



Uio • University of Oslo

Migrants Perception and Involvement in the Ecological Crisis in Ningxia

- A Narrative Review

Sander Kvernørød Bergan

MA in Chinese Culture and Society

30 points

Faculty of humanity

Department of Culture Studies and Oriental Languages

Spring 2022

Abstract:

Ningxia is a province in China which has struggled with increased natural disasters and less accessibility to water in the rise of climate change. The government of China has therefore established massive migration processes to safeguard both the environment and the people living in the exposed areas. With this together with multiple other ecological policies implemented by the government, the environment has steadily improved, and hundreds of thousands have been lifted out of poverty. But after all is said and done, the environment is shaped by the people living in it. Therefore, it is important to understand how the people perceive and respond to the changing environment. By getting an understanding of the migrant's perspective and behaviour of the environment they live under, we can gather information on how to best safeguard the environment through the agency of the migrants. This thesis deploys a Narrative Review to gather data from the perspective of the migrants themselves. Through multiple database searches, 31 sources were found to be able to discover the migrant's perspective and response to the climatic disaster as well as finding possible ways to change the negative side of the migration. This thesis found that topics such as migrants' knowledge and ecological awareness as well as the government's role in the migrant's life satisfaction were important topics to answer this question.

Through the sources found, this paper argues that there are three points that are the current obstacles faced by Ningxia's migrants in their behaviour towards the ecological situation today:

- Knowledge of farming practices as well as knowledge of policies
- Communication between the migrants and the government as well as internally between migrants
- Access to information about farming practices and different types of policies

The environment is in focus in this paper, and as such, this paper does not directly try to suggest ways in which to reduce poverty amongst the people of Ningxia, even though the topics are closely related. Rather than that, it tries to find out how best to increase the migrant's ecological knowledge and awareness which in turn will help the environment as well as having the effect of elevating poverty.

Foreword:

My interest in geography led me down to choose this topic for my master. The original topic was supposed to be grounded in geographical or historical theory. When a classmate one day noted that the people in Mexico were forced to migrate due to no food and water due to the desertification, it got me thinking that that is surely a problem the Chinese are facing as well. With some research I found that it is indeed a problem, especially in the north-western areas like Ningxia. This made me extremely interested in the movement of the migrants, but as I developed the topic and sources were found, the focus shifted from the movement of the migrant to focus on the livelihood of the migrants.

I would like to thank my supervisor Yunyun Zhou who has helped me throughout the whole MA thesis. She has helped me narrow my topic and helped me formulate the reason for this paper to be written in the first place. She has also been a great help in formulating my research question, something that I have been struggling with formulating correctly all the way till the end product.

I would also like to extend my gratitude to my friends for supporting and rooting me through the master writing process. An especial thanks goes to my friends Johan Sverdrup and Sander Skjulsvik for taking their time to proofread my thesis and giving very good constructive feedback.

Table of Contents

Abstract	2
Foreword	3
Table of Contents	4
1 Introduction	5
1.1 Paper outline	6
2 Background	6
2.1 Ningxia	6
2.2 Climate Change and Migration	8
2.3 Research Question	10
2.4 Terminology	11
3 Methodology	11
3.1 Systematic- and Narrative Review	11
3.2 Searches	12
3.2.1 Exclusion Criteria	13
3.2.2 Screening	14
3.3 Sources	16
3.4 Limitations	19
4 Results and Discussion	21
4.1 Ecological Knowledge and Awareness	22
4.1.1 Information	24
4.2 Government’s Influence	25
4.3 Migration village	29
4.3.1 Happiness and life satisfaction	30
4.3.2 Communication	31
4.3.3 Resettlement	32
4.4 Policies and Their Implication on Farmers	34
4.4.1 Grain for Green	35
4.4.2 Grazing Ban Policy	37
4.5 Discussion	41
5 Conclusion	43
6 Sources	46
7 Appendix	51

1 Introduction

Ningxia is one of the poorest provinces in China. One of the reasons for this is that Ningxia is an extremely fragile ecological region. Most of the land area is either desert or arid landscape. It hardly ever rains, and the land is often too harsh to even plant crops. Even so, millions of people live in these areas, only just making a living by farming crops or raising cattle. With global warming, these conditions have only grown worse, up to the point that many places have become uninhabitable. In the last decades, many people have been forced to move because of the worsening climate conditions. The government has therefore created many policies as well as the construction of ecological migration villages close to the yellow river that runs through the northern part of Ningxia. These policies and environmental villages are created to alleviate the pressure on the ecological environment elsewhere in Ningxia as well as help the farmers raise their living standard through easier living in the migration villages. The migration projects have existed in Ningxia since 1983 (Chen Z., 1995) and have become a huge success. The ecological environment has seen improvements and Ningxia's GDP per capita has also risen since its introduction.

But what do the migrants think of these ecological policies? Though it on paper seems to be successful does not mean there are no problems or complaints. As Yang says:

“Migrants who could be considered in theory or on paper as volunteers are often subject to various pressures from the local authorities, in fact making life impossible or impractical in the originating location. Therefore, a review of migration projects in China should strive to go beyond a review of formal policies and focus on the actual experience of migrant communities.” (Yang, Dubé & Huang, 2016 p. 12)

This paper therefore aims to shed light on this by exploring the research done on this topic through the use of a “Narrative Review”. By explicitly looking at the viewpoint of the farmers and villagers, this paper paints a picture of their view of the situation unfolding in Ningxia in the light of the ecological crisis. This paper argues that these three points are the current obstacles faced by Ningxia's migrants in their behaviour towards the ecological situation today:

- Knowledge of farming practices as well as knowledge of policies
- Communication between the migrants and the government as well as internally between migrants
- Access to information about farming practices and different types of policies

These factors are also to a certain extent positively and negatively changing the farmers and villagers' opinion and satisfaction of their daily life.

1.1 Paper outline

This paper is divided into four main sections. The first section gives a general introduction of the research area and the topic. Section two explores the methodology used and the screening process as well as giving an explanation on the different types of sources found through the screening process. Section three goes over the results found in the papers screened as well as explore what they have in common. This part is divided mainly into four main topics. The first two are about the migrant's ecological awareness and knowledge and migrant's communication with the local government. The two other sections distinguish the villagers and the farmers and tackle them individually. The villager's perspective focuses on the problems the villagers are facing in the migration villages, while the farmers perspective focuses more on the policies and what kind of problems these are causing. Together the results can tell us what the conditions are in Ningxia today and how to best face them. The fourth and final part concludes the paper as well as giving a summary of the situation and argues for how to approach the unfolding situation that is facing Ningxia and its people today. It will also try giving some suggestions going forward in the research of migration in Ningxia.

2 Background

2.1 Ningxia

Ningxia Hui autonomous region is one of five autonomous regions in China. It is located in the north-western part of Ningxia, bordering Inner Mongolia, Shaanxi and Gansu. Ningxia is a relatively small province with a population of just over 7 million people. Ningxia is one of the most arid regions in China. Its topography is largely arid land and desert while the south is mountainous. The yellow river flows through the northern area, and this is where most of the population is situated as well as most of the agricultural production. As much as 74% of all agricultural output comes from the northern area around the yellow river (Zheng et al., 2016). With the rise of climate change, Ningxia is facing big problems. It is experiencing dire water shortages due to overconsumption as well as lack of supply availability. Some areas, specifically the middle and southern areas of Ningxia have an annual precipitation of only 200-300 mm a year, making it hard to uphold agricultural production (Yang et al., 2015).

With climate change, we have seen an increase in both the amount and intensity of natural disasters happening around the world as well as a more intense climate, both colder winters and warmer summers. It has also increased the number of floods and droughts as we have seen more prolonged

periods with drought followed by huge amounts of rain for a short period of time. Ningxia is no exception.

Ningxia is an extremely ecologically fragile region, with high climate vulnerability. Lately, as the temperature has risen in Ningxia as shown by figure 1, it has become harder to grow crops in the southern and middle regions of Ningxia. The

land is not eligible as farmland anymore. The areas are experiencing desertification as well as over-exploitation by the farmers. This together with their already poor economy has caused many farmers to become extremely vulnerable to climate change and therefore have no other choice than to migrate to either cities or other areas where the farmland and climate is not as strained. The biggest problem facing farmers in

Ningxia today is the lack of fresh water, both to drink and to irrigate crops. Even though the yellow river, China's second biggest river flows through the northern part of Ningxia, the south has very little in the way of water resources, especially when the annual rainfall is as low as it is. The groundwater reserves are diminishing at an alarming rate as well.

That is why the government of Ningxia has carried out a variety of policies to prevent and safeguard the affected people. One of the policies is to move the people to other more stable areas. These people are often called ecological migrants. Many are instructed by the government; some move by their own choice and some are forced to move since their home or livelihood has been destroyed. Most migrants end up moving to large migration villages or resettlement villages constructed by the government. These villages are often situated near the yellow river in the north so that the villagers can more easily have access to water to farm or use for daily practices. The goal of these villages is also to make the villagers more interconnected, meaning they have easier access to institutional services like schools and hospitals.

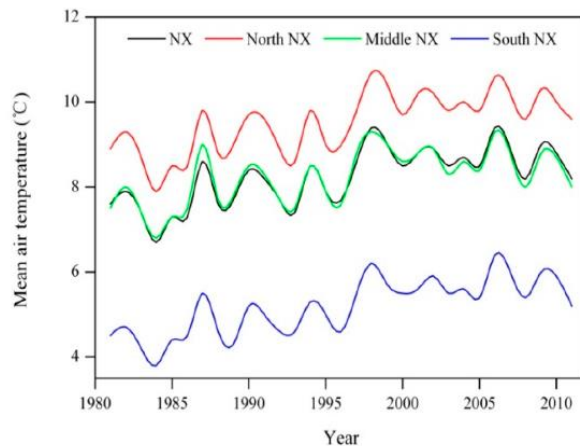


Figure 1: Mean annual temperature of Ningxia's three regions from the year 1980-2011 (Yang, 2015) Taken from: <https://www.mdpi.com/2071-1050/7/11/15029#>



Figure 2: Picture of Ningxia. Sourced from Wikimedia Commons: https://commons.wikimedia.org/wiki/Atlas_of_Ningxia

2.2 Climate Change and Migration

Climate change is rarely the only reason causing migration, but it can be said to be “a new and increasingly significant driver among a constellation of several dynamic forces impinging on mobility with which it interacts” (Tan, 2017 p. 97). In China, climate change has been a big problem for the rural populations' livelihood and living conditions for many years now (National Development and Reform Commission, 2013), and it does not seem like it will change any time soon. Ecologically vulnerable zones like Ningxia are especially exposed. Ecological vulnerability leads to poverty, and poverty again leads to a deepening in environmental degradation due to the poor people's inability to adapt to climate changes (Song et al., 2015).

Migration policies have existed as far back as 1985 in Ningxia. Back then the farmers were part of what was called the “Diao Zhuang villages” (吊庄) (Chen Z., 1995). The Diao Zhuang villages were villages where farmers travelled in the farming off- season to work outside their own fields, often migrating to cities, especially in the area around the capital. At this time, the area they moved to was lush and the migrants enjoyed good living conditions and a lot of land to farm. When the farming season started, the farmers would come back and work the old fields again. The problem was that the farmers then efficiently had two homes. This made it hard to push environmental recovery in the place of origin since the farmers still lived there, making the government shift away from the Diao Zhuang villages to a more aggressive strategy in 2001 (Xu, 2021).

In 2001 the government started an extensive policy project that is still ongoing today. The projects' goal is to relocate the vulnerable population who live in exposed areas and resettle them in new migration villages where they can have easier access to resources such as water and public institutions. As of 2017, 1.16 million people have been resettled in Ningxia and a total of 204 new villages have been built for the migrants (Chen Y. & Cheng Y., 2019; Hu et al., 2020b). This

resettlement has a dual purpose. It is not only used for achieving environmental protection, but also for poverty alleviation. As of 2021 The GDP of Ningxia is 54.528 yuan per capita, which is below the national average of 72.000 yuan (China Database Insight, 2021). The farmers who live in the middle and southern regions are especially poor, as most of the economy is situated in the north. In 2019, the southern area's GDP for example was only 25.886 yuan, which is under half of Ningxia's average (China Data Insight, 2022). It is therefore important to be able to improve the life of those farmers living in these vulnerable areas and raise Ningxia's GDP average. By moving them to resettlement villages not only does this help the farmers develop new skills and take new jobs in the resettlement villages, helping alleviate poverty, it also relieves the ecological pressure of the land in the middle and the southern region. This project aims to kill two birds with one stone.

When looking at the migration villages today, no one can deny that they have been a big success. The GDP of the villagers have risen, and their overall life satisfaction have risen as well. It also seems the ecological protection measures have taken effect as many areas of heavily degraded land have been partly restored (Li & Wang, 2016; State Council of China, 2011). This success has however come at a cost. While the Diao Zhuang villages were seen as slow and ineffective yet prosperous, the new regulations may be overly progressive and less humanised as we have seen strains forming between the people and the government (Xu, 2021).

The way people migrate has similarly also changed in Ningxia over the years. As will be shown in this paper, economic factors stand at the forefront of the farmers' minds when deciding to migrate. Earlier in the period of migration, the reason for migration was mainly due to people wanting to get rid of poverty. Wellbeing and the chance to escape from poverty was especially important for the individual. In a survey done in two phases, one in 2000 and the other in 2008, it was found that the people that migrated in the year of 2000 only did so to try escaping poverty and improve their economic status. This was before the big expansion of the policy in 2001, indicating that the migration then was largely based on their own initiative. In 2008 on the other hand, only having economic intentions was not enough to be able to relocate anymore. Those who lived in impoverished or ecological fragile villages were much more likely to relocate, showing that migration as a whole has developed to safeguard the poor people who live in impoverished areas rather than those who simply are poor. In this sense, the project has become more precise in its implementations (Dong, Li, & Liu, 2011).

But even though the policies seem to be successful on the surface, there are still many problems. The ecological environment is far from healed, many people still live in poverty, and many farmers and villagers do not have enough access to water or public institutions like schools and hospitals. As

a matter of fact, most articles used in this review point out that villagers that recently moved to resettlement villages have an illiteracy rate well over 50%. One paper also noted a big medical problem as well where 37% of the villagers had some form of underlying disease (Zhang et al., 2013). Many farmers are dissatisfied with farming policies and many villagers are dissatisfied with the living conditions in their new villages.

