evidence across Nations and Time," 11.

<sup>53</sup> Knight and Messer, "Environmental Concern in Cross-National Perspective: The Effects of Affluence, Environmental Degradation, and World Society."

<sup>54</sup> Franzen and Meyer, "Environmental Attitudes in Cross-National Perspective: A Multilevel Analysis of the ISSP 1993 and 2000," 222.

can be stark. Hence, this thesis leans more heavily on the theories that suggest the potential influence of wealth on environmental concern.

Furthermore, based on the above brief discussion of the varying theories, one other issue stands out. Several studies have included the actual (local) environmental conditions.<sup>55</sup> In the context of environmentalism, and also environmental concern, it seems sensible to include a factor that accounts for the level of environmental quality. Hence, the case studies center around a pollution incident and the quantitative analysis includes a variable with regards to the survey respondent's personal experience of environmental pollution.

## **1.2.Rural China**

A few remarks should be given on the use of "rural" in this thesis. Kamal-Chaoui et al provide a detailed description of the urbanization process and the varying policies in modern day China as well as historical background.<sup>56</sup> They also supply the official Chinese definition of "urban". According to the National Bureau of Statistics of China in 2006, smaller levels of the hierarchical administrative system can also be considered "urban" if the "urban infrastructure and urban public services are directly extended to" them.<sup>57</sup> The database China Data Online gives three potential definitions of "rural" that are based on the administrative system, the permanent

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<sup>55</sup> See for example Inglehart, "Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies; Knight and Messer, "Environmental Concern in Cross-National Perspective: The Effects of Affluence, Environmental Degradation, and World Society."

<sup>56</sup> Lamia Kamal-Chaoui, Edward Leman, and Rufe Zhang, "Urban Trends and Policy in China," in *OECD Regional Development Working Papers* (OECD, 2009).

<sup>57</sup> Kamal-Chaoui, Leman and Zhang, "Urban Trends and Policy in China," in *OECD Regional Development Working Papers* (OECD, 2009), 16 (Table 3).

residence and the statistical classification respectively.<sup>58</sup> Thus, several different definitions of “rural” exist in the scholarship.

In this thesis, the distinction between rural and urban is based on the *hukou* registration of the people. China uses a household registration system (*hukou*) that can be designated as either rural or urban. Even though no information about the official rural/urban status of the case studies in Chapter 3 is known, as will be shown, the larger percentage of households in the counties where the pollution incidents took place is considered to be “rural”. For Chapter 4, the survey data is divided into subsets according to *hukou*, and for the data analysis only people with agricultural household registration are chosen.

### **1.3.Literature Review**

Given the increase in environmental degradation and the realization that all policies might reach their limitations if there is no support from the general public, more and more studies look at the environmental perception, awareness and behavior of the Chinese population. These include “Western” studies in English as well as studies in Chinese.<sup>59</sup> This literature review focuses exclusively on China even though similar studies have been done for other developing countries, trying to understand how environmental awareness can be enhanced.<sup>60</sup> Furthermore, it will look at studies in English.

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<sup>58</sup> "Chinese Statistical Abstract "Beijing Press,downloaded from China Data Online (downloaded December 18, 2012, from chinadataonline.org/info/yearly04.asp)

<sup>59</sup> For an overview of Chinese studies, see for example: Harris, "Green or Brown? Environmental Attitudes and Governance in Greater China." And Lee, "Public Environmental Consciousness in China: Early Empirical Evidence."

<sup>60</sup> On African countries, among others, see for example: Barbara Anderson et al., "Awareness of Water Pollution as a Problem and the Decision to Treat Drinking Water among Rural African Households with Unclean Drinking Water: South Africa 2005," in *Population Studies Center* (2010); Barbara A. Anderson et al., "Exploring

In general, the studies on China – if in a quantitative setting - tend to vary significantly in terms of sample size, sample group, explanatory variables and the dependent variable. Environmental concern, awareness and behavior can be defined in multiple ways, providing different indicators across disciplines. For this literature review, however, the terms environmental awareness and environmental perception are used interchangeably unless otherwise noted.

One set of literature is primarily concerned with environmental awareness and environmental behavior in urban China (or at least does not distinguish between rural and urban China). Yao studies the relationship between media use and post-materialist values and being an environmentalist in China. He does find a positive correlation between post-materialist and environmentalist.<sup>61</sup> Chen et al. examine the influence of demographic variables as well as environmental attitudes on pro-environmental behavior in urban China using the Chinese General Social Survey from 2003.<sup>62</sup> They find that being employed, single and female as well as having a leadership position and living in a big city positively impacts pro-environmental behavior.<sup>63</sup> Similar variables positively affect environmental behavior when the effect of environmental harm is included in the analysis.<sup>64</sup> A recent study by Xu et al. focuses exclusively

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Environmental Perceptions, Behaviors and Awareness: Water and Water Pollution in South Africa," *Population and Environment* 28(2007); Lori M. Hunter, Susie Strife, and Wayne Twine, "Environmental Perceptions of Rural South African Residents: The Complex Nature of Environmental Concern," *Society & Natural Resources* 23, no. 6 (2010); Michael J. White and Lori M. Hunter, "Public Perception of Environmental Issues in a Developing Setting: Environmental Concern in Coastal Ghana," *Social Science Quarterly* 9, no. 4 (2009).

<sup>61</sup> Qingjiang Yao, "Media Use, Postmaterialist Values, and Political Interest: The Making of Chinese Environmentalists and Their Views on Their Social Environment," *Asian Journal of Communication* 18, no. 3 (2008).

<sup>62</sup> Chen et al., "Effects of Attitudinal and Sociodemographic Factors on Pro-Environmental Behaviour in Urban China."

<sup>63</sup> Ibid.

<sup>64</sup> Xiaodong Chen et al., "How Perceived Exposure to Environmental Harm Influences Environmental Behavior in Urban China," *AMBIO* online(2012).

on the change of environmental awareness based on one pollution incident.<sup>65</sup> They are interested how environmental awareness changed after the Taihu pollution incident in 2007, focusing on urban China.

However, how important the survey respondent considers the environment to be seems often to be a deciding factor among all variables, including demographics, according to a study by Feng and Reisner, even though the importance of it might differ between individual and public behavior.<sup>66</sup> Hence, environmental awareness could be seen as a first step for environmental behavior and should be further analyzed regarding the factors influencing it.<sup>67</sup>

Some studies look at potential differences between urban and rural areas in China or include variables indicating the survey respondent's *hukou* status.<sup>68</sup> As described above, Stalley and Yang do not find any differences between university students from rural and urban areas.<sup>69</sup> However, they are only analyzing one small sample of the Chinese population: university students in Beijing. Even though the survey respondents could come from any level of society and province in China the sample restrictions could limit the potential for establishing a causal relationship. Bi et al. conduct a study on Wujin County in Jiangsu Province and find indeed that being older, more educated, higher income and living in an urban could influence perception of the seriousness of several environmental problems.<sup>70</sup> Similarly, Lin finds that the urbanization level of the survey respondent's place of domicile plays a significant role in environmental

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<sup>65</sup> L. Xu et al., "Changes of Public Environmental Awareness in Response to the Taihu Blue-Green Algae Bloom Incident in China," *Environment, development and sustainability* 15(2013).

<sup>66</sup> Wang Feng and Ann Reisner, "Factors Influencing Private and Public Environmental Protection Behaviors: Results from a Survey of Residents in Shaanxi, China," *Journal of Environmental Management* 92(2011).

<sup>67</sup> However, Stalley and Yang ask for caution when making this connection Stalley and Yang, "An Emerging Environmental Movement in China?," 9.

<sup>68</sup> See for example: Chiu, "Going Green? Urban Vs. Rural Residency and Pro-Environmental Attitudes in China; Jun Bi, Yongliang Zhang, and Bing Zhang, "Public Perception of Environmental Issues across Socioeconomic Characteristics: A Survey Study in Wujin, China," *Frontiers of Environmental Science & Engineering in China* 4, no. 3 (2010); Stalley and Yang, "An Emerging Environmental Movement in China?."

<sup>69</sup> Stalley and Yang, "An Emerging Environmental Movement in China?."

<sup>70</sup> Bi, Zhang, and Zhang, "Public Perception of Environmental Issues across Socioeconomic Characteristics: A Survey Study in Wujin, China," 367.

awareness, however, not in a linear form: an increase in urbanization level seems at first to decrease environmental awareness and then increase it.<sup>71</sup> Zhao includes in his comparison on media and environmental concern between the USA and China a measure for agricultural worker, as well as an indicator for post-materialist values. The results indicate the media can play a strong role for environmental concern.<sup>72</sup>

These studies, which all focus on different locations and kinds of respondents, all show that there are differences in environmental perception or concern between urban and rural areas (or in the case of Zhao agricultural workers)<sup>73</sup>. Thus, it is important to investigate more specifically the factors influencing environmental awareness in rural China.

There are quite a few studies that focus exclusively on rural China<sup>74</sup>. However, they mostly evaluate environmental awareness or attitudes at one specific location in China, not as a representative sample across China or they focus on one specific governmental program or one specific pollution issue. Some studies are pure descriptive case studies, others also employ survey data and to a certain degree quantitative analyses.

Using descriptive statistics based on a survey in three villages close to Shanghai, Zhao et al. are generally interest in farmers' perceptions and opinions, including on environmental matters.<sup>75</sup> Tang et al. look at rural environmental awareness and perception in connection with one specific environmental problem – water scarcity – in their survey of farmers from the

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<sup>71</sup> Tao Lin et al., "A Study of Residents' Environmental Awareness among Communities in a Peri-Urban Area of Xiamen," *International Journal of Sustainable Development* 17, no. 4 (2010): 291.

<sup>72</sup> Xiaoquan Zhao, "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use," *Communication Monographs* 79, no. 2 (2012).

<sup>73</sup> Ibid.

<sup>74</sup> Harry F. Lee and David D. Zhang, "Perceiving the Environment from the Lay Perspective in Desertified Areas, Northern China," *Environmental Management* 41(2008); Jianjun Tang, Henk Folmer, and Jianhong Xue, "Estimation of Awareness and Perception of Water Scarcity among Farmers in the Guanzhong Plan, China, by Means of a Structural Equation Model," *Journal of Environmental Management* 126(2013); Y. P. Wei et al., "Farmers' Perception of Environmental Degradation and Their Adoption of Improved Management Practices in Alxa, China," *Land degradation & development* 20(2009); Deyu Zhao and Zhiqian Fang, "Survey Reveals Farmers' Perceptions of Modern Life," *China Economist* 12(2008).

<sup>75</sup> Zhao and Fang, "Survey Reveals Farmers' Perceptions of Modern Life."

Guanzhong Plains in Shaanxi, China in 2011.<sup>76</sup> They find that drought experience is a significant factor in determining the perception of water scarcity as an environmental problem. They also include exposure to mass media as a potential factor for awareness and perception. Similar to this thesis, Alford et al. are interested in the effect of the central government's effort to promote environmental concern and report that the governmental campaigns are not yet as successful as hoped for. They also look at other factors such as education, media and wealth (briefly mentioned in the context of post-materialism). However, their study is mainly focused on one rural area in Anhui province.<sup>77</sup>

Other studies focus on one particular environmental program in rural areas and the impact it has on the environmental perception of the people affected by it. Cao et al. investigate the influence of the Natural Forest Conservation Program on people in northern Shaanxi. They find that this program is not necessarily welcomed by the local population as it is perceived as decreasing their economic benefits.<sup>78</sup> Using a large sample of 5000 survey respondents in six Chinese provinces, Cao et al. analyze environmental awareness within the Grain for Green Project in China. They conclude that education and economic level are important for increasing pro-environmental attitudes.<sup>79</sup>

This brief discussion on the growing body of literature regarding environmental concern in China suggests that there still exists a need to for addressing environmental concern in rural China. As has been previously discussed, China's rural population is more vulnerable with regards to environmental pollution. Hence, this thesis attempts to get a better understanding of

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<sup>76</sup> Tang, Folmer, and Xue, "Estimation of Awareness and Perception of Water Scarcity among Farmers in the Guanzhong Plan, China, by Means of a Structural Equation Model."

<sup>77</sup> Alford et al., "The Human Dimensions of Pollution Policy Implementation: Air Quality in Rural China."

<sup>78</sup> Cao et al., "Impacts of the Natural Forest Conservation Program on the Livelihoods of Residents of Northwestern China: Perceptions of Residents Affected by the Program."

<sup>79</sup> Shixiong Cao, Li Chen, and Zhande Liu, "An Investigation of Chinese Attitudes toward the Environment: Case Study Using the Grain for Green Project," *A Journal of the Human Environment* 38, no. 1 (2009).

the factors influencing environmental concern in rural China, specifically, of the effect of three of the main actors; central government, local government and the media by using case studies. It will furthermore contribute to the literature by using a unique dataset, “The China Survey” which is more representative of China as a whole to quantitatively assess the influence of the three actors and other factors.

## 2. Conceptual Background

### 2.1. Introduction

The rural Chinese population could receive information regarding environmental protection from various different sources; from the party line presented by the central government to the geographically closer provincial and local governments in addition to news reports and coverage by the media. Hence, it seems to be important which (if any) of these three actors and their particular view on pollution issues influences environmental concerns among the rural population in China. This thesis places the analysis of varying sources within the idea of “framing” and especially “framing effects” as a conceptual basis for the case studies in the following chapter and the quantitative analysis in Chapter 4. Given the complexity of such an analysis, this chapter only provides a rather simplified background on the concept and on each of the actors.

“Framing” is part of the overall ideas of “framing theory”, which according to Chong and Druckman can be described as follows:

The major premise of framing theory is that an issue can be viewed from a variety of perspectives and be construed as having implications for multiple values or considerations. Framing refers to the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue.<sup>80</sup>

However, as has been repeatedly pointed out in the literature<sup>81</sup>, there does not exist one cohesively defined “Framing Theory” across disciplines or even within disciplines. Hence, rather

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<sup>80</sup> Dennis Chong and James N. Druckman, "Framing Theory," *Annual Review of Political Science* 10(2007): 104.

<sup>81</sup> See for example for overview and discussion: Claes H. de Vreese, "New Avenues for Framing Research," *American Behavioral Scientist* 56, no. 3 (2012): 366; Porismita Borah, "Conceptual Issues in Framing Theory: A

than describing the many definitions of the theory, the following section will instead only provide a brief background on framing theory. It then will define how the concepts of frames and framing theory are used in the context of this thesis. Section 3 introduces the three actors, their understanding of the importance of environmental protection, the way they would like to see their viewpoint portrayed, and their potential to influence environmental concerns. Section 4 concludes the chapter.

## 2.2.Framing and Actors

This thesis will look at frames in a political science context. As Druckman summarizes, within social science, two kinds of frames can be distinguished: *frames in communication* and *frames in thought*.<sup>82</sup> The first kind of understanding of frames is most commonly used in the context of media analysis and when looking at arguments in a political environment. *Frames in communication* focuses on the speaker's "words, images, phrases and presentation styles [...] when relaying information about an issue [...]"<sup>83</sup>. In contrast, analyses of *frames in thought* are interested in audience perception of a particular situation.<sup>84</sup> This second focus is also considered to have its foundation in the realm of psychology.<sup>85</sup>

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Systematic Examination of a Decade's Literature," *Journal of Communication* 61, no. 2 (2011). John A. Noakes and Hank Johnston, "Frames of Protest: A Road Map to a Perspective", In *Frames of Protest: Social Movements and the Framing Perspective*, edited by Hank Johnston and John A. Noakes (Lanham, Boulder, New York, Toronto, Oxford: Rowman & Littlefield Publishers, Inc., 2005), 1-29.

<sup>82</sup> James N. Druckman, "The Implications of Framing Effects for Citizen Competence," *Political Behavior* 23, no. 3 (2001): 227-28. He further divides framing effects into emphasis framing effects and equivalency framing effects. In the context of this thesis detailed definition of framing effects, however, is not necessary.

<sup>83</sup> Dennis Chong and James N. Druckman, "A Theory of Framing and Opinion Formation in Competitive Elite Environments," *Journal of Communication* 57(2007): 100.

<sup>84</sup>Chong and Druckman, "A Theory of Framing and Opinion Formation in Competitive Elite Environments," *Journal of Communication* 57(2007): 101.

<sup>85</sup> Porismita Borah, "Conceptual Issues in Framing Theory: A Systematic Examination of a Decade's Literature," *ibid.*61, no. 2 (2011): 247.

However, most importantly for this thesis are not the “frames” themselves, that is, how the actors (central government, local government, media) try to influence the public’s perception of the importance of the environment, or the exact understanding of the presented frames by the rural citizens, but more importantly, how the frames of the actors influence the perception of the rural public. That is, the how do frames of the three actors induce certain frames in the minds of the population they are intended for? As Druckman points out, this connection between *frames in communication* and *frames in thought* is often referred to as “framing effects”.<sup>86</sup> The question then arises, what makes frames so strong that a framing effect occurs, that is, that members of the public shape their own opinions based on the frames presented to them. And even more importantly, what kind of role does the source of a frame play, especially if several actors offer contradictory frames? When looking into such a situation of competing frames, Chong and Druckman<sup>87</sup> identify two alternative explanations in the literature on framing effects: one suggests that frames that are repeated most often will have the greatest effect on the population for which they are intended. From the second set of literature they identify that a frame has a greater effect when it is stronger, even if it is not repeated as often.<sup>88</sup> Aside from the strength and the repetitiveness of the frame, Chong and Druckman further hypothesize that, among other aspects, the “knowledge and motivation”<sup>89</sup> of the target audience could also affect the success of framing effects.

Although framing theory seems in many respects to be an appropriate analytical tool to understand the effects of the media and the governmental actors on environmental perception in China, the cases presented in this thesis have some interesting challenges to the theory, as it will

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<sup>86</sup> Druckman, "The Implications of Framing Effects for Citizen Competence," 228.

<sup>87</sup> Chong and Druckman, "A Theory of Framing and Opinion Formation in Competitive Elite Environments," 104.

<sup>88</sup> Ibid.

<sup>89</sup> Chong and Druckman, "A Theory of Framing and Opinion Formation in Competitive Elite Environments," 110.

be difficult to discern the varying influences solely based on the literature that is available and as this thesis does not directly focus on the words themselves that are used to describe the cases. Furthermore, as will be described in more detail in the Media section, the state still has a great control over news reports. However, one of the main issues, however, is that framing theory has usually been applied to democratic countries and the process through which the public forms an opinion based on the elite frames.<sup>90</sup> Clearly, China does not have a democratic governing structure but can rather be perceived as a decentralized authoritarian regime. Still, there exist several studies on China which place their analyses, generally, within a framing context. For example, Wesoky looks at changes of frames within the contemporary women's movement in China.<sup>91</sup> Similarly, Keech-Marx uses a framing analysis from social movement theory to look at the women's and anti-violence movement in China.<sup>92</sup> In an environmental context, Kostka discusses how local cadres reframe central energy efficiency policies in order to make them sound attractive by putting them into an economic growth context.<sup>93</sup> Another set of literature on framing and China stems from the social movement theory.<sup>94</sup> Also, in that context Deng and Yang look at conditions that would lead to environmental protests in China.<sup>95</sup>

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<sup>90</sup> See for example: "Framing Theory," 104.

<sup>91</sup> Sharon Wesoky, *Chinese Feminism Faces Globalization*, ed. Beauchamp, East Asia: History Politics, Sociology, Culture (New York, London: Routledge, 2002).

<sup>92</sup> Samantha Keech-Marx, "Airing Dirty Laundry in Public: Anti-Domestic Violence Activism in Beijing," in *Associations and the Chinese State: Contested Spaces*, ed. Jonathan Unger (Armonk N.Y., London: M. E. Sharpe, 2008), 175-99.

<sup>93</sup> Genia Kostka and William Hobbs, "Local Energy Efficiency Policy Implementation in China: Bridging the Gap between National Priorities and Local Interests," *The China Quarterly* 211(2012): 781-84.

<sup>94</sup> See for example: Jiping Zuo and Robert D. Bendford, "Mobilization Processes and the 1989 Chinese Democracy Movement," *The Sociological Quarterly* 36, no. 1 (1995).

<sup>95</sup> Deng and Yang, "Pollution and Protest in China: Environmental Mobilization in Context."

## **2.3.Potential Actors in Environmental Concern**

Even though other factors and actors<sup>96</sup> could clearly play a role in influencing environmental concern, this thesis is limited to the discussion of three main actors and their possible interdependencies: central government, local governments and the media. These three actors, their standpoint on environmental issues and their potential to influence the rural Chinese population will be discussed in further detail in this section.

### **2.3.1. Central Government**

As the central government is often perceived as the main authority in China, it is clearly the first actor that has the potential to influence environmental attitudes and values – also on the local level.

After the Maoist era, the Chinese government realized the need for environmental protection and passed its first environmental protection law in 1979 as a trial. Ten years later, in 1989, the central government passed the current environmental protection law which, among other things, governs the protection and improvement of the environment, and pollution control and prevention.<sup>97</sup> Ever since 1979 a series of environmental laws have been passed, including, the Marine Environmental Protection Law (1982), the Law on Prevention and Control of

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<sup>96</sup> Non-governmental organizations often have environmental education as their main goals. Furthermore, the importance of social networks has been shown to enhance environmental awareness: Tang, Folmer, and Xue, "Estimation of Awareness and Perception of Water Scarcity among Farmers in the Guanzhong Plan, China, by Means of a Structural Equation Model," 61.

<sup>97</sup> MEP, "Environmental Protection Law of the People's Republic of China," accessed May 30, 2013, [http://english.mep.gov.cn/Policies\\_Regulations/laws/environmental\\_laws/200710/t20071009\\_109928.htm](http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/200710/t20071009_109928.htm).

Atmospheric Pollution (1995), the Law on Prevention and Control of Pollution from Environmental Noise (1996)<sup>98</sup>, and the Promotion of Clean Production (2002)<sup>99</sup>. This series of laws, as well as numerous policies and regulations, demonstrate the importance the Chinese central government places on environmental protection and the awareness it has of the costs that stem from pollution and overuse of resources.

Aside from the general laws, other indicators of the point of view of the central government are the Five-Year Plans that regulate economic and social issues for five year periods. Ever since 1953, the Chinese central government has outlined their intended policies and goals in five year plans<sup>100</sup>. Since the case studies and data evaluated in chapters 3 and 4 are all from the period between 2006 and 2010, the central government's standpoint on environmental pollution used in this thesis is based on the Eleventh Five-Year-Plan (2006-2010).

The first novelty regarding the Eleventh Five-Year Plan is that it changed its name from plan (*jihua*) to "long-range plan"<sup>101</sup>, "'layout" or "program"'<sup>102</sup> (*guihua*). This re-conceptualization of the function of the plan is also reflected in the way it approaches the economic future of the country. Instead of thoroughly planning every aspect of the economy it generally seems to accept that China has moved on to become a market economy with less direct governmental intervention.<sup>103</sup> Furthermore, it acknowledges the fact that economic growth, especially the absolute emphasis on economic growth of the previous decades, is not the same as economic development and shifts the focus to include sustainability within the economic

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<sup>98</sup> "Environmental Laws," accessed May 30, 2013,

[http://english.mep.gov.cn/Policies\\_Regulations/laws/environmental\\_laws/](http://english.mep.gov.cn/Policies_Regulations/laws/environmental_laws/).

