Ministry of Education and Science of Ukraine

Sumy National Agrarian University

Qualifying scientific work on the rights of the manuscript

CUI LIJUAN

UDC: 338.2:314.1

DISSERTATION

HUMAN RESOURCE MANAGEMENT IN RURAL AREAS

Speciality 073 - Management

(Field of study 07 – Management and administration)

Submitted for a scientific degree of Doctor of philosophy

The dissertation contains the results of own research. The use of ideas, results and texts of other authors have references to the relevant source

_____ Cui Lijuan

数字签名者：Cui Lijuan
DN：cn=Cui Lijuan, o=Sumy National Agrarian University, ou=Faculty of Economics and Management, email=993705019@qq.com, c=UA

Scientific supervisor (consultant)：professor Viktoriia Medvid

Sumy 2023

ANNOTATION

Cui Lijuan Human resource management in rural areas. – Qualifying scientific work on the rights of the manuscript.

Dissertation for obtaining the scientific degree of Doctor of Philosophy in specialty 073 – Management. – Sumy National Agrarian University, Sumy, 2023.

In order to understand the current situation of rural human resource management, improve the level of rural human resource development and management, better meet the needs of work, and provide experience for other countries' rural construction, this study takes China and Ukraine as examples, and adopts qualitative and quantitative research methods to investigate the current situation of rural human resource management in the two countries. The purpose of quantitative research is to quantitatively process and analyze the collected data in order to understand the current situation and existing problems of human resource management in rural areas of China and Ukraine. The purpose of qualitative research is to analyze the attribution of problems existing in human resource management in rural areas of China and Ukraine by using logical reasoning, comparative analysis and other methods on the basis of combing a large number of literature materials, so as to provide a basis for putting forward reasonable suggestions. In terms of data collection this study mainly uses the investigation method, and the data are mainly obtained from the official websites and publications of the State Statistical Office of China and Ukraine. The method of analyzing the data was mainly statistical analysis with the help of Excel and formulas from related subject areas.

Section 1 of this study is the theoretical basis of rural human resource

management. Firstly, the essence and importance of rural human resource management is analyzed. It is argued that the essence of rural human resource management lies in using various ways to tap rural labor resources, improve their labor quality, and provide talent support for rural construction. It also points out that the importance of rural human resource management is reflected in three aspects, namely, it is conducive to promoting the sustainable development of rural regional economy, the promotion of agricultural science and technology and agricultural industrialization, and the acceleration of urbanization. Secondly, this part analyzes the impact of decentralization on rural human resources management in Ukraine, and believes that decentralization accelerates the construction of rural infrastructure and promotes the improvement of rural human resources' living standards. Decentralization has led to reforms in rural health care and education and improved the quality of rural human resources. Finally, this part introduces the experience of rural human resource management in China, including the implementation of the rural surplus labor transfer project, the new professional farmer cultivation project and the rural revitalization strategy.

Section 2 investigates and analyzes the current situation of rural human resource management in China and Ukraine. This part analyzes the current situation of rural human resources in China and Ukraine from the four indicators of population quantity, population quality, population material level and population living conditions, and explores the problems existing in the human resources management of the two countries through the current situation investigation. Population quantity is used to understand whether and what form of population burden exists in two

countries, which is the basic basis for rural human resource management, and the indicators analyzed are the birth rate, mortality rate, natural growth rate and migration rate of the population. The quality of the population is the key to measuring the effectiveness of rural human resource management mainly through the two indicators of education and health care. The material level of the population is a reflection of the economic capacity of rural human resources, which on the one hand reflects the efficiency of rural human resources management, and on the other hand is also a guarantee of human resources quality, mainly reflected by three indicators: employment, income and expenditure. The living condition of the population is not only the reflection of the living standard of rural human resources, but also the projection of the rural infrastructure construction. If the rural infrastructure construction is insufficient or seriously lacking, it will definitely affect the overall development of the rural population, so the living condition of the population is also an important indicator for analyzing the rural human resources management, which is mainly measured from housing and living energy. The survey and analysis revealed that there are different problems in the process of rural human resource management in China and Ukraine. China is mainly manifested in: the migration of surplus rural labor is hindered and the population pressure remains high, insufficient investment in education and medical care makes it difficult to guarantee the quality of rural human resources, human resource management is inefficient and employment structure deviates from industrial structure. Ukraine is mainly manifested in: population control efforts are not in place and negative population growth continues to be serious, high unemployment rate of farmers, and

low economic income and consumption level, poor quality of medical services and high population mortality.

Section 3 puts forward some suggestions for optimizing rural human resource management in China and Ukraine. This study holds that in order to do a good job in the management of rural human resources, it is necessary to mobilize all forces, take the theory of human capital as the guide, clarify the ideas, determine the development goals and principles, and clarify the development tasks and management difficulties. On the basis of learning from the experience of other countries in the development and management of rural human resources, starting from the status quo of rural human resources management in China and Ukraine, Work out a feasible rural human resources development plan that conforms to the national conditions of the two countries.Therefore, in this part, the dissertation first determines the ideas and principles of rural human resources management in the two countries, and analyzes the objectives and contents of rural human resources management in detail. On this basis, this study summarizes the experience of rural human resource management in America, Germany, Japan, India and Brazil. These five countries were chosen because they are both developed and developing countries, European and Asian countries, and can present a more comprehensive view of various management tools, which is more conducive to China and Ukraine to learn from their experiences and improve their management tools.Finally, the dissertation proposes three management models, namely the policy-led model, the education and training model, and the institutional guarantee model, and under each model details the directions of efforts and specific practices in the future

management of rural human resources in China and Ukraine.

The conclusions of the study showed that, first, both China and Ukraine have a serious population burden in rural areas, but the manifestations of the population burden are very different. China's rural population burden is characterized by overpopulation, as evidenced by a large rural population, a large surplus rural labor force, and a heavy burden of child support and old-age support; Ukraine's rural population burden is characterized by underpopulation, as evidenced by a low natural population growth rate, an increasing number of rural people moving out of the countryside, and continued negative rural population growth. Second, in all human resources management means, education and training is the most important way of management, but also the key to the development of rural economy and the improvement of human resources quality. The study holds that only through education and training can potential human resources form real human capital. In rural construction, farmers are the main body and rural human resources are the key. Transforming rural labor force into human capital is a practical move to promote the high-quality development of rural areas and agriculture, and the realization of this task mainly depends on education and training. Thirdly, the implementation of rural human resource management needs to learn from other countries' experience. Different national systems have given birth to different national policies, so that countries have accumulated their own unique experiences in the process of rural human resource management. Although these experiences have certain regional limitations and may not be suitable for the national conditions of other countries,

they have certain inspirational value for other countries to optimize rural human resource management methods.

***Key words*:** globalization, development, strategic management, rural areas, human resources, human capital, intellectual potential, social partnership, China, quality of life, welfare, wages, education, aging of the nation, COVID-19, rural construction.

АНОТАЦІЯ

Цзуй ЛІЧУАНЬ. Управління людськими ресурсами у сільській місцевості. – Рукопис.

Дисертація на здобуття наукового ступеня доктора філософії за спеціальністю 073 – Менеджмент. – Сумський національний аграрний університет, Суми, 2023.

У дисертаційному дослідженні, з поєднанням кількісних та якісних критеріїв оцінювання, наводиться спроба вирішення наукової проблеми розбудови сільських територій за умови управлінням людськими ресурсами, аналітичному дослідженні потреб ринку праці сільської місцевості тощо. Дослідження побудовано на порівнянні досвіду управління сільськими територіями двох країн: Китаю та України.

Метою кількісного дослідження є аналіз рядів динаміки та тенденцій розвитку людського капіталу сільської місцевості. Метою якісного дослідження є обґрунтування умов та передумов розвитку людських ресурсів за допомогою логічних міркувань, абстрактного мислення, результатів соціологічних досліджень. Також у дослідженні були використані наступні методи: опитування, аналізу даних, статистичні, коефіцієнтні, табличні та інші.

Перший розділ дисертаційної роботи присвячено теоретичним основам управління людськими ресурсами в сільській місцевості. У роботі визначено сутність та значення управління людськими ресурсами в сільській місцевості. Встановлено, що зміст управління людськими ресурсами сільських територій

полягає у використанні різних способів залучення сільських трудових ресурсів, підвищення якості їхньої праці та забезпечення кадрової підтримки сільського будівництва, покращення інфраструктурного забезпечення сільських територій. У дисертаційній роботі зазначається, що важливість управління людськими ресурсами в сільській місцевості проявляється в трьох аспектах: сприяння сталому розвитку сільської економіки, просуванню сільськогосподарської науки і техніки, індустріалізації сільського господарства та прискореному процесу урбанізації. У дисертаційній роботі встановлено взаємозв'язок між децентралізаційними процесами в Україні та станом розвитку сільської інфраструктури. При чому, доведено, що децентралізація прискорила розвиток сільської інфраструктури та сприяла підвищенню рівня життя сільських ресурсів, а також сприяла реформам у сфері охорони здоров'я та освіти в сільській місцевості та підвищенню якості сільських трудових ресурсів. У першому розділі дисертаційною роботи представлено досвід управління людськими ресурсами в сільській місцевості Китаю, який полягає в реалізації проекту переміщення надлишкової сільської робочої сили, проекту вирощування нових типів професійних фермерів та стратегії відродження сільської місцевості.

У другому розділі дисертації досліджено та проаналізовано поточну ситуацію з управлінням людськими ресурсами в сільській місцевості Китаю та України. В основу аналітичного дослідження були покладені наступні показники: кількість населення та демографічні показники, якість життя населення та матеріальний рівень забезпечення сільського населення,

умови життя сільського населення та інфраструктурне забезпечення. Для оцінки якісних критеріїв розвитку людських ресурсів використано методику соціологічного дослідження (опитування). Показник чисельності населення використовується для того, щоб зрозуміти, чи існує і в якій формі демографічне навантаження в двох країнах, що є базовою основою для управління людськими ресурсами в сільській місцевості. Серед кількісних характеристик населення проаналізовано показники народжуваності, смертності, природного та міграційного приросту населення. Якість життя населення є ключовим показником ефективності управління людськими ресурсами в сільській місцевості і відображається, в першу чергу, через два основні індикатори: рівень якості освіти та медичне забезпечення сільського населення. Матеріальний рівень якості життя населення (інфраструктурне забезпечення) є відображенням економічного потенціалу сільських людських ресурсів. При чому, економічний потенціал відображає ефективність управління сільськими людськими ресурсами, з одного боку, та якістю людських ресурсів, з іншого, і відображається трьома основними показниками: зайнятість, доходи та витрати. Умови життя населення є не лише відображенням рівня життя сільських людських ресурсів, але й проекцією сільської розвитку інфраструктури. У дослідженні встановлено взаємозв'язок розвитку між станом розвитку соціальної інфраструктури сільської місцевості та розвитком людського потенціалу. Якщо сільська інфраструктура є занедбаною та не відповідає потребам та запитам населення, це, безумовно, впливає на загальний розвиток сільського населення. Саме тому умови

життя населення, з точки зору житлового забезпечення та життєвої енергії, також є важливим показником при дослідженні механізмів управління сільськими людськими ресурсами, головним чином. Наукові дослідження та узагальнення встановили, Китай та Україна мають різні проблеми та потреби в процесі управління сільськими людськими ресурсами. Проблеми в Китаї в основному відображаються в наступному: міграція надлишкової сільської робочої сили ускладнена, а демографічний тиск залишається високим; недостатні інвестиції в освіту та охорону здоров'я ускладнюють гарантування якості сільських людських ресурсів; неефективне управління людськими ресурсами та високе відхилення структури зайнятості від галузевої структури. У Китаї сільські території характеризується перенаселенням, яке, зокрема, проявляється у надлишку робочої сили в сільській місцевості та соціальному тягарі виплат (аліментів) на дітей, людей похилого віку, соціально незахищені категорії. Сільське населення України характеризується демографічним дефіцитом, про що свідчать низькі темпи природного приросту та міграції населення, збільшення кількості сільських жителів, які виїжджають за межі села, значним коефіцієнтами вибуття сільського населення, а також постійним від'ємним приростом сільського населення. Проблеми України в основному відображаються у відсутності контролю над чисельністю населення, високому рівні безробіття серед фермерів та низькому рівні економічного доходу і споживання; низькій якості медичних послуг та високому рівні смертності населення.

У третьому розділі дисертації надаються рекомендації щодо вдосконалення механізмів управління людськими ресурсами в сільській місцевості, на прикладі двох країн: Китаю та України. У дисертації зазначається, що покращення ефективності управління сільськими людськими ресурсами залежить, насамперед, від впровадження стратегічних та тактичних дій. У першу чергу необхідно визначити стратегічні орієнтири розвитку людського капіталу (визначити ідею, стратегічні цілі, принципи розвитку, обґрунтувати середньострокові завдання, сформувати систему моніторингу). По-друге, сформулювати практичний план розвитку сільських людських ресурсів відповідно до стратегічних орієнтирів та поточної ситуації в управлінні сільськими людськими ресурсами в Китаї та Україні. У роботі формування стратегічних орієнтирів відбувалось за допомогою вивчення світового досвіду управління людськими ресурсами сільських населених пунктів. За основу було взято п'ять країн - США, Німеччина, Японія, Індія та Бразилія. Такий склад характеризує вибіркову сукупність, тому що до складу увійшли, як розвинені країни, так і країни, що розвиваються. У складі, як європейські, так і азіатські країни. Такий перелік країн надає повну характеристику різних інструментів управління, що є більш сприятливим для Китаю та України для вивчення їхнього досвіду та вдосконалення своїх інструментів управління. У роботі встановлено, що впровадженні системи управління сільськими людськими ресурсами має базуватись на досвіді інших країн світу. Різні національні системи призвели до різних національних політик, і кожна країна має свій унікальний досвід в управлінні людськими

ресурсами в сільській місцевості. Хоча цей досвід має певні регіональні обмеження і може не відповідати іншим національним контекстам. У дисертації запропоновано три моделі управління сільськими територіями з позиції розвитку людських ресурсів, а саме: модель, керована політикою, модель освіти і навчання та модель інституційних гарантій. При чому, необхідно заначити, що у рамках кожної моделі детально описано напрями стратегічного розвитку і конкретні практики для Китаю та України в майбутньому управлінні людськими ресурсами сільських територій. У дисертації зазначено, що потенційні людські ресурси можуть бути перетворені на реальний людський капітал лише через освіту та навчання. Оскільки фермери є основою сільського будівництва, перетворення сільської робочої сили на людський капітал є прагматичним способом сприяння якісному розвитку сільських територій та сільського господарства, а реалізація цього завдання значною мірою залежить від освіти і навчання фермерів.

LIST OF APPLICANT'S PUBLICATIONS

SCOPUS / Web of Science publications

1.Lijuan Cui, Viktoriia Medvid (2022). Interactive relationship between China's industrial structure and human resources employment structure. *Problems and Perspectives in Management,* 20(1), 177-189. http://dx.doi.org/10.21511/ppm.20(1).2022.16. (*The applicant participated in research, analysis of the results and writing the article.*)

Articles in scientific professional publications and International Journals

2.Cui Lijuan. (2021).Research status of rural human resource management in china：based on citespace's quantitative analysis. *Management and entrepreneurship: trends of development,* 4(18)*, 21-30.* https://doi.org/10.26661/2522-1566/2021-4/14-02.(*The applicant participated in research, analysis of the results and writing the article.*)

3.Cui Lijuan, Shen Jialong (2022). Research on Rural Human Resources in China: Bibliometric Analysis Based on CNKI Database. *Облік і фінанси*, 1(95), 97-102.https://doi.org/10.33146/2307-9878-2022-1(95)-97-102.(*The applicant participated in research, analysis of the results and writing the article.*)

4.Viktoriia Medvid, Cui Lijuan (2023).Comparison of rural population burden between china and Ukraine. *Механізм регулювання економіки*，1 (99), 52-58. https://doi.org/10.32782/mer.2023.99.09.(*The applicant participated in research, analysis of the results and writing the article.*)

5.Cui Lijuan, Viktoriia Medvid, Valentyna Khrapkina, Shen Jialong.(2019).Rural surplus labor migration: an experience introduction to rural human resource management in China. *Актуальні проблеми економіки,*12 (222), 107-115. https://doi.org/10.32752/1993-6788-2019-1-222-107-115. (*The applicant participated in research, analysis of the results and writing the article.*)

6.Cui Lijuan.(2021). A comparative analysis of the consumption structure of Chinese urban and rural residents. *International scientific journal «Internauka».Series: «Economic sciences»,12(56), vol. 2*. 43-50.https://doi.org/10.25313/2520-2294-2021-12-7799.(*The applicant participated in research, analysis of the results and writing the article.*)

7.Lijuan Cui, Viktoriia Medvid, Hejun Zhao, Rui Liang,Jialong Shen.(2022).Cultivation of new professional farmers: an experience introduction to rural human resource management in china. *Journal of Innovations and Sustainability*,6(1).https://doi.org/10.51599/is.2022.06.01.07.(*The applicant participated in research, analysis of the results and writing the article.*)

Conference papers

8.Cui Lijuan, Viktoriia Medvid. The experiences of rural human resources development in China from the perspective of Lewis model, Матеріали *III Всеукраїнської науково-практичної інтернет-конференції «Публічне управління та адміністрування у процесах економічних реформ»*, November 19, 2019, м. Херсон, С. 359-362.

9.Lijuan Cui, Viktoriia Medved. Current issues of management of rural human resource in China, Матеріали *VII Міжнародна науково-практична конференція*

«Сучасний менеджмент: тенденції, проблеми та перспективи розвитку», April 14, 2021, Дніпро, С.21-22.

10Cui Lijuan, Medvid V., Shen Jialong. The impact of rural human resources development and management on regional economic development, *Матеріали Міжнародної наукової конференції «Підприємництво в аграрній сфері: глобальні виклики та ефективний менеджмент»,* 12-13 February 2020, Запоріжжя, С.453.

TABLE OF CONTENTS

INTRODUCTION

Human society has experienced the era of agricultural economy, the era of industrial economy, and currently has entered the era of knowledge economy. In the agricultural economy era, land is the main resource for economic development and social progress; in the industrial economy era, capital is the main resource and economic growth depends on the amount of capital input; while the knowledge economy era is characterized by the possession, allocation and use of knowledge by people, which determines the efficiency of national development[1-3]. The British economist Harbison also said: "Human resources are the ultimate basis of national wealth, the active force that develops natural resources, builds socio-economic and political organization and moves the country forward. A country cannot develop anything else if it cannot develop the skills and knowledge of its people [4]"

The rise and fall of a country depends on the quantity and quality of human resources. As of 2021, the total population of the world is 7.875 billion [5], of which, the rural population accounts for more than half, and the rural human resources are huge in quantity, providing abundant labor for rural economic construction. However, compared with urban areas, the quality of rural human resources in many countries in the world is low, and many farmers have not received higher education, and many of them are even illiterate or semi-literate. In addition, the housing conditions in rural areas of some poor countries are more difficult, and the living standards and medical conditions are not as good as they should be, resulting in lower physical quality of farmers, which to a certain extent inhibit the development of rural economy [6]. Therefore, how to transform the rich rural human resources

into strong human capital, and turn the population pressure into a driving force for development, has become a major problem in the process of rural construction in many countries, and is also a fundamental and critical issue for rural economic development.

Relevance of the topic. Rural human resources are the sum of physical and mental strength of the population in the rural area, and the sum of labor capacity of the population of the right age in the rural area who can use their physical and intellectual abilities to produce and serve after a certain period of education, also known as rural "labor resources" [7]. Rural human resources include both quantitative and qualitative aspects, and are a unity of quality and quantity. The quantity of rural human resources is the number of that part of the population that constitutes the labor force within the rural area [8]. The factors affecting the quantity of human resources are mainly birth rate, mortality rate, and population migration. The quality of rural human resources is the physical, intellectual and skill qualities possessed by rural human resources, which are generally reflected in the physical and cultural qualities of the labor force population. Physical quality is the most basic natural indicator of rural human resources quality, and the influencing factors include genetics, nutrition, medical environment, etc. Cultural quality is acquired, and the form of acquisition is mainly education and training. The study of rural human resources must grasp both quantitative and qualitative aspects.

Rural human resources development and management is a series of activities such as planning, education and training, rational allocation and health protection of rural human resources within the jurisdiction of a country or region, that is, on the

basis of careful analysis of the entire rural population in a specific time and space, determine their health and quality level, and through certain means to regulate the number of people, vocational and technical training and education, the development of compulsory education, public health and social security, etc., to achieve the purpose of improving the overall quality and health of the rural population, and constantly promote the rational allocation, transfer and utilization of labor resources in rural areas[9]. According to the previous definition of rural human resources, rural human resources management can be understood in two aspects, first, the management of rural human resources in quantity. To manage rural human resources quantitatively means to train, organize and coordinate rural human resources appropriately according to rural human and material resources and their changes, so that the best ratio of both can be maintained regularly and both people and materials can give full play to the best effect. Secondly, the quality management of rural human resources. The qualitative management of rural human resources mainly refers to the use of modern scientific methods to effectively manage the thoughts, psychology and behavior of rural human resources, so as to give full play to their subjective initiative and achieve the goal of improving the quality of workers and promoting the sustainable development of rural economy [10].