2.3 Research Question

Ningxia is facing a lot of problems today. With the increasing temperature and harsher climate, it has become harder and harder to do farming without the access to enough water. Because of this, the government has started building migration villages in the northern part of Ningxia. This is a duality project. One is to alleviate poverty, the second is to improve the environment at the source region as well as at the destination region. From an outsider and a governmental point of view, these villages are seen as a success, having lifted many hundreds of thousands out of extreme poverty. Many still live in poverty however. And how about the environmental side of the project? The environment has indeed been improved, but after all is said and done, the environment is shaped by the people living under it. As such, it is important to understand how the people perceive and respond to the changing environment. By getting an understanding of what factors account for the migrant's perceptions and behaviour and what cultural, political and social factors lie beneath these factors, we can gather information on how to best safeguard the environment through the agency of the migrants.

This is the statement that this paper aimed at exploring. By collecting sufficient as well as suitable data gathered by other researchers in this field, this paper will be able to give an illustrative answer to this statement. The sources gathered are a mix of English literature and Chinese literature, and to really get the peoples perspective, only sources that have conducted a form of survey are included. Both non- migrated people and migrants are included in the study. During the research many topics showed up as an answer to the statement. As such, topics such as migrants' knowledge and ecological awareness and the government's role in the migrant's life satisfaction were found to be important topics to answer the statement. Similarly, migration villages and many other policies were found to have a major effect on the migrant's decision making when it comes to the environment. With many different topics, this paper tries to narrow it down by connecting all topics together through the factor which was found to be the most prevalent throughout all the subjects, namely migrants' awareness and knowledge. The environment is in focus in this paper, and that is why this paper does not directly try to suggest ways in which to reduce poverty amongst the people of Ningxia, even though the topics are closely related. Rather than that, it tries to find out how to

increase the migrant's ecological knowledge and awareness which can help the environment as well as have the effect of elevating poverty.

2.4 Terminology

This paper uses different words for different types of people that live in Ningxia. The terms "migrant", "farmer" and "villager" are used often in this paper. Migrants is a generic term including both the villagers and the farmers. The term villager refers here to the people that live in the resettlement villages, while the term farmers are the ones that live in the countryside. That does not mean that the farmers do not plan to resettle, and close to all farmers mentioned in this paper can also be called "potential migrants" since there is a chance they will or can resettle. The word "resettlement village" and "migration village" refers to the villages set up by the government. These two words are used interchangeably throughout this paper.

It is worth pointing out that there are mainly two definitions of migration within the governmental induced migration. One is migration due to ecological degradation in the source area. This type of migration is caused by ecological factors, but the main reason for migration is not always to improve the ecological environment, but rather to improve the living condition of the migrant. The other type of migration directly focuses on ecological protection in the source area. So strictly speaking, the latter is what we call "ecological migration" (Fan, 2016; Wu, 2019). There is however very little which separates these two types as the cause for both is ecological degradation. The reason for pointing out this separation in this paper is that though they are similar, this paper focuses on the ecological side of the problem, while not touching too deeply on the topic of poverty alleviation. These two differentiations however often go hand in hand, and it is almost impossible to mention one and not the other. Nonetheless, this paper makes the distinction between the two so as to not widen the research topic and to keep the narrative narrow enough.

3 Methodology

3.1 Systematic- and Narrative Review

This paper will be using a narrative review to explain the condition in Ningxia. Through the use of a narrative review this paper will get a better understanding of the people's situation in Ningxia. A narrative review is closely linked to a systematic review. A systematic review is defined as a "literature review that is designated to locate, appraise and synthesise the best available evidence relating to a specific research question to provide informative and evidence-based answers." (Dickson, Cherry, & Boland, 2014, p. 3). This type of methodology is mostly used in the field of

healthcare to collect the data of tests in a transparent, policy neutral and comprehensive manner and was therefore rarely seen in the field of social science. It has been argued that this type of research only works within this sector, and that it specifically does not work in social science. But as this method has gained more popularity in recent years it has become clear that it is a methodology that can in fact be used in social studies as well as be a good method to explain ecological policies (Bilotta, Milner, & Boyd, 2014).

A narrative review is a variant of a systematic review. While a systematic review systematically goes through all sources methodologically and often explained in figures, a narrative review tries to tell a story through words instead, which is more fitting with the type of sources that has been chosen for this review. While a systematic review tries to find all available data available on a topic, a narrative review will rather try to find a clear red line between the data collected. As with the case of this paper, a narrative review fits better as the data collected does not have a clear answer, and it is therefore harder to gather all available data and give a definite answer. Compared to a systematic review, this paper does not clearly define the research question and is not as strict with the methodology and the gathering of sources due to the nature of topic chosen.

3.2 Searches

China has since 2001 vigorously carried out a large-scale ecological migration project in Ningxia. This project can be said to be carried out in four phases. In 2011, China released their “Twelfth Five- Year Plan”. In this plan came a big focus on strengthening ecological migration projects all over China. This was the third phase of the project in Ningxia, and arguably the biggest to date (Xu, 2021). This in turn led to a drastic increase in both the Chinese and English literature on the topic. The literature expanded, going from largely being researched at a macro-level to now also focusing more on the micro-level of the individual farmers. The topics of papers got more diverse, and more “on the ground” research was being done on ecological migrants (Geng et al., 2020). When deciding to limit the search for this paper, the year 2011 was a good place to start. Though there has been much research done before 2011, this was the year the topic of ecologic migration really started being heavily researched, as shown in figure 1. That is why the limitation for this review is set between the year 2011 and present day.

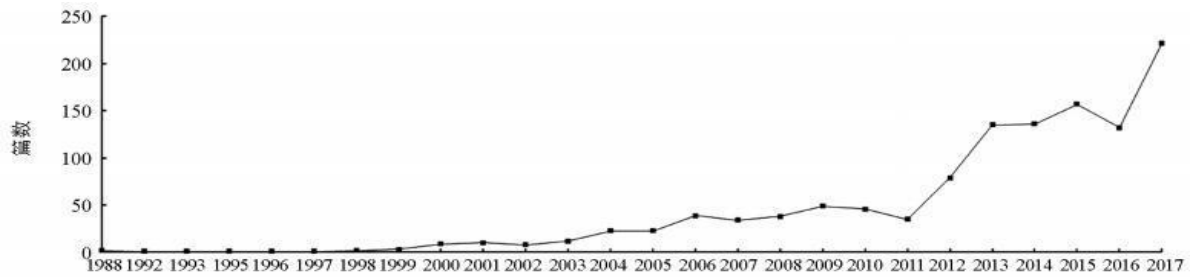


Figure 3: Number of articles written in Chinese about ecological migration (生态移民) from 1988-2017. Taken from Geng (2020): <http://xbqjxt.swu.edu.cn/article/doi/10.13718/j.cnki.xdzk.2020.05.020?viewType=HTML>

Ningxia has for a long time been the pilot area for ecological migration in China. Many policies have been implemented and tested in Ningxia before they have been used in other countries, for example the Grazing Ban Policy (Chen & Zhou, 2016). Because of this, the most frequent area to do migration research is Ningxia. When doing a search on Ecological migration, the most frequent word used with the word “Ecological Migration” (生态移民) is in fact “Ningxia” (宁夏) (Geng et al., 2020). This means that the place with most research done is in Ningxia, making it the perfect place to base this review on.

3.2.1 Exclusion Criteria

Since this topic has so much research available, it is important to be able to narrow the search down significantly to not be overwhelmed by the amount of literature. The purpose of this thesis is to examine and review how the farmers and villagers of Ningxia are experiencing the environmental crisis in Ningxia and their obstacles surrounding this. To do so, sources who have direct involvement with the farmers and villagers need to be picked. So as for the exclusion criteria, all text chosen for this review must have some sort of connection with the common populace. That is why all papers must include field observations, interviews, questionnaires or similar studies that include the farmers or villagers’ views as the main measurement tool. Not all papers that contain farmers’ perspectives are included if they touch on different topics that fall out of line with the topic chosen.

There are a lot more problems facing farmers in Ningxia today than the ones touched in this paper, but those topics are either too broad for the scope of this paper or they are in a different field of research. One such topic for example is migration workers. Migration workers refers to farmers who travel to other parts of the country to work, often to cities. They travel to cities to find jobs and to gain an additional form of income. Though this topic is partly touched upon in multiple papers and it has been shown that it is the practice most farmers do to prevent falling to poverty (Lu et al., 2016), it is too broad to cover in this paper. This topic falls more in line with research on city migration which is a topic this paper does not cover. While it is a core topic on the research of poverty alleviation, it has less to say on the topic of ecological awareness. Topics like this and ethnic

minorities for example are therefore not included even though they fall in line with the exclusion criteria.

The shortcoming of this method is of course that there are other ways to obtain the populous point of view than doing field research and taking surveys. This way of excluding sources narrows the types of paper to only one type, making the data obtained partly one-dimensional as well as severely limiting the scope of papers included and the diversity a wider range of papers would produce. By only including papers that conduct such studies, one can be able to dive deeper into the perceptions and opinions of the farmers that are at the centre of the ecological crisis rather than defaulting to an overarching view of the situation. As well as that, the papers all touch on different topics. No paper asks the same questions, making the data extremely diverse even though only one type of data analysis has been sampled.

3.2.2 Screening

For this review, three databases have been selected to find sources. Two are English databases while one database selected is Chinese. Scopus and Web of Science are English databases while China National Knowledge Infrastructure, or CNKI for short, is the Chinese database. These three databases are in wide use in academic circles today, making them excellent choices for use in this thesis. The Chinese journal especially is the biggest and most comprehensive full-text database on Chinese literature, making it the best choice to use for this paper. These databases were also chosen for their wide availability of source material since they are easily accessible through the University of Oslo services.

The Scopus and Web of Science search were both conducted on January 30th, 2022. To get a sufficient number of searches, a wide range of search words to broaden the search was used. The abstract had to contain the word Ningxia, while the full text had to contain one of the following: Migration, Ecological Migration, Eco Migration, Climate Change, Immigration, Climate Poverty or Adaptation. Only articles written between 2011 and 2022 were selected. After excluding categories that do not concern this thesis, 148 sources were found from Web of Science, in which 21 were pulled after looking at the titles. Similarly, 135 were found in Scopus, in which 30 were pulled. A short search on Scopus was conducted later on February 2. where the words “resettlement village” and “resettlement area” were added to the search. This resulted in 3 additional sources being pulled.

After removing duplicate texts, 19 were left in the Web of Science search and 23 in the Scopus search. After that, the titles and abstracts were looked at and every paper that did not include any

form of field research or similar research on the topic of this paper were excluded. That left 8 and 14 sources left on the Web of Science search and the Scopus search, respectively.

The database search from CNKI was conducted on March 7th. and had to be structured a bit differently than the two English ones. This is because the Chinese database has a lot more sources available as well as having a much wider spectrum of disciplines. This resulted in a lot more sources in Chinese than in English. Therefore, the search had to limit the disciplines to strictly only be relevant to the thesis, as well as narrowing the source type to either “Key Periodicals” (核心期刊) or “Chinese Social Sciences Citation Index” (中文社会科学引文索引). The search topics were similar to the English search, but here the word “Ningxia” (宁夏) and “Ecological migration” (生态移民) had to be present in either the abstract or the title. Sources outside of the years 2011 to 2022 were also excluded here. No other words were used as it was in the English databases since there was no reason to widen the search topic. This resulted in 129 results, in which after examining the titles and abstracts, 15 were pulled. After again excluding papers that did not contain any form of field research related to the topic of this paper, 9 sources were left.

These searches resulted in 31 papers in total. 2 additional papers have been identified outside this search bringing the total up to 33 papers. After doing a full text screening of all the papers, 2 papers were excluded because of the lack of relevance to this paper’s topic, bringing the total number of papers used for this narrative review back to 31 papers. Figure 2 shows the screening process of where the sources were pulled and where in the screening process the sources were excluded.

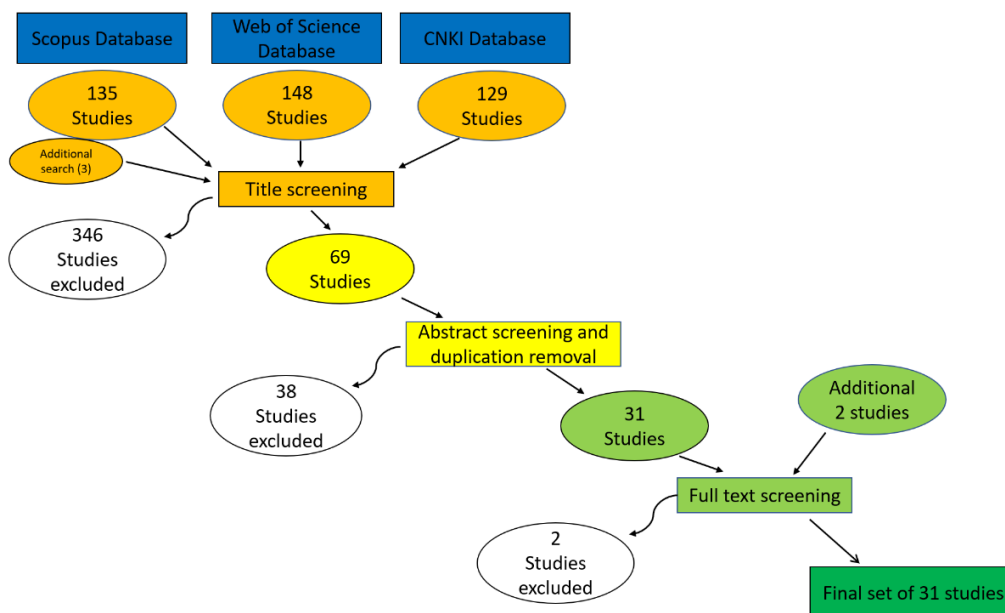


Figure 4: Narrative review screening process

3.3 Sources

This review looks at the villagers, the farmers and the migrants' view and inclusion in the ecological situation in Ningxia. That is why one of the criteria is that the source must contain a survey of sorts conducted in Ningxia, if it is field observations, interviews, or surveys. Most of the topics in the sources found have migration villages as their topic. Close to all the Chinese sources have the migration villages as the main topic, while the English sources are split if their focus is on the migration villagers or the lives of the farmers. This could be due to the difference in databases used or the way the search in these databases were conducted. A difference in how the Chinese sources focus their research compared to the English literature might also be a reason that the distribution of sources is different. There are mainly two types of papers identified in this review. The main types of papers are the ones that regard the farmers and villagers' perspective and association with the ecological environment. They look at how the people are affected by the environment and how the environment is affecting their life choices regarding resettlement and general life satisfaction. The second type of papers have a heavier focus on the life satisfaction of the people. Life satisfaction and poverty are closely related, and these papers therefore have a big focus on how different types of poverty alleviation policies influence people's life satisfaction.