<sup>99</sup> "Environment-Related Laws," May 30, 2013,

[http://english.mep.gov.cn/Policies\\_Regulations/laws/envir\\_elatedlaws/](http://english.mep.gov.cn/Policies_Regulations/laws/envir_elatedlaws/).

<sup>100</sup> The only exception is the time period from 1962 to 1966.

<sup>101</sup> Barry Naughton, "The New Common Economic Program: China's Eleventh Five Year Plan and What It Means," *China Leadership Monitor* 16(2005): 2.

<sup>102</sup> "The New Five-Year Plan," accessed April 1, 2013, [www.china.org.cn/english/2005/Nov/148177.htm](http://www.china.org.cn/english/2005/Nov/148177.htm).

<sup>103</sup> Naughton, "The New Common Economic Program: China's Eleventh Five Year Plan and What It Means," 1-2.

concept.<sup>104</sup> A main part of the focus on sustainability is the importance placed on the conservation and restriction of the use of natural resources. For example, it sets a specific target to reduce energy consumption per unit of GDP by twenty percent within the five years of the plan.<sup>105</sup> Similar set numerical targets are given for the reduction of major pollutants. This general target is then further specified in the “National Eleventh Five-year Plan for Environmental Protection”, the Five Year Plan provided by the central government’s Ministry of Environmental Protection (MEP). The targets include water and air pollution indicators, such as the reduction of chemical oxygen demand (COD) and improvement of water surface quality as well as reduction of SO<sub>2</sub> emissions and improvement of urban air quality.<sup>106</sup>

In line with the concept of a “New Socialist Countryside”, as introduced in the Eleventh Five-Year Plan, the MEP’s Eleventh Five-Year Plan includes a section entitled “Control Rural Environment, Promote the Development of Socialist Countryside”.<sup>107</sup> It declares the intention to control soil pollution, rural non-point pollution, garbage control and improve rural villages.<sup>108</sup> It also demonstrates the importance the central governmental institutions place on the value of the environmental conditions in rural areas.

Another essential section in the Eleventh Five-Year Plan from the MEP is part VIII “Mobilize Social Forces to Protect the Environment,” which describes measures to inform the public of environmental conditions and raise environmental awareness. Even though it only comprises three paragraphs it shows the Ministry’s awareness of the vital role the public plays

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<sup>104</sup> C. Cindy Fan, "China's Eleventh Five-Year Plan (2006-2010): From "Getting Rich First" to "Common Prosperity", " *Eurasian Geography and Economics* 47, no. 6 (2006): 710-11.

<sup>105</sup> "Facts and Figures: China's Main Targets for 2006-2010," Xinhua downloaded from gov.cn, accessed May 24, 2013, [english.gov.cn/2006-03/06/content\\_219504.htm](http://english.gov.cn/2006-03/06/content_219504.htm).

<sup>106</sup> MEP, "The National Eleventh Five-Year Plan for Environmental Protection (2006-2010)," May 24, 2013, [http://english.mep.gov.cn/Plans\\_Reports/11th\\_five\\_year\\_plan/200803/t20080305\\_119001.htm](http://english.mep.gov.cn/Plans_Reports/11th_five_year_plan/200803/t20080305_119001.htm).

<sup>107</sup> Ibid.

<sup>108</sup> Ibid.

when it comes to environmental protection and the commitment of the central government to enhance that awareness.<sup>109</sup>

These efforts to raise public environmental awareness include efforts to keep local environmental officials informed of legal concepts and guidelines. This corresponds to another Section (III) of Section (V) within the Five-Year Plan; “Improve the institutions and carry out responsibilities”. These efforts range from national level to local level supervision and specify the responsibilities especially placed on local officials, as well as companies.<sup>110</sup>

These goals set forth by the central government and the MEP in the Eleventh Five-Year Plan set the frame for the viewpoint of the central government regarding environmental protection and the environment in general in China at from 2006-2010 for the purpose of the following chapters.

### **2.3.2. Local Government**

Local officials are much closer to the local population than the often physically and politically distant central government, and they therefore have the potential to have much greater influence on the environmental awareness of the rural population. However, the relatively clear standpoint of the central government regarding environmental concerns and environmental protection goals is not necessarily easily translated down to the lower levels of government, as local officials may have priorities and interests that are quite different from the macro-level concerns of the central government.

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<sup>109</sup> Ibid.

<sup>110</sup> Ibid.

One cautionary remark should be given when providing such a distinct description of the local government. Even though the following descriptions seem to provide a rather unified picture, this is not necessarily the case. As touched on in the introduction, China's governmental structure and the size of the country itself provide potential for increased differentiation between various counties and provinces as well as within the vertical structure; between county level and provincial level government. Differences between the local and provincial governments will be pointed out in the case studies as well as be accounted for by different variables in Chapter 4. Furthermore, using case studies from three different regions in China could already give a first impression on the differences between local governments.

The centrally decided laws should, of course, be implemented locally by officials on each governmental level – provincial, county, township and village. However, this is often not the case, leading to an “implementation gap” for environmental policies in China.<sup>111</sup> Even though the literature seems to have reached a consensus regarding the existence of this gap between law and law enforcement on the local level, scholars have proposed several different reasons for this phenomenon, not all of which put the blame exclusively on the local officials. Ran argues that the perverse incentive structures given by the central government do not support policy implementation on the local level. Instead they tend to promote the non-implementation of environmental policies.<sup>112</sup> Other authors highlight the conflicting interests of local officials – mainly of economic nature – as a factor inhibiting pollution control in particular.<sup>113</sup>

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<sup>111</sup> See for example: Genia Kostka and Arthur P. J. Mol, "Implementation and Participation in China's Local Environmental Politics: Challenges and Innovations," *Journal of Environmental Policy & Planning* 15, no. 1 (2013): 5.

<sup>112</sup> Ran Ran, "Perverse Incentive Structure and Policy Implementation Gapy in China's Local Environmental Politics," *ibid.*: 19.

<sup>113</sup> See for example: Van Rooij, "Implementation of Chinese Environmental Law: Regular Enforcement and Political Campaigns," 59.

A third reason mentioned in the literature is the decentralization of China's governing structure, both along horizontal (several different ministries and government agencies are responsible for environmental policies) and vertical lines (shifting implementation responsibilities to lower-level governments and thus opening up the possibility for local officials to choose not to implement certain policies).<sup>114</sup> Environmental Protection Bureaus that exist on each vertical level of China's governmental structure – provincial, municipal and county – carry the main burden of policy enforcement.<sup>115</sup> Even though they also have to report to each higher level within the environmental governance structure (up to the MEP), they are highly dependent on the local governments as most of their financial support comes from them.<sup>116</sup> Hence, even though environmental violations might be known and enforcement actions such as closure of illegally operating plants or the collection of discharge fees should be undertaken, due to the strong financial dependence on the local government, the EPBs are often not able (or willing) to carry out their responsibilities, thus giving local governments more power over environmental policies.

So, the environmental policy structure within China does make it easier for local officials to follow their vested interests and disregard centrally decided laws. The mere existence of the implementation gap seems to indicate that they take advantage of it. However, as Ran points out, this gap cannot be interpreted to mean anything as simplistic as that the central government is

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<sup>114</sup> On cadres choosing to not implement certain policies, see: Kevin O'Brien and Lianjiang Li, "Selective Policy Implementation in Rural China," *Comparative Politics* 31, no. 2 (1999): 167. On problems regarding overlap between institutions, see for example: Richard J. Jr. Ferris and Hongjun Zhang, "Environmental Law in the People's Republic of China: An Overview Describing Challenges and Providing Insights for Good Governance," in *China's Environment*, ed. Kristen A. Day (Armonk, NY: M. E. Sharpe Inc, 2005), 92; Abigail Jahiel, "The Organization of Environmental Protection in China," *The China Quarterly* 156(1998): 763-64.

<sup>115</sup> Elizabeth C. Economy, "Environmental Enforcement in China," in *China's Environment*, ed. Kristen A. Day (Armonk, NY: M. E. Sharpe, Inc, 2005), 103.

<sup>116</sup> Jahiel, "The Organization of Environmental Protection in China," 759.

good and the local government is evil.<sup>117</sup> In fact, local governments have the opportunity to pass certain laws on their own as long as they do not contradict the national laws.<sup>118</sup> Some provincial and city governments do take advantage of this, trying to establish themselves as “green” and thus more advanced than others.<sup>119</sup> On the other hand, the central government, which appears to push for the enforcement of the environmental protection laws, does not always follow through when rural residents complain about conditions in their home towns. This is especially true if the local situation seems to conflict with the central government’s goals. That is, if the local situation can be perceived to create social unrest and too high of a degree of social mobilization.<sup>120</sup>

Furthermore, as Ran argues, the goals of the central and local governments are not necessarily opposite.<sup>121</sup> Local officials tend to consider economic growth to be most important as often their advancement within the governmental system depends on evaluations that are often based on economic indicators. Economic growth can often be achieved faster by disregarding pollution restrictions and other environmental regulations. The central government, on the other hand, has realized that sustainable economic growth can only be achieved with environmental protection as the cost of pollution will eventually become too high. Additionally, the increase of environmental pollution could lead to and has led to an increase in social unrest and has been identified as one of the major sources of social instability.<sup>122</sup>

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<sup>117</sup> Ran, "Perverse Incentive Structure and Policy Implementation Gapy in China's Local Environmental Politics," 34.

<sup>118</sup> Ferris and Zhang, "Environmental Law in the People's Republic of China: An Overview Describing Challenges and Providing Insights for Good Governance," 73.

<sup>119</sup> Kostka and Mol, "Implementation and Participation in China's Local Environmental Politics: Challenges and Innovations," 8.

<sup>120</sup> See for example: Kevin J. O'Brien and Lianjiang Li, *Rightful Resistance in Rural China* (Cambridge et al.: Cambridge University Press, 2006), 31-33.

<sup>121</sup> Ran, "Perverse Incentive Structure and Policy Implementation Gapy in China's Local Environmental Politics," 34-35.

<sup>122</sup> See the summary by: Tianjie Ma, "Environmental Mass Incidents in Rural China: Examining Large-Scale Unrest in Dongyang, Zhejiang," *Woodrow Wilson International Center for Scholars China Environment Series* 2008/2009(2008/2009): 33-35.

Hence, even though it should not be overly generalized, there does seem to exist a difference in how the central government and the local government view the importance of environmental protection. The question thus arises, how does the local population perceive the gap between the central and the local government, and how does that influence environmental concern in rural China?

### 2.3.3. Media and the Environment

As Harris states, one deciding factor for environmental awareness aside from socio-economic background and education level is exposure to media.<sup>123</sup> As a public opinion poll from 2007 demonstrates, the majority of the respondents considered the media (newspapers and TV) as their most important source of information regarding environmental protection. The government, however, ranked only fourth on the list.<sup>124</sup>

The importance of media in shaping public opinion and giving a strong foundation for environmental knowledge and values in China has been evaluated by Zhao<sup>125</sup>, for example, and contrasted with the impact of media in the USA. Among other results, he finds that environmental concern is in fact positively related to media use in both countries.<sup>126</sup> The question, of course, arises of whether media in two countries as different as the USA and China can be comparable with respect to the extent to which they help shape environmental consciousness.

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<sup>123</sup> Harris, "Green or Brown? Environmental Attitudes and Governance in Greater China," 151.

<sup>124</sup> Cited by: Economy, *The River Runs Black: The Environmental Challenge to China's Future* 171.

<sup>125</sup> Zhao, "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use."

<sup>126</sup> Zhao, "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use," 142-50.

Even though the media in China is still highly censored and state-controlled it has undergone significant changes ever since the Reform and Opening Policy of 1978. Because of government cuts and competing foreign media involvement in the home market, the media in China underwent rapid commercialization, having to (partially) finance itself through advertisement and thus depending more than before on readers and consumers.<sup>127</sup>

As Shirk describes, many commercial newspapers belong to government- or party-led media groups. However, their appearance and their content might be completely different than the other – more official – newspapers the media group publishes.<sup>128</sup> As much as these commercial media have distanced themselves from the previous propaganda role of the official media during Maoist times, the role of the state-owned media has changed as well. Its function now is that of “guidance of public opinion”<sup>129</sup> and “public opinion supervision”<sup>130</sup>. Based on the idea of guidance of public opinion, the media should never be allowed to openly criticize the party state but should instead focus on maintaining social stability.<sup>131</sup> Closely related to this concept of guidance of public opinion is the role of the media as supervisor of public opinion. In this role, the media “supervises” government officials by exposing any wrongdoing to the public.<sup>132</sup> However, the official party media seems to be less liked by the general consumer than

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<sup>127</sup> For an introduction to the media reform in China, see for example: Susan L. Shirk, "Changing Media, Changing China," in *Changing Media, Changing China*, ed. Susan L. Shirk (New York: Oxford University Press, 2011), 8-15.

<sup>128</sup> Shirk, "Changing Media, Changing China," in *Changing Media, Changing China*, ed. Susan L. Shirk (New York: Oxford University Press, 2011), 9.

<sup>129</sup> See for example: Alex Chan, "Guiding Public Opinion through Social Agenda-Setting: China's Media Policy since the 1990s," *Journal of Contemporary China* 16, no. 53 (2007).

<sup>130</sup> On public opinion supervision, see among others: Wusan Sun, "Alliance and Tactics among Government, Media Organizations and Journalists: A Description of Public Opinion Supervision in China," *Westminster Papers in Communication and Culture* 70, no. 1 (2010). And: Yuezhi Zhao and Wusan Sun, "Public Opinion Supervision: Possibilities and Limits of the Media in Constraining Local Officials," in *Grassroots Political Reform in Contemporary China*, ed. Elizabeth J. Perry and Merle Goldman, *Harvard Contemporary China Series* (Cambridge: Harvard University Press, 2007).

<sup>131</sup> Chan, "Guiding Public Opinion through Social Agenda-Setting: China's Media Policy since the 1990s," 556-57.

<sup>132</sup> Zhao and Sun, "Public Opinion Supervision: Possibilities and Limits of the Media in Constraining Local Officials," 300.

the commercialized news, clearly dampening its ability to guide public opinion, and the official media is often less trusted than the commercialized media.<sup>133</sup>

Still, both of these functions, guidance and supervision, can clearly play a role when it comes to the media as an actor influencing environmental concern in China. In addition to the official party-line newspapers, other media- (print, TV, radio) has the potential to report on environmental issues as well.<sup>134</sup> In recent years, the central government has generally reduced censorship on media that are covering environmental topics as long as the central government itself is not directly criticized. Furthermore, the central government allowed a certain level of investigative journalism and coverage even on pollution incidents<sup>135</sup> that could have happened due to neglect of local officials as the resulting punishment of local officials by the central government could have the potential to strengthen the central government's position.

As can be imagined this new power of the media is not necessarily welcomed by the local governments; officials who fear that their jobs might be endangered by negative media coverage of their politics and their failure to enforce central policies in their jurisdictions. Hence, they often try to hinder media reports that portray them in a negative light.<sup>136</sup> Local media could thus be still constrained regarding the areas they can cover. As a result, cross-provincial media coverage has emerged. Even though local media has to submit to local power structures, media in other localities can still cover explosive material and in this way not only draw the central

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<sup>133</sup> For a discussion on the "credibility gap", see: Qiang Gang and David Bandurski, "China's Emerging Public Sphere: The Impact of Media Commercialization, Professionalism, and the Internet in an Era of Transition," in *Changing Media, Changing China*, ed. Susan L. Shirk (New York: Oxford University Press, 2011), 44-56.

<sup>134</sup> For studies on media and the environment in China, see for example: Hugo de Burgh and Zeng Rong, *China's Environment & China's Environment Journalists: A Study* (Bristol UK, Chicago USA: intellect, 2011); Bryan Tilt and Qing Xiao, "Media Coverage of Environmental Pollution in the People's Republic of China: Responsibility, Cover-up and State Control," *Media, Culture & Society* 32(2010); Zhan Jiang, "Environmental Journalism in China," in *Changing Media, Changing China*, ed. Susan L. Shirk (Oxford et al. : Oxford University Press, 2011).

<sup>135</sup> See among others: Hugo de Burgh and Zeng Rong, "Environment Correspondents in China in Their Own Words: Their Perceptions of Their Role and Possible Consequences of Their Journalism," *Journalism* (2012): 18.

<sup>136</sup> See for example: Jingrong Tong and Colin Sparks, "Investigative Journalism in China Today," *Journalism Studies* 10, no. 3 (2009): 341.

authorities' attention to environmental issues but also educate the public regarding the importance of environmental protection. Officially, this kind of cross-jurisdictional coverage has been restricted since 2005, however, since more and more local officials feared the unfavorable media coverage of their governance in other provinces' media.<sup>137</sup>

Given the increased commercialization of media, both types of media – that is, print media and television – have become more and more prevalent. This is of further advantage for influencing environmental awareness in rural China as most residents own a TV and – depending on educational level – might prefer to get information through television or radio<sup>138</sup> instead of newspapers. Several national and local news programs have emerged in the 1990s that report on grievances against local cadres; the first national<sup>139</sup> and one of the more notable ones being *Focus Interview (Jiaodian Fangtan)*.<sup>140</sup> Their reports also include environmental issues; especially, the potential negligence of local officials with regards to environmental protection laws. However, even though it seems that rural areas suffer disproportionately from pollution issues, the focus of national news coverage is not necessarily China's countryside. Instead, urban news topics are generally preferred, creating a bias towards the urban population and neglecting a large proportion of China's population.<sup>141</sup> And compared to the print media, Chinese TV is more tightly controlled<sup>142</sup>, making it more difficult for TV stations to accurately represent environmental issues in rural areas. However, given education level and the availability of media

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<sup>137</sup> Zhao and Sun, "Public Opinion Supervision: Possibilities and Limits of the Media in Constraining Local Officials," 316-17.

<sup>138</sup> For a discussion on media use, including radio, especially in the context of regime stability, see: Daniela Stockmann and Mary E. Gallagher, "Remote Control: How the Media Sustain Authoritarian Rule in China," *Comparative Political Studies* 44(2011).

<sup>139</sup> Alex Chan, "From Propaganda to Hegemony: Jiaodian Fangtan and China's Media Policy," *Journal of Contemporary China* 11, no. 30 (2002): 39.

<sup>140</sup> For a discussion of *Focus Interview*, see for example: "From Propaganda to Hegemony: Jiaodian Fangtan and China's Media Policy," *Journal of Contemporary China* 11, no. 30 (2002). And: Zhao and Sun, "Public Opinion Supervision: Possibilities and Limits of the Media in Constraining Local Officials."

<sup>141</sup> Zhao and Sun, "Public Opinion Supervision: Possibilities and Limits of the Media in Constraining Local Officials," 314.

<sup>142</sup> Shirk, "Changing Media, Changing China," 11.

types (TV and radio compared to print media), the rural population might be in general more dependent on official news than the urban population.<sup>143</sup>

One other type of media so far has been excluded from the discussion of the importance of media in China with regards to environmental concern; the internet. Even though the Chinese government tries to control the online content accessible within China through various means (the so-called Great Firewall that blocks certain websites, close monitoring of website contents, regulations, and propaganda)<sup>144</sup>, the internet can provide a useful tool for informing the public by disseminating information on environmental issues and raising environmental concern.<sup>145</sup> However, this thesis does not look into the potential effect of the internet on public opinion with regards to environmental issues since it focuses on rural China. Even though the number of rural citizens using the internet is increasing steadily, according to a study by the China Internet Network Information Center, less than one third of the people using the internet were rural citizens at the end of 2010.<sup>146</sup> Furthermore, with regards to the quantitative analysis in Chapter 4 less than 6% of the survey respondents with an agricultural household registration responded that they use the internet.

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<sup>143</sup> Daniela Stockmann, "What Kind of Information Does the Public Demand? Getting the News During the 2005 Anti-Japanese Protests," in *Changing Media, Changing China*, ed. Susan L. Shirk (New York: Oxford University Press, 2011), 195.

<sup>144</sup> Xiao Qiang, "The Rise of Online Public Opinion and Its Political Impact," in *Changing Media, Changing China*, ed. Susan L. Shirk (Oxford et al. : Oxford University Press, 2011), 206-09.

<sup>145</sup> For a discussion on a „Green Public Sphere“ in China, see for example: Guobin Yang and Craig Calhoun, "Media, Civil Society, and the Rise of a Green Public Sphere in China," *China Information* 11, no. 2 (2007); Yangzi Sima, "Grassroots Environmental Activism and the Internet: Constructing a Green Public Sphere in China," *Asian Studies Review* 35(2011).

<sup>146</sup> "The 27th Statistical Report on Internet Development in China," China Internet Network Information Center (CNNIC), accessed August 26, 2013, <http://www1.cnnic.cn/IDR/ReportDownloads/201209/P020120904420388544497.pdf>.

## **2.4.Conclusion**

This chapter has introduced the conceptual background for the discussion of several case studies in the following chapter and for the quantitative analysis in Chapter 4. At the same time it has also set a few limitations on the subsequent analyses.

As described above, the central and the local governments might differ in the importance they place on environmental protection. The central government – even though it does not always follow through – seems to understand the costs associated with pollution and the necessity of improving environmental conditions. In contrast, short-term economic incentives can lead local officials to circumvent and ignore environmental protection laws in favor of higher economic growth rates, to the detriment of the natural environment and the health of local residents. If the rural population feels like at least higher level officials can be trusted when it comes to the protection of their health and livelihood, this could at the same time also change their own perception of the environment. Environmental campaigns from the central government are more likely to reach and shape rural residents if they generally have a certain level of trust in the party system.

Clearly, the media could act in favor of the central or local governments depending on the local power structures, and would thus have no differentiated effect on public environmental opinion. But as Section 3.3 has depicted, it also has the potential to be an independent actor when it comes to environmental education and raising environmental awareness. In the following two chapters, the media will thus be seen as an independent actor when it comes to environmental concern in rural China.

Based on the framework established in this chapter, Chapter 3 will examine three case studies and will consider the roles played by these three actors in shaping environmental concern

in each case. Similarly, Chapter 4 will include variables that could indicate the influence of the central and local governments and the media for the quantitative analysis.

### 3. Case Studies

#### 3.1. Introduction

Based on the conceptual framework described in the previous chapter, this chapter investigates the influence on environmental concern of the three actors (central government, local government, and the media) in three specific cases. As described in Chapter 1, one other factor that could potentially affect environmental concern is personally experienced environmental pollution. Environmental concern could be enhanced when environmental pollution is personally experienced. Hence, the focus is on three pollution incidents and the potential framing effects of the three actors with regards to their role in allowing, discovering and raising awareness of the environmental pollution. It will further look at the reactions of the local population to the incident as soon as they have become aware of it.

All of the case studies are based on material that was accessible through the internet as primary in-person research was not possible. Depending on the case study and availability of newspaper articles directly via the internet, the main (but not only) search engine used for retrieving the material was *Duxiu Knowledge Search Database (Duxiu)*, on the news and the newspaper section. The references include primary sources in Chinese such as newspapers, as well as some secondary Chinese sources – academic journal articles. Additional to the newspaper articles from the *Duxiu* search engine, the internet search engines from two China-wide newspapers were also consulted for any additional information for each case study; *Renmin Ribao* and *Nanfang Zhoumo*. The first newspaper is a party-friendly and party-owned newspaper, the second one is considered to be more independent and rather critical even though it is

published under the Guangdong Communist Party Committee.<sup>147</sup> However, as will be noted in the individual descriptions below, these two large, national newspapers did not necessarily cover all of the case studies. The Chinese newspapers were first briefly assessed using online dictionaries and then looked at in more detail in the Chinese version itself.