At present, scholars' research on the basic theory of rural human resources has been quite rich, and a more complete and mature system has been established, and the research results have shown the effect of various and hundred schools of thought. The main scholars include Schultz [11-13], Gary Becker [14-15], Mincer [16], Yujiro Speedwell [17], Solow [18], Kenneth Arrow [19], Phelps [20], Hirofumi

Uzawa [21], Thomas [22], Ingersoll Louise [23], Lee Sung [24], David [25], En Hua Liu[26], Yi Gang [27], Tingting Geng [28], Shengsong Jiang [29], Hongjiao Hou [30], and Wei Lou [31]. The research focuses on the theory of rural human resource management [32-34], the relationship between rural human resource management and rural economic growth [35-39], the current situation [40-47]and ways of rural human resource management [48-52], which provides a strong theoretical support for the research of this paper. However, scholars, especially western scholars, have not done enough research on the development and management of rural human resources, which is consistent with the status quo that Western developed countries have already entered the industrialized society and agriculture has been highly industrialized. Although Chinese scholars have made certain achievements in the research on the development and management of rural human resources, the relevant research in China started late and is still in a stage of continuous exploration. The research results obtained are not innovative and systematic, and the summary of problems existing in the management of rural human resources is slightly general, and the causes and measures are not comprehensive and systematic enough. Moreover, through the review of domestic and foreign literature, it is found that the current research on rural human resource management focuses more on the micro research of a certain country or region, and lacks comparative research, especially international comparative research, which provides research space and opportunities for the writing of this paper.

*Connection of work with scientific programs, plans, topics***.** The dissertation was carried out following the topic of scientific research of the key project of the

Ministry of Education in the "14th Five-Year Plan" of China's Education Science in 2021 "Study on Influencing Factors and Support System of Teachers' Willingness to Stay in Rural Small-scale Schools" (project number: DHA210343)，in which the author investigated the foreign experience of human resources management.

The purpose and objectives of the study. The purpose of the dissertation research is to build a complete theoretical system of rural human resources management, provide scientific management methods and models, and promote the sustainable and healthy development of rural economy and society.

Achievement of the purpose necessitates the following main tasks:

- To summarize the experience of rural human resources management in various countries, and provide experience for China and Ukraine to optimize the means and approaches of rural human resources management.

- To investigate the current situation of rural human resources management in China and Ukraine, and understand the quantity, quality, material level and living conditions of rural human resources in the two countries.

- To summarize the problems in rural human resource management in China and Ukraine, and analyze the reasons that hinder rural human resource management in the two countries.

- To sort out the ideas, objectives and principles of future rural human resources management in China and Ukraine, and provide theoretical support for better implementation of rural human resources development and management in the two countries.

- To formulate future models and specific approaches for rural human resources management in China and Ukraine, and provide suggestions for better implementation of rural human resources development and management in the two countries.

The object of the study is the current situation of rural human resource management in China and Ukraine.

The subject of the research is the existing problems in rural human resource management in China and Ukraine and the future development direction.

Research methods. The methodological basis of the dissertation work is the fundamental provisions of economic theory and management theory. To achieve the set goal and solve problems, a wide list of methodological techniques was used in the work, such as: Quantitative research - to understand the current situation and problems of human resource management in rural areas of China and Ukraine. Qualitative research - to analyze the causes of the problems of human resources management in rural areas of China and Ukraine and to provide a basis for making reasonable recommendations. In short, the quantitative research is to solve the "what" problem and the qualitative research is to solve the "why" problem. Specific research methods are as follows:

- Literature research method. Through consulting the relevant literature, this paper summarizes the experience of rural human resource management in various countries.

- Comparative research method. According to the theory of rural human resource development, this study combines horizontal comparison and vertical

analysis to compare the current situation of human resource management in rural areas of China and Ukraine.

-Investigation research method. Through the investigation and analysis of relevant data, to explore the problems existing in rural human resource management in China and Ukraine.

The information base of the study was obtained from official websites and publications such as the National Bureau of Statistics of China and the National Bureau of Statistics of Ukraine; scientific articles, reports of Ukrainian, Chinese and foreign authors; Internet resources and authors' calculations. The main relevant publications are: China Statistical Yearbook, China Rural Statistical Yearbook, China Population and Employment Statistical Yearbook, China Health Statistical Yearbook, China Household Survey Yearbook, China Education Statistical Yearbook, Ukraine Health Statistical Yearbook, Ukraine Demographic Statistical Yearbook, etc.

The scientific novelty of the obtained results is the development of ideas, principles and practical recommendations for the future management of rural human resources in China and Ukraine. The scientific novelty of the most significant results obtained in the research process is as follows:

First obtained:

the methodological foundations of the rural human resources management system based on the generation of ideas, the definition of strategic goals, tasks and principles for the sustainable revitalization and development of rural areas are scientifically substantiated

the axiological characteristics of human resource management models oriented towards politics, education and systemic social guarantees for the implementation of the principles of effective and efficient management of human resources in rural areas are formulated.

the priorities of the strategy of revitalization of the Ukrainian countryside, which is based on decentralization approaches, development of social infrastructure, construction of a system of high-quality service provision in order to reduce the negative impact of the removal of the rural population, are substantiated.

Further developed:

a methodical approach to assessing the level of development of human resources in rural areas, which, unlike the existing ones, is built on the basis of qualitative characteristics of the quality and living conditions of the rural population, which allows forming comprehensive characteristics of the state of development of rural areas.

received further development:

theoretical generalization of concepts, models of human resources development based on the establishment of a relationship between the activity of decentralization transformations in Ukraine and the development of the social infrastructure of rural areas, reforming the education and health care sectors, in order to form priorities for the development of human resources;

a scientific generalization of incentives for the movement of China's surplus labor force based on the professional transformation of farmers and urbanized geographic relocation to improve the rural human resource management system;

substantiation of organizational and methodological support for the creation of educational educational organizations based on the strengthening of the leading role of education in rural communities for the formation of full-fledged public education in rural areas.

*Practical significance of the obtained results***.** This study investigates the current situation of human resource management in rural areas of China and Ukraine and finds out the existing problems, which can provide reference for the government to make rural development planning; The suggestions of rural human resources management are based on the investigation of rural human resources, which can not only further improve the level of rural human resources development and management, promote rural construction in an all-round way, but also provide intellectual support for education and training institutions, and have important practical significance for the improvement of the labor market.

*The applicant's personal contribution***.** Dissertation research is an independent scientific work of the author. Scientific results, conclusions, and proposals submitted for defense were obtained by the author personally.

Approbation of the results of the dissertation. The main results of the dissertation were published at 3 international scientific conferences ([9-11] in the list of publications given in the annotation), the most important of which was the III All-Ukrainian Scientific and Practical Internet Conference "Public Administration and Management in the Processes of Economic Reforms",19.11.2019，Kherson，Ukraine），International Scientific Internet-Conference "Entrepreneurship in the agricultural sector: Global challenges and effective management"（12-13.12.2020，

Zaporizhya，Ukraine），Ⅶ International Scientific-Practical Conference "Modern Management: Trends, Problems and Prospects for Development" (14.04.2021, Dnipro, Ukraine).

Publication of obtained results. The main provisions of the dissertation are published in 10 scientific publications, including 1 articles indexed by the Scopus, 3 articles in scientific professional publications of Ukraine, 4 international journal articles，3 publications in the proceedings of scientific conferences.

Scope and structure of the dissertation. The dissertation consists of an introduction, three sections, conclusions and a list of references. The total volume of the dissertation is 247 pages, 40 tables, 43 figures, a list of references that includes 201 items on 25 pages.

SECTION 1

THE THEORETICAL FUNDAMENTALS OF RURAL HUMAN RESOURCE MANAGEMENT

1.1 The nature and importance of rural human resource management

Human resources are the first resource to promote socio-economic development [53]. However, in many countries, especially developing countries, this advantage is mainly reflected in quantity rather than quality. Human resources in rural areas are one of the indispensable elements for rural economic development, and should achieve the unity of quality and quantity. Schultz, the founder of human capital theory, once said: Among the many factors affecting economic development, the human factor is the most critical, and economic development depends mainly on the improvement of the quality of people, rather than the abundance of natural resources or the amount of capital [54].Therefore, how to transform the abundant rural human resources into strong human capital and turn population pressure into development impetus has become a major problem to be faced in the process of rural construction in developing countries, which is also a fundamental and critical issue for rural economic development. The essence of rural human resource management is to use various ways to tap rural labor resources, improve their labor quality and provide human resources support for rural construction. The importance of rural human resource management is mainly reflected in the following aspects.

Rural human resource management contributes to the sustainable development

of the rural regional economy. Regional economy, also called "regional economy", is the part of the national economy distributed in each administrative region, and the economic development of each region is subject to the constraints of natural, social, economic, policy, science and technology, human resources and other factors. Among them, the conditions of human resources in the region have a significant impact on the development of the regional economy, which is an important foundation and prerequisite for the development of the rural regional economy [55]. According to statistics, regions with high quality human resources and strong talent aggregation have a greater impact on the economy, which can reach about 50% in developed countries, but in poor and backward countries where talent aggregation is low due to the lack of attention to human resources, this impact is only 2/3 of that in developed countries [56].In addition, the level of enhancement of human capital to the economy has been measured by scholars. For example, Chinese scholars Wang Xiaolu calculated that the improvement level of human capital on economy was 11.2%, CAI Fang and Wang Meiyan calculated that it was 28%, Yang Jianfang and Gong Liutang calculated that it was 13.8% [57]. Although scholars' calculation results are inconsistent, these data are sufficient to show that human capital has a strong promoting effect on economic development. Schulz, a famous American economist, also found in his research that the main reason why the growth of national income is greater than that of input is the increase of human capital stock. He pointed out that the important reason for the rapid growth of agricultural production and the improvement of agricultural productivity in the United States from the early 20th century to the 1950s was not the increase of land, population

and capital stock, but the improvement of human ability and technological level [58].Using the rate of return method, Schulz calculated that the contribution rate of educational investment to the economic growth of the United States from 1929 to 1957 was as high as 33%. At the same time, he also made a comparative study of capital gains and human capital gains in the United States from 1900 to 1957, and found that in 1957, the investment of human capital increased by 3.5 times, but the income increased by 17.5 times [59].Therefore, Schulz believes that human capital is the main driving force and decisive factor of modern economic growth[60].

The role of human resources to enhance the economy is also reflected in the regulation of other resources. Compared with other survival factors, human resources have the initiative to allocate other resources, enhance the efficiency of resource integration and help the rapid development of the regional economy [61]. Therefore, high quality human resources in the region become the key to regional economic development [62], and high quality rural human resources also have such functions and values.

Rural human resource management is conducive to the promotion of science and technology and the advancement of agricultural industrialization. Agricultural technology popularization refers to the activities of popularizing scientific and technological achievements and practical technologies applied in crop farming, forestry, animal husbandry and fishery in the whole process of agricultural production before, during and after production through experiments, demonstrations, training, guidance and consulting services [63]. The realization of this activity is inseparable from the implementation of rural human resources management. In

human resource management, education and training can enrich the knowledge level of rural human resources, improve their cultural quality, so that they can effectively master advanced agricultural science and technology in a short time, which is conducive to the promotion and application of agricultural science and technology.

Scientific and technological progress is the fundamental driving force to promote rural economic growth and sustainable agricultural development [64]. Previously, China's agricultural science and technology level was relatively backward, and in 2013, the contribution of China's agricultural science and technology to agricultural economic growth was only 30% to 40%[65], while by 2019, the contribution of agricultural science and technology to food security reached 60% [66].All this progress depends on the fact that China has gradually increased the training of agricultural science and technology talents in recent years, and through the deep-level rural human resource development and management, the knowledge and technology level of farmers have been continuously improved, and the productivity of land and labor has been greatly increased. Therefore, rural human resource development and management is of great significance to the promotion and application of rural science and technology.

Agricultural industrialization also puts high demands on the overall quality of rural workers and the structure of talents in the market environment [67]. In the chain of agricultural industrialization, there are many subjects involved, including product producers, product transporters, sellers and relevant information providers, etc. For any of these subjects, they should have high comprehensive ability, and human resources development and management can help improve the

comprehensive quality of the majority of farmers, help the formation of a good talent structure, and help promote the formation and development of agricultural industrialization.

Rural human resource management is conducive to speeding up the process of urbanization. One of the values of rural human resource management is its ability to facilitate the rational flow and allocation of human resources in socio-economic activities, such as the transfer of rural populations to cities through employment guidance and vocational training, and to increase the country's urbanization rate. Urbanization is the historical process of gradual transformation of a country or region's society from a traditional rural-based society with a focus on agriculture to a modern urban-based society with a focus on non-agricultural industries such as industry and services, as social productivity develops, science and technology progresses, and industrial structure is adjusted[68].The urbanization rate is a metric of urbanization, which is generally calculated using demographic indicators, i.e. the proportion of urban population to the total population; the higher the proportion, the higher the level of urbanization, and also the more developed the country is. According to the CIA World Factbook statistics, as of 2019, the urbanization rate of the United States is 82.7%; the urbanization rate of South Korea is 81.4%; and the urbanization rate of Japan is 91.8%, but the urbanization rate of China is only 62.7% [69]. Although China's current urbanization rate is still relatively low, the statistics of previous years show that China's urbanization level is increasing year by year, as shown in Figure 1.1.

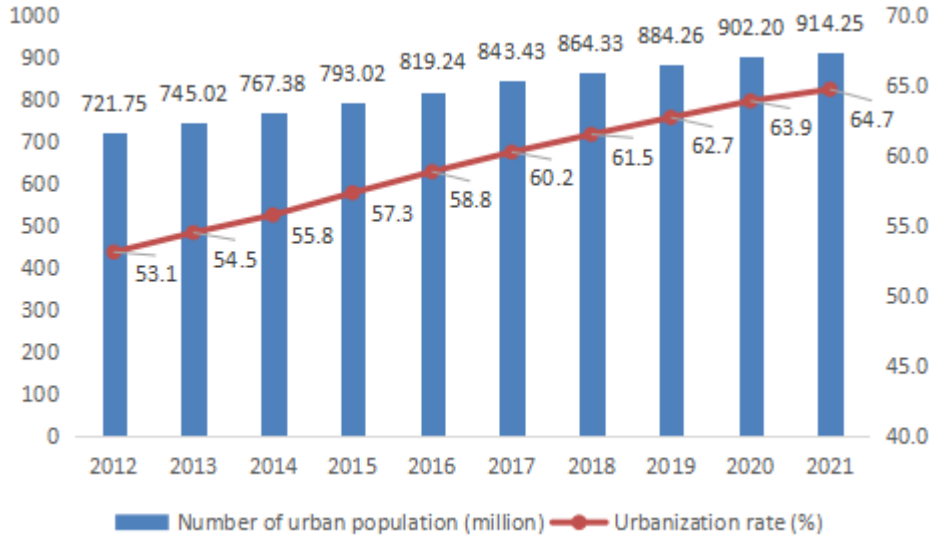


Figure 1.1 - Changes in China's urbanization level from 2012 to 2021

Source: China Statistical Yearbook 2022

Through the analysis of 2012-2021 decade data, we can find that China's urbanization level has increased year by year, the relevant information from China's National Bureau of Statistics shows that in 1978, China began to implement the policy of internal reform and opening up to the outside world, China's urbanization rate has been greatly increased. In 1978, China's urban population was 172.45 million, and the urbanization rate was only 17.92%. 30 years after the reform and opening up, that is, in 2012, China's urban population rapidly increased to 721.75 million, and the urbanization rate rose to 53.10%, and by 2021, China's urban population was 91.25 million, and the urbanization rate reached 64.72%. Analyzing the reasons, it is mainly because China has implemented the project of transferring the surplus rural labor force and effectively developed and managed the rural labor force.

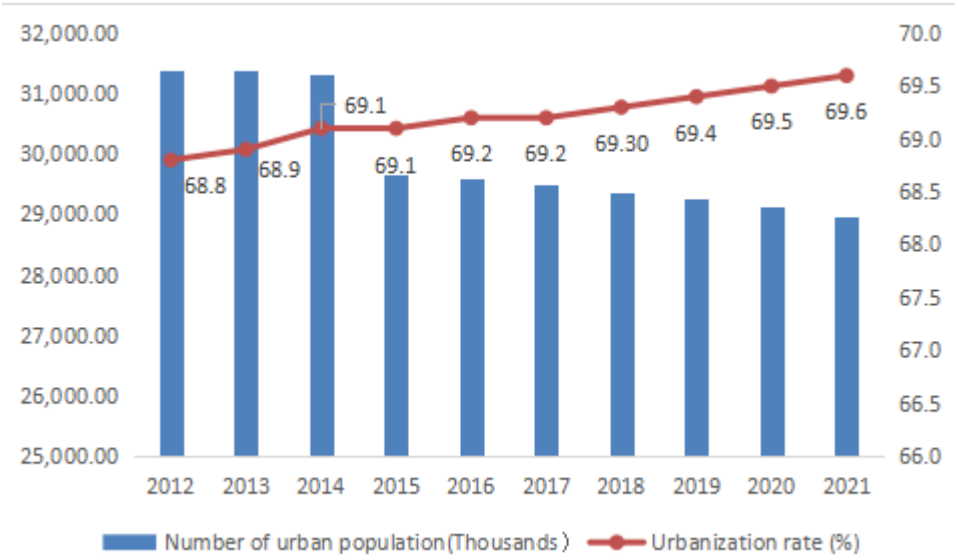


Figure 1.2 - Changes in Ukraine's urbanization level from 2012 to 2021

Source: State Statistics Service Of Ukraine

Ukraine's urbanization level has not fluctuated much during the decade, basically maintaining around 69%. 68.8% in 2012 and 69.6% in 2021, although the fluctuation is small, the overall development trend is increasing year by year, and the urbanization rate is higher than that of China.

1.2 Impact of decentralization on human resource management in rural Ukraine

The decentralization process in Ukraine began in 2014 as a means of reallocating state finances to local municipal budgets, or rather as a means of redistributing finances to localities [70-71]. At that time, the Concept of Local Self-Governance and Territorial Power Reforming in Ukraine (April 1, 2014), the Law of Ukraine on Cooperation of Territorial Communities (June 17, 2014), the Law on Voluntary Amalgamation of Territorial Communities (February 5, 2015), amendments to the Budget and Tax Code on fiscal decentralization were adopted

[72-74].Decentralization in Ukraine is achieved mainly through unification of territorial communities, financial decentralization, etc [75]. The reform of local self-government bodies in accordance with the principle of decentralization is the basis for the smooth implementation of decentralization. It implies many changes in the relations between the central and regional authorities, such as changes in the provision of municipal services to the local population, changes in the support of local business activities, changes in the financing of local communities, etc.At the beginning of the reform, ATCs were established voluntarily, and by ATCs we mean 'amalgamated territorial communities', which, after being recognized by the central government, enjoy considerable rights in terms of taxation, autonomy and public policy. Figure 1.3 presents the evolution of the number of ATCs established and the number of people living in Ukraine in 2015-2020.

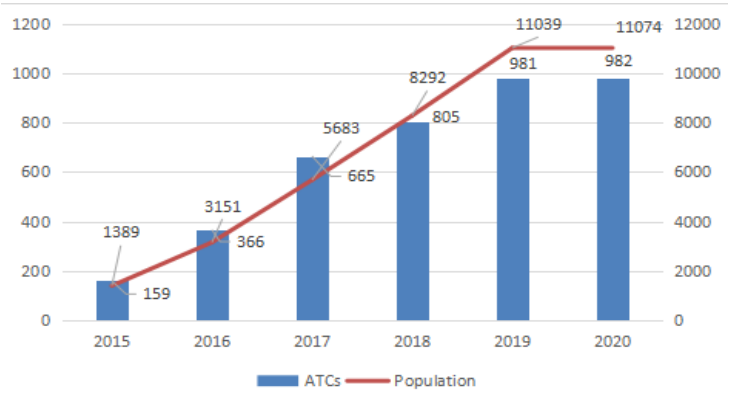


Figure 1.3 - Dynamics of united territorial communities in 2015-2020 of Ukraine

Source: author's calculations based on data from www.decentralization.gov.ua (Unit: thousands of people)

Today, local power reforms have formed a new paradigm of rural human resources development, opening up new theoretical and methodological approaches

to the development of rural human resources. The current social development of rural Ukraine is characterized by low living standards of the rural population, insufficient profitability of agricultural producers, low rural infrastructure, etc. Therefore, in modern conditions, finding and attracting the financial resources necessary for comprehensive rural development has become an urgent priority for rural development in Ukraine [76]. The decentralization reform in Ukraine caters to this need. Decentralization gives territorial communities more authority to work, and local governments are able to spend funds at their own discretion to support educational and medical institutions, infrastructure development, etc. This is important for improving the living standards of the rural population, developing rural infrastructure, and improving the quality of human capital.