When it comes to the papers themselves, close to all papers conducted randomised surveys. The most common way of gaining information was through questionnaires, while some papers also conducted interviews, often together with questionnaires. Field observations were often conducted together with interviews. Different types of randomised sampling were used in all the papers, regardless of research method. The most common way to describe the significance of their findings was the use of different regression models, but also other statistical methods were utilised. Figure 5 showed the different methods used. A few selected sources chose to survey only one village, while some surveyed bigger areas and the villages in that vicinity. Some papers took a wider search, surveying multiple villages in every region of Ningxia. The lowest number of samples were around 60 households, while the biggest surveys had collected as many as 800 household samples. The Chinese surveys had on average a larger number of participants than the English ones, probably because of the easier accessibility of Chinese scholars to do research in Ningxia. Many papers relied solely on their own research to argue their point, but some papers also implemented other types of data as well. Noticeably was Ningxia's statistical yearbook which was used frequently as a source to collect quantitative data. The yearbook is a book published yearly by the government of Ningxia noting statistics about everything from population and economics to housing and the environment (China Statistics Press, n.d.).

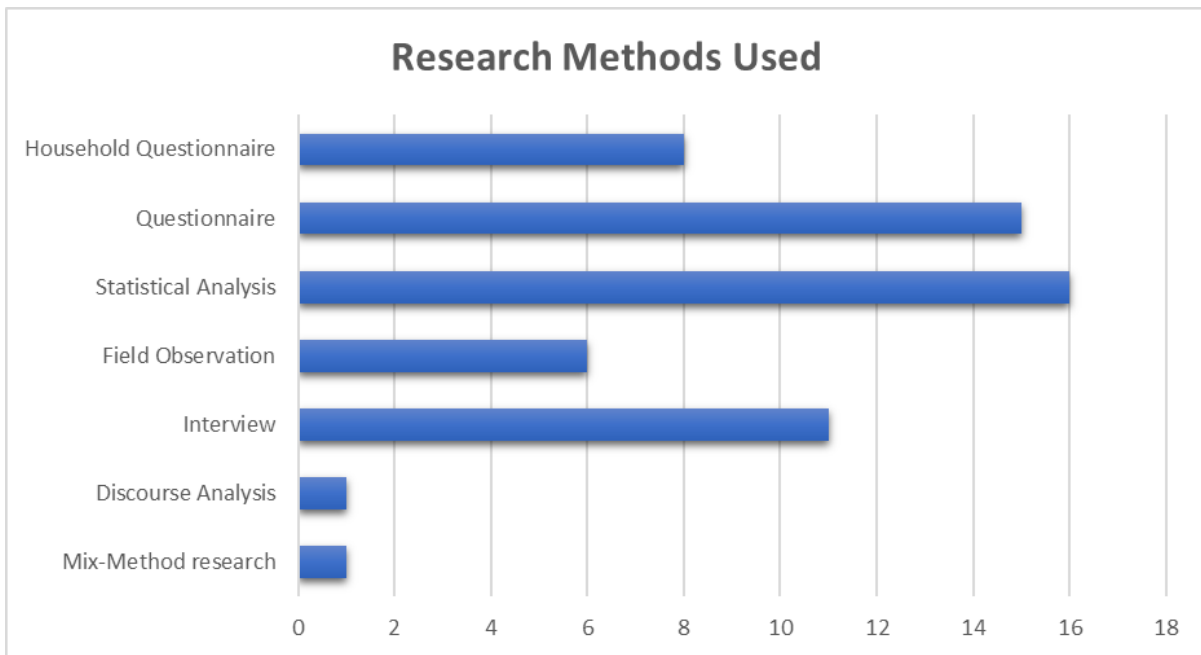


Figure 5: Research methods used in the papers screened

Interestingly, when surveys were conducted in Ningxia, a majority of the surveys were conducted on a household basis. This means that the interviewed were grouped into households rather than as individuals. The head of the household was always picked in this regard, or the second in command if the household head was busy. Since it is almost always the older male that is the head of the household, the interviewees were predominantly older males often in the age between 40-60 years. The percentage of older males interviewed were sometimes as high as 98% (Cao et al., 2020). The reason for this was that the head of the household had the most knowledge and information about the family situation. But, as just shown, this caused only one type of demographic to be interviewed, namely the middle-aged male. This can cause heavy bias as it is only the opinion of the male that gets heard. They might speak on the behalf of the household, but it is impossible that the male is able to answer the questions objectively. A certain amount of subjectivity is unavoidable, but when the demographic is only middle-aged men, that subjectivity becomes a part of an objective standpoint. As well as that, many demographics will not be heard as well. Women especially are underrepresented with only 2% of the interviews being female in the worst case. They might have similar opinions to the male interviewees of course, but they are sure to have opinions and suggestions that are different to the males. Similarly, the youth are also not represented well. As access to education and media has increased in the last decade, the youth are often better educated than their parents. Their opinion and viewpoint might be very different from their parents.

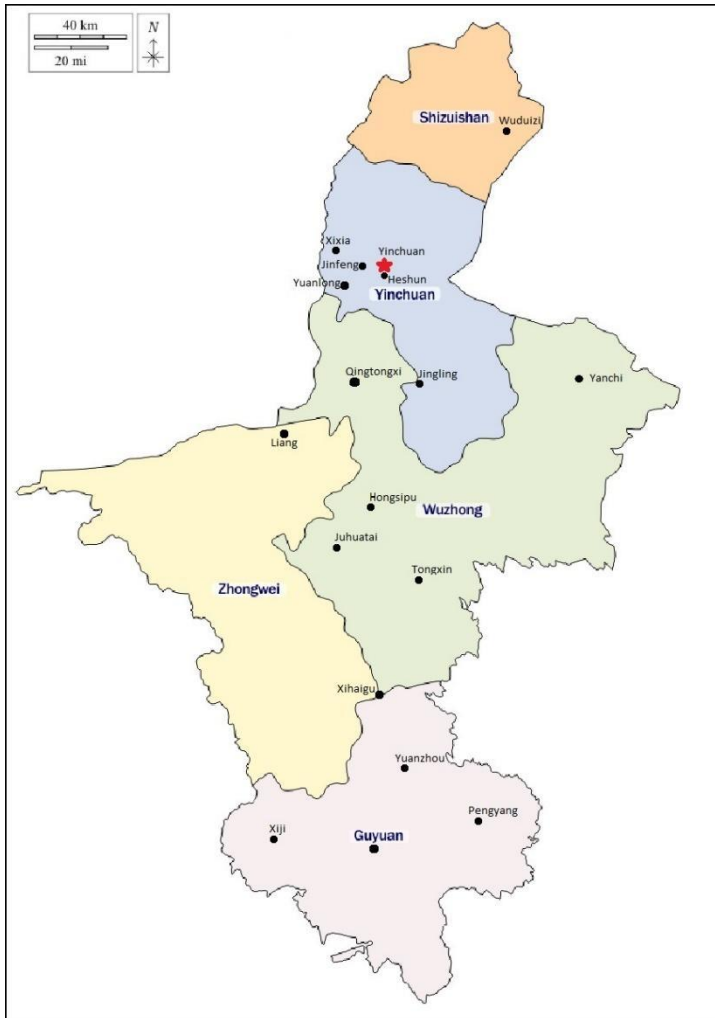


Figure 6: A map of the biggest study areas of this review

Figure 6 shows a map of Ningxia province and the general area of where the surveys have taken place in Ningxia. A total of 8 sources conducted research in multiple areas all over Ningxia. Those are not marked on Figure 6, but most areas are in correlation with the other papers marked. Sources not marked include Chen Y. & Cheng Y., 2019, Dong, Li, & Liu, 2011, Dong M. et al., 2019, Hu et al., 2020b, Li Y. et al., 2013, Shen et al., 2022, Yang et al., 2015 and Zheng Y. et al., 2017.

As noted earlier, there is a difference in the Chinese and English literature on the topic of ecological migration. Xu notes that: “While western scholars pay close attention to climate refugees”, climate change related migrants which belong to the category of environmental migration, Chinese scholars have a strong interest in governmental action”. (Xu, 2021 p. 38-39) Most of the Chinese sources connect their findings to policy, and often make suggestions on how to improve policies in light of the findings. This has become apparent in this review as almost all the Chinese papers put a heavy emphasis on the governmental actions and how the people are reacting to said policies. While the

English literature also touches heavily on policy, the policies themselves are not always the focus of the paper but rather the migrants' reactions to the ecological conditions in the light of policy.

3.4 Limitations

Due to the restriction in time and research method used, this paper is not in any shape or form a comprehensive summary of the environmental problem faced in Ningxia and neither is it comprehensive in telling the farmers side of the story. This paper is therefore more illustrative than comprehensive and conclusive. The topic chosen is extremely extensive, being a topic that has been researched extensively since its introduction in the latter 20th century as well as its rise in popularity after 2011. Due to this, it is almost impossible to gather an extensive enough batch of sources that can conclusively sum up the topic of ecological migration in Ningxia. With more time and resources, this paper could have dived deeper into the big library on this topic and in turn gather a bigger quantity as well as more accurate data on the different topics that are being touched upon here.

A big part of a systematic or narrative review is the possibility of bias. This methodology was largely created to limit the problem of bias, but it is still a problem that needs to be addressed when writing a systematic or narrative review. In this review, the problem of self-bias can be problematic. In a standard systematic review, there are often two or more researchers writing together. In the screening process, when the sources are being pulled, they screen sources independently and thereafter compare results so as to reduce bias. This paper is written independently by only one author and the sources have not been screened or reviewed by another person. Therefore, the sources picked in this review cannot escape being self-biased to a certain point. The databases used for this review are three that are easily accessible through the University of Oslo. There are many more databases, and it is impossible for such a small study to cover all the available databases and sources available as well.

Since this paper touches on multiple topics within the sphere of both migrants, villagers and farmers' view of what is going on in Ningxia, some of those topics have a limited number of sources that have been found in this review. Because of this, the individual topics cannot be said to be hundred percent comprehensive. For example, during the screening process, a decent amount was found on the topic of the farmers perspective on the Grazing Ban Policy, but few sources were found on the topic of other policies like the "One Crop One Village" or the "Land Sloping Program". To account for this, other words and phrases should be used in the pulling process to include more of these topics in future studies. A lengthier study would also be able to include more of these topics as well. Even though there are few papers found touching each topic, it does not mean that they have not been researched, only that this review might have failed to include them. That being said, though this

paper might not be fully extensive on all the topics of discussion, it does give an overview and helps summarise the research done on the problems migrants and villagers are facing in Ningxia today.

There were no limits set to the area of study in this paper, only that the surveys needed to be conducted in Ningxia. This means that any study in Ningxia would be applicable. As a result, the data collected is very widespread. Every migration village is different as well as people's perception of different policies are different depending on where they live. One example is Wei (2020) who looked at the Grazing Ban Policy in Yanchi, but divided the area into the north and south. The south was generally more accepting and satisfied with the project than those in the north. The reason for this was that the farmers in the north raise less livestock in general and were therefore not as affected by the policy. Similarly, some migration villages have been better implemented than others, and as a result the data varies from paper to paper. Papers choose different migration villages all over Ningxia for their studies, some choose multiple villages all over Ningxia while some focus on specific villages. For example, Zhang (2014) did a survey of the satisfaction level of a village in Lingu county, northern Ningxia. Zhang obtained very positive results in the satisfaction level with the resettlement village. This is contrary to Yang (2015) who found the village of Yuanlong, also in northern Ningxia to be generally unsatisfied with their lives in the village. Different villages are constructed differently and have different governance, making them all different from one another. That is why it can be hard to draw direct overarching conclusions about the livelihood of the people living in the villages. On top of that, Shu (2020) also did a study of Yuanlong village, finding the village to be very prosperous, in contrast to what Yang argues for. This shows that even within singular villages there are discrepancies. This is most likely due to the way the survey has been conducted or the difference in the year the survey was conducted.

This paper has only collected papers from a ten-year period, but still, a lot has happened within these ten years. And so, the data collected in the earlier years might in fact already be inaccurate to how the condition is today. The difference we see in Shu and Yang might be due to the difference in time between their studies, even though their papers are only five years apart. Another reason could be that in 2015, China's fourth stage of the migration initiative began which had as a focus to relocate people from the "mountain tops" of Ningxia (Xu, 2021), changing the dynamic of migration in Ningxia again. Today we are also at a shift as China's "fourteenth five- year plan" is sure to further address the problem of migration (Xinhua News Agency, 2021).

4 Results and Discussion

This section will look at the results found in the papers screened as well as explore what they have in common. There are a lot of topics to cover, so this part is divided into multiple sections. It is divided mainly into four main topics. The first two topics debate the core findings of this paper, namely farmers and villagers lack of knowledge and awareness of the ecological conditions and their limited connection with the local government. The next two parts divide the two types of people that are included in the surveys, namely the villagers and farmers. The villager's perspective focuses on the problems and challenges regarding the ecological environment in the resettlement villages. The second part focuses on the farmers' interaction of two different ecological policies and how these policies are affecting them. Together, these results can tell us how the conditions are in Ningxia today.

First off, it is worth pointing out that even though this paper touches on many problems facing the migrants in Ningxia today, as mentioned earlier in this paper, the policies and migration villages are seen as being highly successful. “[T]he past 30 years of migration indicates that migration enriches the poor farmers, and promotes the economic development of the destination region and the ecological restoration of the source region” (Li & Wang 2016 p. 9). The income of the migrants has increased drastically, and the new migration villages are close to the bigger cities, making transportation easier and information gathering easier. Income between the farmers and villagers are significantly higher, showing that the migration villages have achieved one of its main goals (Li & Wang 2016). Even though the lack of education and knowledge is at the forefront of discussion in this paper, they have indeed increased their access to educational services as well as information channels in the migration villages. So, at the end of it all:

“Whether the Ningxia migration program is successful or not depends ultimately on whether the migrants are satisfied with it or not. Our survey results show that the ecological migrants in Ningxia have a higher satisfaction level than that of other groups of migrants in China. This result is good news. It shows that the migration program in Ningxia has been carried out in great detail and with great care” (Li & Wang 2016 p. 10).