Given the previously described media situation for reporting environmental pollution, some caution needs to be used when basing an argument mainly on Chinese newspapers. Hence, whenever possible, the material is also supplemented by and cross-checked in international newspapers to retrieve a picture of the described situation as accurately as possible.

Aside from availability of information, case studies were mainly chosen based on the general economic situation of the province/county in which the pollution incident took place. The three cases studies represent three provinces within China that exhibit different economic development stages; Gansu, Hubei and Fujian province. The case studies are further distinguished by the kind of environmental pollution.

The next section introduces the three case studies. Section 3 discusses the potential influence of the three actors: central government, local government and media. Section 4 concludes the chapter.

### **3.2. Case Studies: Environmental Pollution**

This section presents the three pollution incidents in three economically varying provinces in China as well as the reaction of the local population. Table 1 provides some indicators that could describe the three provinces and their standing compared to the other

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<sup>147</sup> Shirk, "Changing Media, Changing China," 10.

provinces in China. Since these three pollution cases occurred in 2006, 2008 and 2010, respectively, statistics for all three years are presented. Aside from general economic indicators such as GDP per capita and net income for rural households, other indicators have been chosen to describe the development level of industrialization (number of enterprises), education (percentage of school-aged children enrolled), health (number of doctors per 10,000 people), and natural resources (percentage of forest coverage). Even though some of the indicators are fairly rough, they give an impression of the varying development levels of the provinces.

**Table 1: Selected Provincial Macroeconomic Indices**

Economic Indicator	Gansu Province			Hubei Province			Fujian Province		
	2006	2008	2010	2006	2008	2010	2006	2008	2010
GPD (per capita, Yuan)	8,757 (rank 30)	12,075 (rank 30)	16,113 (rank 29)	13,360 (rank 17)	19,858 (rank 16)	27,906 (rank 13)	21,105 (rank 9)	29,755 (rank 10)	40,025 (rank 10)
People's Livelihoods (rural households per capita annual net income)	2,134 (rank 30)	2,723.8 (rank 31)	3,424.7 (rank 31)	3,419.4 (rank 14)	4,656.4 (rank 14)	5,832.3 (rank 13)	4,834.8 (rank 7)	6,196.1 (rank 7)	7,426.9 (rank 7)
Industry (Number of Industrial Enterprises (unit))	1733 (rank 26)	1,940 (rank 26)	2,000 (rank 27)	7,546 (rank 12)	12,067 (rank 12)	16,106 (rank 10)	13,755 (rank 7)	17,212 (rank 8)	19,227 (rank 7)
Education Percentage of School-Aged Children Enrolled (%)	98.9	99.1	N/A	99.5	99.9	100	99.8	100	100
Health (Per 10000 persons, Number of Doctors (person))	12 (rank 23)	14 (rank 23)	15 (rank 25)	15 (rank 13)	15 (rank 18)	16 (rank 19)	13 (rank 16)	12 (rank 25)	17 (rank 17)
Natural Resources Forest-coverage Rate (%)	6.7	6.7	10.4	26.8	26.8	31.1	63	63	63.1

Source: China Data Online Provincial Statistics<sup>148</sup>

As can be seen with regards to most indicators, Gansu province ranks the lowest, Fujian the highest (with the only difference being the indicator for health – number of doctors per

<sup>148</sup> "Chinese Statistical Abstract ", (data accessed: August 5<sup>th</sup>, 2013, downloaded from: <http://chinadataonline.org/>).

10,000 people where Hubei outranks Fujian in 2006 and Gansu outranks Fujian in 2008). This order also does not change significantly from 2006 to 2010 (aside, once again, from the indicator for health – Fujian had more doctors per 10,000 people in 2010). Fujian’s GDP per capita is among the first third of China’s provinces, Hubei the second third, and Gansu ranked among the last third. This pattern is similar for the annual net income per capita for rural households, with Fujian having more than three times as high of an annual income than Gansu province (7426.90 versus 2314 Yuan). Fujian is also the most industrialized of the three provinces when using the number of industrial enterprises with Hubei growing rapidly between 2006 and 2008 and then again between 2008 and 2010. The indicator for basic education, the percentage of school-aged children enrolled, is very similar across the three provinces (98.9 % in Gansu to 99.8% in Fujian in 2006) and across the three years (even though no information is available for Gansu in 2010).<sup>149</sup>

### **3.2.1. Lead Poisoning in Gansu Province**

The first case took place in the economically lesser developed province, Gansu, affecting a few villages in Hui County. Table 2 provides information on the economic situation of Hui County as compared to the (calculated) average of Gansu Province. The overall GDP of Hui County and the annual net income per capita of rural households are slightly below the average GDP and the average net income in Gansu province, but higher than the median. More than half of the households in Hui County are considered to be rural (less than the average of 2/3) and

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<sup>149</sup> All of the data is taken from China Data Online Provincial Statistics which provides information based on, among others, Statistical Yearbooks in China. The accuracy of the data can for this thesis not be confirmed. Furthermore, the individual provinces differ strongly with regards to contents and presentation of information in their Statistical Yearbooks as well as with regards to what kind of yearbooks they compile in a given year and over the years.

almost 2/3 of rural laborers are engaged in farming, forestry, animal husbandry, and fishery; professions that strongly rely on nature and land. Given these basic indicators, Hui County seems to be fairly representative in Gansu province.

**Table 2: Indicators of Hui County (Gansu Province) in 2006**

Indicator	Hui County	Gansu Province (Counties)	
		Average (calculated)	Median (calculated)
GDP (100 million Yuan)	15.07	16.49	13.15
Annual Per Capita Net Income of Rural Households (Yuan)	2,126.04	2,341.51	1,827.45
Percentage of Rural Households (calculated)	58.96 %	66.62 %	-
Rural Labors in Farming, Forestry, Animal Husbandry, and Fishery (calculated)	65.95%	69.04%	-

Source: China Data Online County Statistics and Gansu Statistical Yearbook (2007)<sup>150</sup>

In March 2006, a five-year old child was brought by his parents from Xinsi village to Xi'an for emergency treatment after he electrocuted himself while playing. In the process of the treatment the doctors found very high levels of lead in his blood stream.<sup>151</sup> But as his other injuries were severe and even though the parents were notified of the high levels of lead in their son's blood they did not pay much attention to this information. Only after meeting a worker from a smelting plant in Xinsi village did they learn about lead and the harm to which their child was exposed. Upon returning to their village in August, they spread the news to the other

<sup>150</sup> "Chinese Statistical Abstract ". (data accessed: August 7<sup>th</sup>, 2013, downloaded from: <http://chinadataonline.org/>).

<sup>151</sup> "甘肃铅中毒事件 村民怀疑卫生局买通专家组 [in the Case of Gansu Lead Poisoning - the Villagers Suspect the Health Bureau Bribing the Group of Experts]." edited by 扎, 西 (Zha, Xi) .(*瞭望东方周刊*, downloaded from *人民日报 online*, September 12 2006, accessed June 20, 2013, <http://env.people.com.cn/GB/4808164.html>

villagers who only then took their children to hospitals to have them tested.<sup>152</sup> On August 22<sup>nd</sup>, Huixian Hongyu Nonferrous Smelting Company Ltd., which was operating in Hui County, was officially ordered to close. However, as it continued to operate, villagers from Xinsi blocked the gate to the company which led to a forced shut-down.<sup>153</sup>

In the meantime, the numbers of the residents with exceedingly high levels of lead in their blood kept rising. The Gansu provincial government reported that 258 residents were hospitalized, of which 250 were children.<sup>154</sup> Due to the extent of the lead poisoning and the discussion of the case in the local media, the national news agency Xinhua started to report on the story as well. Finally, on September 8<sup>th</sup>, SEPA sent a group of investigators to find the cause of the lead poisoning. After only one day, they confirmed that the smelting plant of the Huixian Hongyu Nonferrous Smelting Company Ltd. was to blame for the pollution that caused the lead poisoning of several hundred villagers in Xinsi as well as other nearby villages.<sup>155</sup> The plant was originally built in 1995, and according to local residents, was continuously neglecting pollution prevention measures.<sup>156</sup> Originally state-owned, it was sold in 2005 to a private investor who updated the emissions controls but, in order to save money, turned them off at night.<sup>157</sup>

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<sup>152</sup>Shai Oster and Jane Spencer "A Poison Spreads Amid China's Boom." *The Wall Street Journal*, September 30 2006, accessed December 8, 2012, <http://online.wsj.com/article/SB115955597971578257.html#>

<sup>153</sup> "甘肃铅中毒事件 村民怀疑卫生局买通专家组 [in the Case of Gansu Lead Poisoning - the Villagers Suspect the Health Bureau Bribing the Group of Experts]."

<sup>154</sup> 艳明王 and 衡王 (Yanming Wang and Heng Wang). "甘肃徽县: "重点保护" 在保护什么 [Hui County in Gansu Province: "Emphasizing Protection" Is Protecting What?]." *新华网* downloaded from (新浪) 新闻中心, September 16 2006, accessed June 23, 2013, <http://news.sina.com.cn/c/2006-09-16/093210047145s.shtml>

<sup>155</sup> 铁桥叶 (Tieqiao Ye). "甘肃省徽县血铅超标事件进程 [the Progress of the Case of Exceeding Blood Lead Levels in Hui County in Gansu Province]." *中国青年报* downloaded from *Duxiu*, September 15 2006, accessed December 6, 2012

<sup>156</sup> "Smelting Plant Confirmed as Lead Poisoning Source," *People's Daily Online*, September 12 2006, accessed December 6, 2012, [http://english.peopledaily.com.cn/200609/12/eng20060912\\_301781.html](http://english.peopledaily.com.cn/200609/12/eng20060912_301781.html).

<sup>157</sup> Oster and Spencer, "A Poison Spreads Amid China's Boom."

### 3.2.2. Skin Ailments in Hubei Province

The second case study for this thesis concerns a “mysterious” outbreak of a skin disease among 1300 farmers<sup>158</sup> in Jianli County located in the southern part of Hubei Province. Generally, Hubei Province is economically better off than Gansu Province (see Table 1). And within Hubei Province, Jianli County can be considered to be economically above average (Table 3). Most of the population is considered to be rural (73.58 %) which is similar to the provincial average (71.81 %). Cotton production seems to be important for Jianli County; at least, the output of cotton in 2008 was far above the provincial average.

**Table 3: Indicators of Jianli County (Hubei Province) in 2008**

Indicator	Jianli County	Hubei Province (Counties)	
		Average (calculated)	Median (calculated)
GDP (100 million Yuan)	95.43	68.80	60.17
Annual Per Capita Net Income of Rural Households (Yuan)	4,867.14	4,045.19	4,085.14
Percentage of Year-end population of rural population to total population	73.58 %	71.81 %	-
Output of Cotton (tons)	40231	8502.66	-

Source: China Data Online County Statistics and Hubei Statistical Yearbook (2009)<sup>159</sup>

The information for this case study is largely based on the *Duxiu* search engine. Even though it received attention from the media, it did not seem to be picked up by the larger newspapers like *Renmin Ribao* or *Nanfang Zhoumo* (or at least a search in these newspapers

<sup>158</sup> "专家：湖北监利皮肤病为皮炎-可能与虫体毒素有关 [According to Experts: The Preliminary Verdict on the Skin Disease in Jianli Is Dermatitis - It Might Have Something to Do with the Toxins from a Parasite ]." *福州晚报* according to *新华社* downloaded from *Duxiu*, October 17 2008, accessed January 12, 2013

<sup>159</sup> "Chinese Statistical Abstract ". (data accessed: June, 2013, downloaded from: <http://chinadataonline.org/>).

search engines proved unsuccessful). However, similar to the previously described case in Gansu Province, it was covered by the nation-wide newspaper *Zhongguo Qingnian Bao*.

The Jianli County government officials shut down several illegally operating smelting plants in April of 2006. The plants were suspected of having crossed from neighboring Hunan province where they were no longer allowed to operate, into Hubei province, still being supplied with the necessary raw material, vanadium ore, from Hunan.<sup>160</sup> Even though ordered to shut down, in June of 2008, the County government still found ten operating vanadium mills.<sup>161</sup>

Local residents suffered from skin ailments, reaching the highest number of affected people in August and September of 2008.<sup>162</sup> The pollution from the vanadium mills seemed to affect the environment, killing plants and contaminating the water. On October 3<sup>rd</sup>, an online publication made the situation public, raising the attention of the local and national media on Jianli County.<sup>163</sup> As a result, the county party secretary, in collaboration with different offices, forcefully closed down several of the illegally operating vanadium plants through the use of power breaks, destruction of material and freezing of bank accounts. Additionally, the provincial Health Bureau from Hubei sent a team of experts to find the cause behind the skin ailments on

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<sup>160</sup> Maverick Chen "Chemical Pollution in Hubei: It's All About Money." October 21 2008, accessed December 27, 2012, [http://www.china.org.cn/environment/features\\_analyses/2008-10/21/content\\_16645049.htm](http://www.china.org.cn/environment/features_analyses/2008-10/21/content_16645049.htm)

<sup>161</sup> "湖北监利部分群众患皮肤病-当地政府紧急关闭非法钒矿厂 [Part of the Population of Jianli County in Hubei Province Suffer from Skin Disease- the Local Government Urgently Shut Down Illegally Operating Vanadium Plants]." *新消息报* downloaded from *Duxiu*, October 15 2008, accessed January 12, 2013

<sup>162</sup> See for example: "监利皮肤病病因暂不能确定 [the Cause of the Temporary Skin Disease in Jianli Cannot Be Determined]." *深圳商报* downloaded from *Duxiu*, October 17 2008, accessed January 12, 2013

<sup>163</sup> 雷宇 (Lei Yu). "钒厂侵蚀监利鱼米之乡污染企业游走乡村的生态之惑 [Vanadium Plants Gnaw at Jianli's Breadbasket - Polluting Factories Roving around in the Countryside Irritate the Ecology]." *中国青年报*, October 20 2008, accessed June 7, 2013, [http://zqb.cyol.com/content/2008-10/20/content\\_2395361.ht](http://zqb.cyol.com/content/2008-10/20/content_2395361.ht); "湖北监利钒污染近千人患皮肤病 [the Vanadium Pollution in Jianli County in Hubei Province Causes Nearly a Thousand to Suffer from Skin Disease]." *辽沈晚报* according to *长江商报*, downloaded from *Duxiu*, October 15 2008, accessed January 12, 2013

October 15<sup>th</sup> in three different townships in Jianli County, focusing especially on the potential influence of the illegally operating smelting plants.<sup>164</sup>

The results seemed to be inconclusive; given the amount of time that had passed and the decreasing number of newly reported cases, the experts were quoted as having difficulty finding a specific cause.<sup>165</sup> However, one conclusion has been reported: Even though the plants seemed to have discharged their wastewater without any kind of treatment into the water system, leading to up to 209 times the allowed level of the chemical vanadium, the health investigation concluded that either it had been a case of ordinary skin diseases or the skin problems were caused by boll worms from cotton plants.<sup>166</sup>

Still a few doubts remained. According to government officials, smelting factories had proven to be highly profitable and thus potentially operated without legal permission, since the profits from the illegal operations were well worth the risks of being exposed.<sup>167</sup> And some have suggested that given the profitability<sup>168</sup> of the vanadium operations, local stakeholders could follow their own interests to the detriment of the environment and the health of the local population.

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<sup>164</sup> 宇(Yu). "钒厂侵蚀监利鱼米之乡污染企业游走乡村的生态之惑 [Vanadium Plants Gnaw at Jianli's Breadbasket - Polluting Factories Roving around in the Countryside Irritate the Ecology]."

<sup>165</sup> See for example: "专家：湖北监利皮肤病为皮炎-可能与虫体毒素有关 [According to Experts: The Preliminary Verdict on the Skin Disease in Jianli Is Dermatitis - It Might Have Something to Do with the Toxins from a Parasite ]."

<sup>166</sup> Charlie McElwee, "Hubei Smelter Update," accessed December 27, 2012, <http://www.chinaenvironmentallaw.com/2008/10/24/hubei-smelter-update/>.

<sup>167</sup> Xiaohuo Cui and Zhengzheng Gong "Polluting Smelters Shut Down after Damaging Farmers' Skin." *China Daily*, October 15 2008, accessed December 27, 2012, [http://www.chinadaily.com.cn/china/2008-10/15/content\\_7107071.htm](http://www.chinadaily.com.cn/china/2008-10/15/content_7107071.htm)

<sup>168</sup> "初步判断监利皮肤病为皮炎-可能与虫体毒素有关 [the Preliminary Verdict on the Skin Disease in Jianli Is Dermatitis - It Might Have Something to Do with the Toxins from a Parasite ]." *泰山晨刊*, October 17 2008, January 12, 2013

### 3.2.3. Zijin Mining Accident in Fujian Province

The third case is mainly based on newspaper articles from *Renmin Ribao*, *Nanfang Zhoumo*, and the provincial level newspaper *Fujian Ribao*, as well as academic articles in Chinese and English. Other newspapers were not consulted since the material covered by the sources listed should be exhaustive regarding the case which received a huge amount of media attention and academic interest<sup>169</sup>.

**Table 4: Indicators of Shanghang County (Fujian Province) in 2010**

Indicator	Shanghang County	Fujian Province (Counties)	
		Average (calculated)	Median (calculated)
GDP (100 million Yuan)	126.66	138.14	89.00
Annual Per Capita Net Income of Rural Households (Yuan)	6,213.00	7,334.86	7,046.50
Percentage of Year-end population of agricultural residence to total population	83.25 %	66.05 %	-
Rural Labors in Farming, Forestry, Animal Husbandry, and Fishery (calculated)	40.45%	45.53%	-

Source: China Data Online County Statistics and Fujian Statistical Yearbook (2011)<sup>170</sup>

Even though hundreds of people were affected by the two cases described above, these incidents can still be considered rather small in China's pollution history. The third case, the

<sup>169</sup> The Zijin Mining pollution incident has been used or at least mentioned in several studies as an example for certain pollution related issues in China. See for example: Luozhang Wang, "Research on the Environmental Information Disclosure System in Sudden Environmental Pollution Incidents: Taking Zijin Mining Pollution Incident as an Example," in *China Green Development Index Report 2011*, ed. X. Li and J. Pan, Current Chinese Economic Report Series (Springer-Verlag, 2013); Hua Chen and Yusheng Kong, "Research on Stakeholders' Pressure on Chinese Listed Company's Environmental Information Disclosure," in *International Conference on Information Management, Innovation Management and Industrial Engineering* (2011); 肖龙 董, "环境公益诉讼探析——从紫金矿业污染案说起[Analysis of Environmental Public Interest Litigation - Discussion of the Zijin Mining Pollution Incident]," *法制与经济* 2011, no. 5 (2011).

<sup>170</sup> "Chinese Statistical Abstract ". (data accessed: July 6<sup>th</sup>, 2013, downloaded from: <http://chinadataonline.org/>).

Zijin pollution incident, on the other hand, is one of the largest pollution accidents in recent Chinese history. This case took place in 2010 in Shanghang County, Fujian Province, economically the most advanced province of all three case studies. Shanghang County lies slightly below the average of Fujian Province with regards to GDP (126.66 100 million Yuan versus 138.14 100 million Yuan), however, far above the median (89.00 100 million Yuan) (see table 4). The annual per capita net income of rural households in Shanghang County is below the provincial median and mean. A higher percentage of the population has rural residence as compared to the mean in Fujian province. But a lower percentage (40.45% in Shanghang compared to 45.53% in Fujian province) is considered to be rural laborers in typical rural professions such as farming forestry, animal husbandry and fishery, indicating that more people try to take advantage of the mining business in the county.

Furthermore, Zijin Mining Group Co is not – as in the previous cases – a small and maybe illegally operating plant, but instead China’s largest gold producer, a stock company.<sup>171</sup> It thus does not only fall under the jurisdiction of the local environmental protection bureau but also has to justify its actions to private investors and the public in general.

On July 3, 2010, toxic waste from the copper mine owned by Zijin Mining Group Co spilled into the Ding River in Fujian Province.<sup>172</sup> The accident was not made public until days later, when the water of the river had already changed color and tons of fish had died. According to representatives from the mining company, they did report the accident to local authorities

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<sup>171</sup> 明吕 (Ming Lu). "紫金就是上杭, 上杭就是紫金" ["Zijin Mining Is Shanghang, Shanghang Is Zijin Mining"]." edited by 海东 曹, 登科 孟, and 行东 (实习生) 汪. (Haidong Cao, Dengke Meng, and Xingdong (Intern) Wang). *南方周末*, August 5 2010, accessed July 13, 2013, [www.infzm.com/content/48511](http://www.infzm.com/content/48511)

<sup>172</sup> See for example: "“全面停产”变“限产” 紫金矿业减产黄金1吨 [from "Complete Production Stop" to "Limited Production", Zijin Mining Reduces Gold Production by 1 Ton]." *南方周末* July 28 2010, accessed July 5, 2013, <http://infzm.com/content/48171> Or "紫金矿业废水毒杀百万斤鱼 瞒报9天政府部门称对人无毒 [Zijing Mining's Wastewater Killing One Million Pounds of Fish Was Concealed for 9 Days - the Government Departments Say It Is Not Toxic for People]." *南方周末* October 24 2010, accessed July 5, 2013, <http://www.infzm.com/content/47527>

within twenty-four hours, but the local government decided to suppress the information in order to not alarm the public.<sup>173</sup>

So, instead of informing the public of the potential health danger and the environmental disaster that had occurred, the people living along the river found out for themselves that something had gone wrong, given the amount of dead fish and polluted drinking water and the smell in the air.

However, it seems as if the local population was used to being kept in the dark. According to local farmers, the water of the river had been spoiled for years; the air in the village was filled with residue from the mining activities. Even though the company had paid subsidies to improve the water supply and other compensation payments, these payments did not make up enough for the loss in income and the continuous degradation of the surrounding environment.<sup>174</sup> Not surprisingly, Zijin Mining Company had been repeatedly criticized in the past for environmental violations by the Environmental Protection Department according to the Natural Resources Defense Council.<sup>175</sup> For example, in May of the same year, the MEP had published information regarding listed companies with various environmental problems, Zijin Mining being one of them.<sup>176</sup> At the beginning of June 2010, the first cases of pollution-related fish kills were reported, resulting in compensation payments to some of the fishers by the company on June 27<sup>th</sup> but still constituted huge losses for the affected fishers.<sup>177</sup>

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<sup>173</sup> Tian Wei and Yingqi Cheng "Gold Company Defends Handling of Contamination." *China Daily*, July 14 2010, accessed July 5, 2013, [http://www.chinadaily.com.cn/china/2010-07/14/content\\_10102353.htm](http://www.chinadaily.com.cn/china/2010-07/14/content_10102353.htm)

<sup>174</sup> Chuanmin Yuan "Toxic Mine Spill Was Only Latest in Long History of Chinese Pollution." *Guardian (first published by Southern Metropolis Daily, September 1, 2010)*, April 14 2011, accessed July 5, 2013, <http://www.guardian.co.uk/environment/2011/apr/14/toxic-mine-spill-chinese-pollution>

<sup>175</sup> Alex Wang to Greenlawchina, 2010, accessed July 5, 2013, <http://www.nrdc.cn/eblog/greenlawchina/2012/06/06/zijin-mining-group%E2%80%99s-inadequate-disclosure-of-china-acid-spill-%E2%80%93-what-needs-to-be-done/>.