The decentralization of rights has accelerated the construction of rural infrastructure and promoted the improvement of the living standards of rural human resources. The infrastructure in rural Ukraine is relatively lacking, outdated or of low quality, especially rural roads, railroads, and living conditions of the population are more outdated. The rural population expects partial renovation of the existing street and road network in central rural settlements [77]. Therefore, the government adopted many programs and plans, but the financial capacity of local communities in this area of local construction is extremely insufficient, and the actual funds for road construction in Ukraine remain small [78]. The implementation of decentralization, however, has given local communities a stronger financial capacity, making it possible to carry out infrastructure construction such as road reconstruction in rural areas [79]. According to the survey, 45% of Ukrainians

expect to improve road maintenance through decentralization [80].

In late 2014, Parliament amended the budget and tax laws and massive fiscal decentralization went into effect. The newly created ATCs were granted considerable budgetary privileges and allowed to maintain a direct budgetary link with the central government, and were also allowed to retain a significant portion of local tax revenues (including 60% of personal income tax).Following early amendments to the budget and tax laws, the share of local budgets in the state budget is growing, from 42% in 2014 to nearly 50% in 2018.In 2014, total local budget revenues were 68.6 billion UAH (about $4.2 billion),and by 2018, this figure rose to more than 200 billion UAH (about $7.2 billion). The share of locally raised taxes and revenues in municipal budget revenues also increased from 0.7% in 2014 to 26.1% in 2018 [81]. In addition to this, there are numerous state financial incentives for ATCs, giving them more financial resources than the unconsolidated Hromadas. For example, access to the newly established (2014) National Regional Development Fund, which allocates 1% of state revenues to support infrastructure projects in the regions.Ukraine has also established a special infrastructure fund, which amounted to 1 billion UAH in 2016, and the special infrastructure fund was created to provide each incorporated community with about 5-7 million UAH for local infrastructure development [82].In comparison to 2014, the [central] state support for the development of territorial communities and the improvement of their infrastructure rose by 39 times. The size of [central] subsidies for the formation of [administrative] structures of the ATCs was, in 2018, UAH 1.9 billion[83].

Thus, decentralization, especially the decentralization of financial rights, has

given ATCs more autonomy and greatly enhanced their financial capacity, enabling them to strengthen infrastructure development according to local realities, compensate for the backward infrastructure and unsatisfactory level of social services in rural areas, while reducing regional differences with other regions and improving the quality of life and well-being of rural residents.

Decentralization has promoted rural health and education reforms and improved the quality of rural human resources. The quality of human resources in rural areas includes the physical and intellectual quality of people, with physical quality being guaranteed by medical care and intellectual quality by education. Before the implementation of decentralization in 2014, Ukraine was very short of funds for health care and education, with a shortage of hospital beds and a lack of educational resources. After the implementation of the decentralization reform in 2014, the state block grant for local education was further increased, allowing them to take on more responsibility for public services. For example, block grants for education have further improved the financial capacities of the ATCs, allowing them to take on more responsibility for public services. The ATCs are, for instance, responsible for managing primary and secondary education in their territories. This is in contrast to the situation in non-amalgamated communities, where self-government remains weak.

The ATCs are allowed to establish educational districts. These consist of foundational or hub schools (oporni shkoly), which bring together the best available teaching and learning practices. The schools have local branches or divisions known as Filii. As of May 2019, ATCs were responsible for 335 of the 785 oporni shkoly

in the country, and for 540 of the 1,272 Filii. ATCs and ‘cities of oblast significance’ are now responsible for 44.4 per cent of all schools, while 55.6 per cent of schools remain administered by subregional state administrations (i.e. rayon committees) [84]. At the same time, decentralization has increased the autonomy of schools. School autonomy means a reduced role for government management and increased responsibility for schools. By decentralizing administrative functions to school management, teachers have more authority, teachers and students are more concerned about professional development and have a greater sense of responsibility. Decentralizing curriculum development to schools facilitates the development of school-based curricula, making the curriculum more responsive to regional characteristics and better meeting the needs of students.

The reform of the medical sector is also an important part of decentralization. The majority of medical institutions in Ukraine are low-grade hospitals with outdated technical equipment and dilapidated fixed assets, and the old operating model of medical institutions is inefficient, and restructuring reforms are imminent. Mistrust in the professionalism of doctors and medical institutions is an obstacle to decentralization, so the decentralization reform in Ukraine tries to ensure a high level of transparency by providing the necessary information on medical services in a comprehensive manner [85]. At present, the Ukrainian healthcare system has undergone many fundamental reforms, which are based on the latest models of attention to the health of Ukrainian citizens. The main areas of medical reform in Ukraine are polyclinic departments, primary care institutions, and medical workers. At the moment, there is a positive trend in the implementation of medical reform in

Ukraine. The application of reforms in the field of health care helps to improve the health of the population through the selection of medical workers and the provision of highly qualified personnel.

According to the reform of the territorial organisation of power in Ukraine and local self-government, the responsibility for organising the implementation and provision of medical care is borne by communities that provide primary care services, disease prevention, and emergency medical care. Local self-government bodies are responsible for providing specialised medical services at the secondary level and forming a network of hospital districts [86-87].The level of public health in Ukraine before the reform was not satisfactory, but part of the reform met the expectations of citizens.

In conclusion, decentralization can be considered as one of the most "humane" reforms in Ukraine. Although there are still many problems with the reform, it must be admitted that the decentralization reform in Ukraine has qualitatively improved people's living environment in a short period of time and has significantly improved their living standards, as well as educational resources and medical conditions, which has contributed to the improvement of the quality of rural human resources. It can be said that the decentralization reform in Ukraine has inevitably led to a paradigm shift in the management of rural human resources.

1.3 China's experiences in rural human resource management

China is a large agricultural country and a strong human resource country. In

rural China, there are very rich rural human resources, and according to China Statistical Yearbook, in 2021, the number of China's rural population is 498.35 million [88], and the proportion of rural population is large compared with that of developed countries in the world. Currently, China is vigorously promoting the rural revitalization strategy, and the effective implementation of the rural revitalization strategy depends on high-quality rural labor force, so the effective management of rural human resources is of great practical significance for China. In the process of implementing human resource management, China has accumulated a lot of experience, such as implementing the project of transferring surplus rural labor force [89]，the project of cultivating new type of professional farmers [90] and the rural revitalization strategy [91] .

Implemented the project of transferring surplus rural labor. In the 1970s and 1980s, when China was in the early stage of dual economy development, the number of agricultural practitioners was high, the supply was greater than the demand, and a large number of redundant rural workers were stranded, and these redundant laborers seriously hindered the development of the rural economy [92]. For this reason, China implemented the rural redundant labor transfer project, with the aim of moving the rural stranded labor out of agriculture and rural areas. The so-called rural surplus labor force refers to the rural labor force that is not engaged in agricultural production nor in other production or service activities [93]. Since these people do not have any substantial work, they are called surplus labor. In December 1978, the Third Plenary Session of the Eleventh Central Committee was held, and China began to implement the policy of internal reform and external

opening, under the influence of which, China experienced the fastest economic development and the most profound changes in its history, and the large-scale movement of population and labor force was one of the most important changes. 1992, Deng Xiaoping's Southern Tour speech pushed the reform and opening up into a new stage, and a large number of rural surplus labor force accelerated At the same time, the state also introduced a series of policies to promote the development of the secondary and tertiary industries. For example, in 2003, the Third Plenary Session of the 16th CPC Central Committee adopted the Decision of the CPC Central Committee on Several Issues of Improving the Socialist Market Economy System [94], which pointed out that the two-way flow of surplus rural labor between urban and rural areas is an important way to increase farmers' income and promote urbanization. After that, the national and local governments have successively introduced policies to promote the transfer of surplus rural labor.

The connotation of rural surplus labor transfer. As the name implies, "transferring surplus rural labor" means transferring the surplus rural labor out, that is, the majority of the surplus rural labor gradually shift to non-agricultural industries or transfer out of rural areas, which is in essence the non-agricultural transfer of the surplus rural labor. There are two types of migrant workers, local migrant workers and Outbound migrant workers. Local migrant workers refer to the survey year, the rural labor force engaged in non-agricultural activities for 6 months or more in the territory of the township where the household registration. Outbound migrant workers refer to rural laborers who have been engaged in non-agricultural activities for 6 months or more in the year of survey outside the

territory of the township where they are registered. From Table 1.1, from 2012 to 2021, the number of transferred labor force in China increases year by year, and the number of outbound migrant workers increases from 163.36 million in 2012 to 171.72 million in 2021, an increase of 8 million. The number of outbound migrant workers is significantly higher than the number of local migrant workers.

Table 1.1 - Comparison of China's surplus rural labor transfer quantity from 2012-2021

Year	Total number of migrant workers (million)	Local migrant workers (million)	Outbound migrant workers (million)
2012	262.61	99.25	163.36
2013	268.94	102.84	166.10
2014	273.95	105.74	168.21
2015	277.47	108.63	168.84
2016	281.71	112.37	169.34
2017	286.52	114.67	171.85
2018	288.36	115.70	172.66
2019	290.77	116.52	174.25
2020	285.60	116.01	169.59
2021	292.51	120.79	171.72

Explanation:

Migrant workers: Refers to those who are still registered in rural areas and have entered cities to work or have been engaged in non-agricultural labor for at least 6 months.

Local migrant workers: Refer to the survey year, the rural labor force engaged in non-agricultural activities for 6 months or more in the territory of the township where the household registration.

Outbound migrant workers: Rrefer to the survey year, rural labor force engaged in non-agricultural activities for 6 months or more outside the territory of the township where the household registration.

Source: Statistical Bulletin of the National Economic and Social Development of the People's Republic of China[95]

Human resource management is to optimize the structure of human resources, improve the quality of human resources, and maximize the value and potential of human resources. China's national condition of having more people and less land

makes it inevitable that there is a large amount of surplus labor in China's rural areas, so China must go out of the rural areas and agriculture in the process of human resource management, improve the quality of workers and increase the productivity of agricultural labor by transferring the surplus labor in rural areas, reducing the number of rural people, and optimizing the structure of human resources, which has been an important part of China's implementation of rural human resource management for a long time.

Ways of transferring rural surplus labor. There are two ways to transfer surplus rural labor, the first is non-agriculturalized occupational conversion and the second is urbanized geographical transfer. Non-agriculturalized occupational conversion refers to the process by which farmers leave agriculture and engage in other occupations other than agriculture (mainly traditional farming), such as construction, industry, commerce, and so on. Table 1.2 shows that from 2012 to 2021, the employed population in the primary industry in China decreases year by year, from 255.35 million in 2012 to 170.72 million in 2021, a decline of more than 70 million people engaged in agriculture. Among the three major industries, the tertiary industry, which is various industries other than the primary and secondary industries, mainly refers to transportation, warehousing, computer services, wholesale and retail, accommodation and catering, tourism, finance, real estate, and leasing in China, the employed population has increased year by year during this decade, with a total increase of 12 percentage points during the decade. This indicates that many of China's surplus rural laborers have achieved non-agricultural occupational conversion.

Table 1.2 - China's employment population by industry 2012-2021

Year	Number of people employed in each industry (million)			Share of employed population by industry (%)		
	Primary Industry	Secondary Industry	Tertiary Industry	Primary Industry	Secondary Industry	Tertiary Industry
2012	255.35	232.26	274.93	33.5	30.4	36.1
2013	238.38	231.42	293.21	31.3	30.3	38.4
2014	223.72	230.57	309.20	29.3	30.2	40.5
2015	214.18	226.44	322.58	28.0	29.7	42.3
2016	209.08	222.95	330.42	27.4	29.3	43.3
2017	202.95	217.62	340.01	26..7	28.6	44.7
2018	195.15	213.56	349.11	25.7	28.2	46.1
2019	186.52	212.34	355.61	24.7	28.2	47.1
2020	177.15	215.43	358.06	23.6	28.7	47.7
2021	170.72	217.12	358.68	22.9	29.1	48

Source: China Population and Employment Statistics Yearbook 2022

The urbanized geographical transfer means that farmers bid farewell to their original residence in rural areas and move to cities temporarily or permanently. This is often caused by a career change. Non-agricultural occupation conversion requires farmers to get rid of traditional agriculture and gradually transfer to the secondary and tertiary industries. However, the secondary and tertiary industries are still relatively lacking in rural areas and mainly concentrated in cities. Therefore, the geographical transfer of urbanization has become the inevitable choice for the non-agricultural development of China's rural surplus labor force. As can be seen from Table 1.3, the number of urban employed population in China increases year by year from 2012 to 2021. During the decade, the urban employed population increases by 94.86 million, while the rural employed population decreases by 10.88 million. It shows that the geographical transfer of urbanization has become one of

the main ways to transfer the rural surplus labor force. It is also an effective experience in the development and management of rural human resources in China.

Table 1.3 - Comparison of the number of urban and rural employed population in China from 2012 to 2021

Year	Number of urban employed population(million)	Number of rural employed people(million)
2012	372.87	389.67
2013	385.27	377.74
2014	397.03	366.46
2015	409.16	354.04
2016	420.51	341.94
2017	432.08	328.50
2018	442.92	314.90
2019	452.49	301.98
2020	462.71	287.93
2021	467.73	278.79

Source: China Population and Employment Statistics Yearbook 2022

The rural population transfer to the city usually has two results, one is formal transfer, the other is informal transfer. Formal transfer is strictly controlled by the government, and the fundamental sign of transfer is to solve the hukou of farmers, so that farmers can not only settle down in the cities, but also enjoy the treatment of citizens, which means that their citizenship has been officially recognized. This part of people mainly include people who stay in the cities to work after graduation, demobilized soldiers, and a small number of people who buy housing in the cities to realize the transformation of rural areas. Often referred to as migratory populations; Informal transfer mainly refers to those migrant workers who go to urban areas for

work, business, social services and other non-agricultural activities. They do not go through the household registration transfer procedures, do not change the place of registration, and do not enjoy the treatment of citizens, but they work and live in the city. This part of people is usually referred to as the floating population, also known as "migrant workers". This is the current and even in the future quite a long period of time, the rural surplus labor to urban transfer mainstream.

Implemented a new type of professional farmer cultivation project. In 2012, in order to solve the problem of "lack of manpower for modern agriculture and new rural construction", the Ministry of Agriculture of the People's Republic of China launched the pilot project of cultivating new types of professional farmers nationwide, and from that year onward, the No. 1 document of the Central Government emphasized the need to "vigorously cultivate new types of professional farmers" for four consecutive years [96]. The cultivation of new professional farmers is not only a major initiative to deepen rural reform and enhance the vitality of rural development, but also a key link to develop modern agriculture and ensure the effective supply of important agricultural products. More importantly, the cultivation of a large number of new professional farmers has effectively improved the quality level of rural human resources [97].

Meaning of new professional farmers. The term "new professional farmers" was not created overnight, but has undergone a conceptual evolution from traditional farmers to new farmers and then to new professional farmers, which is related to the government's policies in a specific context and the needs of China's economic and social development[98-99]. In 2012, the No. 1 document of the

Central Government used the term "new type of professional farmers" for the first time. The document clearly proposed to "vigorously cultivate new type of professional farmers" and train a large number of rural development leaders, rural skills and service talents, rural production and management talents and other practical rural talents for the development of agricultural modernization. In August 2012, the Guiding Opinions of the General Office of the Ministry of Agriculture on the Pilot Work of Cultivating new-type Professional Farmers gave a detailed description of the concept of "new-type professional farmers" and put forward that "new-type professional farmers refer to modern agricultural practitioners who take agriculture as their occupation, have certain professional skills and their income mainly comes from agriculture. It mainly includes production and management type, professional skills type and social service type professional farmers. The term “production and management professional farmers" refers to agricultural labor forces who take agriculture as their occupation, possess certain resources, possess certain professional skills, have certain capital investment capacity, and derive their income mainly from agriculture. They are mainly large professional households, family farmers, and leaders of farmers' cooperatives. Professional and skilled vocational farmers refer to agricultural laborers with certain professional skills, who are more stably engaged in agricultural labor operations in new production and operation subjects such as farmers' cooperatives, family farms, large professional households and agricultural enterprises, and use them as the main source of income. Social service professional farmers refer to agricultural social service personnel who are directly engaged in agricultural production services and use them as the main

source of income and have corresponding service capacity, mainly rural information personnel, rural brokers, agricultural machinery service personnel, plant protection personnel, village animal epidemic prevention personnel and other agricultural social service personnel.[100]”

The characteristics of new professional farmers. Compared with traditional farmers and new farmers, new professional farmers have several characteristics:

First, professionalism and professionalism are more prominent[101].In the beginning, farmers existed as a profession. However, with the development of social economy and the change of times, farmers were regarded as more synonymous with identity and class, and their occupational characteristics were gradually weakened. As a result, more and more young people from rural areas flocked to cities. Have these farmers really changed their identity completely by entering the city? Can they really enjoy the same benefits as citizens? At the same time, with a large number of farmers flowing into the city, the phenomenon of "aging" in rural areas is becoming increasingly serious, and the social security problem of the left-behind elderly and left-behind children in rural areas is also gradually emerging, which has become another big problem hindering social development. The emergence of new professional farmers can effectively alleviate or even solve these problems. First of all, new professional farmers have a high degree of stability and take farming as a lifelong career. At the same time, the new professional farmers are the main body of the market, which can fully enter the market and make use of all possible choices to maximize the remuneration. Secondly, this kind of occupation is a skilled occupation, which requires professional learning and training just like teachers,

lawyers and doctors. It is the existence of this kind of professionalism that makes the occupational characteristics of farmers more firm and gives them room to rise in social status.

Second, the comprehensive quality is stronger. Comprehensive quality refers to the general term of people's various physiological, psychological and external characteristics that are relatively stable. For the comprehensive quality of new professional farmers, it broadly includes cultural quality, skill quality, physical and mental quality, and legal quality, etc [102]. In 2006, the "Central Committee No. 1" document considered that new farmers should have the basic qualities of "being educated, knowing technology, and being able to operate". On the basis of this, new professional farmers have higher requirements, which are reflected in "being literate, technically proficient, business manlike, policy-oriented, organized and law-abiding", with a high sense of social responsibility and modern concepts, and a high sense of responsibility for society, ecology, environment and future generations.

Third, higher income. The purpose of new professional farmers' production is to provide agricultural products for the market, so they should have full access to the market and meet consumers' needs by using market information, improving product quality, adjusting the structure of agricultural products and extending the agricultural industry chain, etc., and pursue maximum remuneration through all possible options. As a result, new professional farmers generally have higher income. From the experience of western developed countries, the income of professional farmers is basically on par with that of urban residents. For example, in

Japan after 1973, most farmers' incomes were higher than those of urban residents, and in the United States, farmers' incomes were slightly higher than those of urban residents. It is expected that the future income of new professional farmers in China will not only be higher than that of traditional farmers, but also higher than that of part-time farmers, and even higher than that of urban residents in a significant number of cases.

Fourth, the social status is higher. Under the long-term dual structure of urban and rural areas, farmers are a group living in rural areas with low income and poor quality, a poor "identity" and "name", and a lower social level. Along with the emergence and development of new professional farmers, the social responsibility requirements of new professional farmers have been expanded and their social status has been gradually improved. First of all, new professional farmers are responsible for consumers and ensure the safety and reliability of agricultural products; secondly, new professional farmers are responsible for the environment and do not destroy vegetation; finally, new professional farmers are responsible for future generations and leave the most valuable available resources for future generations. It can be seen that the new professional farmers have more social responsibilities, not only for themselves, but also for others, the ecological environment, society and future generations. They will be respected by society[103].

Major practices of new professional farmer cultivation in China. In order to cultivate new-type professional farmers, Chinese governments and agricultural departments at all levels have attached great importance to it and actively launched various new initiatives and methods to create a favorable environment for

cultivating new-type professional farmers across the country. In summary, China has launched training in four main areas: identifying the best cultivation targets, selecting suitable investment subjects, building a reasonable cultivation model and formulating favorable supporting policies [104].

Identifying the best cultivation targets. To do a good job of cultivating new professional farmers, we need to first identify those people who have more potential to be cultivated as professional farmers. Only when the cultivation targets are identified can the next cultivation work be carried out efficiently. The selection of cultivation targets depends on their willingness to work, i.e., whether they are willing to engage in the occupation of new professional farmers[105-106], on the one hand, and their potential to work, on the other. According to human capital investment theory, people with stronger learning ability and younger age are more likely to receive education and training. In general, people with more formal education have stronger learning ability and they pay less effort cost in vocational training than those with lower education, so people with more formal education are more inclined to invest more in subsequent vocational training. In addition, new professional farmers must know the soil, climate and the various aspects of sowing and harvesting, and a person with long experience in agricultural production has a higher learning ability in participating in agricultural education and training and may receive more vocational agricultural education and training. Therefore, large professional households, rural middle and high school graduates and college and secondary school graduates become the best targets for cultivating new professional farmers in China. Take major professional households as an example, see Table 1.4.

Compared with ordinary agricultural practitioners, large professional households have better education, younger age, strong learning ability, and experience in agricultural production and operation. It is more likely to participate in the cultivation of new professional farmers.