The importance of the policies and the migration villages should therefore not be downplayed. The policies that are put in place to safeguard the environment have also shown to yield positive results. So even if the farmers and villagers are not satisfied with some of the policies, it does not mean that those policies have yielded negative results, only that the side effect of the policy is the disdain of the people it affects (Shi et al., 2015).

Migrant participation is an important factor in securing stability and economic development. It is after all their lives that are being governed and transformed by the policies. The aim of this section is therefore to gather the available information from the paper screened to summarise the obstacles that the migrants are facing. In doing so, some conclusion can be drawn as to how to deal with these obstacles based on the information found.

4.1 Ecological Knowledge and Awareness

Knowledge is one of the big factors affecting migrants' decisions when it comes to environmental issues. The more information and knowledge they have about the environmental conditions, the more likely they are to take actions that are pro environmental (Dong M. et al., 2019; Meyer, 2015). In the paper written by Dong, they differentiate between environmental awareness, intention and behaviour. Awareness can be defined as having knowledge or perception of a situation. So, in this situation, having a high environmental knowledge means having high knowledge of the changes in the environment. Environmental intention is the intent the people have to change their practices to become more environmentally friendly. Intention and behaviour are not the same however, as even though you intend to do something environmentally friendly does not necessarily mean what you do is environmentally friendly. Dong argues that by raising environmental awareness you do not necessarily directly raise environmental behaviour, but it does raise environmental intentions which in turn can improve environmental behaviour in the long run. In their research, Dong found that the people in resettlement villages had surprisingly good environmental intentions. In their interviews, the villagers were very positive about a wide range of minor environmentally friendly practices like sorting household trash or a reduction in the use of plastic bags. But when further asked if they had applied such practices, the enthusiasm became much less positive. It seems that awareness and intention does not always lead to an improvement in behaviour. Even so, Dong emphasises that there still is a significant positive correlation between ecological intention and awareness and ecological behaviour. Dong argues that the reason for this lack in ecological behaviour could be that the villagers see no practical value or benefits in adopting environmentally friendly behaviours. Another reason could be their lack of relevant environmental knowledge. Similarly, Wang (2017) argues that when it comes to the choice of resettlement, one of the reasons that farmers don't care for the environment when deciding to resettle is their low education level and their lack of environmental knowledge. This also goes in line with Cao's (2020) findings in that knowledge is important in determining and applying environmentally friendly farming practices.

Pro-environmental agricultural practices often need to be accompanied by governmental policies. If not, few farmers will do them as there is no immediate incentive to do so. If the policies are in place but there is little information given to the farmers, very few will actually utilise them. Therefore, it is

important that the farmers are knowledgeable about the farmland policies (Cao et al., 2020). Cao studied if farmers' knowledge about protection policies has an effect of farmers adaptation to pro-environmental agricultural practices. If the farmers have little knowledge of the agricultural protection policies, they will have a hard time to alter their conventional agricultural practices. Cao concluded that this knowledge indeed has an incentive effect on pro-environmental agricultural practices. If the farmers were more knowledgeable about the policies and about the subsidies offered by the state, the farmers were more inclined to adopt pro-environmental practices. If the farmers had a higher educational level and more contact with extension services, such as agricultural skills training, they were more likely to adopt pro-environmental agricultural practices. One of the reasons for this could be that as their knowledge grows, the chances for them to obtain correct and adequate information also grows, increasing their pro-environmental awareness to a certain extent. Sadly, the farmers interviewed in Cao's paper had relatively poor knowledge of the policies, only scoring on average 2,5 out of 5 when asked about their knowledge of different farmland protection policies and incentives. In this context, a score of two meant that they had very little knowledge. With such low scores, it is hard for the villagers to fully utilise the policies, therefore limiting their pro- environmental agricultural practices.

A different discovery was found under the topic of renting out land. No paper in this review talks explicitly about the renting out or selling of land, but many papers mention that it is something many farmers and villagers alike participate in. Renting out land means as the word suggests, renting out your own land to other companies or governmental institutions. The policy of Grain for Green is such a practice; a topic that is explained in length in 4.4.2. It has become very prominent to rent out one's own land to other companies, if it is for environmental reasons like the Grain for Green policy or for economic reasons. By doing this the farmers or villagers would not need to worry about doing farming and instead focus on other aspects of life. They would also get some amount of money for it. When villagers moved into new migration villages, they would be assigned a small plot of land they could use. As with the example from Yuanlong village by Yang (2016), most of the villagers decided to rent out their given plot of land to other companies. As it turned out, one of the biggest reasons the villagers rented out their land was that they did not believe they possessed the knowledge to cultivate the land properly. This in turn has a big effect on the farmers' lives as the compensation they got is not enough to live by. As so, they remain poor since they are no longer self-sustained and can't get another job due to their low educational level and lack of knowledge. This decision to rent out land can also influence the environmental awareness of the farmers and villagers as Cao (2020) found out.

It is clear that knowledge and information are an important factor in making the villagers and farmers apply environmentally friendly practices, whether it is in the home or in the fields. Education is therefore an important factor in improving this (Meyer, 2015; Sola, 2014). As it stands, very few farmers and migrants have a high education level. In Dong's survey of different migrant villages, 83% had only middle school or lower education. One in four was illiterate. For the farmers the numbers are even higher (Dong M. et al., 2019). It is therefore important to raise the education level of the migrants and the farmers to raise their ecological knowledge and awareness. So, since knowledge has such a big effect on people's pro-environmental farming practices it is evident that the government in this regard should seek to further enhance the farmers' knowledge of farmland protection policies for example through new information channels or extension services.

4.1.1 Information

On the topic of information channels, another way to make the farmers and migrants gain information about the environment is through the media. Media plays a big role as a source of information as well as a place for information sharing today. Gaining knowledge through media can help both farmers and villagers raise their environmental knowledge and awareness. Not only does the media help raise environmental awareness, but it also helps warn them about potential climate disaster conditions. With higher knowledge they will also be better able to prepare when such events occur. However, farmers still mostly rely on neighbours as their main source of information on the environment. Sjögersten's (2013) study pointed out that villagers most often learned new farming methods from their neighbour and that the village head was often seen as a "champion of farmer innovation" (Sjögersten et al., 2013 p. 130). These "neighbours" that people so often listen to were found out to be the people with better access to early information or the ones with better connection to the government. Having better accessibility to other information channels than their neighbours can help more people adapt their farming practices faster.

Huang (2021) did research on new media's role as an information source for the farmers. New media includes for example the internet or social media. Huang found that farmers still use TV or newspapers as their main source of information. There are many farmers who don't have the money to buy an expensive phone or computer. Huang's findings show that media, both traditional and the new form of media have a positive effect on farmers ecological knowledge as well as passively increasing farmers adoption of water and soil conservation technologies, which is key in ecological preservation. However, neighbours are still the prime channel in which the people gain information, and very few gain their information from newer media sources. In today's society, information gained only from neighbours is not enough, and farmers need information from other sources as well. Media is therefore a very good channel for the government to inform the people of different

policies and rules. This review therefore argues that both new and old media should be heavily incentivised by the government to increase the farmers and villagers' information. This in turn can both increase their living standard and reduce their ecological footprint.

4.2 Government's Influence

The government plays a big part in the lives of people, especially in China where the government has stronger control than most other countries. In China, it is mostly the government that oversees the internal migration. It is the government that often initiates migration projects, and it is them that builds and governs most of the resettlement villages. It is the local government that oversees and governs each village.

The government is therefore responsible for how the resettlement villagers are built and responsible for how they are governed. If the villagers have complaints, it is to the government they need to go to. Some grassroot organisations exist, but they are limited in scale and influence, especially in the smaller and poorer provinces like Ningxia. The government therefore has a huge influence on the people's life choices and their life satisfaction as well as heavily influence the migrant's perspective and response to the ecological environment.

To increase people's life satisfaction, people's participation is an important factor (Pacheco & Lange, 2010). Throughout this review, many papers have pointed out the dissonance and the uncommunicative nature between the migrants and the government of Ningxia. Just to name a few, Tan (2017), Wang W. (2019), Wang H. (2021), Wei (2020), Yang (2016) and Zhang (2013) all point out the lack of participation from the side of the people when it comes to political participation. Some papers explain that it is too hard for the people to voice their concerns to the local government, and that if they tried, it would not be heard anyway. Other papers point out that it is simply the people that have no interest in governmental affairs, simply leaving the decisions to the local government to decide. The reasons are argued by the fact that the villagers simply have no good way of communicating with the local government and have therefore given up in trying to participate in politics. Another argument is that the people are not educated enough, therefore making it hard for them to participate and familiarise themselves with the policies and regulations.

A topic that showed up a few times throughout some of the papers was the topic of governmental training. In the resettlement villages, the government often set up training for the villagers to help them learn how to farm better and how to use more environmentally friendly farming practices. This was set up to help the villagers live a better life and reduce their ecological footprint. The problem was that there were very few people that actually participated in these training sessions. Both Yang (2016) and Zhang (2013) noted that very few villagers participated in the training. Zhang found that

over one third of the interviewed did not partake in the activity, and Yang found that as many as 75% did not participate. Most villagers were willing to participate, but when asked why they did not they said that the training didn't meet their needs and that the training was short and at an unfortunate time. According to the villagers it was hard to participate in an effective manner due to the lack of publicity around it. This type of information sharing might be one of the best ways to help the villagers as it can help them increase both their knowledge and skills in farming. And by increasing their knowledge it can help the villagers reduce their water and resource usage as well as help them produce more crops and therefore increase their income. It is a win-win situation for both sides. Sadly, the setup was poorly executed by the government as it did not meet the needs of the people. As explained earlier in the paper, since they did not feel like they had the knowledge, they did not participate in any governmental training. Many therefore decided to rent out their land instead, causing them to fall back into poverty as they suddenly did not have any form of work to do.

Wang's (2021) paper shows a good example of the disconnection between the government and the villagers and why it is important to make the voices of the people heard. Taking Liang Township, a resettlement village in the northern reaches of the yellow river as the study area, the paper looks at a housing policy gone wrong. The villagers were unsatisfied with the housing conditions. The government, in good faith, created a policy to build more houses, and asked how many families were interested in the move. Many responded, but when payment was due after the houses were finished, no one was willing to pay, creating a deadlock. There were multiple reasons for this. One was that they did not like the layout of the houses. It did not correspond to how they used to live. The cadres were in fact aware of this, but when they told it to the local government, there was no response. Another reason was that the villagers did not trust the government and thought the prices they had to pay were too high. They believed that there might be some extra payment that might go directly into the pocket of the government officials.

This housing deadlock is a good example of the disconnect between farmers and the government. Even though this policy was set up in good faith, the policy itself became a deadlock because the government did not listen to the wants of the farmers, as well as the farmers not fully trusting the government. As a result, this housing policy ended up hurting both the farmers and the government.

How the government governs villages is also of great importance. In Yang's (2016) paper they compare two different villages, one successful and one less so. The two villages Yuanlong and Heshen are located in northern Ningxia, close to the capital. Heshen was regarded as a very successful village while Yuanlong was regarded as a more problematic one. The reason for this was that the government was more lenient and allowed more citizen participation in Heshen while it was a lot stricter in Yuanlong. They were not allowed to build new houses in Yuanlong, while they were

allowed in Heshen. Facilities were poorly constructed in Yuanlong, both houses and the governmental facilities. In Heshen, 71% of the interviewed joined the governmental training, while only 26% did in Yuanlong. Because of this, most villagers in Yuanlong decided to rent out land to a third party, gaining only a small sum of money each month which is not nearly enough to sustain the family. They did this because they believed they did not have enough knowledge to farm properly at their new village, despite being offered training from the government. They would rather rent out their own land instead. The farmers in Heshen had in comparison to Yuanlong been distributed their own small greenhouse where they could farm some vegetables. This in conjunction with the increased participation in governmental training caused a lot less people to rent out their land, and rather farm on their own, making them a lot more self-sustained and not reliant on other sources of income. Because of this, the villagers in Heshen village managed a lot better than the villagers in Yuanlong village, and they were able to pay off their loans a lot faster than the villagers in Yuanlong could. How the village is structured and how it is governed has a lot to say on the lives of the ones living in it. The communication between the local government and the people living in the village of Heshen is a lot better than the one in Yuanlong, and they therefore, according to Yang, live a more satisfactory life in Heshen than in Yuanlong. This is why the governance of the migration villages is of great importance in how people's life satisfaction is.

Shu (2020) also did research on Yuanlong and the condition of the people in the village. Surprisingly, Shu was a lot more positive about the development in the village than Yang was. This could be due to the time span in which these two studies took place or the difference in the survey conducted. The fact that the migration village has seen visible improvement since Yang did research is the most plausible explanation. While being a lot more positive to the progress of Yuanlong village than Yang, Shu also points out problems that Yuanlong village is facing. Both Shu and Yang almost identically identify the same problems. This shows that the problems facing Yuanlong, even though the conditions might have improved in recent years are still there. And on that note, the government still has a long way to go in improving the relation between themselves and the villagers.

On the topic of government assistance, a surprising discovery was found when Tan (2017) as a part of their study asked if families got governmental assistance when a natural disaster struck or if the family faced economic difficulties. On a scale of 0 to 10, a mean score of only 2,5 was noted. This means that the families gained next to no help from the government when a climatic disaster struck. Tan also points out that these numbers include households that are a part of the Communist party of China. These, which accounted for 12% of the interviewed, often occupy higher status in the village, and therefore have an easier time getting governmental assistance if a natural disaster were to hit (Tan, 2017). This means that the farmers who have no connection to the government could be

getting even less help than what this study recorded. This shows that the government needs to support the farmers and villages more when it comes to assisting if natural disasters hit. Many in the survey believed that the government would help if a disaster struck, or at least that the government should help if something were to happen.