<sup>176</sup> *Ibid.*

<sup>177</sup> 华张(Hua Zhang). "股票紧急停牌 紫金矿业深陷环保原罪——中国最大黄金企业“污染门”调查 [Stock Emergency Suspension, Zijin Mining's Deep Environmental Original Sin - the Investigation of the "Pollution Gate"

This series of environmental violations and pollution events reached its peak in the July 3<sup>rd</sup> incident. This time, the pollution bore larger consequences for the company than “merely” compensation payments to the affected population. The Fujian EPB fined Zijin Mining over 9.560 thousand Yuan.<sup>178</sup> Several high ranking employees and managers of Zijin Mining were arrested and later sentenced,<sup>179</sup> among them the vice president.<sup>180</sup> But Zijin Mining employees were not the only ones that were under suspicion in connection with the pollution incident. The former director of the Shanghang EPB and the deputy director were also arrested.<sup>181</sup>

Even though this connection might seem a little surprising at first glance; it is in fact one potential reason why the company, while apparently known for its violations, was able to continue operations until the spill in 2010. Zijin Mining’s management structure was supposedly more closely connected to the local government than would be generally expected from a stock listed company. Like many other companies in China, Zijin Mining used to be a state-owned company and had only recently been changed into a shareholder-owned firm. Shanghang government, the local county government, is still the largest shareholder of the company with several management posts being filled with government officials.<sup>182</sup>

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of China's Largest Gold Company]." edited by 海东 曹 and 端端 (实习生)袁.(Haidong Cao and Duanduan (intern) Yuan). *南方周末*, October 24 2010, accessed July 5, 2013, <http://infzm.com/content/47609>

<sup>178</sup> (Xianxun Sun). "紫金矿业污染江河被罚 956 万 曾致 3100 万损失 [Zijin Mining Was Fined 9560000 for the Pollution of the Ding River Which Caused a Loss of 31 Million ]." edited by 琪 蒋.(Qi Jiang). *中国新闻网* downloaded from *人民网*, October 9 2010, accessed July 11, 2013, <http://env.people.com.cn/GB/12898385.html>

<sup>179</sup> "紫金矿业污染被判罚三千万 [Zijin Mining Fined 30 Million for Pollution]." *扬子晚报* downloaded from *人民网*, June 19 2013, accessed July 9, 2013, <http://finance.people.com.cn/stock/n/2013/0619/c222942-21887763.html#>

<sup>180</sup> "紫金矿业副总裁被刑拘 [the Vice President of Zijin Mining Was Arrested]." *南方周末* July 29 2010, accessed July 5, 2013, <http://www.infzm.com/content/48310>

<sup>181</sup> "福建紫金矿业污染事件 2 名环保局官员获刑 [Two Officials from the Environmental Protection Bureau Have Been Arrested in Connection with the Fujian Zijin Mining Pollution Incident]." edited by 琪 蒋.(Qi Jiang). *京华时报* downloaded from *人民网*, July 22 2011, accessed July 9, 2013, <http://env.people.com.cn/GB/15218772.html>

<sup>182</sup> Yuan "Toxic Mine Spill Was Only Latest in Long History of Chinese Pollution."

### 3.3. Comparison of Actor involvement and environmental concern

As can be seen from the brief descriptions above, these three pollution cases differ in scope, impact, and public attention. The diversity of these cases provides an opportunity to focus on the degree to which the three potential actors influenced and had an impact on environmental concern. How did these actors perceive the pollution cases in which they were involved or reporting on? What did they do to inform the local population and to handle the situation? The following three subsections look at each of the three actors separately.

#### 3.3.1. Central Government

As described in Chapter 2, the central government likes to be viewed as having the power to intervene and improve the environmental situation of the rural population, by “rescuing” them from the local government’s negligence of environmental regulations.

In the case of the lead poisoning in Gansu province, the SEPA minister Pan Yue explicitly mentioned the local government for not intervening and even allowing the polluting company to avoid taking the necessary environmental protection actions.<sup>183</sup> Furthermore, the central government, upon hearing about the potential gravity of the situation, sent an investigative team to the affected region to investigate the causes. After the local government had done nothing for over ten years, as described above, SEPA took only one day to evaluate the situation. This could give the impression that the central government does try to elevate

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<sup>183</sup> 衡王 and 艳明王 (Heng Wang and Yanming Wang). "甘肃血铅之害: “畸形”政绩观导演出的一幕悲剧 [the Gansu Lead Victims: "Abnormal" Administrative View Enacted a Tragedy]." *新华网甘肃频道* downloaded from *china.com.cn*, September 20 2006, accessed June 23, 2013, [http://www.china.com.cn/city/txt/2006-09/20/content\\_7178167.htm](http://www.china.com.cn/city/txt/2006-09/20/content_7178167.htm)

environmental concern and knowledge in rural areas and that the central government is dependent on information from media and other sources to see the implementation gap of environmental regulations in favor of economic development.

However, the pollution issue in Hui County did not appear overnight and although the gravity of the situation was found out only by coincidence, this does not mean the pollution had gone unnoticed over the years. Even though the central government did not support the villagers' requests for interventions in earlier years, SEPA did finally decide to investigate and force the polluting plant to close. By doing so, they not only stopped the ongoing pollution but, to a certain degree, sent a signal to the population regarding the importance of adherence to environmental regulation and thus the importance of environmental protection.

Given the magnitude of the environmental impact of the Zijin Mining incident in Fujian Province, the central government clearly had to intervene. The MEP, together with the provincial EPB, investigated and made the causes for the accident public.<sup>184</sup> Furthermore, the official apology of the company was announced by the MEP.<sup>185</sup> This could also be seen as showing the influence of the central government (through their ministries) over even economically very important companies.

The central government, however, does not always decide to act. In the second case discussed in this thesis – pollution issues in Jianli County in Hubei Province – the central

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<sup>184</sup> See for example: 汝发沈 and 良郑 (Rufa Chen and Liang Zheng). "环保部：三大原因造成紫金矿业污染事故 [Ministry of Environmental Protection: The Three Main Causes of Zijin Mining Pollution Incident]." edited by 铁虎杨.(Tiehu Yang). 新华社 downloaded from 人民网, July 16 2010, accessed July 11, 2013, <http://society.people.com.cn/GB/1062/12170789.htm>; 石川梁 (Shichuan Liang). "县环保局长因紫金矿业污染事件辞职 或是“替罪羊”！ [the Director of the County Environmental Protection Bureau Resigned Because of the Pollution Incident or as a "Scapegoat" ]." 人民网强国博客 downloaded from 人民网, July 16 2010, accessed July 11, 2013, <http://leaders.people.com.cn/GB/12170777.html>

<sup>185</sup> "国家环保部将公布紫金矿业污染事件情况通报 [the National Ministry of Environmental Protection Will Announce the Circumstances of the Zijin Mining Pollution Incident]." edited by 江刘(实习).(JiangLiu (intern)). 中国广播网 downloaded from 人民网, July 19 2010, accessed July 11, 2013, <http://society.people.com.cn/GB/12177624.html>

government neither sent an investigative team nor were they in any way present for the actual investigation. Still, the absence of the central government can be seen as important. Why did they not intervene? This failure to act is especially puzzling since – as has been concluded - the actual cause of the skin ailments of the farmers could not be determined with certainty. If indeed the skin ailments were a result of cotton worm and not from pollution from illegally operating plants, then one might expect that even more so is the education on environmental issues and environmental protection issues would be even more necessary.

### **3.3.2. Local Government**

Clearly, the central government tried to portray the local government as the main culprit in the pollution case in Gansu Province for their own opportunistic reasons. So, the question becomes how did the local government actually deal with the situation and how did it act towards the environmental concern expressed by the local population over the years? According to the Hui County Propaganda Vice Minister, the mistrust of the local population towards the government impeded official efforts to improve the situation and deal with the pollution.<sup>186</sup> These kinds of statement give the impression that the local population did not understand the situation itself and was not willing to accept the necessary measures. It also might lead one to believe that the local government was trying to do everything in its power to remedy the situation but was hindered by the resistance of ignorant villagers.

However, the concern about the environmental condition of their land was evident from the behavior of the local population years before the actual main pollution incident. When the

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<sup>186</sup> "甘肃铅中毒事件 村民怀疑卫生局买通专家组 [in the Case of Gansu Lead Poisoning - the Villagers Suspect the Health Bureau Bribing the Group of Experts]."

factory was first built in 1995, the villages in the area were fighting to become the location for the company as that would mean compensation payments for land and potential rental income from outside factory workers.<sup>187</sup> The economic benefits of having such a factory close by seemed most important. However, soy plants in fields in the area started to die, leading to concerns over the benefits of the factory.<sup>188</sup> The affected farmers asked for compensation payments and hoped that the pollution would stop. Three years before the true effects of the ongoing pollution became publicly known, according to locals, the pollution was obvious and serious.<sup>189</sup> Hoping to increase the environmental awareness of other residents as well as the local government, one of the villagers, Li Jianzhong, made a banner which other villagers, including students, signed. When this did not gain any reaction from the local government he tried to petition the government and finally traveled to Beijing.<sup>190</sup> The above described efforts, however, were not successful. The only reaction from the local EPB was that they admitted that before 2004 there might have existed some pollution issues, but after 2004 the issue was completely resolved.<sup>191</sup>

The Gansu lead poisoning case demonstrates the power local governments have, especially in less-developed and remote areas, to favor environmentally detrimental but economically useful factories and protect them – to a certain degree – from cost intensive pollution prevention measures. Similarly, it is suspected that in the case in Jianli in Hubei Province, local officials were involved in allowing the smelting plants to illegally operate.<sup>192</sup>

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<sup>187</sup> Ibid.

<sup>188</sup> "甘肃铅中毒真相一再被隐瞒 [the Truth About the Lead Poisoning in Gansu Province Has Repeatedly Been Concealed]." *扬子晚报* downloaded from *新浪亲子*, 2006, accessed June 20, 2013, <http://baby.sina.com.cn/news/2006-09-11/095623244.shtml>

<sup>189</sup> 王 and 王 (Wang and Wang). "甘肃徽县: "重点保护" 在保护什么 [Hui County in Gansu Province: "Emphasizing Protection" Is Protecting What?]."

<sup>190</sup> Ibid.

<sup>191</sup> Ibid.

<sup>192</sup> (Dong Ji). "监利钒污染致千人患严重皮肤病 [in Jianli County Vanadium Pollution Caused Thousands of People to Suffer from a Severe Skin Disease]." *荆门晚报* according to *长江商报* downloaded from *Duxiu*, October 15 2008, accessed January 12, 2013

Furthermore, it is known even to local governments that these illegally operating factories take advantage of remote villages<sup>193</sup>, hoping for less supervision and high profits. It should also be kept in mind, that the power of the local EPBs is strongly dependent on their relationship with the local governments. The illegally operating plants had previously (unsuccessfully) been told by the Jianli county government to cease operation. However, as the structure and material had not been destroyed that did not last long.<sup>194</sup>

This close interaction between businesses and local officials is even more prominent in the last case, the Zijin Mining incident. Having a leading economic position in China as a whole, the presence of this company was especially important for Shanghang County in Fujian Province. According to *Renmin Ribao*, before Zijin Mining started its company in Shanghang County, it was considered to be one of the poorer counties in Fujian Province. Throughout the 1990s and then the 2000s, it became one of the wealthier counties.<sup>195</sup> This economic importance is reflected in the interdependencies between the local county government and the company. For example, the government itself is the largest stockholder of the company (28.96%)<sup>196</sup> and 60% of Shanghang's revenue stems from Zijin Mining.<sup>197</sup> These general economic linkages are repeated

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<sup>193</sup> 梦佳魏 (Mengjia Wei). "湖北监利部分群众患皮肤病 [A Large Part of the Population in Jianli County in Hubei Province Suffers from a Skin Disease]." *深圳商报* according to *新华社* downloaded from *Duxiu*, October 15 2008, accessed January 12, 2013

<sup>194</sup> 宇 (Yu). "钒厂侵蚀监利鱼米之乡污染企业游走乡村的生态之惑 [Vanadium Plants Gnaw at Jianli's Breadbasket - Polluting Factories Roving around in the Countryside Irritate the Ecology]." And: 毅 王, 凯华 朱, and 正华 程 (Yi Wang, Kaihua Zhu, and Zhenghua Cheng). "监利拆除非法小钒厂烟囱 [Jianli Takes Down the Chimneys from Illegally Operating Small Vanadium Mills]." *Ibid.*, accessed July 7, 2013, [http://zqb.cyol.com/content/2008-10/31/content\\_2411691.htm](http://zqb.cyol.com/content/2008-10/31/content_2411691.htm)

<sup>195</sup> "紫金矿业污染门牵出官商勾结网 或有人故意为之 [Has the Zijin Mining Pollution Gate Pulled from Officials Network of Illegal Doing or Has Someone Done It Deliberately ]." edited by 西 扎.(Xi Zha). *中国经营报* downloaded from *人民网*, July 19 2010, accessed July 11, 2013, <http://env.people.com.cn/GB/12178373.html>

<sup>196</sup> 吕 (Lu). "紫金就是上杭, 上杭就是紫金" ["Zijin Mining Is Shanghang, Shanghang Is Zijin Mining"].

<sup>197</sup> See for example "环保部门在地方政府是儿子辈? 紫金事件暴环保缺陷 [Is the Environmental Protection Bureau the Offspring of the Local Government? Zijin Incident's Sudden and Brutal Environmental Deficiency]." edited by 旭 罗.(Xu Luo). *法制日报* downloaded from *人民网*, August 16 2010, accessed July 11, 2013, <http://politics.people.com.cn/GB/14562/12445394.html>; "紫金矿业灰幕: 诡异的二次泄漏 [Zijin Mining's Grey Screen: The Strange Second Leakage]."

on an individual level; after retirement, former local officials have been able to find positions within Zijin Mining,<sup>198</sup> clearly not only indicating their current commitment to the company but also a potential previous loss of neutrality which an official in a local government should keep.

The Zijin Mining incident also shows the importance of differentiating between the governmental levels below the central government. The Fujian provincial government does not necessarily agree with the local county level governments, at least not when the neglect of environmental precautions becomes an issue that receives media attention and intervention from the central government. With regards to the water quality of the Ding River, the test results from the provincial government seem never able to (also not before) confirm the results from the county government, when they stated that the water quality is sufficient, which questions the motives of the county government.<sup>199</sup>

The economic interdependencies in the region and the obvious inconsistencies in information do not instill trust among the local population that the local government has their interests at heart. Also, with regards to the question of environmental awareness, the local government in the Zijin Mining incident had been trying to prevent an increasing environmental consciousness rather than supporting environmental sound decisions. Similarly, the local EPB, even if its officials had not been as involved with Zijin as they were,<sup>200</sup> most likely would not have received much trust from the local population as it appeared to be comparatively powerless.<sup>201</sup> The only real action on the part of local authorities with regards to environmental

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<sup>198</sup> "紫金矿业和众多官员们 [Zijin Mining and Numerous Officials]." edited by 定荣 朱.(Dingrong Zhu). *每日经济新闻* downloaded from 人民网, November 30 2011, accessed July 9, 2013, <http://fujian.people.com.cn/GB/234644/234650/16451611.html>

<sup>199</sup> 吕 (Lu). "紫金就是上杭，上杭就是紫金" ["Zijin Mining Is Shanghang, Shanghang Is Zijin Mining"].

<sup>200</sup> "福建紫金矿业污染事件 2 名环保局官员获刑 [Two Officials from the Environmental Protection Bureau Have Been Arrested in Connection with the Fujian Zijin Mining Pollution Incident]."

<sup>201</sup> "紫金矿业和众多官员们 [Zijin Mining and Numerous Officials]." "紫金矿业和众多官员们 [Zijin Mining and Numerous Officials]."

awareness was prohibition of the sale of fish (dead or alive) from the Ding River.<sup>202</sup> On the one hand, this ban served as protection of the local (and other) population; on the other hand, the economic consequences for the local population, some of whom depended on fishing for their livelihoods, were increased.

Hence, more than the other two cases, the Zijin mining accident demonstrated the close relationships between businesses and local governments as well as an obvious disregard for properly informing the public of potential environmental disasters. It shows that environmental concern expressed on the local level to local governments by the local population often does not lead to an improvement of environmental conditions as they rank second behind economic concerns.

### 3.3.3. Media

The third actor of interest, the media, can play an important role in enhancing environmental concern in rural areas, as described in Chapter 2, as long as it is not under the complete control of other interest groups. It should be reiterated that for this thesis only the potential impact on environmental concern of newspapers and “official” news is considered. As discussed in Chapter 2, emerging “unofficial” channels like the internet (i.e. blog entries) are not used. The “official” media might still be restrained in their reports on pollution incident, especially if they are cause for social instability.<sup>203</sup>

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<sup>202</sup> "企业如何履行生态责任 紫金矿业污染事故调查 [How Companies Fulfill Ecological Responsibilities -the Investigation of Zijin Mining's Pollution Incident ]." edited by 樱李.(新华网福建频道 downloaded from 人民网, July 14 2010, accessed July 12, 2013, <http://fujian.people.com.cn/GB/181529/12142420.html>

<sup>203</sup> With regards to the Zijin Mining incident, Jiang and Zhou discuss the differences between “official” and “unofficial” discourse. Even though they see the constraints of the mass media, they still establish it to be important for environmental awareness.小艳蒋 and 裕琼周 (Xiaoyan Jiang and Yuqiong Zhou), "论我国环境公共事件中的

In the case of the lead poisoning case in Gansu province, the media did serve as an important source of news for villagers as well as the central government, eventually leading to the closure of the plant. According to the *Wall Street Journal*, only after local newspapers published the story of the little boy whose elevated lead levels were discovered by accident after he had injured himself, leading other villages to be tested for lead poisoning, did the local governments start to pay attention.<sup>204</sup> The story was then picked up by the national news organization, *Xinhua*, which led eventually to the involvement of the central government, through SEPA.<sup>205</sup>

Aside from drawing attention to the poisoning case so that the government felt obligated to step in, the media provided at least some information regarding lead poisoning itself for the affected population as well as for other areas of the country. For example, an online news article discussed the potential sources and symptoms of lead poisoning on September 11, 2006.<sup>206</sup>

It should be noted, though, that the media is viewed from the perspective of the local population. Chapter 2 has discussed the tight control that local authorities would like to have over media coverage when they think they might be portrayed in a negative way. This potential governmental authority to restrict local media also leads the public to be suspicious of the media. So, in this case, villagers would only consent to interviews when they knew that the reporters were not from Gansu province.<sup>207</sup>

This suspicion towards local newspapers is not unwarranted. In the case of the Ding River pollution through the Zijin Mining Company, given the extent of the incident, it rapidly

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双重话语:以紫金矿业污染事件为例 [on the Double Discourse of China's Environmental Public Events: Taking Zijin Mining as an Example], *湖州师范学院学报* 34, no. 4 (2012).

<sup>204</sup> Oster and Spencer "A Poison Spreads Amid China's Boom."

<sup>205</sup> Ibid.

<sup>206</sup> "甘肃铅中毒真相一再被隐瞒 [the Truth About the Lead Poisoning in Gansu Province Has Repeatedly Been Concealed]."

<sup>207</sup> "甘肃铅中毒事件 村民怀疑卫生局买通专家组 [in the Case of Gansu Lead Poisoning - the Villagers Suspect the Health Bureau Bribing the Group of Experts]."

made local and national news.<sup>208</sup> On the local level, in the provincial newspaper, *Fujian Ribao* (even though based on the national news agency) reported the measures undertaken by the local authorities, namely the Shanghang County government in order to keep the population safe and deal with the aftermath of the pollution (before it was even made public). At first, these reports seemed rather positive or at least adequate.<sup>209</sup> Other newspapers, namely the *Nanfang Zhoumo* and even the party friendly *Renmin Ribao* did not report about the local government that positively. Instead, they published articles discussing the economic and political interdependencies in the area, exposing the recurring environmental transgressions and pollution and questioned the local government's choice to keep the pollution incident of July 3<sup>rd</sup> from becoming public.<sup>210</sup> This power of the media is often feared the by local officials (as already described in Chapter 2) who might try to exert as much control over the news coverage as they can. Apparently, in this case, the fear of exposure was so great that officials offered hush-money to some of the reporters for not publishing their story.<sup>211</sup> Aside from this 'peaceful' approach to influence the reporting on the pollution incident, more drastic measures have been suspected to

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<sup>208</sup> For a more detailed analysis of media coverage (and public awareness) in the case of Zijin Mining, see for example: Wenbo Cao(文博 曹), "环保新闻: 中国环境议题的媒介呈现研究 [Environmental News: Research on China's Media Presentation of Environmental Issues]" (Master Thesis, Shaanxi Normal University, 2011), 22-27.

<sup>209</sup> "紫金矿业废水外渗引发汀江流域污染事故调查 [the Investigation of the Ding River Pollution Incident Caused by Wastewater Seepage of Zijin Mining]." edited by 洪熙 林.(新华网, downloaded from 福建网, July 14 2010, accessed July 5, 2013, [http://www.fjsen.com/h/2010-07/14/content\\_3487783.htm](http://www.fjsen.com/h/2010-07/14/content_3487783.htm)

<sup>210</sup> See for example, among others: 吕 (Lu). "紫金就是上杭, 上杭就是紫金" ["Zijin Mining Is Shanghang, Shanghang Is Zijin Mining"]."; "紫金矿业和众多官员们 [Zijin Mining and Numerous Officials]."; "紫金矿业灰幕: 诡异的二次泄漏 [Zijin Mining's Grey Screen: The Strange Second Leakage]."; "紫金矿业灰幕: 诡异的二次泄漏 [Zijin Mining's Grey Screen: The Strange Second Leakage]."; 梁(Liang). "县环保局长因紫金矿业污染事件辞职 或是“替罪羊”! [the Director of the County Environmental Protection Bureau Resigned Because of the Pollution Incident or as a "Scapegoat" ]."

<sup>211</sup> "紫金矿业宣传部长发砍腿毒誓否认封口费 [the Head of the Zijin Mining Propaganda Department under Oath Denies Giving Hush Money]." edited by 西 扎.(Xi Zha).四川新闻网 downloaded from 人民网, July 28 2010, accessed July 11, 2013, <http://env.people.com.cn/GB/12270660.htm>; 江涛梁 (Jiangtao Liang). "紫金矿业水有多深, 公关“信封”就有多厚! [Zijin Mining Is Even in Deeper Water, It's Public Relations "Envelope" Even Thicker!]." edited by 扎西.(Xi Zha).人民网-环保频道, July 26 2010, accessed July 11, 2013, <http://env.people.com.cn/GB/12248297.htm>; "“全面停产”变“限产”紫金矿业减产黄金1吨 [from "Complete Production Stop" to "Limited Production", Zijin Mining Reduces Gold Production by 1 Ton]."

be chosen to intimidate reporters. Li mentions two car accidents on the same day in which two families of journalists reporting in connection with the Zijin Mining Pollution incident were involved.<sup>212</sup> This indicates that the media would have the power to influence the environmental concern of the local population and could help them to achieve a less polluted environment.