Table 1.4 - Age structure and educational structure of large professional households and ordinary agricultural practitioners[107]

Indicator	Indicator	Large professional households	Ordinary agricultural practitioners
Age structure	≦35	21.10%	19.20%
	36-54	58.30%	47.30%
	≧55	20.70%	33.60%
Educational structure	Never attended school	3.60%	6.40%
	Primary school	30.60%	37.00%
	Junior high school	55.40%	48.40%
	Senior high school	8.90%	7.10%
	College and above	1.50%	1.20%

Source: Major data Bulletin of the third National Agricultural Census

Selecting suitable investment subjects. According to the theory of human capital investment, the subject of human capital investment includes individuals, families, enterprises and governments. As a human capital investment activity, the cultivation of new professional farmers is still inseparable from these investment subjects. Psychology points out that the driving force leading to behavior is demand. Similarly, any investment subject will consider its own investment demand before making human capital investment, and investment is possible only when there is

demand. From the perspective of individuals and households, whether there is a demand for investment in the cultivation of new professional farmers is mainly based on the comparison between the expected return of investment and the cost of investment [108]. In China, the cost of receiving secondary vocational education is very low, because the tuition fees for secondary vocational education have been reduced and waived, and for the various vocational short-term training organized by the state, the participants are generally not required to bear the training costs, and individuals only need to bear part of the time costs, so farmers' desire to invest in vocational training is still relatively strong. Enterprises are also an important place for human capital development, but they always pursue profit maximization, so for many agriculture-related enterprises, the main way they carry out human capital development is master with apprentice and on-the-job training, etc., and take less ways such as leaving training, but in recent years, with technological progress enterprises gradually realize the importance of talent, and in order to improve the marginal productivity of employees and increase enterprise income, enterprises invest more and more money and opportunities in human capital. The return on investment is also an important factor for the government to decide whether to invest in the cultivation of new professional farmers. Of course, the main consideration for the government to invest in the cultivation of new professional farmers is the social benefits, not just the economic benefits. In order to consolidate the basic position of agriculture, maintain the harmony and stability of rural areas, and narrow the gap between urban and rural areas, the Chinese government actively invests in the cultivation of new professional farmers. In 2017 alone, China's central

government invested 1.5 billion yuan in the cultivation of new professional farmers [109].

Table 1.5 - Main indicators for the development of new professional farmers in China [110]

Index	2015year	2020year	Average annual growth	Indicator properties
Number of new professional farmers	12.72 million	20 million	1.46 million	Anticipatory
Percentage of high school and above education level	30%	≥35%	1%	Anticipatory
Number of modern young farmer training	13,000	≥63,000	≥10,000	Constraint
Number of rural practical talent leader training	67,000	167,000	≥20,000	Constraint
Number of farm machinery cooperative leaders training	10,000	≥50,000	10,000	Constraint
Online education and training development	Pilot development	Improve the online education platform, carry out online training courses no less than 30% of the total training courses, and carry out online tracking services	≥6%	Anticipatory

Source: China's 13th Five-Year Plan for the Development of New Professional Farmers

Building a reasonable cultivation model. Training for farmers requires not only classroom teaching but also distance education, and at present, the level of information technology in China is in a stage of rapid development, and the Internet, cloud computing, and big data have been deeply applied to various fields of social

development and have played an important role in various fields; in addition, in 2017, the Chinese Ministry of Agriculture issued the "Thirteenth Five-Year National Plan for the Cultivation and Development of New Professional Farmers", in which the Chinese government stipulated the main indicators for the cultivation and development of new professional farmers (as shown in Table 1.5), one of which is the development of online education and training, which shows that online education and training has become the main mode of cultivating new professional farmers in China. It is also bound to play a good role in supporting the development of modern agriculture and new rural construction in China.

The use of "big data" to implement online education and training has two major advantages. On the one hand, it can realize the situation of multi-faceted collaboration and resource sharing. At present, from the perspective of the fields involved in the cultivation of professional farmers, the main bodies for the cultivation of new professional farmers are the government departments of agriculture, science and technology, education, human resources and social security, as well as enterprises and institutions, public welfare training institutions and other social organizations [111]. In this system, the government plays an absolutely dominant position and enjoys the most comprehensive and high-quality data resources, while other social institutions cannot share these information data. In addition, each functional department within the government has unclear authority and responsibility, and holds a large amount of public data in a scattered manner, which cannot effectively realize the integration and sharing of information resources, thus forming information islands. The embedding of big data technology in the

cultivation of emerging professional farmers is conducive to breaking the information barrier between various functional departments within the government and between the government and other social subjects, thus realizing mutual collaboration among different subjects. On the other hand, it can better meet the market demand for talents and make cultivation more efficient. Big data can analyze massive data such as farmers' education level, age distribution, regional distribution, regional agricultural development characteristics, and the number of working population, which enables in-depth discovery of the data's inherent correlation and application value, better analysis of farmers' personalized cultivation needs and the market's supply and demand for talents, and targeted cultivation programs for effective implementation of farmer cultivation.

Formulating favorable supporting policies. In order to create a favorable policy environment for the cultivation of new professional farmers, the Chinese government has formulated a series of supporting policies. For example, it relies on modern agricultural industrial technology systems to train high-end talents. In the 13th Five-Year Plan, the Chinese Ministry of Agriculture and Rural Development has set up 50 industrial technology research and development centers, 299 functional research laboratories and 1,252 comprehensive experimental stations, hired 50 chief scientists, 1,370 post scientists and 1,252 station managers, and relied on the modern agricultural industrial technology system to strengthen the training of high-end agricultural talents. The Ministry of Agriculture and Rural Development has set up a total of 50 industrial technology R&D centers, 299 functional research laboratories, 1,252 comprehensive experiment stations, 50 chief scientists, 1,370

post scientists and 1,252 station managers, and relies on modern agricultural industrial technology system to strengthen the training of high-end agricultural talents. China also vigorously implements new vocational farmer cultivation projects. since 2014, China's Ministry of Agriculture and Rural Affairs, together with the Ministry of Finance, has launched the implementation of the new vocational farmer cultivation project, focusing on large farmers, family farm owners, backbone of farmers' cooperatives, agricultural socialization service personnel and returning agriculture-related entrepreneurs, with the goal of improving production and management capabilities and professional skills, and carrying out tiered and classified training. As of 2017, the central government has arranged a total of 5.09 billion yuan to support the cultivation of new vocational farmers and trained more than 4 million people, providing strong talent support for high-quality agricultural development and transformation and upgrading [112]. In addition, the Chinese government has established land transfer policies, agricultural subsidy policies, and continuing education support policies to support the training of new professional farmers.

To sum up, new vocational farmer training is a new type of management approach explored by China in the process of rural human resource management. On the one hand, this approach improves the skill level of rural human resources, widens the employment space of farmers, and optimizes the structure of human resources, and on the other hand, it is particularly important for consolidating the basic status of agriculture, improving farmers' income, and promoting rural economic development.

Implemented the rural revitalization strategy. In October 2017, the 19th National Congress of the Communist Party of China clearly put forward the strategy of rural revitalization in its report, pointing out that the issues of agriculture, rural areas and farmers are fundamental issues related to the people's livelihood of the country [113]. The revitalization of rural talents cannot be separated from the development of rural human resources, and it is a long-term process [114].In September 2018, the Central Committee of the Communist Party of China (CPC) and the State Council issued the "Strategic Plan for Rural Revitalization (2018 - 2022)", putting forward the requirements and deployments for the implementation of the rural revitalization strategy, and pointing out that "a more active, open and effective talent policy will be implemented to promote the revitalization of rural talents, so that all kinds of talents can give full play to their abilities, display their talents and show their talents in the countryside. [115] "China is a large agricultural country with a wide geographical area, a large rural population and unbalanced development between urban and rural areas. The most important thing for the implementation of the rural revitalization strategy is to solve the problems faced in rural development, such as large quantity of human resources, low cultural quality and conservative thinking, etc. To change this situation, the key lies in stimulating the endogenous power of rural economic development and cultivating a team of high-quality talents [116]. Specifically China has mainly adopted the following talent development and management models to implement the rural revitalization strategy:

Government support model. Government support refers to the special support

given by the national or local government in terms of policies, capital and other aspects for specific areas, specific environments and special groups [117]. In the process of implementing the rural revitalization strategy, the government's support for rural human resources is mainly focused on policy support, financial support and technical support [118]. For example, the implementation of new vocational farmers cultivation project is one of the main ways developed by the Chinese government in the process of promoting rural revitalization [119]. In order to better cultivate new vocational farmers, the Chinese government has created the vocational farmers system, formulated special policies on education and training, introduced policies on vocational education funding, set up special funds for vocational education and training, and launched pilot projects to evaluate the titles of vocational farmers, etc., which have prompted many traditional farmers to be transformed into new professional farmers, making their cultivation techniques, business methods and service concepts more modern and more responsive to modern market demands.

Along with the improvement of China's urbanization level, a large number of surplus rural laborers have moved to cities, which makes the phenomenon of hollowing out and aging of talents appear in rural areas, which seriously affects the development of rural economy and the improvement of farmers' quality of life. For this reason, promoting the return of migrant workers has become a key task in the implementation of China's rural revitalization.[120]"The return of migrant workers refers to a phenomenon in which the surplus labor force in rural areas goes out of the countryside to work for a period of more than six months and returns to engage in various occupational activities within the county. "The return of migrant workers

can help the development of rural economy and enhance the capacity of rural development. However, due to the constraints of knowledge and skills, low return on human capital and weak willingness to return human resources, the return of migrant workers to rural areas was not smooth at the beginning. However, after the implementation of the rural revitalization strategy, the Chinese government provided more and more financial, personnel and technical support to rural areas. The return of rural human resources is accelerating. For example, in terms of migrant workers returning to their hometowns to start their own businesses, the Chinese government has increased credit support, lowered mortgage loan standards, and granted preferential measures such as tax incentives and rent relief to agricultion-related enterprises established, which has stimulated the enthusiasm of migrant workers to start their own businesses back home[121].

Able person-driven model. Rural capable people are active, hardworking, risk-taking and advancing with the times, playing an irreplaceable role in the rural revitalization strategy. Most of the rural competent people have good market adaptability and organizational leadership, as well as high independent innovation and personal prestige, and their charisma has a subtle influence on the improvement of the quality of human resources in the region. Rural competent people live in the same area with villagers for a long time and have symbiotic interests with them, so usually, rural competent people are willing to lead the villagers of their village to grow together. Rural competent people can be divided into economic competent people, scientific and technological competent people and cultural competent people according to their specialties [122]. For the economic competent people, they

generally take the industrial project as a carrier to lead the villagers in the region to deeply integrate into the industrial chain. Farmers can, according to their own needs, adopt the mentor-apprentice system, seminars and other ways to voluntarily learn from the economic experts about industrial processing, sales and management[123]. Scientific and technological competent people have crop breeding, greenhouse green house, planting and breeding, home appliance maintenance, network applications and other technologies, villagers can combine market demand and their own preferences, and actively interact with technology competent people to enhance their own scientific and technological capabilities through their words and teachings. The cultural connotation displayed by cultural talents in opera, martial arts, paper cutting and other cultural projects can enhance the spiritual power of villagers, bring strong artistic appeal to villagers, and help them establish excellent ideological concepts and humanistic spirit [124].

"Internet+" platform model. The "Internet+" is a new economic form and communication method that has a significant impact on the behavioral concepts and lifestyles of rural human resources. Through the deep application of "Internet+" platforms, the process of rural human resource development and management can be effectively promoted. China has adopted three types of "Internet+" platforms for rural human resource development practices. First, the "Internet + education and training" platform can be used to carry out a variety of online training activities, such as systematic training based on "agricultural vocational education"[125], diversified training based on "agricultural science and technology issues", graded training based on "professional farmer titles" and personalized training based on

"interests and specialties". "Internet + education and training" platform mode is a new training mode, because the training video in the platform can be repeated, teaching time and space is infinite, education resources are optional, teaching methods are different, so it is more conducive to the realization of rural human resources development goals. Second, the "Internet + Career growth" platform covers modules such as career planning, employment and entrepreneurial knowledge reserve, employment information release, entrepreneurial project discussion, entrepreneurial resources integration, etc. These modules can enhance the vocational skills of rural human resources, help them quickly obtain development opportunities, and is an effective means to expand the employment space of rural human resources [126]. Third, the "Internet + comprehensive service" platform, which covers ideological construction, institutional construction, cultural knowledge, legal knowledge, scientific and technological development, policy interpretation and advanced deeds and other aspects of the platform can promote the multi-dimensional development of rural human resources [127].

Conclusions to section 1

In section 1 "Theoretical foundations of rural human resource management", focuses on three aspects: the nature and importance of rural human resource management, the experience of rural human resource management in China, and the impact of decentralization on rural human resource management in Ukraine. This section is the theoretical basis of this study, which on the one hand indicates the necessity and urgency of this study, and on the other hand provides the theoretical

framework for this study. The main conclusions are as follows.

1.Rural human resource development and management is significant for rural population and rural development. Effective rural human resource management can not only improve the quality of rural human resources, optimize their structure, fully exploit the potential of individual workers, and promote the reasonable flow and allocation of human resources in social and economic activities, but also promote the sustainable and healthy development of rural economy and society on this basis[128].The basic features of modern agriculture are modernization of material equipment, modernization of science and technology and modernization of management, which ultimately depend on the improvement of the quality of the rural population and on the development and management of rural human resources.

2.The implementation of rural human resource management needs to be informed by the experience of other countries. Different national systems have given birth to different national policies, thus making each country accumulate its own unique experience in the process of rural human resource management. Although these experiences have certain regional limitations and may not be suitable for other countries' national conditions, they may also have certain inspirational value for other countries to optimize the means of rural human resource management. The value of learning from the experience of other countries is to selectively absorb, adapt and utilize the existing management models of other countries according to their national conditions, and to promote the pace of rural human resources management in their own countries.

3.The management tools currently implemented in China and Ukraine provide

directions and guidelines for the next step in rural human resource management. For example, China has proposed to actively promote the return of migrant workers in the process of rural revitalization, and how to promote the return of migrant workers? This is the focus of the next step of the relevant human resource departments, namely, to increase the construction of rural infrastructure and provide necessary and high-quality public products and public services. Whether migrant workers return or not is influenced by two factors, one is land and the other is social security. For this reason, the Chinese government should steadily promote the market-oriented transfer of rural land contracting and use rights, and make sure that farmers' rights related to land can be fully protected; in addition, it should strengthen the construction of rural basic pension and medical security systems, increase the construction of public infrastructure, and continuously optimize and upgrade public service facilities and levels. When migrant workers see that the infrastructure and social security in rural areas are comparable to those in cities, they will naturally choose to return to their hometowns for employment and business.

SECTION 2

CURRENT SITUATION AND PROBLEMS IN THE MANAGEMENT OF RURAL HUMAN RESOURCES IN CHINA AND UKRAINE

2.1 Present status of rural human resources in China

This section analyzes the current situation of rural human resources in China and Ukraine from four indicators: population quantity, population quality, material level of population and living conditions of population, and digs deeper into the problems in human resource management in both countries through the current situation survey. The population quantity can be used to understand whether and what form of population burden exists in the two countries, which is the basic basis for rural human resource management. Effective human resource management can promote the rational allocation, transfer and utilization of labor resources in rural areas, and the indicators analyzed are birth rate, mortality rate, natural growth rate and migration rate of the population. Population quality is the key to measure the effectiveness of rural human resource management, which is mainly reflected through two indicators: education and health care. The cultural quality of rural human resources in the two countries is understood through education, and the physical quality of rural human resources in the two countries is understood through health care. Meanwhile, these two indicators can also provide insight into the management gaps in the process of ensuring the quality of rural human resources in the two countries, and better improve the stock of intelligent capital and health

capital of rural human resources in order to improve the overall quality and health status of the rural population. The material level of the population is a reflection of the economic capacity of rural human resources. The economic capacity reflects the efficiency of rural human resources management on the one hand, and the quality of human resources on the other hand, which is mainly reflected by three indicators: employment，income and expenditure. The living condition of the population is not only a reflection of the living standard of rural human resources, but also a projection of the rural infrastructure construction. If the rural infrastructure construction is insufficient or seriously lacking, it will definitely affect the overall development of the rural population, so the living condition of the population is also an important indicator for analyzing the rural human resources management, which is mainly measured from housing and living energy.

Population size is the natural basis of human resources, which refers to the sum of population with intellectual and physical labor capacity in a certain time and space. Its influencing factors include birth rate, death rate, population migration and mobility, etc. It is an important indicator to measure the population burden of a country and region, and is closely related to the increase or decrease of human resources quantity and the change of spatial distribution of human resources. Effective human resource management can promote the rational allocation, transfer and utilization of labor resources in the region.

Total population and distribution structure. By reviewing the China Statistical Yearbook, it is found that China's total population grows steadily during 2012-2021, from 1359.22 million in 2012 to nearly 1412.60 million in 2021.The huge total

population provides valuable human resources for China's economic take-off and lays a solid foundation of talents for the modernization of socialism with Chinese characteristics. However, at the same time, the number of China's rural population is decreasing year by year. In 2012, the rural population was 637.47 million, accounting for 46.90% of the total population of the country, and by 2021, the rural population decreased to 498.35 million, with the proportion decreased to 35.28%, as shown in Figure 2.1.

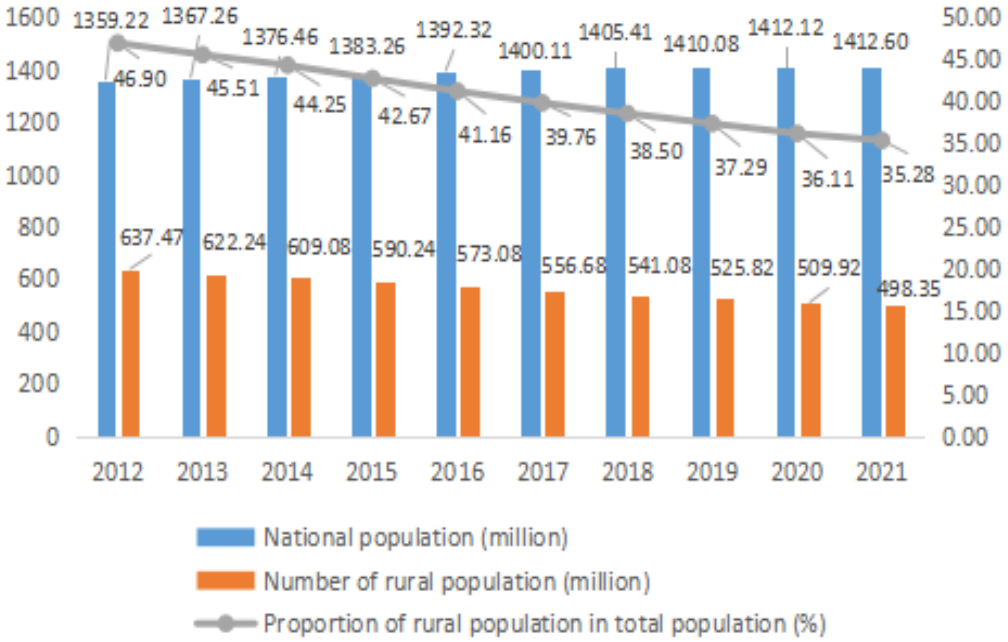


Figure 2.1 - Number of rural human resources in China from 2012-2021

Source: China Statistical Yearbook 2022

This figure is also lower than the world average, and in 2021, the proportion of the world's rural population to the total population was 43.4% [129]. The main reason for the change in data is that in recent years, China has implemented the project of transferring surplus rural labor force. The purpose of transferring surplus rural labor force is to shrink the large amount of remaining surplus labor force in

rural areas and enhance their ability to work in non-agricultural sectors, and the decrease in the number of rural population and the increase in the proportion of urban population indicate that China's rural human resource development has achieved great success, and a large amount of surplus rural labor force has been successfully transferred out of rural areas.

In terms of regional distribution, China's rural population is mainly distributed in western regions such as Tibet, Yunnan, Gansu, and Guizhou, where the rural population accounts for a relatively high proportion, especially in Tibet, which is as high as 63.39%, see Table 2.1, mainly because these regions are economically backward and it is more difficult for farmers to transfer regionally, and there are relatively more stranded laborers in rural areas. In contrast, regions such as Beijing, Shanghai and Guangdong are economically developed and urbanization is advancing more rapidly, and the rural population is relatively small, for example, only 10.69% in Shanghai, which is the province with the smallest rural population in China.

In terms of age structure, according to the general international standard, 15-64 years old belongs to the range of working age, and the number of people in this age group in China occupies the main part, basically maintaining at about 71%, but there is a decreasing trend year by year, with a decline of nearly 6 percentage points during the decade. In contrast, the proportion of children aged 0-14 and the elderly aged 65 and above is increasing year by year, and the trend of population aging is more obvious, with the population aged 65 and above increasing from 9.4% in 2012 to 14.2% in 2021, an increase of nearly 5 percentage points, as shown in Table 2.2 .