That being said, it is not only the government that causes problems. There is a difference between self-initiated migrants and government organised ones. The government organised ones can enjoy favourable incentives by the government, like access to educational and healthcare institutions and access to housing. The self-initiated migrants do not necessarily have access to such luxuries. In Shu's (2016) study they found that as many as 40% of the migrants were self-migrated, meaning that a large number of migrants needs to sustain themselves with little help from the government. Due to wanting help from the government but not getting it, most of these self-initiated migrants do not trust the government at all:

“They bluntly refuse the administration of the local government. Their spontaneity, disobeying rules, and general distrust of government make it very difficult to carry out the migration work. Occasionally, the self-initiated migrants besiege the government or launch a group petition when the government fails to meet their needs. This seriously disrupts the normal running of the government (Shu & Nie, 2016 p. 92)”

As well as that, the migrants themselves have a very weak ability of self-governance (Shu & Nie, 2016). Since the migration villages are the local governments responsibility, they play a vital role in community building. The government has not paid enough attention to the community's role in self-management. According to Shu, only 20% of the migrants regularly attend villager's congress, and as few as 5% attend village level economic organisations. With poor grassroot social management as well as weak self-management the responsibility falls almost all on the government. Though the government can in the early stages of development properly manage the citizens, it does not transfer into the long term as it is disadvantageous for the sustained development of social management in the villages (Shu & Nie, 2016). On top of that, out of all the poorer western provinces in China it was found that Ningxia had the worst social network, indicating that there is definitively room for improvement (Shen et al., 2022)

It can be seen that it is important to have the government be able to listen to the farmers and villagers. It seems to be a recurring theme in multiple villages as well as out in the countryside that the voices of the population are not heard. The government constructs the villages to try to alleviate the ecological pressure as well as reduce poverty. But if the voices of the people are not heard and they have no chance of input it can be hard to create good living conditions. The farmers and villagers complain that there is very little communication between the local government and

themselves. This paper agrees with many of the other papers in this review that a good plan for the government moving forward is to increase the connection between the people and the local government. Since many of the complaints from the villagers and farmers were that the government did not heed their needs and that they had no knowledge about the policies the government enforces, increasing the connection between the people and the government is greatly beneficial. Giving them improved citizen participation does not only improve their satisfaction with the government, but it can also improve their life satisfaction as well as their environmental awareness and behaviour. As multiple papers identify, life satisfaction can positively affect ecological awareness and practices. That is, if they are wealthier and happier, they have more resources to use and therefore have it easier adopting new ecological practices. If they have more land in which they farm or more animals they feed, Chen (2019) argues that this makes them more likely to apply environmentally friendly practices since the consequences for breaking with such policies will be more costly. Cao (2020) similarly found that people who rent out their land have less incentive to adopt environmentally friendly practices, which is similar to Chen's discovery.

4.3 Migration village

Migration villages are smaller villages built by the government to resettle poorer farmers too. Here, they get a designated plot of land to farm. Migration villages are today the government's main way of protecting the environment and reducing poverty. As it has turned out, migration villages have been doing well at both. They are both able to alleviate poverty as well as improve the environment in both the source region as well as the place of settlement. In Ningxia, most migration villages are situated in the northern part of Ningxia. This is because the biggest problems facing the farmers are access to water. This is therefore the most important problem that needs to be solved. That's why when farmers resettle, the most important thing to take into consideration is water availability. Villages also have a big focus on improving the accessibility of the farmers. Farmers who live in the countryside have very little access to institutional services like schools and hospitals. That is one of the main reasons the illiteracy rate is so high in Ningxia's middle and southern parts. Resettlement has been a part of policy in Ningxia since 1983, and it is still going strong even today. However, even though migration villages are regarded as being a successful policy, there are still many problems facing migration villages to this day.

This raises the question, is it therefore not best to relocate everybody if everybody generally sees an improvement to their living standards? The simple answer is no. Great amounts of resources are needed to build the settlement villages, and the movement, if it is forceful or not, usually does not

have a positive impact on the villagers. The better plan would generally be to improve the living condition of the place where the people already live. Simply raising the life satisfaction in the place of origin would be the best cause of action. The problem that Ningxia is facing now is that the environment around the area they live in is becoming too poor to live in. That is why the people are forced to resettle. Resettlement is therefore necessary for the improvement of the environment.

As it stands, there are an extreme amount of people living in poverty in Ningxia, meaning that the government needs to build a lot of resettlement villages. To be able to build so many in such a short amount of time the government must resort to building standardised settlement schemes. When they built the villages, they formulated a standard procedure for things like subsidies, arable land distributions and housing. The problem with this is that the needs of the migrants are vast. A standardised scheme cannot possibly manage to meet all the migrants' needs. Every household is in different situations and needs also vary from household to household. The migrant's needs are too diverse, therefore, problems and dismay will always arise (Li & Wang 2016).

Even though the focus of the migration villages is to improve access to things such as water, education or hospitals, these things are still not fully optimised. The topics that have already been discussed in this paper are highly prevalent in the migration villages, maybe even more prevalent than for the farmers who still live in the countryside. People still have to spend a lot of money on water and many villagers still have no access to education due to the cost being too high. Some villagers don't feel at home in the new environment, and many have noticed that communication and family life has been reduced. Many people also complain about the living conditions. A concrete example of this is the example of the housing deadlock explained earlier in this paper found by Wang (2021). As we have also seen, some villages have done a better job than others in their implementation (Yang et al., 2015), indicating that there is space for a lot of improvement in a lot of villages. If the villagers are very unhappy, they might decide to resettle a second time. This causes a lot of problems for both the migrants as well as the government.

4.3.1 Happiness and life satisfaction

When it comes down to it, it is the happiness and life satisfaction that is one of if not the most important factor in measuring the success of the migration villages. It is overall found that the life satisfaction of the villager is higher after relocation (Wang Y., 2016). Zhang (2014) did a study on the satisfaction level of the villagers in Jingling village. Overall, they were very happy with their new life in the migration village. As will be described in length in the next section, the main reason for wanting to resettle is economic factors. That is also why the most important factor for the migrant when migrating is the possibility of gaining increased economic status in their new area. With the

resettlement, many villagers have gotten new jobs. They had transitioned from farmers to workers. As with the case of Jingling village, before the relocation, about 60% of the villagers gained their income from farming and 20% from working. After the resettlement however that number flipped into becoming 60% from working and 20% from farming. The villagers were very happy about the change in income source not only because it diversified their daily job life, but it also overall raised the average income as well as social status (Wang Y., 2016; Zhang, Li & Xia, 2014).

Yang (2016) also found that the overall environment in the villages they studied were satisfactory. The planning was reasonable and the area around the village was lush with greenery. As well as that, the social services were also satisfactory. The villagers were satisfied with the public services and infrastructure in the new village. Wang (2016) similarly found in their survey that the villagers were generally satisfied with the public services as well as the environment around the village. Wang also found that the villagers are able to access different things that the farmers can't necessarily access so easily. Since the villagers have more money, they can also use said money on different activities. Villagers were found to be able to do more leisurely activities than the farmers did. Villagers more often went shopping or drank with family and friends at home. They were also more likely to engage in recreational activities like going to the movies or reading newspapers. Villagers also spent more money on food, clothing, residence, telecommunication and such. In short, the villagers are generally able to have a higher standard of living (Wang Y., 2016)

Even though there are many aspects that the villagers are satisfied with, there is still improvement to be done, and there are still problems facing the villagers. The point is that many villagers are positive about the migration villages, but one of the big reasons for it being so is that the living standard of the village is almost always better than what it was at the source region (Li & Wang, 2016; Shu & Nie, 2016; Wang Y., 2016; Zheng Y. et al., 2016).

4.3.2 Communication

The issue of communication is prevalent in the migration villages. Some villages have problems with communication between the villagers themselves. This is due to a few reasons according to Chen (2019). The most important reason is that people have been moved to the same migration village but at different times. With time, the migration policies have changed, meaning that different migrants have gained different perks throughout the years. Villagers that resettle now gain more governmental assistance than the ones that resettled 20 years ago. This has created an unbalance and a strained relationship between the migrant that came to the village first and the ones that moved in later. These two groups can have a hard time openly communicating because of their differences. Another problem is that if the people resettled in a resettlement village are from

different places of origins or have different ethnicities. This can also hamper communication. Communication with neighbours is an important part of village life and an important part of creating a good atmosphere in the village. Without it, people might not find the village a very nice place to live and decide to resettle somewhere else, hurting both themselves and the government who have to deal with large amounts of resettlements (Chen Y. & Cheng Y., 2019; Tan, 2017).

Not only that, but since the prime way for villagers to gain information is with their neighbours, communication becomes very important. If communication between the villagers is strained, it becomes harder to share information between each other. This can hamper both their ability to adapt to climatic disasters as well as being able to adopt and implement ecological practices due to the lack of knowledge-sharing. It is therefore important to also strengthen communication between different villagers who have different origins. Chen suggests that if possible, moving people from the same place of origin to the same village should increase communication since people from the same village often already have a strong bond and therefore communicate easier. Another point is to avoid resettling villagers with a large time span between resettles. In addition to that, the local government should focus on reducing the differences between the villagers so that they might have an easier time communicating.

4.3.3 Resettlement

Settling somewhere else can be difficult. There are a lot of different variables to take into account when moving. How is the living condition, how is the available farmland, how is access to institutional services? These are only some of the questions people might have about the area they are moving to. Some questions however are a lot more important than others when it comes to resettling, namely economic questions. Wang (2017) found that farmers do not regard the ecological environment when deciding to move. Instead, economic factors are in the forefront of the farmers' thoughts. Wang suggests that this is related to the very low educational level of the farmers. One third are illiterate, and most others only have primary education. Most of them are still concerned with obtaining material enjoyment brought by economic development, and therefore take little note of the ecological environment. On the other hand, Zhang (2014) found that when it came to life satisfaction, the ecological environment was a big deciding factor. But Zhang also agrees with Wang in saying that it is the primary economic factors that dictates the intention to move and the degree of life satisfaction among the migrants.

When it comes to people's reason to migrate, they chose economic status as their prime reason for migration. While "ecological migrants" are migrants that migrate due to the government wanting to improve the ecological environment in the source region and the destination region, the migrants

mostly think of economic reasons for resettling. Being able to inform and teach the potential settlers about the ecological conditions and reasons for resettling is beneficial in that they can make a better judgement on how and why they are resettling. After all, as Zhang found out, the ecological environment is an important part of life satisfaction and knowing this might positively alter the way the migrants think about migration.

Even though economic factors are the prime reason for farmers wanting to relocate, there are also other factors that change their willingness to resettle as we have seen developed throughout the years. As it turns out, geographic factors now have a significant effect on multiple aspects of farmers' willingness to resettle (Hu et al., 2020a). Factors like climate type, topography, housing quality and the amount of arable land all have an effect on the farmers. Many of the farmers have transformed from the initial level where they move solemnly due to survival needs and changed into people who are in the pursuit of higher economic and social needs. And for this, geographical factors are one of the key factors in realising these higher-level goals that the farmers are now able to envision when choosing to resettle (Dong, Li, & Liu, 2011; Hu et al., 2020a). But of course, the same parameters are set for people not wanting to resettle (Tan, 2017; Dou et al., 2019) As from the same survey that Shu & Nie based their paper on, Li (2016) points out that because the natural condition of the intra-county settlement wasn't up to their believed standard, the enthusiasm for migration was not too high among the migrants. Only 30 % of villagers were willing to migrate to the destination arranged by the government on the condition that the overall condition of the destination region must be better than the source region. Note that these conditions do not technically concern the potential economic benefits, but rather the overall living environment of the new village.

Tan (2017) similarly investigated at what degree climate hazards have an impact on migration intentions of already resettled rural households. Tan looks at four social systems; knowledge, institution, practice, and technology and finds that these have significant associations with common aspects of climate impact (decreased water supply, land loss and increased living costs). Tan finds that these have a major effect on the decision to relocate. Families with less accessibility to these social systems had a higher chance of experiencing more extreme climatic impacts, and therefore have a bigger chance of wanting to resettle. As an example of the knowledge's effect on farming practices, Tan found out that if the villagers had been taught the knowledge of agricultural "techniques" like e.g. drip irrigation, the chances of them wanting to resettle a second time was indeed lower.

As a consequence of someone wanting to migrate to or from a migration village, a phenomenon called hollowing can happen. Hollowing is when many houses are left unoccupied due to people moving to a different place and abandoning their old home. These people are often the young and strong. This causes problems as land is not unlimited when many houses get unoccupied. On top of that, in correlation with hollowing, since people are moving out of the village, there is not enough labour to work the fields and therefore a lot of arid land goes to waste as well. Neither is there any incentive to improve the living conditions anymore (Li & Wu, 2017). Zheng (2019) did research on hollowing in Juhuatai, a resettlement village in central Ningxia and found that the biggest reasons for villagers to resettle was that they were doing migrant work, had poor educational institutions where they lived or that the environment was still too bad at their destination. If the resettlement area is badly constructed with little access to institutional services as well as doing a bad job at protecting its citizens, there is a big chance of people resettling at a different place again, causing problems for both the government and the people that have to move a second time.

4.4 Policies and Their Implication on Farmers

The way the government regulates and controls people and the environment are through policies. The construction of the migration villages is regarded as policies and the government is in charge of daily governance. The decision to move people over to these built villages are also policy driven and the daily lives and routines of the people in the village is often due to certain policies. In the context of this paper, policies mentioned are only made either to protect the environment or policies that try to help the migrants and alleviate poverty (National Development and Reform Commission, 2013). So far, most of this paper has looked at this climate crisis in Ningxia from the point of view of the villagers living in migration villages. It is not only them that are being affected by the climate and the policies that come thereafter. Though less extensive in sources pulled, the farmers living outside the migration villages also play a vital role in understanding the situation in Ningxia. Therefore, looking outside of the migration villages for a moment, there are many different policies made to safeguard the environment which do not directly have ties to migration, but have a very strong indirect effect. These policies mostly affect farmers living in the countryside. Policies like “Grains for Green”, “One Crop One Village”, “The Grazing Ban Policy” or the “National Forest Conservation Program” are programs that affect the farmers more so than the ones living inside the migration villages. Being able to understand their standpoint is also important to be able to tailor better policies. Dou argues that:

“Because the residents of areas affected by such [policy] programs must believe in the value of the programs before they will be willing to participate, it's necessary for program planners and implementers to understand how these residents perceive these changes. This understanding will help the government to evaluate the influence of the changes and mitigate any unsuspected but serious consequences by exploring the experiences of local communities.” (Dou, 2019 p. 686)

It is therefore important to have the people's thoughts of the policies when making them. In the review process, this paper identified the Grazing Ban Policy and the Grain for Green policy as worthy of further exploration. Though these two policies are the only ones being mentioned in this review does not mean that other policies don't have a significant effect on the lives of the farmers. With longer time and a more in-depth study, more policies could have been included for a wider and better understanding.