For the potential pollution situation in Jianli County, first the local and then the national media played a crucial role in making the problem known and the damage to environment and health public. Even if the polluting factories were not the main cause (which has not been established either way) and the media coverage thus overly dramatic, still, the attention gained through the media helped lead eventually to the demolition of the polluters.

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<sup>212</sup>李磊(Lei Li), "“记者劫”何时休[When Does the "Robbery of Reporters" Stop]," *政府法制* (2010), 22.

### 3.3.4. Other Factors

Clearly, the main focus of this thesis is to look at the involvement of the three actors in shaping environmental concern. However, as these case studies show, there are also other things that can shape environmental concern, some of which will be briefly touched upon in this subsection.

One of the most important additional factors that appeared in the context of the above case studies is the social network of the affected population. Social networks can play a powerful role in increasing environmental concern, especially in rural areas, where people often know each other on a personal level. In the case of the lead poisoning in Gansu province, after learning about the environmental pollution of the smelting plants and the resulting health issues, but at the same time still feeling ill-informed, people in the affected area took it upon themselves to find out more about the symptoms and consequences of lead poisoning and make that information available to a wider public.<sup>213</sup>

The potential pollution case in Jianli County shows that only after the continuous pollution was suspected to have caused serious health damage to the local population did the importance of the environment become an issue. Local farmers seem to have generally used insecticides and pesticides for their cotton production.<sup>214</sup> However, these do not appear to be of much concern. The smell from the smelting plants on the other hand was more noticeable and thus more of a reason for concern.<sup>215</sup>

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<sup>213</sup> "甘肃铅中毒事件 村民怀疑卫生局买通专家组 [in the Case of Gansu Lead Poisoning - the Villagers Suspect the Health Bureau Bribing the Group of Experts]."

<sup>214</sup> See for example, "专家初步判断监利皮肤病为皮炎疑与虫体毒素有关 [the Preliminary Verdict from Experts with Regards to the Skin Disease in Jianli County Is That It Is Dermatitis and It Might Have to Do with Toxins from Parasites]." 今日早报 downloaded from *Duxiu*, October 17 2008, accessed January 12, 2013

<sup>215</sup> Chen "Chemical Pollution in Hubei: It's All About Money."

Another important factor is the question of understanding the potential consequences of pollution; hence the importance of education. This is especially true in the case of the lead poisoning in Gansu province. Lead poisoning is not necessarily as obvious as the development of skin ailments based on pollution but can be more harmful. Even after the parents from Xinsi village had learnt about their son's elevated lead levels, they did at first not understand what it meant to his health. They needed more information to fully comprehend the extent of their son's poisoning.

### **3.4. Conclusion**

Even though the above case studies are only quick snapshots of environmental concern in rural areas, a few conclusions can still be drawn. First of all, it is obvious that a clear answer to the research questions does not exist. With regards to each actor, when comparing across the different cases, their potential to positively influence environmental concern among the rural population is not always reached. This could be on the one hand because the local population might not trust the local government to act in their interests, on the other the three actors might have conflicts interests, and hence of no incentive to stress the importance of the environment to the local population.

This holds especially true for the actor who likes to be portrayed as being capable of having the strongest potential to influence the public; the central government. Even though the central government seems to want to enhance environmental awareness, especially in rural areas as discussed in Chapter 2, it does not always come to help when actual concern leads rural

citizens to ask for support, as seems to have been the case, for example, in the skin disease situation in Jianli County.

The local government, who could be considered to be more influential because of their geographically closer relation to the local population, seems to be especially concerned with their own economic situation in the case of the Zijin Mining incident in Fujian Province. The close interdependencies of the local government and the company allowed Zijin Mining to neglect environmental regulations. Hence, the local government indirectly communicated the importance of economic development over environmental protection.

The third actor, the media, clearly plays an important role in enhancing environmental concern – at least in the respect that they are able to provide further information and draw enough attention to pollution cases that something is done about them. However, even though the media has the potential to influence things, this does not necessarily mean that it is always possible to or always done.

Finally, the Gansu lead poisoning case supports the hypothesis that environmental concern in rural areas, especially in lesser developed and more remote areas, tends to stem primarily from pollution related health issues. It also shows that because of the arising health issues, economic opportunities from increased industrialization without proper environmental regulations in place are not necessarily always welcomed.

## 4. Quantitative Analysis of Environmental Concern in Rural China

### 4.1. Introduction

Based on the discussion of the three case studies in Chapter 3, this chapter now quantitatively analyzes the factors that could be connected to the three previously discussed actors and their influence on environmental concern. The variables used as proxies to assess the potential influence are media exposure, trust in the different level of government and also direct experience of environmental pollution. Furthermore, it will analyze demographic factors such as gender, education and economic status on environmental concern in rural China. Finally, it discusses the potential effect of migration status, specifically rural-to-urban migration on environmental concern.

The analysis in this chapter is based on data from “the China Survey” from 2008 (see the Data and Summary Statistics section). Similar investigations on environmental awareness in China have been conducted using the same data. However, this chapter focuses exclusively on the rural population in China and thus distinguishes itself from the analysis by Shield and Zeng<sup>216</sup>, who use the full sample to look at gendered differences in environmental perception. This study further uses detailed regression analysis to assess the influence of the various factors on environmental perception and thus takes it a step further than Chiu<sup>217</sup>, who focuses on the differences between *hukou* status. This chapter, like the rest of this thesis, only concentrates on environmental concern in rural China.

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<sup>216</sup> Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey"."

<sup>217</sup> Chiu, "Going Green? Urban Vs. Rural Residency and Pro-Environmental Attitudes in China."

This quantitative analysis supports the findings from the case studies chapter, that media can be influential for heightening people's environmental concern. It also provides further evidence of the ambiguous role that the different levels of government play in China. The sample of respondents includes people that have not directly experienced environmental pollution. Still, the analysis will use a variable to control the influence of pollution on environmental awareness. Thus, overall it provides a similar background as the case studies.

The rest of the chapter is organized as follows. Section 2 states the hypotheses for the model in Section 3. Section 4 describes the data and gives summary statistics. Section 5 reports the results and Section 6 concludes the chapter.

## **4.2. Hypotheses**

The analysis in this chapter complements the case studies in Chapter 3 by focusing on the same research questions, this time from a quantitative point of view. In particular, it is interested in what actors/factors can shape environmental concern among rural citizens in China. The first factor of interest is exposure to different kinds of media. Since previous research has shown that the media in China still has a strong effect on public opinion in general<sup>218</sup> but specifically also in the area of environmental protection and importance<sup>219</sup>, it is expected that a similar overall effect will be found in this study. More importantly for this study, the difference in the kind of media that is consumed by the survey respondents is analyzed. It will specifically focus on two types of

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<sup>218</sup> See for example John James Kennedy, "Maintaining Popular Support for the Chinese Communist Party: The Influence of Education and State-Controlled Media," *Political Studies* 57(2009).

<sup>219</sup> See for example Zhao, "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use."

media: newspaper usage and TV. As Chapter 2 described, newspapers might be more informative but TV could be more available in rural China. And indeed, the majority of households in rural China own a television set. So, news programs on TV can be perceived as one of the primary sources of information for rural citizens. But since TV programs might not be allowed to cover environmental pollution as much as newspapers, that raises the question of whether there is a difference in environmental perception between exposure to TV and gaining access to information through newspapers.<sup>220</sup> Still, the media hypothesis is written as:

*Media Hypothesis: Increased exposure to media (both television and newspaper) positively influences the perceived importance of environmental protection.*

The second factor that has been identified by the literature as carrying importance in determining support for government or as having the potential to shape public opinion in favor of the central government is trust in different levels of government. For example, Li has shown that trust in higher levels of government increases the likelihood for rural citizens to claim their rights on a local level.<sup>221</sup> That could indirectly show support for the central government as the local population trusts it enough to assume the central government will help them against local governments. Similarly, in the context of environmental protection, it is expected that trust in higher levels of government has a positive influence on environmental perception. Being aware of environmental pollution issues and the cost to society associated with them, the Chinese central government tries to foster a greater environmental conscience in rural areas. Rural areas further away from direct control of the central government and often in dire need of economic

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<sup>220</sup> For an overview of the varying potentials of different media usages, see the literature discussion by Zhao: "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use," 139.

<sup>221</sup> Lianjiang Li, "Political Trust in Rural China," *Modern China* 30, no. 2 (2004): 244.

development show a lesser degree of environmental protection than the urban centers. Local governments try to reduce and sometimes hinder the proper pollution control measures to attract more industry. Chapter 3 has shown the involvement of the different levels of government in the various pollution incidents. Even though the central government clearly pursues its own interest and thus does not always act in accordance with its proclaimed view of the importance of environmental protection, still, the following hypothesis can be formulated (similar to Shields and Zeng<sup>222</sup>):

*Trust Hypothesis A: A higher level of trust in the county level government results in lower environmental concern:*

*Trust Hypothesis B: A higher level of trust in the central government results in higher environmental concern.*

The model includes a factor so far often neglected by scholars addressing the question of environmental concern – rural migration<sup>223</sup>. Two types of rural migrants can be distinguished: rural-to-rural and rural-to-urban. Rural-to-rural migrants leave their hometown in search of work in other rural areas. Tilt has conducted interviews with rural migrants that were hired by industries in other rural areas.<sup>224</sup> As these migrants have no social network in the new area and no other reason for living there than work, they often support any kind of company policy even at the expense of their own health. They are thus unlikely to consider environmental pollution to be a problem. The threat to their livelihood personified in environmental protection bureaus that

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<sup>222</sup> See Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey". They use trust variables in their analysis from the same survey of environmental perception, however, focus on the full sample and also include trust in businessmen. This chapter is only interested in environmental concern in rural China and the role different governmental actors play in forming it. Thus, it excludes the role of businessmen.

<sup>223</sup> For a recent study on China's floating population and environmental concern, see: Peng Gu, and Xiaoming Ma. "Investigation and analysis of a floating population's settlement intention and environmental concerns: A case study in the Shawan River Basin in Shenzhen, China." *Habitat International* 39 (2013).

<sup>224</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*.

could potentially close factories for violating environmental protection laws is much more pressing than any long-term health problems that could arise from unsafe work conditions.<sup>225</sup>

The second group of migrants – rural-to-urban – leaves their hometowns in search of work and a better life in urban areas. Previous research on environmental perception in China has shown that people in urban areas might have higher levels of environmental awareness<sup>226</sup>; potentially also because environmental awareness might be higher in areas with – generally – higher income and higher education levels. Being in an urban environment could thus have a positive effect on the perceived importance of the environment even for people who have grown up in a rural setting. As these migrants still officially have an agricultural household registration and are thus considered to be rural citizens, they are included in this study.

*Migrant Hypothesis: Being a migrant worker (rural-to-urban) positively influences environmental concern.*

Aside from these three main hypotheses, this analysis acknowledges the fact that certain demographic variables have the potential to influence environmental perception. Previous studies have shown that Chinese women tend to be less concerned with environmental pollution than men; a result which is different to the findings from Western countries.<sup>227</sup> Often this is explained as being the consequence of the difference in knowledge and education between men and women.<sup>228</sup> Similarly, people with a higher education and income level tend to value environmental protection more than less educated, lower income citizens. Furthermore, it is expected that the younger the survey respondent, the more he or she is aware of environmental

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<sup>225</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 100-03.

<sup>226</sup> See among others, the overview by Harris, "Green or Brown? Environmental Attitudes and Governance in Greater China," 164-65.

<sup>227</sup> See for example Xiao and Hong, "Gender and Concern for Environmental Issues in Urban China." And: Xiao, Dunlap, and Hong, "The Nature and Bases of Environmental Concern among Chinese Citizens."

<sup>228</sup> Todd Shields and Ka Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey", " *ibid.*93, no. 1.

protection. Lastly, direct experience of environmental pollution could influence environmental concern as well. Hence, the case studies in the previous chapter have focused on actual pollution incidents and the reaction by the local population.

### 4.3. Model

Based on the three hypotheses identified in the previous section, environmental perception can be modeled according to the function:

$$Envtper=f(\text{media exposure, trust, migration status, pollution, demographics, control variables})$$

The survey provides several questions that assess the respondents' awareness of the environment. Given the categorical nature of each of the variables, either a logit or an ordered logit model is used for the econometric analysis. In particular, three different models will be estimated:

$$EPP_i = c + \alpha_1^T \text{media}_i + \alpha_2^T \text{trust}_i + \alpha_3^T \text{migrant}_i + \alpha_4^T \text{demo}_i + \alpha_5^T \text{controls}_i + \varepsilon_i \quad (\text{A})$$

$$EPC_i = c + \beta_1^T \text{media}_i + \beta_2^T \text{trust}_i + \beta_3^T \text{migrant}_i + \beta_4^T \text{demo}_i + \beta_5^T \text{controls}_i + \varepsilon_i \quad (\text{B})$$

$$EE_i = c + \gamma_1^T \text{media}_i + \gamma_2^T \text{trust}_i + \gamma_3^T \text{migrant}_i + \gamma_4^T \text{demo}_i + \gamma_5^T \text{controls}_i + \varepsilon_i \quad (\text{C})$$

where  $EPP_i$  looks at the perception of the importance of environmental protection at a specific place according to survey respondent  $i$ ,  $EPC_i$  considers the overall importance of environmental protection in China from the perspective of survey respondent  $i$ , and  $EE_i$  compares environmental protection to economic development according to  $i$ .  $\text{Media}_i$  indicates the media

use of the respondent  $i$ ,  $\text{trust}_i$  is a vector including three variables for trust in different levels of government,  $\text{migrant}_i$  specifies if the respondent is a rural-to-urban migrant,  $\text{demo}_i$  contains demographic characteristics of respondent  $i$ ,  $\text{controls}_i$  consists several control variables, and  $\varepsilon_i$  is the error term.

#### 4.3.1. Dependent Variables

Three different indicators for the respondent's perception of the importance of the environment will be employed. They are consistent with the definition of environmental concern that has been continuously used throughout this thesis. Furthermore, they coincide with measures discussed by Klineberg; perceived importance of pollution and potential tradeoff with economic importance as described in Chapter 1.<sup>229</sup>

It could be argued that environmental protection issues in rural China become more prominent in people's opinion if they are directly affected by pollution and resulting health issues. The first dependent variable is thus the answer to the question: "*How serious of a problem do you believe the environment is in this place today?*" The answer is modeled in a first step as a binary variable based on four different levels ranging from "*not serious at all*" to "*very serious*". Hence, 1 indicates that the respondent considers the environment to be a serious problem, and 0 not a problem. Secondly, for robustness, the analysis takes advantage of the ordinal nature of the categorical variable in an ordered logit (generalized ordered logit regression).

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<sup>229</sup> Stephen L. Klineberg, Matthew McKeever, and Bert Rothenbach, "Demographic Predictors of Environmental Concern: It Does Make a Difference How It's Measured," *ibid.* 79, no. 4 (1998): 736-38.

In a second step, the overall environmental perception of the survey respondent is analyzed by using the answers to the question: *“On a scale from 0 to 10, with 0 indicating this is not a problem at all in China and 10 indicating this is an extremely serious problem, how serious do you think these problems are in China today? - Answer: Environmental protection”*. The eleven-level answer is first reduced to a binary variable and then to a five-level categorical variable so that it can be estimated using the ordered logit model.

In the final step, environmental importance is compared to the perceived need for economic growth. Economic development has for a long time been prioritized over environmental protection in China. Only in the last two decades has the central government acknowledged the problems arising from uncontrolled economic development, leading to increasing environmental damage. Still, especially in rural areas, environmental protection is often perceived as a hindrance to much needed economic growth. Hence, a binary dependent variable capturing this direct comparison is used based on the survey question: *“Some people believe there is a conflict between economic development and environmental protection. If you had to choose between economic development and environmental protection, which would [you] consider to be more important?”* 1 includes the answers *“environmental protection is somewhat important”* and *“environmental protection is much more important”*, 0 combines *“economic development is much more important”* and *“economic development is somewhat more important”*. Hence, 1 indicates the respondent considers environmental protection is more important, 0 economic development should be prioritized. Secondly, similar to the other variables, the ordinal nature of the variable is used and it is estimated as such.

### 4.3.2. Variables of Interest

*Media Exposure* Chapter 3 has described how media can influence and reflect public opinion regarding environmental issues. In order to capture the effect of the media, the quantitative analysis uses a comprehensive variable; media exposure. It is “typically measured as the frequency with which respondents read or watch political news [...]”<sup>230</sup>. This study distinguishes between two kinds of media usage: television and newspapers. Given the survey questions, both of these variables are less precise than usual in a political study as they do not explicitly address media exposure to environmental issues. Even though a more precise measure might be preferred, other studies on media use and environmental perception employ a similarly general indicator<sup>231</sup>. Furthermore, because of the increase of coverage of environmental issues in the Chinese media<sup>232</sup>, even this rather imprecise measure should provide some insight into the impact of media on environmental importance.

In order to analyze any potential differences between the two kinds of media, the binary variable for newspaper usage indicates if the respondent usually reads any kind of newspaper, and the binary variable for TV is equal to 1 if the respondent has watched any hours of TV the previous day (or, if not, at least does normally watch TV). As most households in rural China own a TV set these days<sup>233</sup>, it is not possible to purely analyze the effect of newspaper usage on environmental perception, as only a very small percentage of respondents who normally read

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<sup>230</sup> Kennedy, "Maintaining Popular Support for the Chinese Communist Party: The Influence of Education and State-Controlled Media," 523.

<sup>231</sup> Zhao, "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use," 146.

<sup>232</sup> Burgh and Rong, *China's Environment & China's Environment Journalists: A Study*, 35-57.

<sup>233</sup> According the National Bureau Statistics in 2008, 99.2 percent of rural households owned a color TV set. National Bureau of Statistics, "Ownership of Durable Consumer Goods Per 100 Rural Households by Region at Year-End (2008)," accessed June 13, 2013, <http://www.stats.gov.cn/tjsj/ndsj/2009/indexeh.htm> (based on China Statistical Yearbook 2009).

newspapers do not watch TV. Hence, both binary variables for media use cannot exclude the other type of media.

*Trust in government* The survey explicitly addresses the level of trust the survey respondent has for the government. It distinguishes between county, provincial and central government officials. Each of these levels is included in the models as a binary variable, where 1 indicates that the respondent trusts the government officials at all. It is based on a four level categorical variable where 1 indicates that the respondent does not trust the government officials at all and 4 that she trusts them very much. The two lower levels are recoded as 0, the upper two as 1.

*Migration* This variable describes the migration status of the respondent. In recent years, the Chinese government has relaxed the strict household registration (*hukou*) system and tolerated a stronger inflow to urban areas. The migrants in the sample are part of this floating population; even though they still have an agricultural registration they currently live and work in an urban area. Migration is included as a binary variable in the models, with 1 indicating the respondent is a migrant worker and 0 otherwise. The second group of migrants who have successfully changed their household registration to an urban area, are not considered in this study on rural citizens.

### **4.3.3. Demographic Variables**

In addition to the above described variables of interest, several demographic variables are incorporated in the three models as controls. These include gender, marital status (married vs. unmarried), income, education, age, party membership and political qualification.

*Income* As many people in rural areas do not have a steady income that can be quantified in monetary terms, it has to be imputed. There are several ways to impute income; for example, using education, profession or wealth. Education and profession are self-reported. Similar to Shields<sup>234</sup> this study uses the interviewer's reported economic class to assess the income of the interviewee. Four levels (lower, middle, upper middle and upper) could be chosen for the economic class, however, as less than 1% of the respondents fall within the highest level, upper and middle upper class are combined. Variables capturing occupation are included as well; agricultural, white collar worker, blue collar worker and unemployed. Blue collar worker is used as the reference category (the omitted category in the following regressions).

*Education* Three different binary variables are used to capture the effect of education on environmental perception. The first one indicates no education at all; that is, not having completed elementary school. The second one takes the value of 1 if the respondent has completed compulsory education (that is, equivalent to junior high school). The last variable stands for completed high school education.

*Age* The variable age is used to also reflect political change throughout the second half of the twentieth century in China. Under Mao, nature was strongly disregarded and exploited in favor of economic development.<sup>235</sup> With the reform and open policy of the 1980s China introduced the system of social market economy which led to faster economic growth and faster environmental degradation. At the same time, however, China also opened up politically, especially regarding environmental issues. The variable for age that is used distinguishes between respondents born before and after 1970, thus distinguishing between respondents growing up during the Maoist period and post-Mao period. The expectations for the age variable

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<sup>234</sup> Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey"," 7.

<sup>235</sup> Shapiro, *Mao's War against Nature: Politics and the Environment in Revolutionary China*.

are ambiguous. As Franzen and Meyer summarize the existing literature seems to indicate that younger people tend to be more environmentally concerned.<sup>236</sup> Even though the younger generation is usually expected to have a more environmentally friendly attitude, the change from Maoist to post-Maoist was also the change of economic systems. Hence, the focus on economic development in the 1980s and 1990s could lead to a more pro-economic perception, especially when having to choose between economic development and environmental protection.

*Political Variables* Two political variables including, one indicates if the survey respondent is currently a Communist Party member, the other one if the survey respondent considers herself to understand the current political situation.

#### **4.3.4. Other Control Variables**

*Environmental Pollution* As described in Chapter 3, personal experience has the potential to greatly influence a respondent's perception of the importance of the environment. As pollution data for the various counties are not available, the answer to the question: "*In the last 12 months, did your household experience: Environmental Pollution?*" is used as a control variable for the environmental conditions the respondent faces.

*Economic Development* The model also controls for regional variation. Generally speaking, the coastal regions in the East of China are more developed than the Western part of the country. The analysis follows the convention of dividing the country into three regions: East

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<sup>236</sup> Franzen and Meyer, "Environmental Attitudes in Cross-National Perspective: A Multilevel Analysis of the ISSP 1993 and 2000," 222.

(as economically most developed and urbanized area), Central, and West (economically least developed region)<sup>237</sup>.

*Provincial Environmental Conditions* The analysis includes two variables capturing the environmental conditions in the provinces. The first one states the number of pollution incidents in the province in 2008 (the survey year), the other gives the percentage of provincial area covered by nature reserves in 2008. Both of the variables are taken from the China Statistical Yearbook, available online from the National Bureau of Statistics<sup>238</sup>.

#### 4.4. Data and Summary Statistics

*The China Survey*<sup>239</sup> is a project from Texas A&M University together with the Research Center for Contemporary China (RCCC) at Peking University. The survey was administered between April 6 and June 7 in 2008 across seventy-three counties in China. In-person interviews were conducted with 3989 randomly chosen individuals in urban as well as in rural areas covering a broad selection of topics. As this study focuses on the rural population in China, answers from urban residents are not going to be used for the main analysis. Furthermore, the

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<sup>237</sup> The analysis uses the definition for East, Central and West as defined by Shiqing Jiang, Ming Lu, and Hiroshi Sato, "Identity, Inequality, and Happiness: Evidence from Urban China," *World Development* 40, no. 6 (2012): 1199. They define East as Heilongjiang, Jilin, Liaoning, Tianjin, Beijing, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, and Hainan, Center as Hebei, Anhui, Jiangxi, Henan, Hubei, Hunan, and Shanxi and West as Sichuan, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Inner Mongolia, Guangxi, and Guizhou, and one municipality, Chongqing. Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey"." also use a division through three areas. For this study, given the available provinces, the three areas are: West includes the provinces Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Ningxia, Xinjiang; Center: Hebei, Anhui, Jiangxi, Henan, Hubei, Hunan; and East: Liaoning, Jilin, Heilongjiang, Jiangsu, Zhejiang, Guangdong and Fujian.