Table 2.1 - Regional distribution of China's rural population in 2021

Region	The proportion of rural population in the total population (%)	Rank	Region	The proportion of rural population in the total population (%)	Rank
National	35.28		Shanxi	36.58	16
Tibet	63.39	1	Shaanxi	36.37	17
Yunnan	48.96	2	Shandong	36.06	18
Gansu	46.67	3	Hubei	35.92	19
Guizhou	45.66	4	Heilongjiang	34.30	20
Guangxi	44.93	5	Ningxia	33.93	21
Henan	43.55	6	Inner Mongolia	31.79	22
Xinjiang	42.76	7	Fujian	30.31	23
Sichuan	42.18	8	Chongqing	29.67	24
Anhui	40.60	9	Zhejiang	27.34	25
Hunan	40.29	10	Liaoning	27.19	26
Qinghai	39.06	11	Jiangsu	26.06	27
Hainan	39.02	12	Guangdong	25.37	28
Hebei	38.86	13	Tianjin	15.15	29
Jiangxi	38.54	14	Beijing	12.52	30
Jilin	36.63	15	Shanghai	10.69	31

Source: China Statistical Yearbook 2022

This situation is even more prominent in rural areas. In 2021, for example, the proportion of the rural working-age population aged 15-64 to the total rural population is lower than the national average, by nearly 6 percentage points, while the proportion of children aged 0-14 and the elderly aged 65 or older is higher than the national average, especially the proportion of the elderly is 4.3 percentage points higher than the national average, and the rural population has a heavier burden of

child support and elderly support.

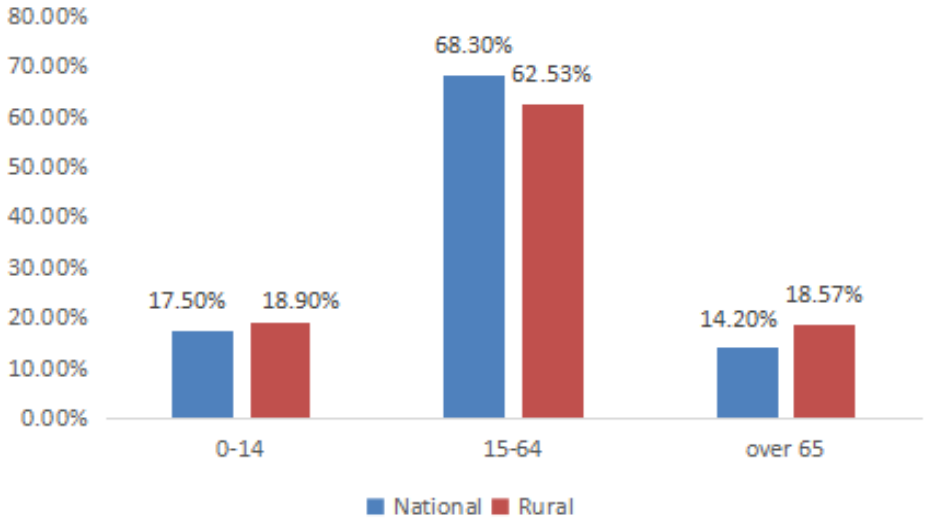


Figure 2.2 - Age composition of China's rural population in 2021

Source: According to the relevant data in China Statistical Yearbook 2022 and China Population and Employment Statistical Yearbook 2022

The rural population is under more pressure as shown in Figure 2.2.

Table 2.2 - Age composition of China's population from 2012 to 2021

Year	Ratio (%)		
	0-14	15-64	**Over 65**
2012	16.5	74.1	9.4
2013	16.4	73.9	9.7
2014	16.5	73.4	10.1
2015	16.5	73.0	10.5
2016	16.7	72.5	10.8
2017	16.8	71.8	11.4
2018	16.9	71.2	11.9
2019	16.8	70.6	12.6
2020	17.9	68.6	13.5
2021	17.5	68.3	14.2

Source: China Statistical Yearbook 2022

Birth rate and death rate. In modern society, the level and change of birth rate

level affects the population size, and the change of mortality rate also affects the amount of human resources. As seen in Figure 2.3, China's natural population growth rate shows an overall decreasing trend from 2012 to 2021, where the birth rate has a brief increase in 2016 and 2017, and then starts to decline year by year, which is mainly influenced by China's population policy. In order to cope with China's aging population, population imbalance and other problems, in October 2015, the Fifth Plenary Session of the 18th CPC Central Committee decided to fully implement the two-child policy. Therefore, the number of births in China increased to more than 17 million in 2016. However, since 2017, the birth rate of China has been declining year by year, and by 2020, the birth rate of China has fallen below 10‰. It was only 8.52 ‰, and it even dropped to 7.52 ‰ in 2021.The analysis found that the main reason for the high birth rate in 2016-2017 was the release of the cumulative effect of the "two-child" policy, which resulted in a small peak of fertility after the release of the family planning policy. In recent years, there are two main factors affecting the gradual decline of the birth rate. One is the decrease in the number of women of childbearing age; the other is the high cost of childbirth, which is one of the main negative factors affecting the family's fertility intention. Between 2012 and 2021, the mortality rate of the Chinese population has not changed much, basically staying at 7‰.

On the whole, China's natural population growth rate declines rapidly, especially after 2017. By 2021, China's natural population growth rate is only 0.34‰, which is related to the improvement of China's medical and health level and the extension of average life expectancy. However, if the natural growth rate of

population continues to develop at a low level, the proportion of teenagers will become smaller and smaller, which will lead to the decline of the country's labor production capacity. Coupled with the improvement of living standards and the progress of medical technology, the mortality rate will decline. In this way, the proportion of the elderly over 65 years old will become larger and larger, resulting in aging, which is not conducive to the development of society. However, a moderate decrease in the natural population growth rate will have some positive effects on the environment and economic development.

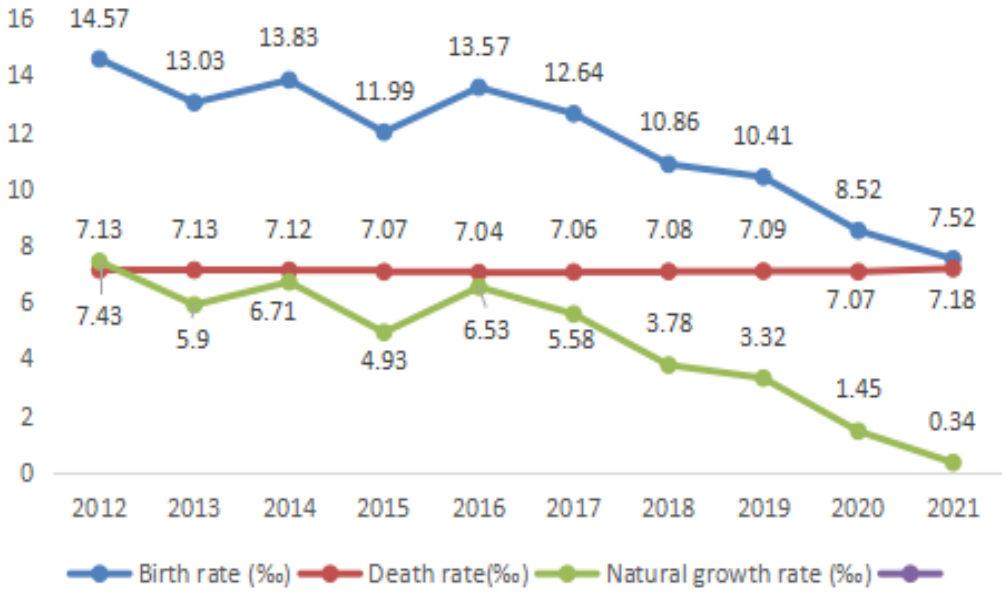


Figure 2.3 - Birth rate, death rate and natural growth rate of China from 2012 to 2021

Source: China Statistical Yearbook 2022

Migration. The migration and flow of population in modern society, to a certain extent, promote the increase and decrease of human resources in some areas and the change of human resources spatial distribution. The fundamental factor determining the direction of population flow is the difference in economic

development and employment opportunities in different regions. Therefore, the basic direction of population movement in China is from rural to urban areas, and the main reason for population movement is to work and do business to solve the employment problem. Young people make up the majority of the migrant population, with those aged 15 to 35 accounting for more than 70% of the total migrant population, most of whom have received junior high school education or above. The income earned by rural laborers working and doing business in the inflowing areas becomes an important source of funds for rural and agricultural development, which strongly contributes to the economic development of rural areas and farmers' poverty alleviation and prosperity. In the process of working and doing business, the migrant population acquires various new knowledge, skills and concepts, and cultivates and reserves talents for rural areas. The Chinese government has taken a series of measures to actively guide the reasonable flow of domestic population, for example, by reforming the household registration system, lowering the threshold for the rural population to enter the cities; by actively solving the education problems of migrant children and youth, creating more convenient conditions for the flow of population; local governments actively organize rural labor export, increasing the opportunities for rural laborers to go out for employment, etc.

According to China Health Statistical Yearbook 2022, this paper sorted out the changes of China's floating population from 2012 to 2021. As can be seen from Figure 2.4, 2012-2019, the number of floating population in China has not changed much, and the flow scale is relatively stable. But in 2020 and 2021, the number of

migrants increased dramatically. In 2020, the national population were 493 million people separated from their households, of which, the mobile population will be 376 million. Among the mobile population, the inter-provincial mobile population was 125 million, and the intra-provincial mobile population was 251 million. Compared with the sixth national census in 2010, the number of people separated from households increased by 232 million, or 88.89%; the number of mobile population increased by 155 million, or 70.14%. 2021, the national population of people separated from households continued to grow, reaching 504 million, including 385 million mobile people.

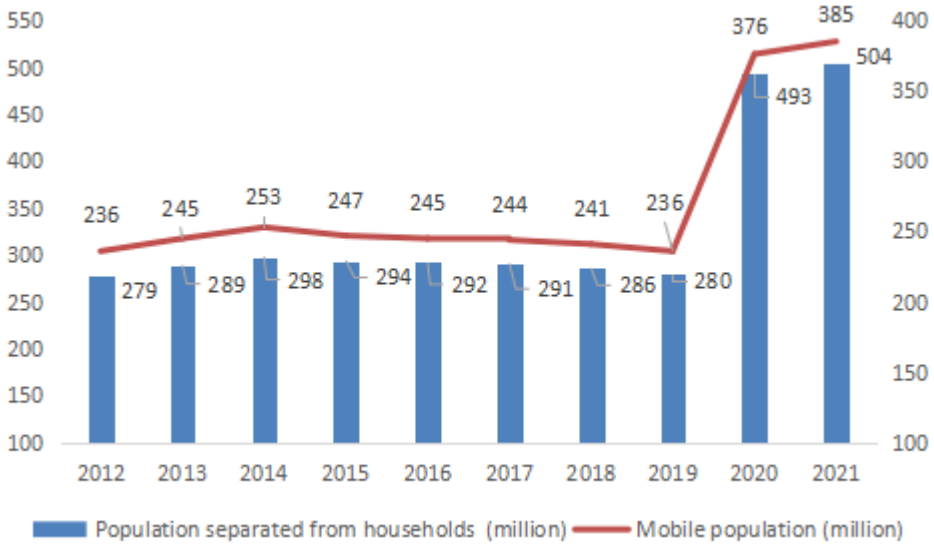


Figure 2.4 - Floating population in China from 2012 to 2021

Source: China Health Statistical Yearbook 2022

In rural areas, migration is mainly driven by migrant workers moving out to work. The first chapter summarizes the experience of rural human resource management in China, the paper analyzes the transfer of China's rural surplus labor force, which is the main form of rural population mobility. From 2012 to 2021, the

number of transferred labor force in China increased year by year, with the number of migrant workers in rural areas increasing from 163.36 million in 2012 to 171.72 million in 2021, an increase of 8 million. The number of migrant workers who go out is significantly higher than that of local migrant workers.

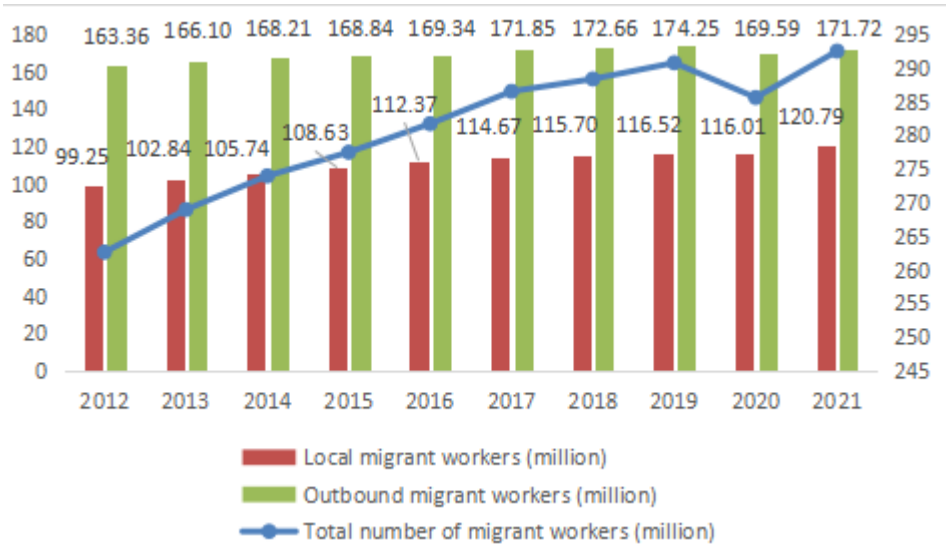


Figure 2.5 - Comparison of the number of migrant workers in China from 2012 to 2021

Source: Statistical Bulletin of the National Economic and Social Development of the People's Republic of China[130]

Population quality. The quality of rural human resources is a collective concept. Generally speaking, the quality of rural human resources is the physical quality and intellectual quality of human beings, which is the quality set of individual labor force constituting human resources. In other words, the ability quality level of the whole labor force is the organic unity of its physical quality, intelligence and skills. Population quality is mainly reflected by two indicators, education and health care,

through education to understand the cultural quality of rural human resources in the two countries, health care to understand the physical quality of rural human resources in the two countries, at the same time, through these two indicators to understand the management loopholes in the process of guaranteeing the quality of rural human resources in the two countries，and better improve the stock of intelligent capital and health capital of rural human resources in order to improve the overall quality and health status of the rural population.

Education status of human resources. The main indicator of the educational status of human resources is the average number of years of education. The average years of education refers to the average number of years of education of the population in a country or region in a certain period of time, which is a comprehensive indicator reflecting the cultural and educational level of the population, and reflects the current situation and development changes of the cultural and educational level of the population. The average years of education of the population at different age stages are different. 2012-2021, the average years of education of the population over 6 years old in rural China is increasing year by year, 7.61 years in 2012 and 8.03 years in 2021, which has a large gap with the average years of education of the population over 6 years old nationwide, basically maintaining about 1.5 years.

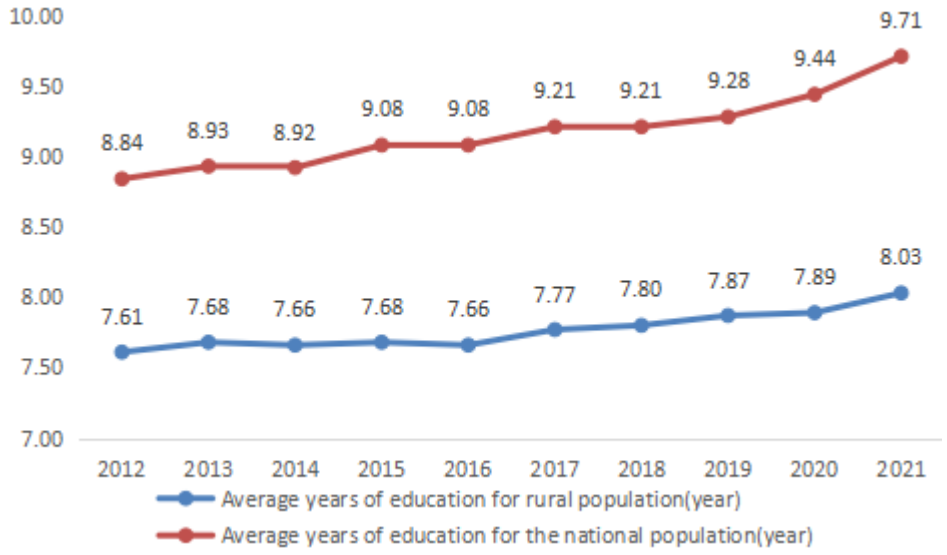


Figure 2.6 -The average years of education of China's rural population from 2012 to 2021

Note: Average years of education is calculated by converting various levels of schooling into the average number of years of schooling,the specific conversion standards are: elementary school = 6 years, junior high school = 9 years, high school = 12 years, college and above = 16 years.

Source:Calculated according to the relevant data in China Statistical Yearbook of Population and Employment (2012-2021) and China Statistical Yearbook (2012-2021) (only population above 6 years old)

According to international general standards, 15-64 years old belongs to the range of working age, and the average years of schooling of this group can more accurately reflect the education level of the working population in a country or region. Compared with the sixth national census in 2010, the average years of schooling for the population aged 15 and above increased from 9.08 years to 9.91 years in 2020, according to data released in the bulletin of the seventh National Census. At present, there is no data on the average years of schooling of rural population aged 15 years and above, but according to the average years of schooling of Chinese population from 2012 to 2021, it can be inferred that the average years of schooling of rural population aged 15 years and above is lower than 9.91.

Although there are no statistical data on the average years of education of rural human resources over 15 years old in China, there are statistical data on the educational level of the head of a rural household, as shown in Table 2.3. As can be seen from the table, the education level of the heads of rural households in China is mainly concentrated in Junior high school and primary school, and the proportion of those who have never been to school is very low, indicating that China's nine-year compulsory education is well implemented. At the same time, the proportion of Senior high school degree and college degree increased year by year, but the rising range was slow.

Table 2.3 - Education level of rural household head from 2012 to 2021

Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Never attended school（%）	-	4.7	4.4	3.8	3.3	3.2	3.9	3.6	3.4	2.7
Primary school（%）	-	32.3	31.8	30.7	29.9	29.8	32.8	32.5	32.3	28.9
Junior high school（%）	-	51.0	51.5	53.1	54.6	54.7	50.3	50.8	51.3	54.6
Senior high school（%）	-	10.7	10.9	11.1	10.7	10.8	11.1	11.2	11.2	11.7
College and above（%）	-	1.4	1.4	1.4	1.4	1.5	1.9	2.0	1.8	2.0

Note: Data for 2012 are missing because the caliber of statistical indicators for 2012 and 2013-2021 are not the same.

Source: China Rural Statistical Yearbook 2022

The quality of human resources education is closely related to the number of educational institutions, and sufficient educational institutions are the basis for securing the cultural level of human resources. Taking secondary education as an example, Figure 2.7 shows the changes in the number of general secondary education institutions in China. From the figure, it can be seen that from 2012 to 2021, the number of general secondary education institutions (Including regular middle schools and regular high schools) in China is relatively stable overall, with little change, but the number of rural secondary education institutions is obviously on a downward trend, decreasing from 20,126 in 2012 to 14,324 in 2021, a decrease of nearly 6,000 in ten years. This is mainly related to China's urbanization development, and along with the decrease in the number of rural population, the number of school-age students in general secondary education institutions also decreases accordingly, and the number of rural secondary education institutions is bound to shrink.

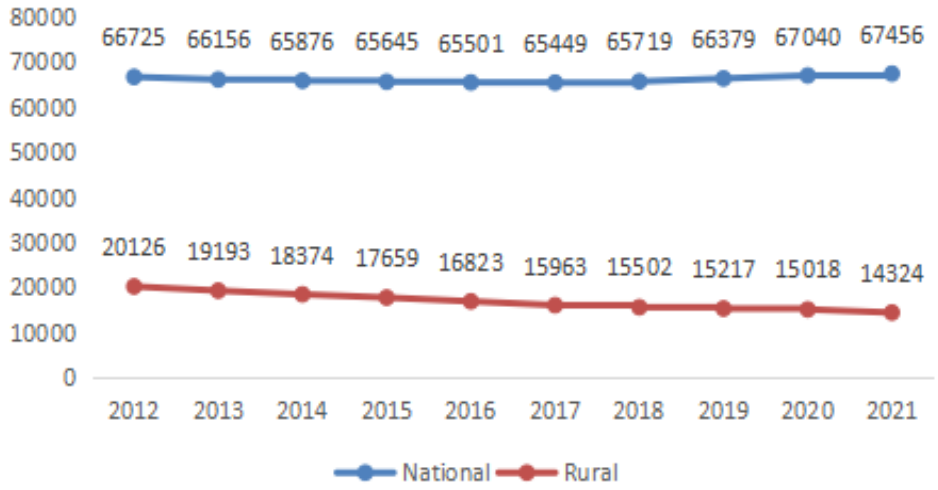


Figure 2.7 - Changes in the Number of General Secondary Education Institutions in China

Source:Ministry of Education of China

Table 2.4 shows the overview of general secondary education institutions in China in 2021.