4.4.1 Grain for Green

The Grain for Green policy (退耕还林, Tuìgēng huán lín) has been mentioned in a few papers. Most prominent was the papers by Sjögersten (2013) and Dou (2019). The Grain for Green policy involves the farmers giving their land to the government to plant vegetation like grass fields, forest or light shrubbery. In return, the farmers will get grain as compensation. The land has for many years been over-exploited and the soil has therefore become poor. This together with much of the vegetation disappearing because of heavy grazing or natural reasons is causing the land all over Ningxia to become very poor. With this policy, the land can be revitalised and be restored, ready to be used again. Not only does this help the environment and the land, but the grain gained from the government is supposed to be more than what the farmers would manage to farm on their own land. This frees up a lot of time for the farmers to do other occupations which in turn alleviates poverty by the fact that they can earn more money by other means. The Grain for Green policy therefore fills a similar role as the migration villages in that it is a duality proposed policy that is supposed to not only help the environment, but also alleviate poverty among the farmers.

Dou (2019) did research on the farmers perception of the cultural ecosystem services (CES). The CES is closely connected to how people interact and gain benefits from the landscape around them. In more blatant terms, it means how the people perceive the landscape around them and how different landscapes have different effects on people. This included aesthetic services, recreational services, mental and physical health and religious inspirations just to name a few. It was the aesthetic and recreational services as well as the mental and physical health that was most prevalent to the interviewed since this had the most meaning to the participants since for example not all participants partook in religious services.

When it came to aesthetic services the Grain for Green program was highly relevant. When asked, the farmers surprisingly regarded cultivated land as being more important to the CES than forest and grassland. This means that the farmers saw cultivated land as more important to their life than what forest and grassland did. This could be explained by the fact that the farmers have a thorough understanding of the cultivated land in which they have relied on for generations. Another good reason is that the farmers are not allowed to alter the forest or grassland much, and they have never really been taught to enjoy the recreational benefits that a forest might provide. With the introduction of the Grain for Green, much of the cultivated land has been transformed into either grassland or forest, altering the landscape a lot. So, not only does the Grain for Green change the environment, but it also changes the farmers perception of the land and negatively affects the CES provision. As a result, the farmers believed that the value of mental and physical health as well as religious services has decreased under Grain for Green. On the other hand, even though farmland was seen as more important, the farmers thought the value of aesthetic and recreational services had increased.

In Wang's (2017) paper they found that farmers' connection with the environment influences their willingness to relocate. The connection to religious sites had a negative effect on wanting to relocate. If the environment around the place of origin was good, it also had a negative effect on wanting to resettle. With the introduction of the Grain for Green policy, religious services and the connection to the land as a religious actor decreased, implying that the policy had made the farmers have a higher willingness to resettle after the Grain for Green policy. Just because the aesthetic value has increased with the Grain for Green policy does not mean that the satisfaction level of the land is increased.

Farmers' perception of the land around them does in fact change their satisfaction level, and the introduction of the Grain for Green policy has changed how they view their surroundings, but not always in a positive way as we might expect. This policy was not meant to last forever. The program was scheduled to gradually disappear when it ended in 2015 and only be extended to certain program areas. This would, according to Dou, not only affect ecological restoration, but "also undermine the cultural identity of human inhabitants by dramatically affecting the lifestyle of residents and their employment opportunities" (Dou et al., 2019 p. 686). That is why it is important to understand how the farmers perceive the changes made to the environment around them.

To that extent, there is the danger that when the policy ends, people who have previously been dragged out of poverty might fall back. "Some poverty alleviation cadres found that the income from poverty alleviation of some poor households is staged, and once the poverty alleviation policy is

terminated, many poor households are still at risk of returning to poverty” (Shu X. et al., 2020 p. 132. Self-translated). That is why it is important to not have the farmers and villagers rely solely on policies from the government. Policies do not last forever. Policies like the Grain for Green policy or the Grazing ban policy therefore might work at reducing poverty in the short-term, but do not work too well in the long-term. If they fall back into poverty, they might be worse off than when they started. Not only that, but they would also need to fall back to exploiting their fields again, completely neglecting the effect of the Grain for Green policy. What is needed to combat the ecological crisis in Ningxia is long term goals, not short-term ones. Having the farmers be more knowledgeable about the reasoning behind the policies might make them more inclined to follow said policies after their abolishment. Information and communication improve this. This also goes in line with a previous study by Cheng (2018) who suggests that improving communications between farmers and local governments is needed to enhance the social acceptability of policy outcomes.

4.4.2 Grazing Ban Policy

Another policy that was prevalent during this review process was the Grazing Ban Policy. During the founding of the People’s Republic of China the population grew rapidly. This meant that there was a big focus on food production. At that time there were not many regulations on grazing and farming. Over time, the people of western China gradually evolved into sedentary grazing, meaning that they let their livestock graze around their farming fields year-round. Livestock were distributed to households which meant that there was a big incentive to own livestock. Livestock therefore increased from 30 million heads in 1949 to 100 million heads in the 1990s (Chen & Zhou, 2016). This led to a drop in average land area per animal by about 70%. What ended up happening was a vicious circle of grassland degradation. To stop this, the government established a policy that banned grazing on grassland. In return, the farmers get subsidies including feed grain and capital grants. The Grazing Ban Policy (GBP) was implemented in most of the western provinces including Ningxia in 2003, and later expanded to other provinces experiencing similar problems. Since then, the grassland ecological environment has seen major improvement and huge areas have regained its grassland properties. “The grassland vegetation coverage, vegetation height, and fresh yield compared with areas without grazing control are 10%, 34.8%, and 53.5% higher, respectively (Chen & Zhou, 2016).”

In terms of ecological protection, the GBP has been a success in Ningxia since its implementation in 2003. The number of livestock has neither decreased nor increased massively in Ningxia as a result of the GBP (Wei et al., 2020). Even so, the GBP is not all positive and has caused both strain and reward for the farmers who the Policy hit.

During the screening of papers for this narrative review, four papers were identified with having the

grazing ban as its main focus of the article. These papers include Chen & Zhou, 2016, Lu et al., 2016 Wang W., 2019 and Wei, 2020. They all look at the people's opinion on the Grazing Ban. The area of Yanchi has been chosen as the field area of research for all four papers. Yanchi lies in the central northern area of Ningxia. Yanchi has been chosen because it is the area of Ningxia that has the biggest distribution of stockbreeding. The output value of stockbreeding accounts for 60% of the total output value of the agricultural sector (Chen & Zhou, 2016). The grazing ban was also implemented in this area one year before its official implementation in 2003.

Chen (2016) focuses on the farmers' perception of the GBP over a period of nine years, from 2003 to 2012 divided into three separate field observations. By comparing these three time periods, Chen measures how the satisfaction of the policy has changed through the years. Wang (2019) compares the satisfactory level of the GBP with life satisfaction to see if there are any correlations between the two. Wei (2020) takes a general stance at desertification control projects and farmers perspective towards said projects. As the GBP is a major project in this regard, it becomes the main topic of the paper. Lastly, Lu (2016) looks at the adaptation strategies of the farmers after the implementation of the Grazing Ban.

Both Chen and Wang found that the farmers' perception of the ecological impact was overwhelmingly positive. Over 94% of participants in both studies agreed to a certain degree that the GBP had improved the grassland in the area around where they lived (94% and 97% respectively), showing that the policy has been positive in the eyes of the farmers as well, at least from an ecological standpoint.

The farmers showed a general positive view of the GBP and thought the government had done a good job with its implementation and its subsidies. But as time went on, the farmers' perspective changed. This is especially shown in Chen's paper as over the years the farmers gained a more negative stance towards the policy. When asked if they supported the policy, the people went from supporting and encouraging it to only accepting it as a state policy they were forced to abide by. The topic of "short-term views" prevails in many of the papers here as well. Wei asked if the farmers were willing to follow similar regulation after the ban had been lifted, in which many were, but if they had to expend personal economic funds to do so, a lot fewer were willing to continue with the practice. It seems the farmers have a very narrow and short-term view of the GPB (Wei et al., 2020). Even though the farmers have good environmental awareness, it does not lead to any environmental protection behaviour as long as there are no economic benefits (Chen & Zhou, 2016). Since farmers are mainly driven by economic incentives, Chen suggests that further policy should focus on economic incentives like grazing fees or payment based on provision on ecosystem

services. Having short-term views could be due to the lack of knowledge or information. Long-term incentives are next to useless if the people do not know what the long-term goals are.

Livestock raising is a huge part of the farmers' livelihood in Yanchi, and such a ban on grazing has major effects on their livelihood. Many poorer farmers had to abolish livestock completely and find other ways to gain money. Most of the farmers had to either migrate to bigger cities to look for work there or rely solemnly on the subsidies from the state, which in most cases was not enough to live on. According to Lu, 50% had to reduce or abolish their livestock, while 46% increased their production. The state incentivised breeding parks and large indoor breeding facilities. As a result, the price of the grain for livestock also rose. Those farmers who had the capital available ended up increasing their livestock by building out their barns. This has to a certain point caused an aggravation in the gap between the poor and the rich in the rural society of Yanchi. The farmers that have the least amount of capital available are the ones that have been hit the hardest by the policy. This is also why all papers point out that almost 75% of farmers practise illegal grazing at night, as the grain prices and facilities are too expensive to maintain. The farmers also graze illegally because they disagree with the government in the prolonged implementation of the policy. According to them, they have seen an improvement in the grassland since the policy introduction and no longer think it is necessary to have the ban as strict as it is (Lu et al., 2016). This can both connect up to the lack of communication between the government and the farmers as well as the lack of a long-term vision from the farmers side. With such strict rules over such a long time, the policy ends up hurting the farmers a lot more than it might need to. At the same time, revitalising the environment and the grassland is not done in a day, and even if the grassland "seems" to be restored does not mean it is. A lack of a long-term view might make the farmers annoyed at the slow pace in which the policy is abolished.

All papers put a strong emphasis on the lack of participation on the farmer's side. Such environmental policies are often orchestrated by either the government or private donors. Their agenda is often focused on environmental improvement more so than farmers welfare. Farmers are therefore often omitted in the matter of environmental protection projects even though they are the ones that are affected the most. According to Wei, over 50% of the farmers in northern Yanchi surveyed do not have a clear understanding of what the policy is. More so, 40% did not understand the subsidies properly (Wei et al., 2020). Wei identifies two reasons for such low knowledge of the policy. First, projects like these are top-down projects established by the government, and most funds come from the government. Farmers are one of the stakeholders on the surface, but they have in reality very little involvement in decision making. The second reason is lack of institutional capacity. The communication between the state and farmers is poor. There are lacking institutions

for farmers to voice their complaints. Because of this, farmers have a hard time influencing decision making and have had to opt into accepting the policy for what it is while not having any channels to report their opinions and complaints to. They “only blindly ‘believed in the country’ and mechanically obeyed the state’s commands, leading to a low degree of real participation” (Wei et al., 2020, p. 11)

Wang’s findings show that satisfaction of the GBP has a big effect on farmers' life satisfaction. Since the GBP has largely been a positive policy, the GBP satisfaction as well as the life satisfaction has risen. Higher satisfaction could lead to better participation and farmers being more supportive of the policy. An increase in participation will likely increase the farmers satisfaction of the GBP, and as such, increased participation can facilitate an increase in life satisfaction. With a satisfied population, new policies can become easier to regulate (Wang W. et al., 2019).

The result of the policy has to a certain extent caused a bigger gap between the rich and the poor in Ningxia due to the policy incentivising large scale breeding. However, this could on the other hand be a positive point for the environment to a certain extent. In Huang’s (2021) paper on media's role, the author found a positive effect by transferring cultivated land and having bigger facilities because it makes farmers more likely to implement ecological measures. Farmers with bigger pastures are more likely to uphold the Grazing Ban Policy because they have more to lose if they break it by grazing illegally. To that extent, making bigger breeding facilities might be better for the environment to a certain extent, but might cause a bigger gap between the poor and the rich. This point was similarly made by Cao (2020) who found that pro-environmental agricultural practices have an incentive effect on farmers having rented-in land as they have a bigger income share from farmland than those who do not have as much land.

Due to this and the fact that GBP and the Grain for Green policy does not directly create any employment opportunities, many farmers see no other way out than to find employment elsewhere. The compensation they get from the state, though substantial, is far from enough to sustain themselves, and that is why they must find other means of income. As Lu (2016) pointed out, the most common adaptation strategy for farmers who do not migrate to migration villages is to do migration work. The problem with this is that it is mostly young people who migrate out to work. If they decide not to come back after working in the cities, it can really hurt the local community. Many farmers see the migration work as a positive thing in that people who travel out provide financial support for the family. If they decide to come back, they can bring valuable skills and attributes to the community (Sjögersten et al., 2013). The problem is only that there are few young people who decide to move back to their village after becoming accustomed to life in the cities. That

is one of the reasons why migration work can't be the only answer to poverty alleviation. The farmers that do not migrate out to work in cities must resort to other ways of making money. They could rent out their land, but that would leave the family very vulnerable as the subsidies are not good enough to live on. Due to their already poor economic condition, it can be hard finding other ways to earn money. This can as a result lead to people deciding to relocate to resettlement villages. To further argue this point, Tan (2017) mentions that the reason for relocation is not only for economic reasons, though it is identified as the biggest factor (Wang Y. et al., 2017; Zhang, Li & Xia, 2014). Factors such as life satisfaction and income inequality also influence resettlement. The Grazing Ban Policy has to a certain extent increased income inequality and reduced life satisfaction. As such, the policies can be said to have a positive effect on farmers' willingness to resettle, if it is through resettlement villages or migration work.