<sup>238</sup> National Bureau of Statistics of China, accessed Dec. 2<sup>nd</sup>, 2012 and Nov. 5<sup>th</sup>, 2012, respectively, <http://www.stats.gov.cn/english/>

<sup>239</sup> Website for the China Survey: <http://thechinasurvey.tamu.edu/html/home.html>.

observations for strata variables for urban and rural municipalities are excluded. This reduces the sample size to 2985 or roughly 75% of the original number of respondents.<sup>240</sup>

Table 5 summarizes the explanatory variables used in the model and provides basic statistics. The summary statistics are given with the appropriate survey weights (i.e. the interviewee survey weights). In contrast to Harmel and Yeh (2011)<sup>241</sup> who use the same survey data for their analysis, missing values are coded as 0 for dummy variables (when the independent variable has more than 5% missing values).

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<sup>240</sup> This study also excludes the region “municipality” in the survey.

<sup>241</sup> Robert Harmel and Yao-Yuan Yeh, "Corruption and Government Satisfaction in Authoritarian Regimes: The Case of China," in *2011 Annual Meeting of the American Political Science Association* (Seattle2011), 9.

**Table 5: Description and Summary Statistics for Explanatory Variables**

<i>Variables</i>	<i>Description</i>	<i>Frequency (%)</i>	
<i>Media Exposure</i>			
newspaper	= 1 if normally read any kind of newspaper, 0 otherwise	28.06	
TV	= 1 if regularly watch TV, 0 otherwise	89.68	
<i>Trust</i>			
trust in center	= 1 if trust in central government officials, 0 otherwise	64.35	
trust in province	= 1 if trust in provincial government officials, 0 otherwise	53.96	
trust in county	= 1 if trust in county government officials, 0 otherwise	49.11	
<i>Migration</i>			
Migrant	= 1 if rural-to-urban migrant, 0 otherwise	12.00	
<i>Demographics</i>			
Age	= 1 if born before 1970, 0 otherwise	64.45	
Gender	male=1, 0=female	49.34	
Married	= 1 if married, 0 otherwise	83.11	
unemployed	= 1 if unemployed, 0 otherwise	4.20	
White collar worker	= 1 if white collar (commerce, service trade worker, manager, professional/technical, employee of govt agency, party agency, social organization), 0 otherwise	4.14	
Blue collar worker	= 1 if blue worker (self-owned business, owner of private-owned business, laborer/worker, clerk, serviceman or police officer), 0 otherwise	17.42	
agricultural worker	= 1 if farmer, animal husbandry, or fishery, 0 otherwise	66.11	
no education	= 1 if no education (has not completed elementary school), 0 otherwise	24.52	
junior high	= 1 if only completed junior high school, 0 otherwise	42.36	
high school	= 1 if completed high school, 0 otherwise	10.08	
Economic Class	3 level categorical variable, =3 highest economic class	Mean: 1.95	
		Standard Error:	
		0.134	
Party membership	= 1 if currently member of Communist Party	4.53	
Politically Qualified	= 1 if considered to have knowledge about politics	27.98	
<i>Controls</i>			
environmental pollution	= 1 if environmental pollution in last 12 months, 0 otherwise	20.59	
West	= 1 if Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Ningxia, Xinjiang, 0 otherwise	28.50	
Center	= 1 if Hebei, Anhui, Jiangxi, Henan, Hubei, Hunan, 0 otherwise	33.11	
East	= 1 if Liaoning, Jilin, Heilongjiang, Jiangsu, Zhejiang, Guangdong, Fujian, 0 otherwise	38.39	
Pollution incident	Number of pollution incidents in province of survey respondent	Mean: 15.17	13.83, Error:
		Standard Error:	
		6.51,	
Nature Reserve	Percentage of provincial area covered by nature reserves	Mean: 6.51,	Standard Error: 3.80

In the following regression analysis, an indicator for missing values for each of these dummies is included in order to control for missing values. The descriptive statistics show the recoded variables (including 0 for missing values).

Since this study focuses only on the rural subsample, not accounting for missing values of the independent variables would make the sample size even smaller. By maximizing the potential sample size (and not losing respondents because of missing answers), the reliability and representativeness of the analysis is increased. However, this clearly could also threaten the validity of the analysis. Especially, as there is a distinction between the missing answers in the survey, since survey respondents could choose not to answer or answer that they do not know. Some of the independent variables, specifically the ones focusing on political questions, have a comparatively high percentage of “don’t know” answers. Hence, the results from the regressions with the recoded variables are compared to the results which have a lower sample size due to dropping missing values.

Overall the sample seems to be an accurate representation of China’s rural population in 2008. The variables for media exposure demonstrate the increasing trend for rural households to own TV sets. Almost 90% watch TV on a regular basis. Clearly, TV usage, even for local news information, seems to be more common than reading any kind of newspaper. As expected, the percentage of people trusting the central government (and or provincial/ county government officials) is larger than the percentage of trusting provincial or county government officials. This trend seems to be consistent (at least for the moment) with the literature on rural contention.<sup>242</sup> Rural-to-urban migrants comprise twelve percent of the sample. The floating population in China

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<sup>242</sup> Li, "Political Trust in Rural China," 229-30., among others.

in 2008 was around ten to eleven percent.<sup>243</sup> Hence, the sample clearly reflects the Chinese rural population.

Regarding basic demographic variables, most respondents are married, have at least elementary school (six years) education and work in the agricultural sector. Furthermore, 20.59% of the respondents have experienced environmental pollution in the last year, indicating that the impact or awareness of environmental pollution is increasing on a local level.

The three different dependent variables could be seen as an indicator that there exists an environmental consciousness in rural China. As can be seen in table 6, more people consider the environment to be a serious problem in their locality than have actually directly experienced an environmental pollution incident.

**Table 6: Description and Summary Statistics for Dependent Variables - Binary**

<i>Variables</i>	<i>Description</i>	<i>Frequency (%)</i>
environmental protection this place	= 1 if environment serious problem in this place, 0 otherwise	35.97 (Missing: 9.57) [39.78 when excluding missing]
environmental protection China	= 1 if environmental protection serious problem in China today, 0 otherwise	42.14 (Missing: 12.08) [ 47.94 when excluding missing]
environmental protection vs. economic development	= 1 if environmental protection more important than economic development, 0 otherwise	36.08 (Missing: 16.50) [ 43.21 when excluding missing]

A little less than half of the survey respondents (or more than one third when including missing) consider environmental protection to be more important than economic development. Given that most of the respondents live in rural areas and not in the more economically

<sup>243</sup> Some sources say 11.5 percent, the National Bureau of Statistics claims 140.41 million people who work outside their hometown (not specified if rural or urban though), which with a given population of 1328020000 in 2008 would be 10.57 percent. [National Bureau of Statistics, accessed June 13, 2013, [http://english.gov.cn/2009-02/27/content\\_1244832\\_12.htm](http://english.gov.cn/2009-02/27/content_1244832_12.htm), [http://www.stats.gov.cn/was40/gjtjj\\_en\\_detail.jsp?channelid=4920&record=17](http://www.stats.gov.cn/was40/gjtjj_en_detail.jsp?channelid=4920&record=17)]

developed urban areas, the strong focus on environmental protection could be an indicator that pollution has started to heavily impact individuals' lives.

It should be noted that table 6 and table 7 show the frequencies of the dependent variables, including the missing values. Respondents had the opportunity to either answer “don’t know” or to refuse to answer. Both of these options are equally coded as “missing variables”. Since the number of missing answers is different for each dependent variable, the regressions shown below do not have identical observations.

**Table 7: Description and Summary Statistics for Dependent Variables - Multiple Levels**

<i>Variables</i>	<i>Description</i>	<i>Frequency (%)</i>
Environment as a problem in this place	=1 not a problem; = 4 serious problem	1: 25.24; 2: 29.2; 3: 24.34; 4: 11.63 – Missing: 9.57
environmental protection China	= 1 not a problem; =5 serious problem (rescaled from 11 levels)	1: 20.56; 2: 11.61; 3: 21.83; 4: 20.88; 5: 13.03 – Missing: 12.08
environmental protection vs. economic development	=1 economic development much more important; =4 environmental protection much more important	1: 21.78; 2: 25.63; 3: 19.10; 4: 16.98 – Missing: 16.50

Tables 8 to 11 give basic frequencies regarding the main variables of interest, the dependent variable from Model B (importance of environmental protection in China), in the binary form.<sup>244</sup> Aside from the first look into the potential relationship between the variables and the measures for environmental concern, they also compare the frequencies for the variables

<sup>244</sup> It should be noted, that the frequency tables are important for a first look at the relationship between the dependent and independent variables. They do not use the interviewee survey weights.

where missing values are still used and the recoded variables where the missing values are coded as 0s. This might be especially important for the answer “don’t know”.

As can be seen in table 9, the trust variables for the different governmental levels include rather high percentages of “don’t know” answers (all of them report more than twenty percent). With regards to trust in county level government, the largest percent of the “don’t know” answers report that they do not consider environmental protection to be important in China.

**Table 8: Frequencies - County Level Trust and Importance of Environmental Protection (missing values recoded)**

Trust in County government	Importance of Environmental Protection in China				Total
	0	1	“don’t know”	“refuse to answer”	
0	598	633	201	11	1,443
	41.44%	43.87%	13.93%	0.76%	100%
	42.59%	53.10%	53.32%	91.67%	48.34%
1	806	559	176	1	1,542
	52.27%	36.25 %	11.41%	0.06%	100%
	57.41%	46.90%	46.68%	8.33%	51.66%
Total	1,404	1,192	377	12	2,985
	47.04%	39.93%	12.63%	0.40%	100%
	100%	100%	100%	100%	100%

However, recoding the variable from “don’t know” to 0 does not change the overall pattern of the basic frequencies: Generally, trusting the county level government results in not placing as much importance on environmental protection in China, whereas people claiming not to trust the county level government seem to be more likely to answer that they consider environmental protection in China to be important than those that do trust the government as can be seen in table 8.

**Table 9: Frequencies - County Level Trust and Importance of Environmental Protection**

Trust in County government	Importance of Environmental Protection in China				Total
	0	1	“don’t know”	refuse to answer	
0	330 43.31% 23.50%	369 48.43% 30.96%	61 8.01% 16.18%	2 0.26% 16.67%	1,762 100% 25.53%
1	806 52.27% 57.41%	559 36.25 % 46.90%	176 11.41% 46.68%	1 0.06% 8.33%	1,542 100% 51.66%
“don’t know”	254 40.38% 18.09%	244 38.79% 20.47%	127 20.19% 33.69%	4 0.64% 33.33%	629 100.00% 21.07%
refuse to answer	14 26.92% 1%	20 38.46% 1.68%	13 25% 3.45%	5 9.62% 41.67%	52 100% 1.74%
Total	1,404 47.04% 100%	1,192 39.93% 100%	377 12.63% 100%	12 0.40% 100%	2,985 100% 100%

As the summary statistics have already shown, most people who have a rural household registration in the survey work in agriculture. Table 10 provides the basic frequencies between the (recoded) variable for agricultural occupation and perceived importance of environmental protection.<sup>245</sup> It seems to establish a trend that working in agriculture has a negative effect on environmental concern as the percentage of workers reporting not to consider environmental protection important is much higher than those reporting they do consider it important (50.73 % to 33.66%).

<sup>245</sup> The frequencies for the variable for agricultural occupation not having the missing values recoded are not reported as the results do not vary strongly and as there is not a similar potentially meaningful pattern of missing values as in the other recoded variables.

**Table 10: Frequencies - Agricultural Occupation and Importance of Environmental Protection**

Agricultural Occupation	Importance of Environmental Protection in China				Total
	0	1	“don’t know”	“refuse to answer”	
0	367	504	63	7	941
	39%	53.56%	6.70%	0.74%	100%
	26.14%	42.28%	16.71%	58.33%	31.52%
1	1,037	688	314	5	2,044
	50.73%	33.66%	15.36%	0.24%	100%
	73.86%	57.72%	83.29%	41.67%	68.48%
Total	1,404	1,192	377	12	2,985
	47.04%	39.93%	12.63%	0.40%	100%
	100%	100%	100%	100%	100%

Similarly, having no education seems to adversely impact environmental concern. There could be a connection to occupation as well. Agricultural workers do not necessarily require a strong educational background.

**Table 11: Frequencies - Education and Importance of Environmental Protection**

No Education	Importance of Environmental Protection in China				Total
	0	1	“don’t know”	“refuse to answer”	
0	1,020	1,016	185	6	2,227
	45.80%	45.62%	8.31%	0.27%	100%
	72.65%	85.23%	49.07%	50.00%	74.61%
1	384	176	192	6	2,044
	50.66%	23.22%	25.33%	0.79%	100%
	27.35%	14.77%	50.93%	50.00%	25.39%
Total	1,404	1,192	377	12	2,985
	47.04%	39.93%	12.63%	0.40%	100%
	100%	100%	100%	100%	100%

Lastly, having experienced environmental pollution seems to have a strong positive effect on environmental concern (see table 12); 64.24 % of survey respondents who have experienced environmental pollution within the last 12 months report that they consider environmental protection to be important (compared to 34% among those that have not experienced pollution).

**Table 12: Environmental Pollution and Importance of Environmental Protection**

Environmental Pollution	Importance of Environmental Protection in China				Total
	0	1	“don’t know”	“refuse to answer”	
0	1,197 52.39% 85.26%	777 34% 65.18%	307 13.44% 81.43%	4 0.18% 33.33%	2,227 100% 74.61%
1	179 29.64% 12.75%	388 64.24% 32.55%	35 5.79% 9.28%	2 0.33% 16.67%	604 100% 20.23%
“don’t know”	19 29.23% 1.35%	15 23.08% 1.26%	30 46.15% 7.96%	1 1.54% 8.33%	65 100% 2.18%
refuse to answer	9 29.03% 0.64%	12 38.71% 1.01%	5 16.13% 1.33%	5 16.13% 41.67%	31 100% 1.04%
Total	1,404 47.04% 100%	1,192 39.93% 100%	377 12.63% 100%	12 0.40% 100%	2,985 100% 100%

This preliminary data discussion based on descriptive statistics is further evaluated using regression analysis in the following section.

#### 4.5. Results and Discussion

As described above, all of the models are first estimated using a logit regression, clustering on psu (counties). For testing the robustness of the results, the ordinal nature of the variables is taken into consideration and they are estimated using either an ordered logit or generalized ordered logit regression.<sup>246</sup>

<sup>246</sup> Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey", " 11-15. have already shown that the ordered logit model is not sufficient for this data. It will be tested if that also holds true for the rural subset.

For each regression, the results are compared to the results in the Tables A, that is, to the regression results if the missing values from some of the variables had not been recoded. As will be shown, even though by recoding the variables, the validity of the regression analyses might generally be reduced, in the following regression, the results do not change substantially. That would allow the above described treatment of the missing values and thus increase the reliability and representativeness of the data used.

#### **4.5.1. Binary Regression Results**

Table 13 shows the results from the full model, using binary dependent variables for each of the three models. The indicators for missing values are not presented in this table, however full results can be found in the Appendix.

**Table 13: Logit Regression of the three Measures for Environmental Concern: Marginal Effects**

VARIABLES	Model A: Environmental Seriousness in this place	Model B: Importance of Environmental Protection	Model C: Environmental Protection vs. Economic Development
Male	0.0161 (0.0233)	-0.0168 (0.0214)	-0.00763 (0.0223)
Age	-0.0385 (0.0330)	-0.0295 (0.0289)	-0.0558** (0.0236)
Unemployed	0.0434 (0.0702)	-0.137** (0.0690)	-0.0802 (0.0529)
White Collar Worker	-0.0813 (0.0605)	-0.0227 (0.0646)	0.0327 (0.0642)
Agriculture	-0.0768** (0.0381)	-0.101** (0.0409)	-0.0354 (0.0400)
No education	-0.106*** (0.0396)	-0.0880** (0.0380)	-0.0980*** (0.0351)
Junior High	-0.0123 (0.0263)	0.0522* (0.0279)	-0.0164 (0.0254)
High school	0.0654 (0.0478)	0.0490 (0.0415)	0.0398 (0.0378)
Married	0.0589* (0.0321)	0.0808** (0.0335)	-0.0201 (0.0290)
Economic Class	0.0384* (0.0200)	0.0169 (0.0196)	0.0362** (0.0177)
Newspaper	0.0662** (0.0337)	0.0643* (0.0334)	0.0349 (0.0311)
TV	-0.0767 (0.0764)	-0.0360 (0.0573)	0.0820 (0.0682)
Migrant	0.0919* (0.0494)	0.0937* (0.0537)	0.0485 (0.0396)
Envntl Pollution	0.355*** (0.0334)	0.248*** (0.0327)	0.158*** (0.0327)
Trust in County Govt	-0.139*** (0.0450)	-0.0864** (0.0418)	0.00604 (0.0377)
Trust in Prov Govt	-0.0383 (0.0425)	-0.0311 (0.0506)	-0.0272 (0.0518)
Trust in Central Govt	0.0371 (0.0412)	0.0236 (0.0489)	-0.0518 (0.0561)
West	-0.0259 (0.0634)	-0.187*** (0.0586)	-0.0917* (0.0489)
Central	-0.0163 (0.0547)	-0.0444 (0.0510)	-0.0144 (0.0392)
Party Membership	-0.00845 (0.0544)	0.0242 (0.0452)	-0.0175 (0.0544)
Politically qualified	-0.0143 (0.0333)	0.0103 (0.0272)	-0.0333 (0.0339)
Pollution Incidents	-0.00230 (0.00153)	0.000893 (0.00149)	0.00103 (0.00128)
Nature Reserves	-0.00194 (0.00591)	0.00680 (0.00609)	0.00362 (0.00533)
Observations	2,587	2,501	2,342

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Standard errors are clustered on county (psu) level and for better interpretation, the marginal effects are reported.

Most of the demographic variables are not significant and even exhibit opposite signs throughout the models. Having no education, though, portrays a consistently significant negative influence on environmental concern. In Model A, having not finished elementary school reduces the probability of considering environmental protection important in the location of residency by 10.6 percentage points. Even though the probability is less, the other models still show the importance of having education on environmental concern. This finding is consistent with previous research<sup>247</sup> indicating that greater knowledge leads to a better understanding of environmental issues and reinforcing the importance of providing basic education. Additionally, being married also positively influences environmental perception in Models A and B (both significant at least on the 10% level) and negatively influences it when the environment is directly contrasted with economic development, however, the last finding is not significant on any conventional significance level.

Consistent with Shields and Zeng<sup>248</sup>, gender does not play a significant role for environmental concern in the rural subsample either. The variable for income (economic class) is significant and similar in size in Models A and C, showing that higher income does have a positive influence on environmental concern and thus is consistent with the Affluence Theory and Post-materialism Theory as described in Chapter 1.

The other variables that could be used as a proxy for income – types of profession – are not as easily interpreted and are inconsistent in sign and significance throughout the different

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<sup>247</sup> See for example: Harris, "Green or Brown? Environmental Attitudes and Governance in Greater China," 164.; and Xiao and Hong, "Gender Differences in Environmental Behavior in China," 479; "Gender and Concern for Environmental Issues in Urban China."

<sup>248</sup> Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey"."

models. Being mainly employed in farming, husbandry or fishery leads to an overall negative effect<sup>249</sup>, significant in Model A and B, with the omitted category being blue collar worker. That seems surprising as one could have assumed that people whose livelihood directly depends on the environment would have expressed greater concern for environmental conditions as increased pollution might quickly deplete existing resources. Indeed, Tilt reached this conclusion when contrasting the perspectives of migrant industrial workers and local peasants.<sup>250</sup> On the other hand, one of the main environmental problems in rural China stems from the excessive application of pesticides and other chemicals for agricultural purposes<sup>251</sup>. Additionally, case studies have shown that the overuse of common pool resources is not unusual and resistance against tighter regulations is demonstrated in order to maintain a livelihood.<sup>252</sup>

Even though not all the coefficients for the variables of interest are equally significant across the different models, they present very consistent signs. Reading the newspaper on a regular basis has the potential to positively influence environmental concern. This result is significant on the 5% level for Model A, 10% level on Model B and holds true (though not significantly) when having to choose between environmental protection and economic development. For the first two models, the probability of considering environmental protection important increases by 6 to 7 percentage points for respondents who read the newspaper regularly. This result seems to be consistent with the conclusion in some of the case studies in the previous chapter. The media (and newspaper) played a vital role in making the lead poisoning and its causes known to local residents. Without the news reports the local population

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<sup>249</sup> A similar result was given in: Zhao, "Personal Values and Environmental Concern in China and the Us: The Mediating Role of Informational Media Use," 152.

<sup>250</sup> Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*, 99-100.

<sup>251</sup> See for example: Linhai Wu and Bo Hou, "China's Farmer Perception of Pesticide Residues and the Impact Factors: The Case of Jiangsu Province," *China Agricultural Economic Review* 4, no. 1 (2012).

<sup>252</sup> Melinda Herrold-Menzies, "Peasant Resistance against Nature Reserves," in *Reclaiming Chinese Society: The New Social Activism*, ed. You-tien Hsing and Chingkwon Lee (London, New York: Routledge, 2010).

might not have been as aware of the dangers of the industrial facilities. On the other hand, when using TV news as the primary source of information, the effect is negative for Model A (importance of environmental protection on a local level). As the result is not significant on any reasonable level, further speculation for this opposite effect might not be necessary. It can be said, though, that TV news might sometimes be more carefully watched and controlled by official authorities, as discussed in Chapter 2. Furthermore, TV news shows vary widely (especially on the local level) with respect to content and accuracy.<sup>253</sup> Additionally, the variable used for the analysis just asked for TV usage overall, which might not even include news shows.

The binary variable for migration status is positive and significant for Models A and B (and still positive but insignificant for Model C), which indicates that moving away from rural areas into urban areas has a positive effect on the perceived importance of environmental protection. Stalley and Yang have found that university students exhibit a similar concern for environmental conditions regardless of whether they grew up in an urban or rural setting.<sup>254</sup> 58.05% of the rural-to-urban migrants in the sample has completed junior high school (which is above the average completion rate in the sample) and 13.07% went on to finish high school. Therefore, the strong positive influence on environmental concern among migrants could partially be explained by a potential difference in education level. A comparatively higher percentage of migrants (28.54%) has experienced environmental pollution in the previous year than the rural sample overall. Furthermore, the urban environment itself and most likely the work conditions of migrant workers could provide some explanations for these results.