Table 2.4 - General Secondary Education Institutions in China in 2021

		National	Urban	Rural	Student-teacher ratio		
					National	Urban	Rural
Total	Number of schools	67456	53132	14324	12.7:1	12.8:1	11.6:1
	Number of students	76234664	69146433	7088231			
	Number of teachers	5999462	5388942	610520			
Junior high school	Number of schools	52871	39350	13521	12.6:1	12.8:1	11.4:1
	Number of students	50184373	44084884	6099489			
	Number of teachers	3971121	3436171	534950			
High school	Number of schools	14585	13782	803	12.9:1	12.7:1	13.1:1
	Number of students	26050291	25061549	988742			
	Number of teachers	2028341	1952771	75570			

Source:Ministry of Education of China

From the table, it can be seen that the number of rural secondary education institutions is less than urban ones in 2021, which is basically synchronized with the development of urbanization in China. In terms of student-teacher ratio, the average student-teacher ratio of secondary education institutions in China is 12.7:1, including 12.8:1 in urban areas and 11.6:1 in rural areas, and rural areas are

obviously better than urban areas. According to China's National Standard for Student-Teacher Ratio in Primary and Secondary Schools, the student-teacher ratio should be 12.5:1 in high school and 13.5:1 in junior high school, but the table below shows that in 2021, the average student-teacher ratio in junior high school in China is 12.6:1, which has already met the national requirement, and the student-teacher ratio in rural areas is better than that in urban areas. However, the high school student-teacher ratio is not optimistic, with a national average of 12.9:1, which is lower than the national standard, and the rural student-teacher ratio is even worse, at 13.1:1.

Status of human resources health care. Health is an important component of human resource quality, a key determinant of workers' labor force participation and labor market performance, and an important guarantee of sustainable economic growth. If a person has a healthy physique, it will be more beneficial to obtain employment opportunities and improve the quality of life of individuals [131]. Through the health care survey of human resources, we can understand the physical fitness of rural human resources in the two countries and the state's guarantee of rural medical care. The physical fitness of rural human resources can be analyzed from the health care of women and children and the mortality rate of main diseases of rural residents. The state's guarantee of rural medical care can be analyzed from three aspects: village clinics, the number of beds in rural medical and health institutions per thousand population ， and the number of rural health personnel per thousand population.

Health care status of women and children. As can be seen from Table 2.5, the

neonatal mortality rate, infant mortality rate and under-five mortality rate are significantly higher in rural areas than in urban areas. However, with the development of China's economy and the improvement of the rural medical and health care system, the mortality rate of rural children has gradually decreased. In the past ten years, the mortality rate of rural newborns, infants and children under five has decreased by 4.5‰, 6.6‰ and 7.7‰ respectively, while the mortality rate of urban newborns, infants and children under five has decreased by about 2.0 percent. The decline trend of child mortality in rural areas is significantly faster than that in urban areas, and the gap between urban and rural areas is gradually narrowing. Among them, the gap between urban and rural neonatal mortality decreased from 4.2‰ in 2012 to 1.3‰ in 2021, and the gap between urban and rural infant mortality decreased from 7.2‰ in 2012 to 2.6‰ in 2021. The urban-rural gap in the mortality rate of children under the age of five decreased from 10.3 per thousand in 2012 to 4.4 per thousand in 2021. The maternal mortality rate is slightly higher in rural areas than in urban areas, but there is little difference between urban and rural areas. The above analysis shows that in order to improve the quality of rural human resources, it is necessary to improve the level of health security for rural women and children.

Mortality rate of major diseases among rural residents. By referring to the China Health Statistics Yearbook, it is found that the main causes of death of rural residents are heart disease, cerebrovascular disease, malignant tumor, respiratory system disease, endocrine and metabolic diseases, etc. In 2021, for example, the top 3 are heart disease, cerebrovascular disease and malignant tumor, accounting for

25.36%, 23.62% and 22.47% respectively.

Table 2.5 - Health care of rural women and children in China from 2012-2021

Index	Year									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Neonatal mortality rate(‰)	6.9	6.3	5.9	5.4	4.9	4.5	3.9	3.5	3.4	3.1
Urban	3.9	3.7	3.5	3.3	2.9	2.6	2.2	2.0	2.1	1.9
Rural	8.1	7.3	6.9	6.4	5.7	5.3	4.7	4.1	3.9	3.6
Infant mortality rate(‰)	10.3	9.5	8.9	8.1	7.5	6.8	6.1	5.6	5.4	5.0
Urban	5.2	5.2	4.8	4.7	4.2	4.1	3.6	3.4	3.6	3.2
Rural	12.4	11.3	10.7	9.6	9.0	7.9	7.3	6.6	6.2	5.8
Under-five mortality rate(‰)	13.2	12.0	11.7	10.7	10.2	9.1	8.4	7.8	7.5	7.1
Urban	5.9	6.0	5.9	5.8	5.2	4.8	4.4	4.1	4.4	4.1
Rural	16.2	14.5	14.2	12.9	12.4	10.9	10.2	9.4	8.9	8.5
Maternal mortality rate(1/100,000)	24.5	23.2	21.7	20.1	19.9	19.6	18.3	17.8	16.9	16.1
Urban	22.2	22.4	20.5	19.8	19.5	16.6	15.5	16.5	14.1	15.4
Rural	25.6	23.6	22.2	20.2	20.0	21.1	19.9	18.6	18.5	16.5

Source: China Health Statistics Yearbook 2022

Three diseases account for 71% of the deaths of rural residents in China, which is a serious threat to the health of the rural population.

Table 2.6 - Mortality rate of major diseases among rural residents in China in 2021

Name of disease	Mortality rate(1/100,000)	Proportion（%）	Rank
Heart disease	188.58	25.36	1
Cerebrovascular disease	175.58	23.62	2
Malignant tumor	167.06	22.47	3
Respiratory diseases	65.23	8.77	4
External causes such as injury and poisoning	52.98	7.13	5
Endocrine and metabolic diseases	21.09	2.84	6
Diseases of digestive system	15.98	2.15	7
Diseases of nervous system	10.15	1.37	8
Diseases of genitourinary system	7.86	1.06	9
Infectious disease	6.52	0.88	10
Mental disorder	3.54	0.48	11
Musculoskeletal and hoof tissue diseases	2.48	0.33	12
Diseases of the blood, hematopoietic organs and immune systems	1.36	0.18	13
Congenital malformations and chromosomal abnormalities	1.04	0.14	14
Perinatal disease	0.79	0.11	15
Complications of pregnancy, childbirth and puerperium	0.04	0.01	16
Parasitic disease	0.04	0.01	17
Unknown diagnosis			
Other diseases			

Note: Missing data for unknown diagnosis and other diseases

Source: China Health Statistics Yearbook 2022

Village health office situation. A village health office is a medical institution at

the village level unit, and Figure 2.8 presents the change in the number of rural health offices in China from 2012-2021, from which it can be seen that the number of rural health offices in China declined sharply between 2012 and 2021, by more than 50,000 in ten years. The dramatic change in the number of village health offices is partly due to the influence of the merger of administrative villages. After the implementation of the new medical reform in China, the state unified village medical institutions as village health offices and merged the former village health rooms and village medical points, and now there is only one standardized village health room in each administrative village. So now in rural China, although the number of village health offices has decreased, the construction has become more standardized and the medical services provided to residents are more quality assured.

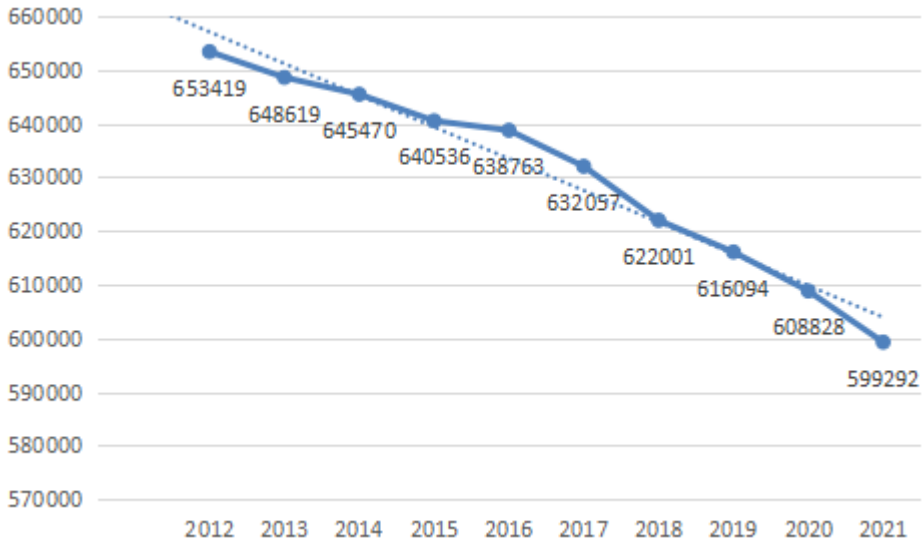


Figure 2.8 - Change in the number of rural health rooms in China from 2012-2021

Source: China Health Statistics Yearbook 2022

Number of rural health care institution beds per 1,000 population. Table 2.7 shows that the number of beds in medical institutions in China is increasing year by year, from 5724775 in 2012 to 9450110 in 2021, an increase of 3725335 in ten years, which is a very large increase. In terms of urban and rural distribution, there is no big difference in the absolute number of beds in rural and urban health care institutions, even more in rural than in urban areas, but in terms of the number of beds per 1,000 population in health care institutions, the difference between rural and urban areas is large, and the number of beds per 1,000 population in rural health care institutions is much lower than in urban areas. This data shows that in order to improve the health protection of rural human resources and narrow the gap between urban and rural areas, it is necessary to vigorously develop rural medical and health care.

Table 2.7 - Number of beds in medical and Health institutions per 1,000 rural population in China from 2012-2021

Year	Number of beds in medical and health institutions			Number of beds in medical and health institutions per 1,000 population		
	Total	Urban	Rural	Total	Urban	Rural
2012	5724775	2733403	2991372	4.24	6.88	3.11
2013	6181891	2948465	3233426	4.55	7.36	3.35
2014	6601214	3169880	3431334	4.85	7.84	3.54
2015	7015214	3418194	3597020	5.11	8.27	3.71
2016	7410453	3654956	3755497	5.37	8.41	3.91
2017	7940252	3922024	4018228	5.72	8.75	4.19
2018	8404088	4141427	4262661	6.03	8.70	4.56
2019	8806956	4351540	4455416	6.30	8.78	4.81
2020	9100700	4502529	4598171	6.46	8.81	4.95
2021	9450110	4970374	4479736	6.70	7.47	6.01

Source: China Health Statistics Yearbook 2022

Rural health personnel per 1,000 population. As can be seen from Table 2.8, the number of health technicians, practicing (assistant) physicians and registered nurses per 1,000 population in China increased from 2012 to 2021, indicating that the national investment in this field is constantly increasing.

Table 2.8 - Health personnel per 1,000 population in rural China from 2012-2021

Year	Health technician(person)			Practicing (assistant) physician(person)			Registered nurse(person)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
2012	4.94	8.54	3.41	1.94	3.19	1.40	1.85	3.65	1.09
2013	5.27	9.18	3.64	2.04	3.39	1.48	2.04	4.00	1.22
2014	5.56	9.70	3.77	2.12	3.54	1.51	2.20	4.30	1.31
2015	5.84	10.21	3.90	2.22	3.72	1.55	2.37	4.58	1.39
2016	6.12	10.42	4.08	2.31	3.79	1.61	2.54	4.75	1.50
2017	6.47	10.87	4.28	2.44	3.97	1.68	2.74	5.01	1.62
2018	6.83	10.91	4.63	2.59	4.01	1.82	2.94	5.08	1.80
2019	7.26	11.10	4.96	2.77	4.10	1.96	3.18	5.22	1.99
2020	7.57	11.46	5.18	2.90	4.25	2.06	3.34	5.40	2.10
2021	7.97	9.87	6.27	3.04	3.73	2.42	3.56	4.58	2.64

Source: China Health Statistics Yearbook 2022

However, from the perspective of urban and rural distribution, there is a big gap between rural and urban. Take health technicians as an example. In 2012, the number of health technicians in urban areas was 8.54 per 1,000 population, while that in rural areas was only 3.41, a difference of 5.13. In 2021, the gap between urban and rural areas narrowed to 3.6 per 1,000 population. The same is true of practicing (assistant) doctors per 1,000 population and registered nurses per 1,000 population. This phenomenon shows that the number of rural health personnel in China is far from enough to meet the needs of the rural population, so the

government needs to continue to increase the construction of rural medical and health teams to narrow the gap between urban and rural areas.

Material level of population. The material level of the population is a reflection of the economic capacity of rural human resources, which on the one hand reflects the efficiency of rural human resources management and on the other hand is the guarantee of human resources quality, mainly reflected by three indicators: employment，income and expenditure. The employment structure of rural human resources can be analyzed through its matching with the economic structure, which is the main indicator reflecting the efficiency of rural human resources management, while the income level and consumption structure are the material basis for individuals to improve the quality of human resources, which is the core of human resources development and management in the micro sense [132].

Employment status. According to the statistics of employed people in China from 2012 to 2021, a trend chart reflecting their overall changes is drawn, and it can be intuitively seen from Figure 2.9 that the number of employed people in China has always maintained a steady growth trend from 2012 to 2015, and declined rapidly after 2016. In terms of urban and rural distribution, the rural employed population decreases year by year, from 389.67 million in 2012 to 278.79 million in 2021, a decrease of 110.88 million in the rural employed population in ten years, while at the same time the urban employed population is increasing year by year, which is greatly related to the rural labor transfer project implemented in China in recent years and the vigorously implemented national policy of urbanization This has a lot to do with the transfer of rural labor force and the national policy of urbanization

implemented in recent years.

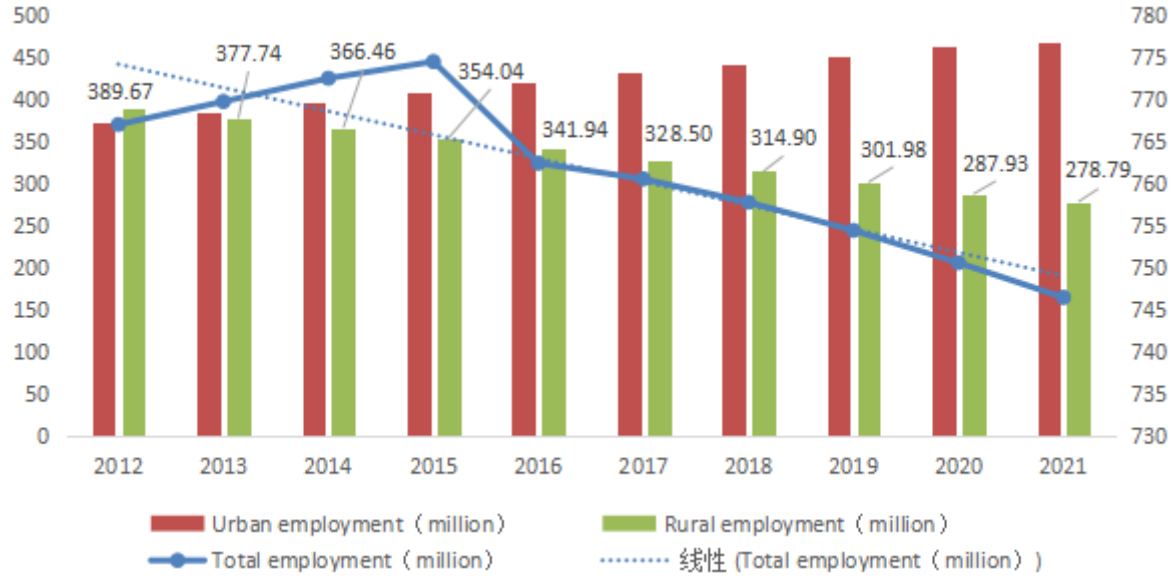


Figure 2.9 - Urban and rural composition of China's employed population from 2012- 2021

Source: China Population and Employment Statistical Yearbook 2022

The industrial distribution of employed persons refers to the specific distribution of employed persons in each industry, i.e., the number of employed persons in each industry in relation to the total employed population. Western economists divide the national economic sectors into three industries according to the order in which labor objects are processed, namely agriculture, industry and all industries other than the primary and secondary industries. In terms of national employment, China has the largest number of people employed in the tertiary sector, followed by the secondary and primary sectors, as shown in Figure 2.10. The employment structure of the rural population is different, as can be seen in Figure 2.11, which shows that rural employment is mainly concentrated in the primary sector, but the share of employment is decreasing year by year, from 62.5% in 2013

to 49.8% in 2021, a decrease of nearly 13%.The employment ratio of secondary and tertiary industries does not fluctuate much, but the overall trend is up, and the employment trend of tertiary industries is faster than that of secondary industries. during the period of 2013-2021, the secondary industries only increased by 3.3 percentage points, which is a small increase, while the tertiary industries increased by 9.4 percentage points, which indicates that China's industrial structure is constantly adjusting and upgrading, from the original primary industries to the Therefore, China's rural human resource development and management should focus on the needs of secondary and tertiary industries and use them as the focus of employment.

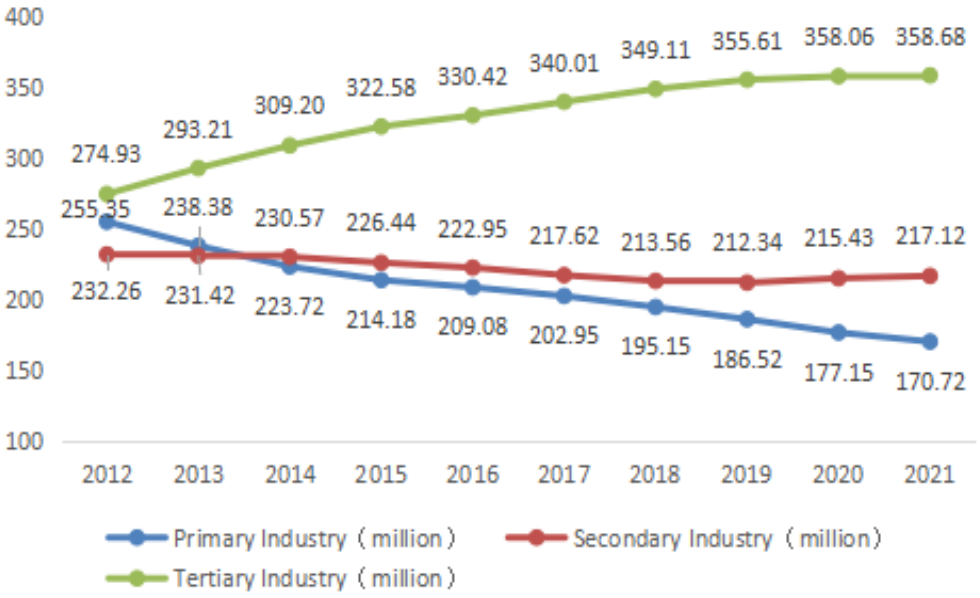


Figure 2.10 - Industrial composition of China's employed population

Source: China Population and Employment Statistical Yearbook 2022

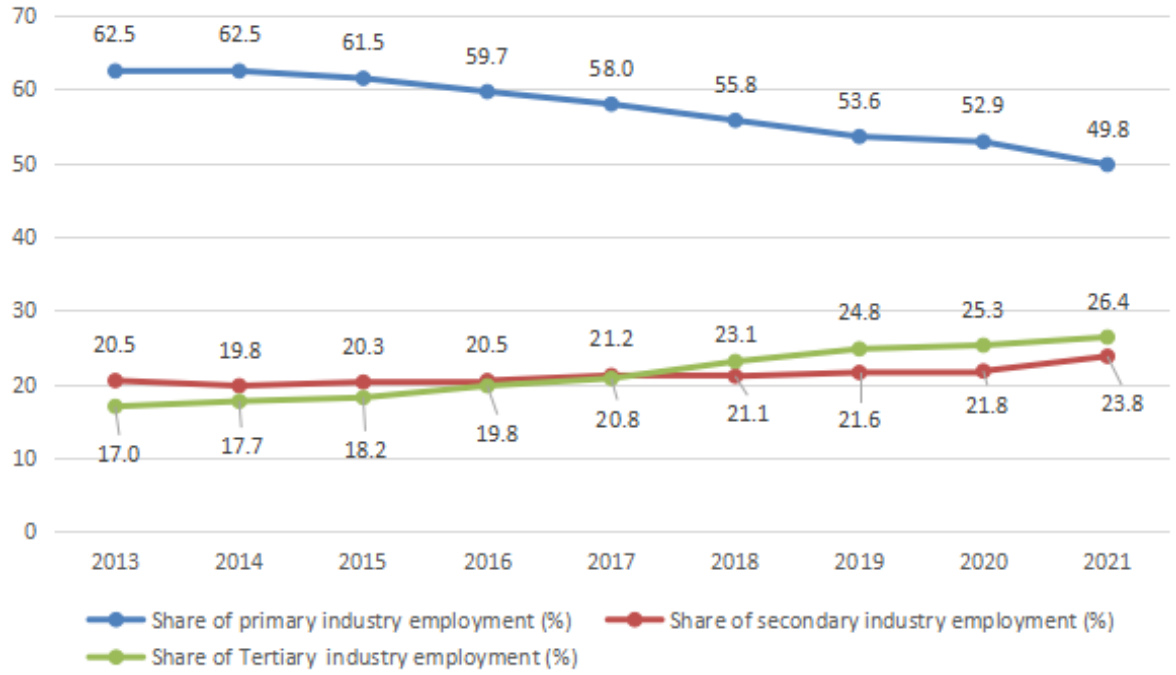


Figure 2.11 - Industrial composition of the employed population in rural China

Note: Data for 2012 are missing because the caliber of statistical indicators for 2012 and 2013-2021 are not the same.