It can be worth noting that the reason people travel to cities to work is because they have very little other choice in the matter, at least in Ningxia (Jia et al., 2016). Knowledge could also change this fact in that we could see a rural revitalization. With more knowledge and a better educational background, people could take up more diverse jobs, not being defaulted to work in the fields. With this, there is less of an incentive to travel to cities to work since you have the capability of creating different types of work in the countryside or in the resettlement villages. That is why it is also important that the government sets up work opportunities in the migration villages as well so that the only opportunity for the villagers is not only to travel to the cities to work.

4.5 Discussion

By increasing the farmers' knowledge of policies they could more easily utilise the policies to their advantage. This in turn makes them less likely to relocate as the knowledge they gain could help them in the long term to protect themselves from climatic disaster and change in climate as well as gain a better understanding of why these policies are made in the first place. Same goes for knowledge of farming practices where more knowledge and information could help save water and increase crop output, both helping the environment and alleviate poverty. By the same coin, the villagers living in migration villages could also gain from the increase in knowledge and especially increased communication. The government is trying to educate the farmers coming to the village, but many refuse to participate. This only hurts both parties. It would help both parties if the communication was strengthened between them.

Many farmers are unaware of policies that could help them. As some papers show, many farmers are not aware of how the policies work. If one does not know how the policies work, it can be hard

to utilise them to their full potential. Being able to both inform the farmers and giving them easier accessibility to such information can really help them make better choices when it comes to policies. By helping the farmers and villagers utilising different types of communication channels like old and new media, they can get a better understanding of policies as well as be able to faster respond to different ecological challenges. With this, the farmers and villagers will become more positive to the different policies as it has been shown that those who have a better understanding of other policies are also the ones that are more satisfied with them.

The government does not listen to the farmers and villagers wants and needs, which really hurts both parties as shown in the example by Wang (2021) and the housing deadlock. But it also goes the other way. The villagers do not trust the government and believe there are some hidden fees to the housing project. As well as that, as Shu (2016) pointed out, the self-migrated farmers blatantly refuse to cooperate with the government because they have no trust in them. Increasing communication both ways between parties are therefore important. By doing so the farmers and villagers can get their voices heard more easily which in turn will increase life-satisfaction. And as argued by the villagers, by increasing information clarity from the government side, the villagers will be able to put more trust in the government.

As quoted earlier “Some poverty alleviation cadres found that the income from poverty alleviation of some poor households is staged, and once the poverty alleviation policy is terminated, many poor households are still at risk of returning to poverty” (Shu X. et al, 2020 p. 132 Self-translated). The policies that are helping farmers and villagers escape poverty by offering short term rewards are obviously good in the short term but might not work out in the long term. Through this review it is found that short term actions are good in securing people getting out of poverty but hampered by the fact that the short-term initiatives do not necessarily transform into long term goals. Instead, an increase in knowledge, communication and access to information is one of the most important points in increasing the farmers and villagers’ opinion and satisfaction of their daily life. A majority of the papers talks about how these three factors are poorly developed, and how an increase in these could really help the farmers develop. They are not the most effective methods in the short term but can in the long term improve the lives of the people. An increase in knowledge amongst farmers and villagers might not solve all problems, but given the correlation of a lot of the problems inhabited within the region and poor education as well as poor ecological awareness, it might be the best course of action.

Similarly, the short-term benefits are generally what is on the migrant’s mind. Short term investments are generally more profitable than long term ones, so when deciding to apply either

short- or long-term deals, migrants often choose the short term. So, as well as the policy subsidies being short term and the migrants often choosing the short-term option it leads to the migrants simply falling back to poverty over the long term. This paper therefore argues that it is important to help the farmers make the choice that leads to the best long-term rewards. As argued many times, knowledge and awareness is one of the better ways to reach this goal. Having better knowledge allows for better decision making when it comes to deciding long term vs short term rewards. It is then easier to understand the value of a potential long-term payoff (Chen & Zhou, 2016; Wei et al., 2020).

As multiple papers identify, life satisfaction can positively affect ecological awareness and practices as well. That is, if they are wealthier and happier, they have more resources to use and therefore have it easier at adopting new ecological practices. If they have more land in which they farm or more animals they feed, Chen (2019) argues that this makes them more likely to apply environmentally friendly practices since the consequences for breaking with such policies will be more costly.

5 Conclusion

This paper has with the use of a narrative review aimed at figuring how the people of Ningxia perceive and respond to the changing climate. A narrative review is not often used in this field of research and especially not this topic. With the use of a narrative review this paper has been able to analyse and combine the data available on the problems facing migrants in Ningxia to get a clear and overarching view of the factors limiting the migrant's ecological behaviour. It also helps get a better understanding of how to combat the environmental problems through the people living under it. By collecting sufficient data gathered by other researchers in this field this paper has been able to illustrate the view of the crisis from the perspective of the migrants. Their standpoint and their considerations are important. By trying to understand this, one can more easily decide on what to do moving forwards. We can decide the best cause of action to safeguard the people's lives as well as safeguarding the environment in the most effective way possible. The results can help the government make decisions as well as find out where more research or testing is needed. The people of Ningxia are living better today than they have done before. Their wealth has increased and many of them now have better access to institutional services like education and healthcare through the migration villages. Even so, there are still problems facing Ningxia.

This paper has identified several barriers the farmers and villagers believe they are struggling with. Barriers such as lack of farming knowledge and a lack of knowledge about policies. Similarly, lack of information makes it hard to get the knowledge necessary to live a prosperous life. Low life

satisfaction as well as poor economic situations forces people to resettle. A lack of communication causes hardship between the government and the migrants. Through these barriers this paper has found that there are especially three variables that can elevate the migrant's awareness and behaviour of the environment, namely:

- Knowledge of farming practices as well as knowledge of policies
- Communication between the migrants and the government as well as internally between migrants
- Access to information about farming practices and different types of policies

Most of the recommendations to improve the environmental behaviour of the farmers is through wealth because farmers are much more willing to participate in pro-environmental practices if it is economically beneficial. The point this paper tries to make is that there are other ways to solve the problem. Such economic incentives work well in the short term, but do not translate well into the long term. Information, education and knowledge however can be a long-term investment. Though not seemingly being the main focus of all the papers gathered in this review, almost all the papers mention these points as shortcomings. Knowledge, education and information is still not widespread in Ningxia, and an increase in this can improve the farmers willingness to participate as well as increase their life satisfaction without having to pour massive amounts of money into increasing or prolonging the subsidies given.

It also seems evident that there is a real lack of institutional capacity and communication between the farmers and governmental institutions. Many papers debate that this is one of the problems that are causing problems for the migrants as well as the government and that an improvement in communication might just be one of the easiest ways to improve the livelihood of the people living in Ningxia's exposed areas. Bad communication lowers access to information to the migrants as well as make them more sceptical and less trusting towards the government.

Even though this paper puts its focus on knowledge being one of the answers to the problems in Ningxia, the value of economic incentives should not be downplayed. As farmers and villagers focus mostly on the short-term rewards, economic incentives are definitely the best incentives to make them adopt environmentally friendly practices. The problem comes when the policies end and the economic incentives end with them. Even so, as the situation stands, they are extremely reliable at improving the environment and reducing poverty. Another solution that was surprisingly found was the fact that some papers argued for increasing the size of the farms around Ningxia as it incentivised the use of environmentally friendly methods. Even though this might not be the best for the individual farmers, it seems to have a positive effect on the environment. As well as that, the

villages in Ningxia are all different and they all have different governmental structures and therefore all have different satisfaction levels. That is why this paper should not be taken as a definitive view of how the situation is in Ningxia today. All villages are different, and some are a lot more prosperous than others, meaning that many of the points made in this paper should be researched and investigated on a village-to-village basis.

The limited time span of this study makes it so that not all papers on the topic could be included. To reduce the number of sources, only sources with a form of survey or field study has been included. Because of this, a lot of different other types of sources have been excluded. Many of these sources who might not directly include farmers and villagers' perspective, might still have valuable information about the life of said people. A wider search should be conducted where other types of information and research is included as well so as to widen the reach of the study and paint a clearer picture of the situation of how life is for the villagers and farmers in Ningxia today. The inclusion of other research methods will give a better picture of the situation and get a better overview of the physical improvement of the environment as well.

6 Sources

- Bilotta, G. S., Milner, A. M., & Boyd, I. (2014). On the use of systematic reviews to inform environmental policies. *Environmental Science and Policy*, 67-77.
- Cao, H., Zhu, X., Heijman, W., & Zhao, K. (2020). The impact of land transfer and farmers' knowledge of farmland protection policy on pro-environmental agricultural practices: The case of straw return to fields in Ningxia, China. *Journal of Cleaner Production*, 277, Article 123701. <https://doi.org/10.1016/j.jclepro.2020.123701>
- CDI (China Data Insight). (2021). *China Data Insight: Dataset*. Retrieved from <https://cdi.cnki.net/>
- Chen, Y., & Zhou, L. (2016). Farmers' perception of the decade-long grazing ban policy in northern China: A case study of Yanchi county. *Sustainability (Switzerland)*, 8(11), Article 1113. <https://doi.org/10.3390/su8111113>
- Chen Y. 陈祎, & Cheng Y. 成媛. (2019). 脱贫攻坚背景下宁夏生态移民心理距离与交往意愿实证研究 [An empirical study on the psychological distance and communication willingness of ecological immigrants in Ningxia under the background of poverty alleviation]. *西南民族大学学报(人文社科版)* [Journal of Southwest University for Nationalities], 40(07), 186-191.
- Chen Z. 陈忠祥. (1995). 宁夏扶贫工程与引黄灌区开发中的吊庄移民 [A Study on the "Diao Zhuang" Villages in the New Irrigated Areas in Ningxia]. *地理学报* [Acta Geographica Sinica], 50(6), 514-520.
- Cheng, L., Liu, Y., Brown, G., & Searle, G. (2018). Factors affecting farmers' satisfaction with contemporary China's land allocation policy – The Link Policy: Based on the empirical research of Ezhou. *Habitat International*, 75, 38-49. <https://doi.org/https://doi.org/10.1016/j.habitatint.2018.04.004>
- China Statistics Press. *Ningxia Statistical Yearbook*. China Statistics Press Retrieved from <http://cdi.cnki.net/Titles/SingleNJ?NJCode=N2022030250>
- Dickson, R., Cherry, G., & Boland, A. (2014). *Carrying Out a Systematic Review as a Master's Thesis*. Sage.
- Dong M. 东梅, Li X. 李晓明, & Liu Q. 刘乔巧. (2011). 生态移民瞄准精度实证研究——以宁夏为例 [An Empirical Study on the Targeting Accuracy of Ecological Migration ——Take Ningxia as an example]. *农业技术经济* [Economic Agricultural Technology](09), 24-32.
- Dong M. 东梅, Zhao J. 赵家艺, Gao Y. 高越红, & Ou Y. 欧耀文. (2019). 安置区移民生态意识会影响其生态行为吗?——来自宁夏的证据 [Does ecological awareness affect ecological behavior? -Evidence from Ningxia]. *干旱区资源与环境* [Journal of Arid Land Resources and Environment], 33(09), 50-56.
- Dou, Y. H., Zhen, L., Yu, X. B., Bakker, M., Carsjens, G. J., & Xue, Z. C. (2019). Assessing the influences of ecological restoration on perceptions of cultural ecosystem services by residents of agricultural landscapes of western China. *Science of the Total Environment*, 646, 685-695. <https://doi.org/10.1016/j.scitotenv.2018.07.205>

- Fan, L. (2016). The Policy Needs of Ecological Migrants in Ningxia and Assessment of Satisfaction Levels. In P. Li & X. Wang (Eds.), *Ecological Migration, Development and Transformation* (pp. 171-207). Springer.
- Geng Y. 耿一睿, Miao H. 苗红, An S. 安烁, Kong Y. 孔云霄, Jia F. 贾菲, & Deng H. 邓慧丽. (2020). 中国生态移民可视化研究分析 [Research of Visualization Analysis of Ecological Immigration in China]. *西南大学学报(自然科学版)* [*Journal of South West University (Natural Science Edition)*], 42(5), 152-161. <https://doi.org/10.13718/j.cnki.xdzk.2020.05.020>
- Hu, X., Liu, X., Huang, Y., Huang, L., & Dong, M. (2020b). 宁夏生态移民村空间剥夺测度及影响因素 [Measurement of spatial deprivation of eco-migrant villages and its impact factors in Ningxia]. *Dili Xuebao/Acta Geographica Sinica*, 75(10), 2224-2240. <https://doi.org/10.11821/dlxb202010013>
- Hu X. 胡西武, Chen Z. 陈珍妮, Huang Y. 黄越, Huang L. 黄立军, & Dong M. 东梅. (2020a). 宁夏生态移民定居意愿和行为的地理要素影响研究 [Effect of geographical factors on settlement willingness and behavior of eco-migrants in Ningxia]. *干旱区资源与环境* [*Journal of Arid Land Resources and Environment*], 34(02), 29-38.
- Huang, X. H., Yang, F., & Lu, Q. (2021). 媒介使用对农民水土保持技术采用行为的影响-生态知识和生态风险感知的中介效应分析 [Media Use and Farmers' Soil and Water Conservation Technology Adoption Behavior: Analyzing the Mediation Effect of Ecological Knowledge and Ecological Risk Perception]. *Resources and Environment in the Yangtze Basin*, 30(5), 1241-1251. <https://doi.org/10.11870/cjlyzyyhj202105021>
- Jia G. 贾国平, Zhu Z. 朱志玲, Wang X. 王晓涛, Deng H. 邓慧丽, & Pei Y. 裴银宝. (2016). 移民生计策略变迁及其生态效应研究——以宁夏红寺堡区为例 [Research on the changes of migrant's livelihood strategies and their ecological effects: A case study of Hongsipu District in Ningxia Province]. *农业现代化研究* [*Research of Agricultural Modernization*], 37(3), 505-513.
- Li, C., & Wu, K. (2017). Driving forces of the villages hollowing based on geographically weighted regression model: a case study of Longde County, the Ningxia Hui Autonomous Region, China [Article]. *Natural Hazards*, 89(3), 1059-1079. <https://doi.org/10.1007/s11069-017-3008-y>
- Li, P., & Wang, X. (2016). Introduction: Poverty Reduction, Ecological Migration and Sustainable Development. In P. Li & X. Wang (Eds.), *Ecological Migration, Development and Transformation*. Springer.
- Li, Y., Conway, D., Wu, Y., Gao, Q., Rothausen, S., Xiong, W., Ju, H., & Lin, E. (2013). Rural livelihoods and climate variability in Ningxia, Northwest China. *Climatic Change*, 119(3-4), 891-904. <https://doi.org/10.1007/s10584-013-0765-9>
- Lu, H., Zhou, L., Chen, Y., Ma, B., & Wei, X. (2016). 禁牧政策下宁夏盐池县农户适应策略及其影响因素 [Adaptive strategy of peasant households and its influencing factors under the grazing prohibition policy in Yanchi County, Ningxia Hui Autonomous Region]. *Shengtai Xuebao/Acta Ecologica Sinica*, 36(17), 5601-5610. <https://doi.org/10.5846/stxb201503100461>