Aside from the variable for trust in central government officials in Model C, the variables for trust all exhibit the expected sign, although most of them are not significant. In both Model A

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<sup>253</sup> Miao Di, "Between Propaganda and Commercials: Chinese Televisions Today," in *Changing Media, Changing China*, ed. Susan L. Shirk (New York: Oxford University Press, Inc., 2011), 96-105.

<sup>254</sup> Stalley and Yang, "An Emerging Environmental Movement in China?."

and B, trust in county government officials negatively influences the perceived importance of the environment which is in accordance with Trust Hypothesis A. The marginal effect of trusting local government officials is additionally very high; if the respondent expressed trust in the county government, the probability of considering the environment to be a serious problem in this place is reduced by 13.9 percentage points (Model A) and in China in general by 8.64 percentage points (Model B). As discussed in previous chapters, local government officials could have the incentives to downplay any environmental problems in favor of economic development. As long as citizens are not directly impacted, it could be that they believe the interpretation of official policies by local cadres and thus do not put much value on environmental protection. The other two variables for trust, however, are not significant, which is consistent with the analysis by Shields and Zeng<sup>255</sup>; trust in the provincial level still exhibits a negative sign. However, trust in the central government is positive for Models A and B. As described in Chapter 2, if an understanding of the official party line can indeed be based on the Eleventh Five-Year-Plan and if that is known to the public, which emphasizes sustainable development, emission goals and environmental education, then it would follow that trust in the central government could indicate a tendency for environmental concern.

One of the main control variables that is strongly significant throughout every specification is the answer to the question if the respondent has experienced any kind of environmental pollution in the previous year. The personal experience of environmental pollution has clearly a stronger effect on a respondent's perception than, for example, "second-hand" information from the media. This could also be an indicator that a general environmental consciousness is not yet developed and that only when environmental pollution is personally experienced, environmental protection becomes important.

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<sup>255</sup> Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey", " 11-15.

The control variables for location exhibit the expected sign and are significant for the Western Provinces in Models B and C. If the omitted category (East) is indeed economically more developed than the other regions, then by comparison it can be assumed that environmental protection is perceived as less important in economically lesser developed areas (like the West). This would be consistent with the hypothesis that higher income leads to an increased awareness of environmental conditions. The finding is also consistent with Shields and Zeng's analysis of the full sample.<sup>256</sup>

Economic development seems to be more important for the Western provinces that are generally least developed – the probability of considering environmental protection to be more important decreases by 9.17 percentage points in this less economically developed region. However, the effect is even stronger for Model B – the probability of considering environmental protection to be a serious problem for China decreases by 18.7 percentage points if the respondent lives in the Western region. Once again, that could be explained by the need for economic development.

Table 14 presents the results from the same three models, leaving the missing values as they are in the regression and thus substantially reducing the sample size.

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<sup>256</sup>Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey", " 15-16.

**Table 14: Logit Regression of the three Measures for Environmental Concern: Marginal Effects and keeping Missing Values**

VARIABLES	Model A: Environmental Seriousness in this place	Model B: Importance of Environmental Protection	Model C: Environmental Protection vs. Economic Development
Male	0.0212 (0.0308)	-0.0379 (0.0252)	0.00459 (0.0256)
Age	-0.0257 (0.0381)	0.00159 (0.0388)	-0.0524** (0.0247)
Unemployed	0.0526 (0.0698)	-0.149* (0.0875)	-0.0175 (0.0729)
White Collar Worker	-0.0530 (0.0813)	0.0175 (0.0836)	-0.00648 (0.0745)
Agriculture	-0.113** (0.0536)	-0.0932* (0.0505)	-0.0463 (0.0512)
No education	-0.117*** (0.0417)	-0.102** (0.0453)	-0.0596 (0.0496)
Junior High	-0.00393 (0.0305)	0.0590 (0.0370)	-0.00327 (0.0392)
High School	0.0696 (0.0581)	0.0827 (0.0512)	0.0120 (0.0504)
Married	0.0555 (0.0447)	0.0692 (0.0505)	0.00587 (0.0382)
Economic Class	0.0594*** (0.0230)	0.0269 (0.0274)	0.0296 (0.0251)
Newspaper	0.0871* (0.0450)	0.0848** (0.0383)	0.0359 (0.0392)
TV	-0.0304 (0.0812)	-0.0423 (0.0822)	0.0592 (0.0935)
Migrant	0.0674 (0.0597)	0.0479 (0.0565)	0.0364 (0.0457)
Envt'al Pollution	0.331*** (0.0446)	0.225*** (0.0454)	0.126*** (0.0435)
Trust in County Govt	-0.185*** (0.0573)	-0.118*** (0.0429)	-0.0510 (0.0436)
Trust in Prov Govt	-0.00753 (0.0541)	-0.0195 (0.0639)	0.00572 (0.0614)
Trust in Central Govt	0.0756 (0.0486)	0.0486 (0.0585)	-0.0701 (0.0585)
West	-0.0636 (0.0655)	-0.204*** (0.0620)	-0.0857 (0.0557)
Central	0.0162 (0.0679)	-0.0778 (0.0584)	0.0555 (0.0557)
Party Membership	-0.0204 (0.0671)	-0.0181 (0.0556)	0.0309 (0.0654)
Politically qualified	-0.0120 (0.0156)	0.01000 (0.0133)	-0.00389 (0.0168)
Pollution Incidents	-0.00133 (0.00159)	0.000366 (0.00153)	0.000959 (0.00121)
Nature Reserves	0.00169 (0.00708)	0.00508 (0.00724)	0.00849 (0.00578)
Observations	1,424	1,397	1,344

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As can be seen, for most variables the results are consistent, sometimes even stronger, than when increasing the sample size by recoding the missing values. For example, the results for the variables of interest regarding the influence that the government could have are consistent for both regressions. In the case of not recoding the variables, the coefficients for trust in county level government are equally strongly significant and even larger in size for both Models A and B.

However, in a few cases the results are not significant anymore, even though the sign of the coefficients remains the same. This seems to be mainly important for Model C. The coefficient for no education is not significant anymore but still equal in sign.

#### **4.5.2. Ordinal Dependent Variables**

Given the ordinal character of all of the three variables standing for environmental concern, the analysis can be extended using ordinal regression methods. Similar to Shields and Zeng<sup>257</sup>, the parallel odds assumption can be rejected ( $p$ -value=0.000 or at least 0.001), and the generalized ordered logit model should be used. Once again, the marginal effects of such an analysis can be calculated; however, the standard errors could not be clustered on county level.

Generally, the results from the generalized ordered logit are consistent with the previously reported binary results can be found in the Appendix.

With regards to the dependent variable for environmental protection as a local problem the analysis shows that certain variables only have a significant effect for a specific level of the

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<sup>257</sup> Shields and Zeng, "The Reverse Environmental Gender Gap in China: Evidence from "the China Survey", " 11-12.

dependent variable (using the recoded independent variables). Others, like environmental pollution and trust in county level government, however, are consistently significant on all levels or three levels (county level government officials) of the dependent variable. The results are similar without recoding variables that include a high percentage of missing values.

The consistency for using the recoded variables and the variables which include missing values holds also mainly true for the ordinal analysis for Model B. Those results are also mainly consistent with the binary model (even though a few variables are only significant for the lower or higher values of environmental awareness such as media usage and trust in county government).

For the comparison between importance of environmental protection and economic development, similar to the binary case, only very few coefficients are significant. When comparing the regression results from the recoded variables to the original ones, in this last model, there seem to be some differences regarding the significance for some variables. Overall the signs are consistent across the recoded and missing variables. The coefficient for trust in county government is not significant in the original regressions. In the generalized ordered logit for both the recoded it is now negative and significant on the highest level (before it was positive and insignificant (recoded model) or negative and insignificant (including missing)). And, gender seems to be more important. The probability of considering the environment much more important than economic development is reduced by five percent if the respondent is a male in the model where the missing variables are excluded. Still, the binary results are preferable to the ordinal regression as the (small) number of respondents in each of the categories might be too small for a good analysis.

## 4.6. Conclusion

This last chapter ties together the results from the case studies discussed in Chapter 3 using quantitative methods. The quantitative results seems to be consistent with the case studies and the generally with the overall literature in the field. It further indicates that there does seem to exist an environmental consciousness in rural China and identifies some of the factors influencing it.

Experience with environmental pollution is clearly a deciding factor to determine environmental awareness as measured by the perceived importance of environmental protection in the place of residence, China in general, and in comparison to economic growth. This result is similar to Tang who finds that awareness and experience are important factors for the perception of water shortage.<sup>258</sup> Even though environmental concern should not only be based upon personal experience, the realization that environmental pollution should not be accepted in order to achieve higher economic growth could be considered as a first step toward increased environmental protection in China's countryside. The idea that environmental conditions (and as such pollution) affect people's awareness of the importance of the environment is consistent with the theories described in Chapter 1.

Since with regards to media, newspaper usage comes up as significant and positively influential towards environmental perception, it would be a good instrument to enhance environmental concern among the rural population in China.

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<sup>258</sup> Tang, Folmer, and Xue, "Estimation of Awareness and Perception of Water Scarcity among Farmers in the Guanzhong Plan, China, by Means of a Structural Equation Model," 61.

Furthermore, the results demonstrate that the different governmental levels are indeed important actors in the development of environmental concern in the rural population. Even though not always a significant factor in the analysis, they indicate that local governments tend to disregard environmental protection in favor of economic growth; at least trusting the local government tends to decrease the indicators for environmental concern. The central government, on the other hand, seems to have been successful in establishing itself as being in favor of environmental protection even if it might be to the detriment of economic growth. If the central government can continue to maintain this position it might positively influence environmental awareness in rural areas.

## 5. Conclusion

This thesis has focused on discerning the influence of various actors on environmental concern among the rural population in China. In particular, it looked at the potential and the practice of the central government, the local government(s) and the media with regards to environmental pollution and environmental awareness.

By using a mixture of case studies and a quantitative analysis based on a representative, unique dataset this thesis contributes to the literature on environmental concern in China, and specifically in rural China. Overall, it supports the impression that the general Chinese public is concerned about the environment<sup>259</sup>, an awareness, which also exists among the rural population in China, and to a certain degree, a willingness on the part of China's rural population to do something about these problems. The case studies have shown that these efforts can range from trying to raise local awareness of pollution issues to appealing to higher governmental levels for support. Hence, the overall definition of environmental concern as defined in Chapter 1 applies to the Chinese countryside. Given the environmental issues in China and the recurring pollution incidents, this level of environmental concern in China's countryside should be seen in a positive light. It should be kept in mind though, that the case studies only provide a small snapshot of China's rural areas.

However, given the complexity of the varying influences that (not only) the rural population is subject to and the disparities across China, it is difficult to establish a concrete causal effect of the three actors on environmental concern. Based on the analyses in the previous chapters, this thesis concludes that the three actors, central government, the media and even the local government, do all have the potential to positively influence environmental concern in rural

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<sup>259</sup> See for example: Xiao, Dunlap, and Hong, "The Nature and Bases of Environmental Concern among Chinese Citizens."

areas and as such the potential to also reduce environmental pollution issues. However, this potential often conflicts with other, seemingly more pressing or immediate issues, specifically with regards to economic development and social stability.

The issue of economic development seems to be especially significant for the local governments. Among the case studies, the pollution incident involving Zijin Mining shows the consequences of the partiality towards economic interests of local officials most clearly. The local government not only did nothing to support the local population in their concern for the environment, but tried to hinder any information flow to the public and thus actively worked against the public's efforts to do something about the environmental problems. It seems at least in that case that the local governments still prioritize economic development. This impression is supported by the quantitative analysis in Chapter 4. Trust in local government seems to have a negative influence on the various measures for environmental concern, which could indicate that the local government is not seen as supportive of environmental protection.

The central government, on the other hand, still seems to play an important role in the mind of the local population and is successfully able to portray itself as a supporter of the local population when it comes to environmental pollution. As such, it clearly has the potential to increase environmental concern among the local population. However, even though its standpoint might be clearly defined theoretically, its decisions in reality are not always transparent. The central government does not always intervene in cases of local neglect of environmental protection. Even though the central government has embarked on the route of sustainable economic development, economic growth clearly is still very important for many reasons, including for its potential to help maintain social stability. Hence, the central government also has its vested interests; they just do not always coincide with those of local

governments or local populations. Still, as the quantitative analysis in Chapter 4 also shows, trusting the central government has a positive influence on the measures of environmental concern. But as the central government does not always support the local population, and as it might not always be able to find the right balance between positioning the local governments as a culprit (to keep the support of the population) and maintaining social stability (which can already be seen as threatened by the increased environmentally related protests<sup>260</sup>), the question becomes how long it can stay in this favorable position.<sup>261</sup>

Lastly, the media plays several roles such as education, support, and exposure, as discussed in the case studies in Chapter 3. As Chapter 4 has shown as well, the media has the potential to positively influence environmental concern, maybe even more than the central government. But its impact is politically limited, as described in Chapter 2 and as shown in the context of the Zijin Mining case. Furthermore, the media as seen in the cases in Chapter 3 tends to focus on the direct impact of environmental pollution on human health (lead poisoning) or economic-related issues<sup>262</sup> (such as the impact on fisheries in the Zijin Mining case). Hence, in order to further influence environmental concern in general, it should also focus on topics such as ecological diversity and the importance of environmental protection (even if neglect of the latter is not directly felt through pollution-related health concerns). As has been pointed out in the literature and as has been described for the Gansu case study in this thesis (at least at first), the local population might adjust to pollution or at least take it as a necessary side-effect of

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<sup>260</sup> Ma, "Environmental Mass Incidents in Rural China: Examining Large-Scale Unrest in Dongyang, Zhejiang."

<sup>261</sup> See for example the discussion by: Tilt, *The Struggle for Sustainability in Rural China: Environmental Values and Civil Society*; Kevin O'Brien and Lianjiang Li, "Popular Contention and Its Impact in Rural China," *Comparative Political Studies* 38, no. 3 (2005); Kevin J. O'Brien, "Rightful Resistance Revisited," (Berkeley: University of California, 2012); O'Brien and Li, *Rightful Resistance in Rural China*.

<sup>262</sup> See also the discussion by: 蒋 and 周 (Jiang and Zhou), "论我国环境公共事件中的双重话语:以紫金矿业污染事件为例 [on the Double Discourse of China's Environmental Public Events: Taking Zijin Mining as an Example]."

economic opportunity and thus learn to accept it, which counteracts overall environmental concern and efforts to increase it.<sup>263</sup>

Clearly, it is difficult to draw one clear-cut conclusion on the influence of the three actors on environmental concern in rural China, especially since other factors could play an important role as well. For example, this thesis has specifically focused on official media, mostly print media (or the equivalent online presentation of newspapers). As has been hinted at in Chapters 2 and 3, other types of media could provide a stronger influence so long as they are easily accessible by the rural population. Such media could, for example, include internet blogs and micro-blogs<sup>264</sup> or messages from environmental non-governmental organizations or social networks and modern communications technologies (such as text messaging).

Regardless of which other factors influence environmental concern in rural China, a few important issues remain: all of the case studies and one variable in the quantitative analysis were based on actual experienced environmental pollution issues, and these examples all demonstrated that experience played a main role in environmental concern. Since the case studies are limited to pollution cases and given the positive effect of pollution on environmental concern, a next step would be to see how to enhance environmental awareness among rural Chinese without having to experienced environmental pollution directly. Only then can environmental protection be enhanced in general. Clearly, this is outside of the scope of this thesis. Secondly, economic development is still a deciding factor when it comes to raising or lowering environmental concern. Economic development should be seen in the context of sustainable development. That is, the local population needs economic opportunities that take environmental protection into

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<sup>263</sup> For example as described by: Lora-Wainwright et al., "Learning to Live with Pollution: The Making of Environmental Subjects in a Chinese Industrialized Village."

<sup>264</sup> 蒋 and 周 (Jiang and Zhou), "论我国环境公共事件中的双重话语 \* :以紫金矿业污染事件为例 [on the Double Discourse of China's Environmental Public Events: Taking Zijin Mining as an Example]."

account. If these are lacking then it should not be surprising if environmental concern is not more prevalent.

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## Appendix

### Survey Questions and Variable Coding

Note: Variables could include “don’t know” and “refuse to answer”. The treatment of missing values is discussed in Chapter 4.

Survey Questions Number	Variable Name	Survey Question	Coding
a1	age	When were you born?	=0 if greater or equal to 1970 =1 if less than 1970
b9g	Trust in County	How much do you trust the following people? Do you trust them <01> very much <02> somewhat trust them <03> don't trust them very much <04> don't trust them at all? County government officials	0=<04> and <03>, 1=<01> and <02>
b9h	Trust in Province	How much do you trust the following people? Do you trust them <01> very much <02> somewhat trust them <03> don't trust them very much <04> don't trust them at all? Provincial government officials	0=<04> and <03>, 1=<01> and <02>
b9i	Trust in Center	How much do you trust the following people? Do you trust them <01> very much <02> somewhat trust them <03> don't trust them very much <04> don't trust them at all? Central government officials	= 0 if <04> and <03>, =1 if <01> and <02>
c1a	Importance of Environmental Protection in China	On a scale from 0 to 10, with 0 indicating this is not a problem at all in China and 10 indicating this is an extremely serious problem, how serious do you think these problems are in China today? - Environmental protection	=0 if less or equal to '5', =1 if greater than '5'
c4	Environmental Protection vs. Economic Development	Some people believe there is a conflict between economic development and environmental protection. If you had to choose between economic development and environmental protection, which would consider to be more important? <1> economic development is much more important, <2> economic development is somewhat more important <3> environmental	0=<1> and <2>, 1=<3> and <4>

		protection is somewhat more important <4> environmental protection is much more important	
c5	Environmental Seriousness this place	How serious of a problem do you believe the environment is in this place today? <01> very serious <02> somewhat serious <03> not so serious <04> not serious at all	0=<04> and <03>, 1=<01> and <02>
d4	TV	Yesterday, how many hours did you personally watch television? (continuous variable) <98> Never watch TV	=0 if <98> =1 if any continuous variable (including 0)
d9_4	newspaper	Normally, do you read local, national, or foreign newspapers? Never read any newspapers - <1> yes, <5> no	=0 if <1> =1 if <5>
e6_a	party membership	See descriptive statistics Chapter 4	
e8c	Politically qualified	I feel I have a pretty good understanding of the important political issues facing China <1> strongly disagree <2> somewhat disagree <3> neither agree nor disagree <4> somewhat agree <5> strongly agree	= 0 if <1> or <2> =1 if <3>, <4> or <5>
g9	environmental pollution	In the last 12 months, did your household experience: Environmental Pollution <1> yes <5>	=0 if <5> =1 if <1>
z6	economic class	Interviewer's assessment: Where would you place the economic status of R's family on the following scale, as compared to the average family in this city or county? <01> Lower class <02> Middle Class <03> Upper-middle class <04> Upper class	= 1 if <01> = 2 if <02> = 3 if <03> or <04>
f16a, f16b, f16c	education variables	See descriptive statistics Chapter 4	
f17, f18	occupation variables	See descriptive statistics Chapter 4	
gender	male	See descriptive statistics Chapter 4	
k10	married	See descriptive statistics Chapter 4	
prov	West, Center, East	See descriptive statistics Chapter 4	

## Logit Regression of the three Measures for Environmental Concern: Marginal Effects – Full Results

VARIABLES	Model A: Environmental Seriousness in this place	Model B: Importance of Environmental Protection	Model C: Environmental Protection vs. Economic Development
Male	0.0161 (0.0233)	-0.0168 (0.0214)	-0.00763 (0.0223)
Age	-0.0385 (0.0330)	-0.0295 (0.0289)	-0.0558** (0.0236)
Unemployed	0.0434 (0.0702)	-0.137** (0.0690)	-0.0802 (0.0529)
White Collar Worker	-0.0813 (0.0605)	-0.0227 (0.0646)	0.0327 (0.0642)
Agriculture (missing job)	-0.0768** (0.0381)	-0.101** (0.0409)	-0.0354 (0.0400)
No education	-0.0162 (0.0414)	-0.0487 (0.0462)	-0.00467 (0.0520)
Junior High	-0.106*** (0.0396)	-0.0880*** (0.0380)	-0.0980*** (0.0351)
High school	-0.0123 (0.0263)	0.0522* (0.0279)	-0.0164 (0.0254)
Married	0.0654 (0.0478)	0.0490 (0.0415)	0.0398 (0.0378)
Economic Class	0.0589* (0.0321)	0.0808** (0.0335)	-0.0201 (0.0290)
Newspaper	0.0384* (0.0200)	0.0169 (0.0196)	0.0362** (0.0177)
TV	0.0662** (0.0337)	0.0643* (0.0334)	0.0349 (0.0311)
Migrant	-0.0767 (0.0764)	-0.0360 (0.0573)	0.0820 (0.0682)
Envntl Pollution	0.0919* (0.0494)	0.0937* (0.0537)	0.0485 (0.0396)
Trust in County Govt	0.355*** (0.0334)	0.248*** (0.0327)	0.158*** (0.0327)
Trust in Prov Govt	-0.139*** (0.0450)	-0.0864** (0.0418)	0.00604 (0.0377)
Trust in Central Govt	-0.0383 (0.0425)	-0.0311 (0.0506)	-0.0272 (0.0518)
(Missing County Trust)	0.0371 (0.0412)	0.0236 (0.0489)	-0.0518 (0.0561)
(Missing Province Trust)	-0.0659 (0.0413)	0.00261 (0.0447)	0.0148 (0.0455)
(Missing Central Trust)	-0.0450 (0.0489)	0.0573 (0.0593)	0.0173 (0.0594)
West	-0.0174 (0.0581)	-0.101 (0.0656)	-0.120* (0.0650)
Central	-0.0259 (0.0634)	-0.187*** (0.0586)	-0.0917* (0.0489)
Party Membership	-0.0163 (0.0547)	-0.0444 (0.0510)	-0.0144 (0.0392)
	-0.00845	0.0242	-0.0175

	(0.0544)	(0.0452)	(0.0544)
Politically qualified	-0.0143	0.0103	-0.0333
	(0.0333)	(0.0272)	(0.0339)
(Missing political)	0.00802	0.0419	-0.0408
	(0.0352)	(0.0353)	(0.0373)
Pollution Incidents	-0.00230	0.000893	0.00103
	(0.00153)	(0.00149)	(0.00128)
Nature Reserves	-0.00194	0.00680	0.00362
	(0.00591)	(0.00609)	(0.00533)
(Missing TV)	-0.0203	0.0162	0.0456
	(0.0885)	(0.0705)	(0.0918)
Observations	2,587	2,501	2,342

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Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Generalized Ordered Logit: Environmental Protection in this place: Marginal Effects