Source: China Household Survey Yearbook 2022

In China, the primary industry mainly includes plantation, forestry, animal husbandry, fishery and agriculture, forestry, animal husbandry and fishery services. Although the number of employees in the primary industry has been decreasing year by year since 2012, China is a large agricultural country, and for most of the rural population, agriculture is still the main industry that farmers rely on for survival. In Figure 2.12, it can be clearly found that 92.9% of the population in the primary industry is engaged in farming, which has become the main industry for rural human resources employment.

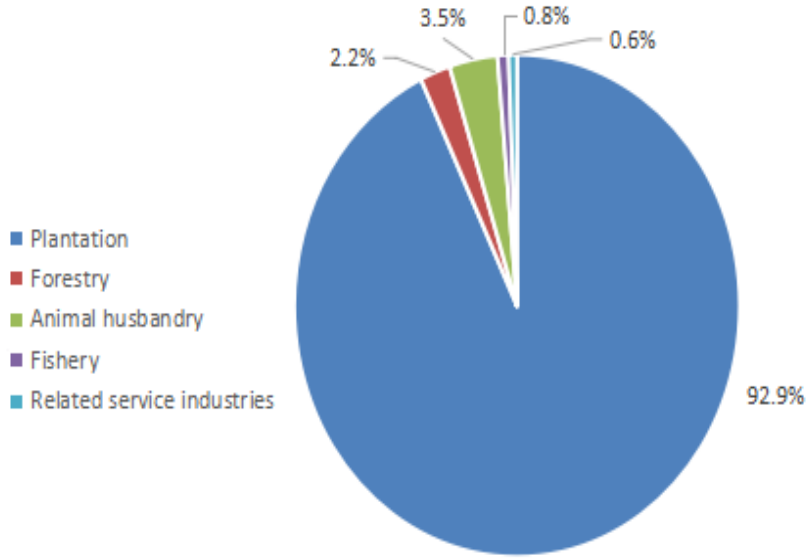


Figure 2.12 - Industry Composition of Rural Employed Persons in Primary Industries in China

Source: Data from China's Third National Agricultural Census Main Data Bulletin (No. 5)[133]

From Figure 2.13, the industry composition of rural employed persons in the primary industry in each region likewise shows that all rural employed persons in all regions of China are dominated by plantation industry in the primary industry, accounting for over 90% of employment in the primary sector，which is the same as the overall national situation, indicating that there is no major regional difference in the employment structure of rural employed persons in China.

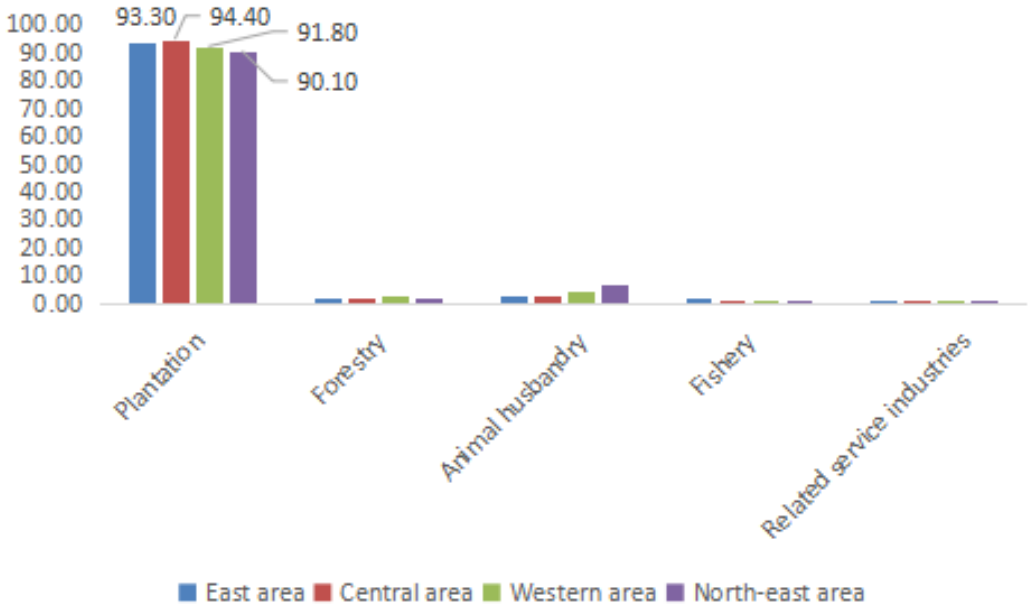


Figure 2.13 - Industry composition of rural employed persons in the primary sector by region

Source:Data from China's Third National Agricultural Census Main Data Bulletin (No. 5)

In terms of unemployment rate, there is no survey specifically for China's rural unemployment rate, and existing surveys are mainly based on urban unemployed people, as shown in Figure 2.14. Since 2012, China's urban unemployment rate has generally been on a downward trend, but it rapidly increased in 2020, with 11.6 million unemployed people and an unemployment rate of 4.24%, which is the highest unemployment rate in a decade. Analyzing the reason, it is mainly because China was affected by the new coronavirus in 2020, and the nation's residents lived at home, which led to a significant increase in the unemployment rate.

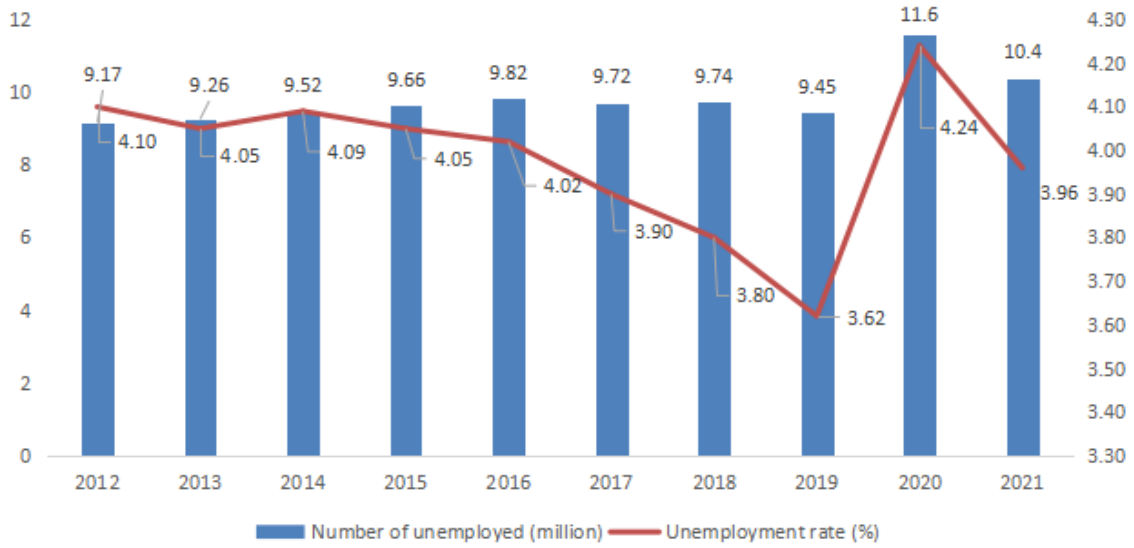


Figure 2.14 - Number of Registered Unemployed and Unemployment Rate in Urban Areas

Source:China Population and Employment Statistical Yearbook 2022

Income status. According to China Statistical Yearbook 2022 and China Household Survey Yearbook 2022, from 2012 to 2021, the per capita disposable income of Chinese rural residents increased year by year, and the growth rate was large. In 2012, the per capita disposable income was only 8389.3 RMB, and it increased to 18,930.9 RMB in 2021, an increase of 10,000 RMB in ten years, twice as much as in 2012 more than twice as much. Among disposable income, cash disposable income accounts for the highest percentage, basically maintaining at over 90%. Among all income sources, net property income is the least and does not fluctuate much, accounting for only about 2.2%. Wage income and net business income account for the highest proportion, indicating that in rural China, the main sources of income for residents are labor compensation and income earned from engaging in production and business activities, which account for more than 80% of total income and play an important role in promoting stable income growth for rural

residents.

In terms of net operating income, Chinese rural residents' net operating income is mainly obtained through the primary industry, followed by the tertiary and secondary industries, and among the primary industries, agriculture is again the main source of income, followed by pastoralism, forestry and fishery, which basically matches the employment situation of rural human resources previously surveyed. Taking 2021 as an example, the net operating income of rural residents in 2021 is 6,566.2 RMB, accounting for 34.7% of the total income, of which the net operating income of the primary industry is 4,291.7 RMB, while in the primary industry, the income from agriculture alone is as high as 3,209.8 RMB, occupying more than half of the net operating income of the primary industry, see Table 2.9.

Table 2.9 - Per capita disposable income of rural residents in China from 2012-2021

Index	2012	2013	2014	2015	201	2017	2018	2019	2020	2021
Disposable income (RMB/ person)	8389.3	9429.6	10488.9	11421.7	12363.4	13432.4	14617	16020.7	17131.5	18930.9
Cash disposable income (RMB)	7432.9	8747.1	9698.2	10577.8	11600.6	12703.9	13912.8	15279.8	16394.5	17596.4
Cash disposable income as a share of disposable income (%)	88.6	92.8	92.5	92.6	93.8	94.6	95.2	95.4	95.7	93.0
Wage income	3123.5	3652.5	4152.2	4600.3	5021.8	5498.4	5996.1	6583.5	6973.9	7958.1
Net operating income	3659.6	3934.8	4237.4	4503.6	4741.3	5027.8	5358.4	5762.2	6077.4	6566.2

Continuation of the table.2.9

Primary industry	-	2839.8	2998.6	3153.8	3269.6	3391.0	3489.5	3730.2	3978.1	4291.7
Agriculture	-	2160.0	2306.8	2412.2	2439.7	2523.6	2608	2740.1	2887.6	3209.8
Forestry	-	162.0	177.3	170.6	165.9	176.5	187.0	196.7	185.6	231.0
Pastoralism	-	460.1	443	488.7	573.7	585.8	574.5	656.9	754.2	683.1
Fishery	-	57.6	71.4	82.3	90.3	105.2	120	136.5	150.7	167.9
Secondary industry	-	252.5	259.1	276.1	287.9	318.9	378.4	413.4	430.6	471.8
Tertiary industry	-	842.5	979.6	1073.7	1183.8	1318.0	1490.5	1618.6	1668.7	1802.6
Net property income	165.0	194.7	222.1	251.5	272.1	303.0	342.1	377.3	418.8	469.4
Net transfer income	1441.2	1647.5	1877.2	2066.3	2328.2	2603.2	2920.5	3297.8	3661.3	3937.2
Disposable income composition (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wage income	37.2	38.7	39.6	40.3	40.6	40.9	41.0	41.1	40.7	42.0
Net operating income	43.6	41.7	40.4	39.4	38.3	37.4	36.7	36.0	35.5	34.7
Primary industry	—	30.1	28.6	27.6	26.4	25.2	23.9	23.3	23.2	22.7
Agriculture	—	22.9	22.0	21.1	19.7	18.8	17.8	17.1	16.9	17.0
Forestry	—	1.7	1.7	1.5	1.3	1.3	1.3	1.2	1.1	1.2
Pastoralism	—	4.9	4.2	4.3	4.6	4.4	3.9	4.1	4.4	3.6
Fishery	—	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9
Secondary industry	—	2.7	2.5	2.4	2.3	2.4	2.6	2.6	2.5	2.5
Tertiary industry	—	8.9	9.3	9.4	9.6	9.8	10.2	10.1	9.7	9.5
Net property income	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.5
Net transfer income	17.2	17.5	17.9	18.1	18.8	19.4	20.0	20.6	21.4	20.8

Source: China Household Survey Yearbook 2022，China Statistical Yearbook 2022

In terms of growth rate, the per capita disposable income growth rate of rural residents in China during 2012-2021 shows a downward trend on the whole, as shown in Figure 2.15.

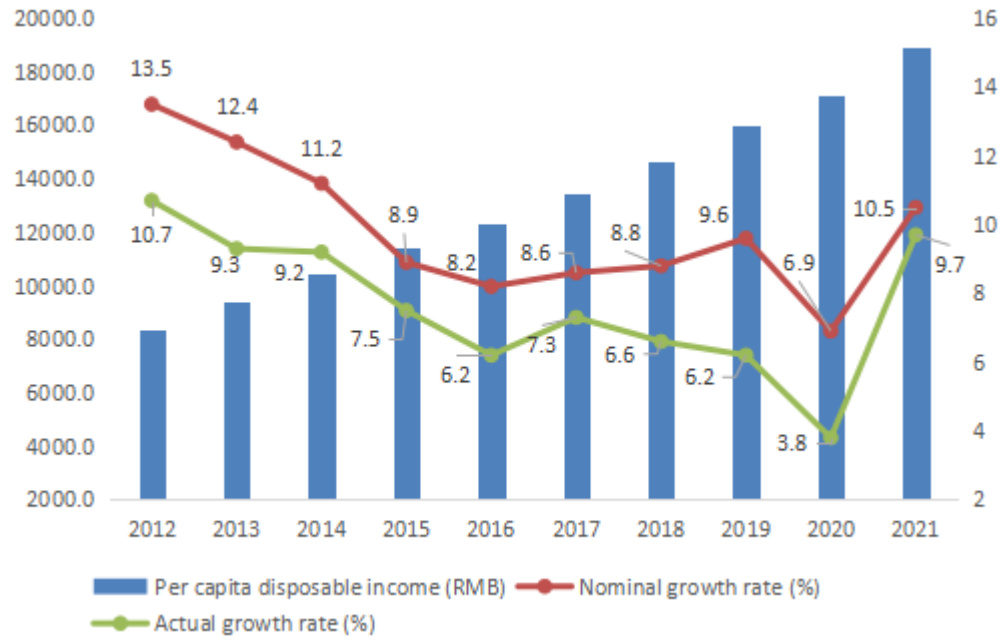
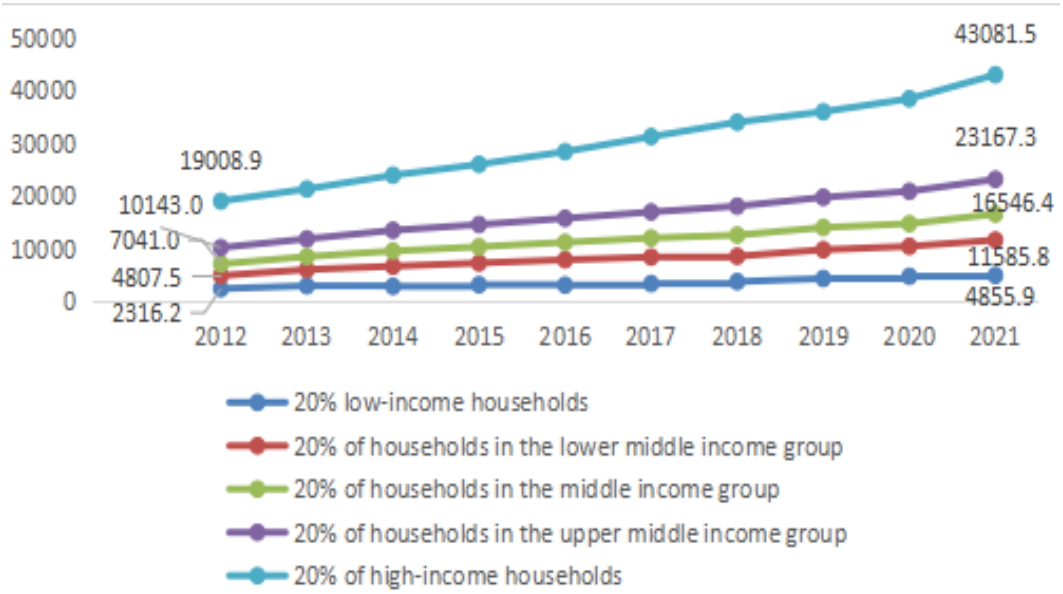


Figure 2.15 - Growth of per capita disposable income of rural residents in China from 2012-2021

Source: China Household Survey Yearbook 2022

Both nominal growth rate and real growth rate decrease year by year, and there is a large gap between the two indicators over the years. For example, in 2012. The nominal growth rate of per capita disposable income in China's rural areas after accounting for prices was 13.5 per cent, compared with 10.7 per cent in real terms, a difference of nearly three percentage points. From the perspective of the overall development trend, the growth rate in 2020 is the lowest, with the real growth rate of only 3.8% and the nominal growth rate of only 6.9%. The main reason is that

China is at the peak of the COVID-19 epidemic in 2020, and the Chinese government has implemented the lockdown policy, which makes many residents unable to work outside or even unemployed. Therefore, the per capita disposable income growth rate of rural residents in China in 2020 was the lowest in a decade, but in 2021, there was a substantial increase, and the gap between nominal growth rate and real growth rate was the smallest, only 0.8%.



Note: The residents are divided into five equal groups by income, which means that all the surveyed households are ranked from low to high per capita disposable income and divided into five equal groups on average. The lowest 20% income group is the low-income group, and so on, the lower middle income group, the middle income group, the upper middle income group, and the high income group. The data in this table are the per capita disposable income of different groups of households.

Figure 2.16 - Per capita disposable income of China's rural residents by income quintiles

Source: China Statistical Yearbook 2022

After the income of rural residents was divided into five equal groups, it was found that the per capita disposable income of each group increased year by year

from 2012 to 2021, but the growth rate was quite different. Among them, the per capita disposable income of the 20% low-income group has the smallest growth rate, increasing from 2316.2 RMB in 2012 to 48555.9 RMB in 2021, an increase of 2,539 RMB, while the per capita disposable income of the 20% high-income group has the largest growth rate. From 19,008.9 RMB in 2012 to 43,081.5 RMB in 2021, an increase of 24,072 RMB, the gap between the two groups is quite large.

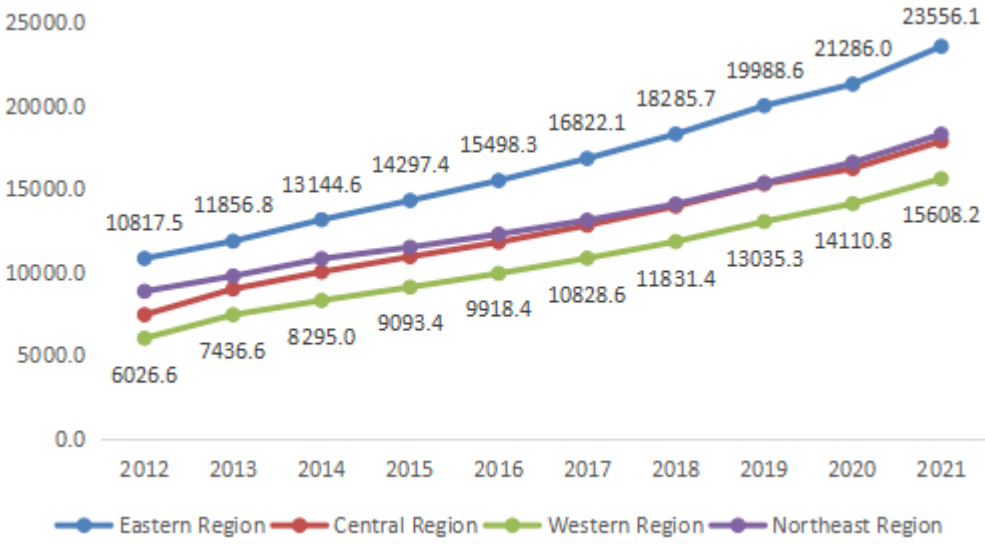


Figure 2.17 - Per capita disposable income of rural residents in China by regional grouping (Unit:RMB/person)

Source: China Rural Statistical Yearbook 2022 and China Statistical Yearbook 2012-2022

From the perspective of regional distribution, per capita disposable income in eastern China is the highest, while that in western China is the lowest. There is little difference between central China and Northeast China. In terms of growth range, per capita disposable income in all regions is increasing year by year, and the growth range is basically the same. For example, the per capita disposable income in the eastern region increased from 10,817.5 RMB in 2012 to 23,556.1 RMB in 2021,

an increase of 12,738.6 RMB in 10 years. The per capita disposable income of the western region was 6,026.6 RMB in 2012, and increased to 15,608.2 RMB in 2021, with an increase of 9,581.6 in ten years.

The growth rate is no less than that of the eastern region, but the real income is still the lowest among the four regions.