- Meyer, A. (2015). Does education increase pro-environmental behavior? Evidence from Europe. *Ecological Economics*, 116, 108-121. <https://doi.org/10.1016/j.ecolecon.2015.04.018>
- NDRC (National Development and Reform Commission). (2013). *国家适应气候变化战略 [National Climate Change Adaptation Strategy]*. Retrieved from <http://www.gov.cn/gzdt/att/att/site1/20131209/001e3741a2cc140f6a8701.pdf>
- Pacheco, G., & Lange, T. (2010). Political participation and life satisfaction: a cross-European analysis. *International Journal of Social Economics*, 39(9), 686-702. <https://doi.org/https://doi.org/10.1108/03068291011062489>
- SCC (State Council of China). (2011). New Progress in Development-oriented Poverty Reduction Program for Rural China. *China Daily*. http://usa.chinadaily.com.cn/china/2011-11/16/content_14106364.htm
- Shen, J. Y., Duan, W., Wang, Y. Q., & Zhang, Y. J. (2022). Household Livelihood Vulnerability to Climate Change in West China. *International Journal of Environmental Research and Public Health*, 19(1), 14. <https://doi.org/10.3390/ijerph19010551>
- Shi, Y., Han, M., Zhuang, Z., Ma, C., Wu, J., & Ma, X. (2015). Ecological Benefits Evaluation in Ecological Migration Zone Based on Ecological Green Equivalent: A Case Study of Migration Zone in Yanchi County. *Asian Agricultural Research*, 7(7), 50-56. <https://doi.org/10.22004/ag.econ.209848>
- Shu, X., & Nie, J. (2016). Social Management Problems Facing the Ningxia Ecological Migration Zones and Their Solutions. In P. Li & X. Wang (Eds.), *Ecological Migration, Development and Transformation* (pp. 89-101). Springer.
- Shu X. 束锡红, Ye Y. 叶毅, Chen Y. 陈祎, & Fan Y. 樊晔. (2020). 乡村振兴背景下东西协作回汉互嵌社区的脱贫模式——宁夏生态移民闽宁镇原隆村的个案研究 [Under the Background of Rural Revitalization, The Poverty Alleviation Model of east-west Cooperation and Hui-han Community: A Case of Eco-immigrant Community in Ningxia Yuanlong Village]. *贵州民族研究 [Guizhou Ethnic Studies]*, 41(06), 128-134.
- Sjögersten, S., Atkin, C., Clarke, M. L., Mooney, S. J., Wu, B., & West, H. M. (2013). Responses to climate change and farming policies by rural communities in northern China: A report on field observation and farmers' perception in dryland north Shaanxi and Ningxia. *Land Use Policy*, 32, 125-133. <https://doi.org/10.1016/j.landusepol.2012.09.014>
- Sola, A. O. (2014). Environmental Education and Public Awareness. *Journal of Educational and Social Research*. <https://doi.org/10.5901/jesr.2014.v4n3p333>
- Song, Y., Li, C., Jiang, L., & Lu, L. (2015). Ecological indicators for immigrant relocation areas: a case in Luanjingtian, Alxa, Inner Mongolia. *International Journal of Sustainable Development & World Ecology*, 1-7. <https://doi.org/10.1080/13504509.2015.1075440>
- Tan, Y. (2017). Resettlement and Climate Impact: addressing migration intention of resettled people in west China. *Australian Geographer*, 48(1), 97-119. <https://doi.org/10.1080/00049182.2016.1266593>

- Wang, H., & Yuan, L. (2021). Why good governance goes wrong: Government and village in the supply of public goods in rural China. *Rural China*, 18(2), 192-223. <https://doi.org/10.1163/22136746-12341274>
- Wang, W., Zhou, L., Yang, G., Sun, Y., & Chen, Y. (2019). Prohibited grazing policy satisfaction and life satisfaction in rural northwest china—a case study in yanchi county, ningxia hui autonomous region. *International Journal of Environmental Research and Public Health*, 16(22), Article 4374. <https://doi.org/10.3390/ijerph16224374>
- Wang, Y. (2016). The Social Relation of the Ecological Migrants in Ningxia and Their Social Evaluation. In P. Li & X. Wang (Eds.), *Ecological Migration, Development and Transformation* (pp. 69-88). Springer.
- Wang Y. 王艳, Peng J. 彭婧, & Dang J. 党晶晶. (2017). 移民的迁移意愿与生活期望——基于宁夏生态移民调查数据的 Logistic 回归分析 [The Migration Intentions of Migrants and Life Expectancy: Based on the Logistic Regression Analysis of Ecological Migrant Survey Data]. *西北人口 [Northwest population]*, 38(04), 116-121.
- Wei, X., Zhou, L., Yang, G., Wang, Y., & Chen, Y. (2020). Assessing the effects of desertification control projects from the farmers' perspective: A case study of Yanchi county, northern China. *International Journal of Environmental Research and Public Health*, 17(3), Article 983. <https://doi.org/10.3390/ijerph17030983>
- Wikimedia Commons. (2021). *Atlas of Ningxia*. Retrieved 16.05 from https://commons.wikimedia.org/wiki/Atlas_of_Ningxia
- Wu, Y. (2019). "Ecological Migration" -- A Different Version of "Climate Migration" in China? https://cn.boell.org/sites/default/files/2020-09/Ecological%20Migration_Final%200902.pdf
- Xinhua News Agency. (2021). *中华人民共和国国民经济和社会发展第十四个五年规划和 2035 年远景目标纲要 [Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035]*. Xinhua News Agency 新华社, Retrieved from http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm
- Xu, Y. (2021). Evaluation of the Types and Comprehensive Effects of Ecological Migration in China: Taking the Ecological Protection and Land Tenure Protection of Xihaiigu Area in Ningxia as an Example. *Asian Social Science*, 17(9), 38. <https://doi.org/10.5539/ass.v17n9p38>
- Yang, H., Dubé, F., & Huang, L. (2016). Lack of Migrant Involvement in Environmental Migration Projects in Western China. *Migraciones internacionales*, 8(4), 9-40.
- Yang, J., Tan, C., Wang, S., Wang, S., Yang, Y., & Chen, H. (2015). Drought Adaptation in the Ningxia Hui Autonomous Region, China: Actions, Planning, Pathways and Barriers. *Sustainability*, 7(11), 15029-15056. <https://doi.org/10.3390/su71115029>
- Zhang R. 张荣飞, Wang J. 王建力, Li J. 李昌晓, Li. C. 李健, & Li Z. 李志刚. (2013). 基于 PRA 方法调查的农户对生态移民现状的反馈——以宁夏黄河流域五堆子第一安置点为例 [Farmers' Feedback on Current Situation about Ningxia Ecological Immigration Based on the Method of PRA: The First Relocation Site in Ningxia Yellow River Valley's Wuduizi as an Example]. *重*

庆师范大学学报(自然科学版) [*Journal of Chongqing Normal University (Natural Science)*], 30(04), 157-164.

- Zhang Y. 张越, Li S. 李双奎, & Xia M. 夏淼. (2014). 生态移民工程中的移民满意度实证研究——以宁夏泾灵新村为例 [An Empirical Study on Migration Satisfaction in the Ecological Migration Project ——Taking Jingling New Village in Ningxia as an example]. *宁夏社会科学* [*Social Sciences in Ningxia*](05), 54-61.
- Zheng D. 郑殿元, Wang Y. 王银, & Mi H. 米欢. (2019). 生态移民安置区聚落空心化研究 [Study on the Settlement Hollowing of Ecological Immigrant Settlement Area —A Case of Juhuatai Resettlement Area of Tongxin County in Ningxi]. *宁夏工程技* [*Ningxia Engineering Technology*], 18(1).
- Zheng, Y., Meng, H., Xie, X., & Shi, S. (2017). Dynamics of Climate Change, Drought and Migration: A Mixed Method Research in Ningxia. *Chinese Journal of Urban and Environmental Studies*, 05(03), 1750021. <https://doi.org/10.1142/s234574811750021x>
- Zheng, Y., Meng, H., Zhang, X., Zhu, F., Wang, Z., Fang, S., Opitz-Stapleton, S., Pan, J., Ma, Z., Fan, J., Shi, S., Fan, J., Xie, X., Nadin, R., & Kierath, S. (2016). Ningxia. In *Climate Risk and Resilience in China*. Routledge.

7 Appendix

1. List of sources screened and methods used in each paper in accordance with figure 5

Methods used	Title	Author
Questionnaire Statistical Analysis	The impact of land transfer and farmers' knowledge of farmland protection policy on pro-environmental agricultural practices: The case of straw return to fields in Ningxia, China.	Cao et al., 2020
Household questionnaire Statistical Analysis	Farmers' perception of the decade-long grazing ban policy in northern China: A case study of Yanchi county	Chen Y. & Zhou L., 2016
Questionnaire Statistical Analysis	An empirical study on the psychological distance and communication willingness of ecological immigrants in Ningxia under the background of poverty alleviation	Chen Y. & Cheng Y., 2019
Interview Statistical Analysis	An Empirical Study on the Targeting Accuracy of Ecological Migration ——Take Ningxia as an example	Dong, Li & Liu, 2011
Questionnaire Statistical Analysis	Does ecological awareness affect ecological behavior? - Evidence from Ningxia	Dong M. et al., 2019
Interview	Assessing the influences of ecological restoration on perceptions of cultural ecosystem services by residents of agricultural landscapes of western China	Dou et al., 2019
Questionnaire	The Policy Needs of Ecological Migrants in Ningxia and Assessment of Satisfaction Levels	Fan L, 2016
Household Questionnaire	Measurement of spatial deprivation of eco-migrant villages and its impact factors in Ningxia	Hu X. et al., 2020b
Questionnaire Statistical Analysis	Effect of geographical factors on settlement willingness and behavior of eco-migrants in Ningxia	Hu X. et al., 2020a
Questionnaire Statistical Analysis	Media Use and Farmers' Soil and Water Conservation Technology Adoption Behavior: Analyzing the Mediation Effect of Ecological	Huang, Yang & Lu, 2021

	Knowledge and Ecological Risk Perception	
Household Questionnaire	Research on the changes of migrant's livelihood strategies and their ecological effects: A case study of Hongsipu District in Ningxia Province	Jia et al., 2016
Household Questionnaire Field Observation	Rural livelihoods and climate variability in Ningxia, Northwest China	Li, 2013
Field Investigation Statistical Analysis	Adaptive strategy of peasant households and its influencing factors under the grazing prohibition policy in Yanchi County, Ningxia Hui Autonomous Region	Lu, 2016
Household Questionnaire Statistical Analysis	Household Livelihood Vulnerability to Climate Change in West China	Shen et al., 2022
Questionnaire	Social Management Problems Facing the Ningxia Ecological Migration Zones and Their Solutions	Shu & Nie, 2016
Field Observation, Questionnaire	Under the Background of Rural Revitalization, The Poverty Alleviation Model of east-west Cooperation and Hui-han Community: A Case of Eco-immigrant Community in Ningxia Yuanlong Village	Shu et al., 2020
Field Observation Interviews	Responses to climate change and farming policies by rural communities in northern China: A report on field observation and farmers' perception in dryland north Shaanxi and Ningxia	Sjögersten et al, 2013
Household Questionnaire Statistical Analysis	Resettlement and Climate Impact: addressing migration intention of resettled people in west China	Tan Y., 2017
Interview Discourse analysis	Why good governance goes wrong: Government and village in the supply of public goods in rural China	Wang H. & Yuan L., 2021
Household Questionnaire Statistical Analysis	Prohibited grazing policy satisfaction and life satisfaction in rural northwest china—a case study in yanchi county, ningxia hui autonomous region	Wang et al., 2019

Questionnaire	The Social Relation of the Ecological Migrants in Ningxia and Their Social Evaluation	Wang Y., 2016
Questionnaire Statistical Analysis	The Migration Intentions of Migrants and Life Expectancy: Based on the Logistic Regression Analysis of Ecological Migrant Survey Data	Wang Y., Peng J. & Dang J., 2017
Questionnaire Interview based on Questionnaires Statistical Analysis	Assessing the effects of desertification control projects from the farmers' perspective: A case study of Yanchi county, northern China	Wei et al., 2020
Field investigation Interviews	Evaluation of the Types and Comprehensive Effects of Ecological Migration in China: Taking the Ecological Protection and Land Tenure Protection of Xihaigu Area in Ningxia as an Example	Xu Y., 2021
Household Questionnaires Interviews	Lack of Migrant Involvement in Environmental Migration Projects in Western China	Yang, H., Dubé, F., & Huang, L., 2016
Field Observation Questionnaire	Drought Adaptation in the Ningxia Hui Autonomous Region, China: Actions, Planning, Pathways and Barriers	Yang, 2015
Questionnaire Statistical Analysis	Farmers' Feedback on Current Situation about Ningxia Ecological Immigration Based on the Method of PRA: The First Relocation Site in Ningxia Yellow River Valley's Wuduizi as an Example	Zhang et al., 2013
Questionnaire Statistical Analysis	An Empirical Study on Migration Satisfaction in the Ecological Migration Project — —Taking Jingling New Village in Ningxia as an example	Zhang Y, Li S & Xia M., 2014
Interviews	Study on the Settlement Hollowing of Ecological Immigrant Settlement Area — A Case of Juhuatai Resettlement Area of Tongxin County in Ningxi	Zheng D., Wang Y. & Mi H., 2019
Field Observation Mix-Method Research	Dynamics of Climate Change, Drought and Migration: A	Zheng Y. et al., 2017

	Mixed Method Research in Ningxia	
Questionnaire	Ningxia	Zheng Y. et al., 2016