VARIABLES	1	2	3	4
Male	-0.0224 (0.0172)	0.00130 (0.0201)	0.00861 (0.0195)	0.0125 (0.0118)
Age	0.0218 (0.0190)	0.0128 (0.0218)	-0.0353 (0.0220)	0.000785 (0.0131)
Unemployed	0.0184 (0.0586)	-0.0554 (0.0639)	0.0239 (0.0554)	0.0131 (0.0316)
White Collar Worker	0.0546 (0.0682)	0.0193 (0.0706)	-0.0959* (0.0498)	0.0219 (0.0347)
Agriculture (missing job)	0.112*** (0.0272)	-0.0337 (0.0339)	-0.0671** (0.0302)	-0.0112 (0.0174)
No education	-0.0110 (0.0444)	0.0109 (0.0510)	-0.00256 (0.0432)	0.00262 (0.0253)
Junior High	0.0342 (0.0225)	0.0592** (0.0250)	-0.0662*** (0.0248)	-0.0271* (0.0153)
High school	-0.0504** (0.0208)	0.0594** (0.0247)	-0.00466 (0.0240)	-0.00431 (0.0142)
Married	-0.0400 (0.0341)	-0.0236 (0.0401)	0.0623* (0.0366)	0.00129 (0.0198)
Economic Class	-0.0496** (0.0246)	-0.0143 (0.0271)	0.0405 (0.0260)	0.0233 (0.0152)
Newspaper	-0.0176 (0.0139)	-0.0223 (0.0169)	0.0271* (0.0162)	0.0128 (0.00962)
TV	-0.0875*** (0.0204)	0.0286 (0.0259)	0.0782*** (0.0242)	-0.0193 (0.0129)
Migrant	0.108*** (0.0261)	-0.0445 (0.0447)	-0.0576 (0.0439)	-0.00574 (0.0279)
Envtl Pollution	-0.0656** (0.0263)	-0.0287 (0.0335)	0.0481 (0.0317)	0.0463** (0.0207)
Trust in County Govt	-0.226*** (0.0160)	-0.126*** (0.0224)	0.142*** (0.0235)	0.210*** (0.0205)
Trust in Prov Govt	0.0423 (0.0274)	0.0936*** (0.0300)	-0.0719** (0.0292)	-0.0640*** (0.0182)
Trust in Central Govt	-0.0236 (0.0372)	0.0618 (0.0378)	-0.0138 (0.0399)	-0.0244 (0.0229)
Missing County Trust	0.00452 (0.0392)	-0.0389 (0.0394)	0.00703 (0.0416)	0.0273 (0.0206)
Missing Prov Trust	0.0994** (0.0419)	-0.0412 (0.0437)	-0.0362 (0.0392)	-0.0220 (0.0209)
Missing Central Trust	-0.0324 (0.0441)	0.0796* (0.0471)	-0.0282 (0.0502)	-0.0190 (0.0266)
West	0.00246 (0.0496)	0.0201 (0.0500)	-0.00891 (0.0549)	-0.0136 (0.0295)
Central	0.138*** (0.0257)	-0.127*** (0.0282)	-0.00447 (0.0266)	-0.00561 (0.0160)
Party Membership	-0.0164 (0.0245)	0.0226 (0.0297)	0.0261 (0.0271)	-0.0322** (0.0151)
Politically qualified	0.0109 (0.0421)	-0.0262 (0.0488)	0.0122 (0.0458)	0.00309 (0.0270)
Missing political	0.0256 (0.0203)	-0.0156 (0.0228)	0.00282 (0.0222)	-0.0128 (0.0129)
	-0.0173 (0.0224)	0.00803 (0.0283)	0.0135 (0.0276)	-0.00430 (0.0166)

Pollution Incidents	-0.00105*	0.00350***	-0.00115	-0.00130***
	(0.000617)	(0.000777)	(0.000736)	(0.000469)
Nature Reserves	-0.00645***	0.00882***	-0.00137	-0.00100
	(0.00239)	(0.00288)	(0.00275)	(0)
Missing TV	0.130**	-0.115*	0.0183	-0.0336
	(0.0643)	(0.0664)	(0.0602)	(0.0301)
Observations	2,587	2,587	2,587	2,587

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Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Generalized Ordered Logit: Environmental Protection in this place: Marginal Effects and keeping Missing Values

VARIABLES	1	2	3	4
Male	-0.0135 (0.0238)	-0.0144 (0.0283)	0.0202 (0.0261)	0.00763 (0.0158)
Age	0.00804 (0.0264)	0.0196 (0.0308)	-0.0308 (0.0304)	0.00316 (0.0180)
Unemployed	0.0516 (0.0847)	-0.0949 (0.0858)	0.0528 (0.0783)	-0.00957 (0.0366)
White Collar Worker	0.0275 (0.0794)	0.0234 (0.0820)	-0.0673 (0.0610)	0.0164 (0.0395)
Agriculture	0.107*** (0.0351)	0.00444 (0.0449)	-0.0788* (0.0406)	-0.0325 (0.0249)
No education	0.0428 (0.0328)	0.0511 (0.0381)	-0.0507 (0.0355)	-0.0432** (0.0201)
Junior High	-0.0811*** (0.0282)	0.0830** (0.0331)	0.0119 (0.0320)	-0.0138 (0.0193)
High School	-0.0220 (0.0471)	-0.0635 (0.0524)	0.0565 (0.0481)	0.0290 (0.0287)
Married	-0.0857** (0.0370)	0.0250 (0.0392)	0.0403 (0.0372)	0.0203 (0.0224)
Economic Class	-0.0304 (0.0195)	-0.0347 (0.0240)	0.0586*** (0.0224)	0.00659 (0.0132)
Newspaper	-0.113*** (0.0268)	0.0376 (0.0342)	0.0878*** (0.0322)	-0.0123 (0.0177)
TV	0.112*** (0.0349)	-0.0815 (0.0688)	0.0143 (0.0636)	-0.0449 (0.0507)
Migrant	-0.0696* (0.0365)	-0.00122 (0.0482)	0.0474 (0.0442)	0.0234 (0.0264)
Envtal Pollution	-0.200*** (0.0246)	-0.126*** (0.0329)	0.159*** (0.0318)	0.167*** (0.0261)
Trust in County Govt	0.0748** (0.0325)	0.101*** (0.0370)	-0.118*** (0.0382)	-0.0582** (0.0259)
Trust in Prov Govt	-0.0553 (0.0509)	0.0718 (0.0494)	0.0214 (0.0505)	-0.0378 (0.0326)
Trust in Central Govt	-0.0215 (0.0513)	-0.0583 (0.0507)	0.0525 (0.0487)	0.0273 (0.0232)
West	0.173*** (0.0356)	-0.121*** (0.0383)	0.00265 (0.0338)	-0.0544*** (0.0191)
Central	-0.0591* (0.0336)	0.0354 (0.0410)	0.0503 (0.0370)	-0.0266 (0.0209)
Party Membership	0.0612 (0.0577)	-0.0631 (0.0609)	0.00975 (0.0561)	-0.00787 (0.0316)
Politically qualified	0.0118 (0.0106)	-0.00363 (0.0126)	-0.00463 (0.0126)	-0.00349 (0.00771)
Pollution Incidents	-0.000696 (0.000817)	0.00206** (0.00101)	-0.00122 (0.000944)	-0.000144 (0.000598)
Nature Reserves	-0.0137*** (0.00348)	0.0120*** (0.00424)	-0.000334 (0.00389)	0.00201 (0.00241)
Observations	1,424	1,424	1,424	1,424

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### Generalized Ordered Logit: Environmental Protection in China: Marginal Effects

VARIABLES	1	2	3	4	5
Male	-0.0122 (0.0164)	0.0441*** (0.0159)	-0.0107 (0.0196)	-0.0190 (0.0181)	-0.00225 (0.0136)
Age	0.0338* (0.0179)	0.00437 (0.0172)	-0.0124 (0.0226)	-0.0212 (0.0200)	-0.00462 (0.0149)
Unemployed	0.0761 (0.0611)	-0.0381 (0.0504)	0.0254 (0.0569)	-0.0293 (0.0416)	-0.0342 (0.0260)
White Collar Worker	0.104 (0.0696)	-0.0981* (0.0554)	-0.0217 (0.0588)	0.0453 (0.0481)	-0.0295 (0.0268)
Agriculture (missing job)	0.0784*** (0.0266)	0.0179 (0.0260)	-0.0370 (0.0299)	-0.0215 (0.0261)	-0.0379* (0.0202)
No education	0.0429 (0.0458)	-0.0144 (0.0401)	-0.0118 (0.0458)	0.0208 (0.0376)	-0.0374* (0.0221)
Junior High	0.0779*** (0.0234)	0.0495** (0.0215)	-0.0449* (0.0254)	-0.0245 (0.0239)	-0.0580*** (0.0167)
High school	-0.0592*** (0.0199)	0.0161 (0.0188)	0.0124 (0.0247)	0.0306 (0.0218)	0.000187 (0.0163)
Married	-0.0299 (0.0319)	-0.00151 (0.0311)	-0.0417 (0.0366)	0.0573* (0.0327)	0.0158 (0.0229)
Economic Class	-0.0501** (0.0234)	0.0189 (0.0206)	-0.0187 (0.0274)	0.0108 (0.0245)	0.0391** (0.0167)
Newspaper	-0.0285** (0.0133)	-0.00668 (0.0131)	0.0192 (0.0158)	-0.00640 (0.0148)	0.0224** (0.0111)
TV	-0.0819*** (0.0195)	-0.0117 (0.0192)	0.0478* (0.0246)	0.0309 (0.0215)	0.0148 (0.0159)
Migrant	0.0948*** (0.0233)	-0.0216 (0.0321)	0.00630 (0.0416)	-0.0258 (0.0419)	-0.0537 (0.0371)
Envntl Pollution	-0.0658*** (0.0233)	0.0313 (0.0257)	-0.0786*** (0.0269)	0.0487* (0.0286)	0.0644*** (0.0235)
Trust in County Govt	-0.161*** (0.0167)	-0.0588*** (0.0176)	-0.0102 (0.0232)	0.0633*** (0.0216)	0.167*** (0.0204)
Trust in Prov Govt	0.0677*** (0.0249)	-0.0155 (0.0237)	0.0200 (0.0310)	-0.0182 (0.0269)	-0.0539*** (0.0206)
Trust in Central Govt	-0.0188 (0.0353)	0.0945*** (0.0302)	0.00797 (0.0441)	-0.0584 (0.0365)	-0.0254 (0.0266)
Missing County Trust	-0.0172 (0.0403)	-0.0163 (0.0374)	-0.0317 (0.0463)	0.0338 (0.0364)	0.0313 (0.0244)
Missing Prov Trust	0.0347 (0.0371)	-0.0687** (0.0331)	0.00370 (0.0411)	0.0573 (0.0382)	-0.0270 (0.0240)
Missing Central Trust	-0.0676* (0.0397)	0.0531 (0.0418)	0.0166 (0.0567)	-0.0292 (0.0512)	0.0271 (0.0382)
West	0.0480 (0.0548)	0.0306 (0.0492)	-0.0185 (0.0622)	-0.0398 (0.0513)	-0.0202 (0.0348)
Central	0.147*** (0.0255)	0.0182 (0.0215)	-0.0270 (0.0270)	-0.120*** (0.0230)	-0.0188 (0.0178)
Party Membership	0.0575** (0.0270)	0.0389 (0.0241)	-0.0536* (0.0290)	-0.0115 (0.0243)	-0.0312* (0.0172)
Politically qualified	0.0387 (0.0429)	-0.0293 (0.0369)	-0.0162 (0.0449)	0.0127 (0.0419)	-0.00594 (0.0293)
Missing political	0.0480** (0.0196)	-0.0227 (0.0175)	-0.0526** (0.0227)	0.00788 (0.0203)	0.0194 (0.0157)
	0.00782 (0.0227)	0.0267 (0.0225)	-0.0910*** (0.0269)	0.0390 (0.0264)	0.0175 (0.0207)

Pollution Incidents	-0.00230*** (0.000644)	0.000184 (0.000622)	0.00204*** (0.000782)	-0.000611 (0.000609)	0.000683 (0.000455)
Nature Reserves	-0.00376 (0.00236)	6.65e-05 (0.00230)	0.000822 (0.00286)	0.000942 (0.00249)	0.00193 (0.00191)
Missing TV	0.0742 (0.0603)	-0.0520 (0.0524)	0.0380 (0.0605)	-0.00163 (0.0515)	-0.0586** (0.0276)
Observations	2,501	2,501	2,501	2,501	2,501

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### Generalized Ordered Logit: Environmental Protection in China: Marginal Effects, keeping Missing Values

VARIABLES	1	2	3	4	5
Male	-0.00526 (0.0210)	0.0761*** (0.0219)	-0.0394 (0.0274)	-0.0145 (0.0240)	-0.0169 (0.0180)
Age	0.0270 (0.0227)	-0.00859 (0.0231)	-0.00528 (0.0315)	-0.00958 (0.0258)	-0.00349 (0.0192)
Unemployed	0.112 (0.0911)	-0.103 (0.0737)	0.0809 (0.0845)	-0.0254 (0.0577)	-0.0648** (0.0283)
White Collar Worker	0.0684 (0.0799)	-0.0834 (0.0704)	0.00899 (0.0711)	0.0113 (0.0548)	-0.00536 (0.0359)
Agriculture	0.0680** (0.0330)	0.0165 (0.0355)	-0.00237 (0.0405)	-0.0563* (0.0342)	-0.0258 (0.0256)
No education	0.105*** (0.0342)	0.0459 (0.0320)	-0.0748** (0.0376)	-0.0346 (0.0326)	-0.0417* (0.0234)
Junior High	-0.0485* (0.0257)	0.00882 (0.0260)	0.00847 (0.0334)	0.0314 (0.0283)	-0.000162 (0.0213)
High School	0.0110 (0.0447)	-0.0270 (0.0436)	-0.0985** (0.0465)	0.0963** (0.0424)	0.0181 (0.0281)
Married	-0.0540* (0.0321)	0.0333 (0.0302)	-0.0205 (0.0394)	-0.0154 (0.0352)	0.0567*** (0.0214)
Economic Class	-0.0350** (0.0178)	-0.00686 (0.0192)	0.0160 (0.0226)	0.00526 (0.0190)	0.0206 (0.0144)
Newspaper	-0.129*** (0.0240)	-0.00395 (0.0268)	0.0807** (0.0343)	-0.00318 (0.0284)	0.0559** (0.0229)
TV	0.0984*** (0.0276)	0.0139 (0.0443)	0.0113 (0.0608)	-0.0446 (0.0664)	-0.0790 (0.0620)
Migrant	-0.0318 (0.0332)	0.0482 (0.0383)	-0.0696* (0.0394)	-0.00245 (0.0371)	0.0557* (0.0313)
Envtl Pollution	-0.144*** (0.0229)	-0.0395 (0.0268)	-0.0125 (0.0329)	0.0556* (0.0293)	0.141*** (0.0269)
Trust in County Govt	0.0715** (0.0287)	-0.0337 (0.0341)	0.0657* (0.0386)	-0.0419 (0.0359)	-0.0615** (0.0288)
Trust Province Govt	0.0155 (0.0456)	0.143*** (0.0443)	-0.110** (0.0545)	-5.95e-05 (0.0451)	-0.0478 (0.0360)
Trust in Central Govt	-0.0504 (0.0560)	-0.0541 (0.0536)	0.0469 (0.0621)	0.0110 (0.0414)	0.0466** (0.0232)
West	0.226*** (0.0377)	0.00746 (0.0329)	-0.0649* (0.0367)	-0.140*** (0.0289)	-0.0290 (0.0220)
Central	0.0728* (0.0386)	0.0464 (0.0365)	-0.0337 (0.0420)	-0.0727** (0.0317)	-0.0128 (0.0234)
Party Membership	0.0901 (0.0581)	-0.0431 (0.0523)	-0.00525 (0.0590)	-0.0432 (0.0452)	0.00136 (0.0357)
Politically qualified	0.0169* (0.0100)	-0.0228** (0.0107)	-0.00395 (0.0124)	-0.00356 (0.0109)	0.0133 (0.00816)
Pollution Incidents	-0.000331 (0.000802)	-0.000348 (0.000848)	0.000777 (0.00103)	-0.00126* (0.000766)	0.00116** (0.000567)
Nature Reserves	-0.00662** (0.00309)	0.00140 (0.00323)	0.00258 (0.00410)	-0.00126 (0.00339)	0.00390 (0.00257)
Observations	1,397	1,397	1,397	1,397	1,397

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Generalized Ordered Logit: Environmental Protection vs. Economic Development:  
Marginal Effects**

VARIABLES	1	2	3	4
Male	0.00564 (0.0192)	-0.00499 (0.0206)	0.0169 (0.0181)	-0.0175 (0.0175)
Age	0.0202 (0.0210)	0.0320 (0.0222)	0.0146 (0.0194)	-0.0667*** (0.0198)
Unemployed	0.0696 (0.0628)	0.0340 (0.0578)	-0.100** (0.0499)	-0.00329 (0.0500)
White Collar Worker	-0.0254 (0.0541)	-0.0147 (0.0555)	-0.0205 (0.0537)	0.0606 (0.0508)
Agriculture	0.0250 (0.0294)	0.0113 (0.0303)	-0.0829*** (0.0268)	0.0466* (0.0240)
missing job	0.0325 (0.0452)	-0.0316 (0.0443)	-0.0241 (0.0400)	0.0232 (0.0392)
No education	0.0419 (0.0265)	0.0560** (0.0277)	-0.0301 (0.0241)	-0.0678*** (0.0225)
Junior High	-0.0160 (0.0232)	0.0334 (0.0242)	-0.0103 (0.0209)	-0.00701 (0.0205)
High school	-0.0344 (0.0343)	0.00425 (0.0359)	-0.0105 (0.0311)	0.0407 (0.0309)
Married	0.00387 (0.0254)	0.0281 (0.0273)	-0.0131 (0.0251)	-0.0188 (0.0248)
Economic Class	-0.0171 (0.0152)	-0.0281* (0.0160)	0.0154 (0.0144)	0.0298** (0.0139)
Newspaper	-0.0524** (0.0230)	0.0199 (0.0245)	0.0446* (0.0228)	-0.0121 (0.0207)
TV	-0.0707 (0.0433)	-0.0140 (0.0451)	0.0657* (0.0350)	0.0189 (0.0381)
Migrant	-0.0777*** (0.0260)	0.0215 (0.0298)	-0.0216 (0.0262)	0.0779*** (0.0286)
Envtl Pollution	-0.0691*** (0.0217)	-0.0894*** (0.0225)	0.0456** (0.0211)	0.113*** (0.0223)
Trust in County Govt	0.0299 (0.0300)	-0.0368 (0.0319)	0.0536* (0.0276)	-0.0467* (0.0272)
Trust in Prov Govt	-0.00337 (0.0405)	0.0323 (0.0423)	-0.0533 (0.0390)	0.0244 (0.0365)
Trust in Central Govt	-0.00488 (0.0431)	0.0524 (0.0435)	-0.103** (0.0416)	0.0559 (0.0354)
Missing County Trust	-0.0552 (0.0349)	0.0350 (0.0395)	0.00657 (0.0408)	0.0136 (0.0386)
Missing Prov Trust	-0.0192 (0.0512)	-0.00501 (0.0546)	0.0221 (0.0517)	0.00218 (0.0479)
Missing Central Trust	0.124* (0.0649)	-0.00180 (0.0613)	-0.152*** (0.0515)	0.0296 (0.0530)
West	0.0458* (0.0266)	0.0410 (0.0270)	-0.0533** (0.0232)	-0.0335 (0.0228)
Central	0.0189 (0.0279)	-0.00802 (0.0285)	-0.0299 (0.0256)	0.0189 (0.0245)
Party Membership	0.0698 (0.0482)	-0.0482 (0.0450)	-0.0243 (0.0410)	0.00259 (0.0394)
Politically qualified	0.0122 (0.0221)	0.0196 (0.0232)	-0.0322 (0.0202)	0.000301 (0.0196)

Missing political	0.00856 (0.0275)	0.0378 (0.0294)	-0.0759*** (0.0253)	0.0296 (0.0274)
Pollution Incidents	-0.00449*** (0.000779)	0.00309*** (0.000829)	0.00348*** (0.000754)	-0.00207*** (0.000707)
Nature Reserves	0.00274 (0.00267)	-0.00547* (0.00284)	-0.00239 (0.00254)	0.00512** (0.00255)
Missing TV	-0.0653 (0.0500)	0.00978 (0.0683)	0.0928 (0.0603)	-0.0373 (0.0544)
Observations	2,342	2,342	2,342	2,342

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Generalized Ordered Logit: Environmental Protection vs. Economic Development:  
Marginal Effects and keeping Missing Values**

VARIABLES	1	2	3	4
Male	0.00416 (0.0251)	-0.0139 (0.0275)	0.0621** (0.0248)	-0.0523** (0.0236)
Age	0.0171 (0.0273)	0.0317 (0.0302)	0.0155 (0.0279)	-0.0642** (0.0269)
Unemployed	0.0734 (0.0850)	-0.0436 (0.0761)	-0.0254 (0.0724)	-0.00439 (0.0662)
White Collar Worker	-0.0202 (0.0661)	-0.00289 (0.0701)	-0.00473 (0.0599)	0.0278 (0.0569)
Agriculture	0.0548 (0.0357)	-0.00739 (0.0393)	-0.0826** (0.0353)	0.0351 (0.0315)
No education	0.0238 (0.0351)	0.0358 (0.0379)	-0.00260 (0.0345)	-0.0570* (0.0313)
Junior High	-0.0201 (0.0299)	0.0250 (0.0327)	0.00854 (0.0292)	-0.0134 (0.0276)
High School	-0.0193 (0.0446)	0.0301 (0.0476)	-0.0634 (0.0428)	0.0526 (0.0421)
Married	0.00110 (0.0343)	0.00322 (0.0382)	-0.00407 (0.0343)	-0.000250 (0.0329)
Economic Class	-0.0278 (0.0201)	-0.0121 (0.0220)	0.0130 (0.0189)	0.0269 (0.0185)
Newspaper	-0.0493* (0.0295)	0.0126 (0.0326)	0.0411 (0.0294)	-0.00433 (0.0275)
TV	-0.0130 (0.0540)	-0.0552 (0.0622)	0.133** (0.0528)	-0.0653 (0.0651)
Migrant	-0.0127 (0.0384)	-0.0258 (0.0402)	-0.0741** (0.0373)	0.113*** (0.0417)
Envtl Pollution	-0.0321 (0.0301)	-0.0932*** (0.0311)	0.0469 (0.0295)	0.0784*** (0.0294)
Trust in County Govt	0.0414 (0.0351)	0.00667 (0.0381)	0.000908 (0.0371)	-0.0489 (0.0363)
Trust Province Govt	0.0143 (0.0477)	-0.00236 (0.0492)	-0.0383 (0.0495)	0.0263 (0.0436)
Trust in Central Govt	-0.0241 (0.0533)	0.0757 (0.0518)	-0.103** (0.0507)	0.0514 (0.0395)
West	0.0791** (0.0349)	0.00900 (0.0367)	-0.0585* (0.0306)	-0.0296 (0.0302)
Central	-0.00979 (0.0371)	-0.0441 (0.0393)	-0.00832 (0.0374)	0.0622* (0.0360)
Party Membership	0.0613 (0.0592)	-0.0819 (0.0555)	0.0128 (0.0542)	0.00774 (0.0496)
Politically qualified	0.00132 (0.0119)	0.00478 (0.0132)	-0.0191* (0.0111)	0.0130 (0.0105)
Pollution Incidents	-0.00411*** (0.000982)	0.00277*** (0.00106)	0.00271*** (0.000952)	-0.00138 (0.000884)
Nature Reserves	-0.000632 (0.00348)	-0.00709* (0.00372)	-0.000999 (0)	0.00872** (0.00347)
Observations	1,344	1,344	1,344	1,344

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1