Expenditure status. Consumption plays an increasingly important role in economic development, and it is the driving force in constituting market demand and driving economic growth[134].From 2012-2021, the per capita consumption expenditure of Chinese rural residents increases year by year, from 6,667.1 RMB in 2012 to 15,915.6 RMB in 2021, an increase of nearly 10,000 RMB in ten years, as shown in Figure 2.18.From the perspective of growth rate, the growth rate of per capita consumption expenditure of rural households in China from 2012 to 2021 showed a downward trend on the whole, and reached the bottom in 2020, with the actual growth rate even negative. The main reason is that affected by the novel coronavirus epidemic in 2020, China implemented the lockdown policy and people worked at home, which reduced the flow of people. Thus making the consumption expenditure decrease in 2020. However, per capita consumption expenditure in 2021 increased significantly, with nominal growth of 16.1 percent and real growth of 15.3 percent compared with 2020. The growth rate even exceeded that of 2012, mainly due to the liberalization of COVID-19 policies. In 2021, the epidemic situation in China improved and residents' mobility increased. "Retaliatory consumption" led to a jump in consumer spending in 2021. The so-called retaliatory consumption refers to the behavior of restricting people's consumption demand in a

special period or occasion, and then letting go of the desire to consume wildly once forbidden [135]. The rapid growth rate of per capita consumption expenditure of rural households in 2021 is mainly influenced by "retaliatory consumption" after the epidemic.

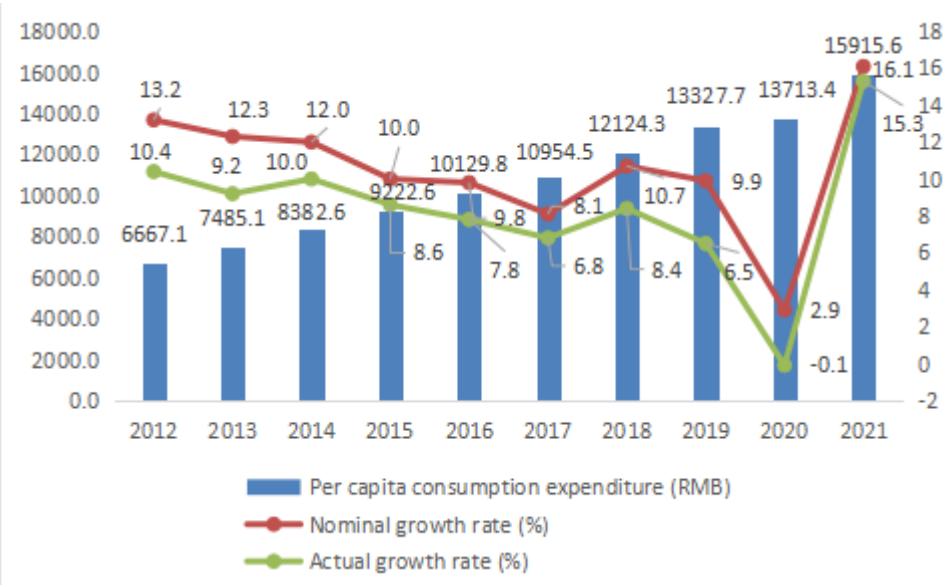


Figure 2.18 - Growth of per capita consumption expenditure of rural households in China from 2012-2021

Source: China Household Survey Yearbook 2022

In terms of rural residents' consumption by region, the top five in 2021 are Shanghai, Zhejiang, Beijing, Jiangsu and Guangdong, with per capita consumption spending far exceeding the national average. In 2021, the per capita consumption expenditure of rural households in China was 15,915.6 RMB, while in Shanghai it was 27,204.8 RMB, exceeding the national average of 11,289.2 RMB and almost twice that of the national average. The bottom five are Guizhou, Yunnan, Shanxi, Gansu and Tibet, where per capita consumption expenditure is very low and still far

behind the national average. Among the 31 provinces in China, Tibet has the lowest per capita consumption expenditure, only 10,576.6 RMB, more than 5,000 RMB less than the national average.In addition, the difference between Shanghai, which ranks first in per capita consumption expenditure, and Tibet, which ranks last in per capita consumption expenditure, is 16,628.2 RMB, thus indicating that the gap between the rich and the poor in rural China is still relatively large.See Table 2.10.

Table 2.10 - Per capita consumption expenditure of rural residents by region in China in 2021

Region	Per capita consumption expenditure (RMB)	Rank	Region	Per capita consumption expenditure (RMB)	Rank
Shanghai	27204.8	1	Heilongjiang	15225.0	17
Zhejiang	25415.2	2	Liaoning	14605.9	18
Beijing	23574.0	3	Shandong	14298.7	19
Jiangsu	21130.1	4	Guangxi	14165.3	20
Guangdong	20011.8	5	Henan	14073.2	21
Fujian	19290.4	6	Ningxia	13535.7	22
Tianjin	19285.5	7	Jilin	13411.0	23
Hubei	17646.9	8	Qinghai	13300.2	24
Anhui	17163.3	9	Shaanxi	13158.0	25
Hunan	16950.7	10	Xinjiang	12821.4	26
Sichuan	16444.0	11	Guizhou	12557.0	27
Chongqing	16095.7	12	Yunnan	12386.3	28
Inner Mongolia	15691.4	13	Shanxi	11410.1	29
Jiangxi	15663.1	14	Gansu	11206.1	30
Hainan	15487.3	15	Tibet	10576.6	31
Hebei	15390.7	16			

Source: China Statistical Yearbook 2022

In terms of expenditure structure, food consumption accounts for the highest

proportion, which basically maintains over 30% of the total consumption in the past years, followed by housing and transportation communication. Clothing and daily necessities account for a relatively low proportion and have a small increase in the past decade, which basically maintains around 6.0% of the total consumption in the past years, as shown in Table 2.11.

Table 2.11 - Per capita consumption expenditure and structure of rural households in China from 2012-2021

Index	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Consumption expenditure (RMB/person)	6667.1	7485.1	8382.6	9222.6	10129.8	10954.5	12124.3	13327.7	13713.4	15915.6
Food	2394.7	2554.4	2814.0	3048.0	3266.1	3415.4	3645.6	3998.2	4479.4	5200.2
Dress	412.5	453.8	510.4	550.5	575.4	611.6	647.7	713.3	712.8	859.5
Live	1380.7	1579.8	1762.7	1926.2	2147.1	2353.5	2660.6	2871.3	2962.4	3314.7
Household goods and services	399.9	455.1	506.5	545.6	595.7	634.0	720.5	763.9	767.5	900.5
Traffic communication	717.4	874.9	1012.6	1163.1	1359.9	1509.1	1690	1836.8	1840.6	2131.8
Education, culture and entertainment	677.2	754.6	859.5	969.3	1070.3	1171.3	1301.6	1481.8	1308.7	1645.5
Medical care	560.5	668.2	753.9	846.0	929.2	1058.7	1240.1	1420.8	1417.5	1579.6
Other supplies and services	124.2	144.2	163.0	174.0	186.0	200.9	218.3	241.5	224.4	283.8
Composition of consumption expenditure (%)	100	100	100	100	100	100	100	100	100	100
Food	35.9	34.1	33.6	33.0	32.2	31.2	30.1	30.0	32.7	32.7
Dress	6.2	6.1	6.1	6.0	5.7	5.6	5.3	5.4	5.2	5.4
Live	20.7	21.1	21.0	20.9	21.2	21.5	21.9	21.5	21.6	20.8

Continuation of the table.2.11

Household goods and services	6.0	6.1	6.0	5.9	5.9	5.8	5.9	5.7	5.6	5.7
Traffic communication	10.8	11.7	12.1	12.6	13.4	13.8	13.9	13.8	13.4	13.4
Education, culture and entertainment	10.2	10.1	10.2	10.5	10.6	10.7	10.7	11.1	9.5	10.3
Medical care	8.4	8.9	9.1	9.2	9.2	9.6	10.2	10.7	10.3	9.9
Other supplies and services	1.8	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.6	1.8

Source: China Statistical Yearbook 2022 and China Household Survey Yearbook 2022

As food consumption reflects the economic level of a country and a region, and the level of economic ability is the key to the management and development of rural human resources, so this paper focuses on the analysis of food consumption. Since medical treatment and education are important factors to guarantee the quality of human resources, the consumption of medical care and education culture is also analyzed in this paper.

The proportion of food consumption expenditure to total consumption expenditure (i.e. Engel coefficient) is an important indicator reflecting the consumption structure and consumption level of residents. The higher this proportion means the lower the consumption level, and the lower this proportion means the higher the consumption level[136]. From Figure 2.19, it can be seen that, in terms of the actual amount of residents' consumption, along with the improvement of living standards, the total food consumption expenditure of rural residents has been rising year by year, from 2,394.7 RMB in 2012 to 5,200.2 RMB

in 2021. In addition, the overall Engel coefficient of rural residents' households from 2012 to 2021 shows a decreasing trend, from 35.9% in 2012 to 32.7% in 2021.This indicates that the level of Engel coefficient of food consumption of rural residents in China has far reached the well-off level (the United Nations has a standard of living for countries in the world based on the size of the Engel coefficient, that is, a country with an average household Engel coefficient of 40%-50% is well-off[137]).

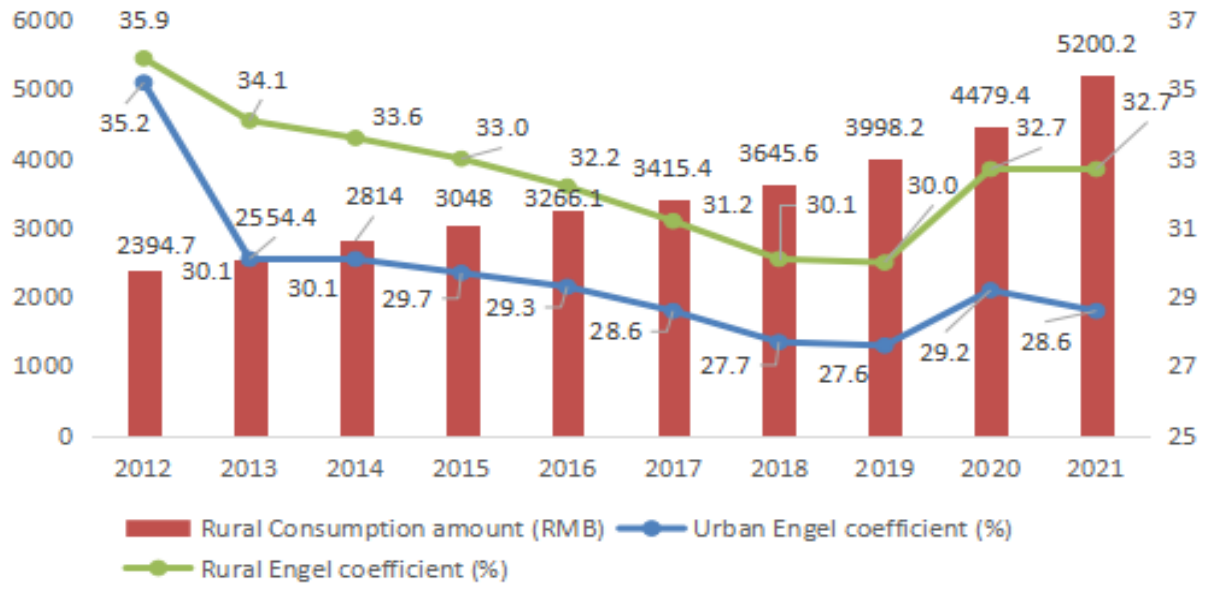


Figure 2.19 - Food consumption of rural households in China from 2012-2021

Source: China Statistical Yearbook 2022

However, it should be noted that the Engel coefficient in 2020 has a large increase compared with 2019, which is 2.7 percentage points higher, which is mainly related to the new crown pneumonia epidemic in China in 2020, because of the new crown, China has implemented the policy of city closure, which restricts the movement of people and residents all live and work at home, thus leading to an

increase in food consumption and a decrease in other consumption. In terms of urban-rural structure, the Engel coefficient is higher in rural areas than in cities, indicating that the income level and standard of living of Chinese rural residents is lower than in cities.

In terms of health care consumption, although the health care expenditure of rural residents fluctuates from 2012 to 2021, the overall trend is to increase year by year. 560.5 RMB of health care expenditure of rural residents in 2012 and 1579.6 RMB in 2021, which is nearly three times of the health care expenditure in 2012. In terms of proportion, rural residents' health care expenditure accounted for 8.4% of total expenditure in 2012 and 9.9% in 2021, while urban residents' health care consumption accounted for 6.4% of total expenditure in 2012 and 8.3% in 2021, with urban health care accounting for a lower proportion than rural areas. This is mainly because China's urban medical insurance system is more complete and the proportion of self-pay medical care is smaller, so the proportion of health care consumption in total consumption is smaller than that in rural areas. In conclusion, the lower level of economic development in rural areas and the less stable income of rural residents, as well as their social security system of pension and medical care are not as good as those of urban residents, which will certainly increase their consumption expenditure on medical care [138].

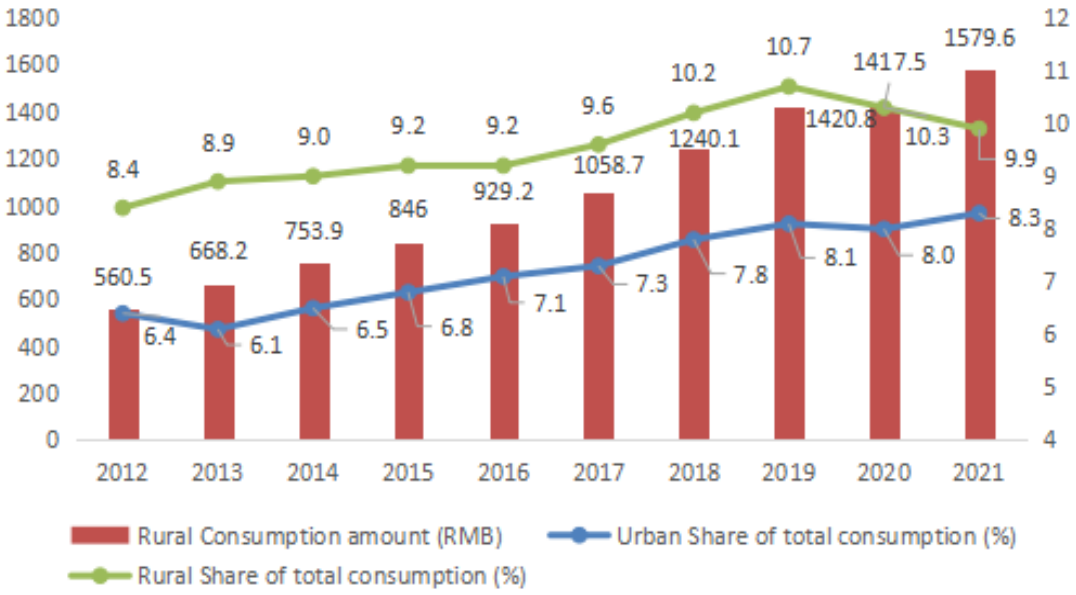


Figure 2.20 - Healthcare Expenditure of Rural residents in China from 2012-2021

Source: China Statistical Yearbook 2022

In recent years, with the continuous development of culture and education in China, the level of residents' cultural, educational and entertainment consumption expenditure has been increasing. In absolute terms, the per capita consumption expenditure on culture, education and entertainment of Chinese rural households was only 677.2 RMB in 2012, and 1645.5 RMB in 2021, which is nearly three times of 2012, but in 2020, the amount of consumption on culture, education and entertainment is reduced due to the impact of the new crown epidemic, which is only 1308.7 RMB. In terms of the share of cultural, educational and entertainment consumption in total consumption, there are fluctuations in the middle, but the fluctuations are not large, 10.2% in 2012 and 10.3% in 2021, and the highest share in 2019, but only 11.1%, which is less volatile. In terms of the urban-rural gap, the gap was larger in 2012, with a difference of 2 percentage points. after 2013, the

urban-rural gap is not obvious. in 2021, for example, the proportion of urban residents' expenditure on culture, education and entertainment to total consumption expenditure in China is 10.9%, and the proportion of rural residents' expenditure is 10.3%, with a difference of 0.6%, which is less than one percentage point. in 2020, the gap is even smaller, with a difference of only The difference is even smaller in 2020, only 0.1%. This indicates that with the improvement of living standards, rural residents' demand for education and recreation begins to increase.

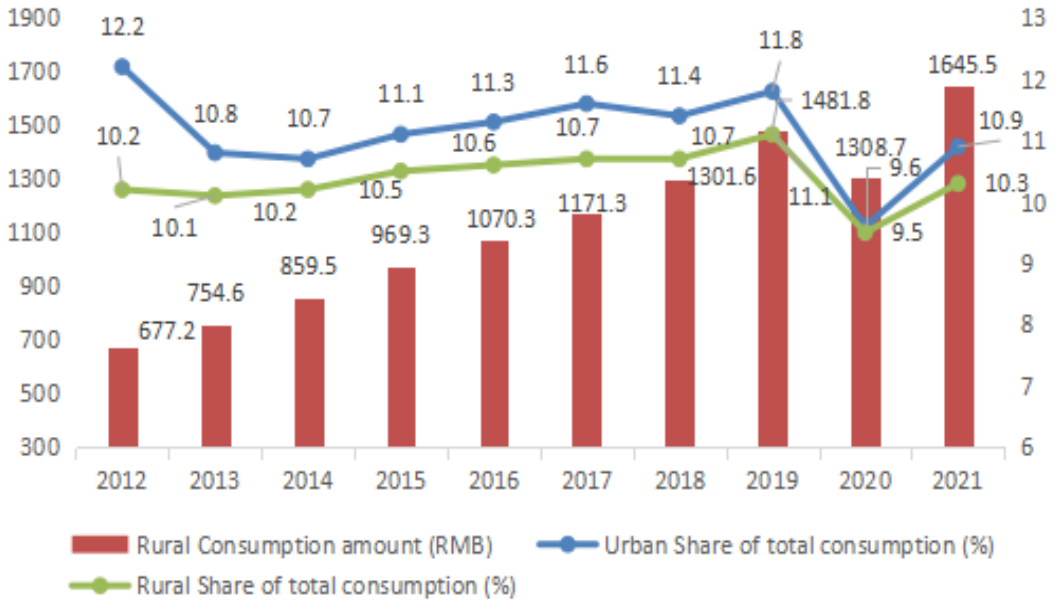


Figure 2.21 - Education and Culture Expenditure of Rural Residents in China from 2012-2021

Source: China Statistical Yearbook 2022

Living conditions of the population. The living conditions of the population are a reflection of the living standard of rural human resources and are closely related to the construction of rural infrastructure. If the construction of rural infrastructure is

insufficient or seriously lacking, it will certainly affect the overall development of the rural population, so the living conditions of the population are also an important indicator for analyzing the management of rural human resources, mainly measured in terms of housing and living energy.

Housing. According to the main data bulletin of the Third Chinese Agricultural Census, as of January 2017, 99.5% of Chinese farm households owned their own houses. Among them, 200.3 million households, or 87.0%, owned one home; 26.77 million households, or 11.6%, owned two homes; 1.96 million households, or 0.9%, owned three or more homes; and only 0.5% owned no home.In terms of regional distribution, there is a strong relationship between the level of regional economic development and the number of home ownership, for example, the eastern region has a developed economy and higher income of residents, so the proportion of farm households with two or more homes is the highest, while the western region has a less developed economy and the highest proportion of farm households without homes nationwide.

Table 2.12 - Number of rural housing in China (unit: %)

Composition by number of houses owned	National	Eastern Region	Central Region	Western Region	Northeast Region
Owning 1 house	87.0	82.7	87.9	89.5	93.9
Owning 2 houses	11.6	15.6	11	9.2	5.0
Owning 3 or more houses	0.9	1.4	0.7	0.5	0.3
No housing	0.5	0.3	0.4	0.9	0.8

Source: Bulletin on the Main Data of the Third Chinese Agricultural Census

Main domestic energy. Among the energy used by farmers for cooking and heating, 135.03 million households mainly use electricity, accounting for 58.6%;

113.47 million households mainly use gas, natural gas, liquefied petroleum gas, accounting for 49.3%; 101.77 million households mainly use firewood, accounting for 44.2%; 55.06 million households mainly use coal, accounting for 23.9%; 1.56 million households mainly use biogas, accounting for 0.7%; 1.26 million households use 1.26 million households, or 0.5%, use other energy sources; 560,000 households, or 0.2%, mainly use solar energy.

In terms of regional distribution, the type of domestic energy used has a lot to do with the geographical characteristics of the region. For example, 84.5% of farmers in the northeast use firewood and 58.6% of farmers in the west use firewood and grass, mainly because these two regions have lush vegetation and vast grasslands, so firewood and grass naturally become the main source of energy for cooking and heating. However, Table 2.13 also shows that the proportion of new energy sources such as solar energy is still very small in rural areas.

Table 2.13 - Main domestic energy composition (unit: %)

	National	Eastern Region	Central Region	Western Region	Northeast Region
firewood and grass	44.2	27.4	40.1	58.6	84.5
coal	23.9	29.4	16.3	24.8	27.4
Gas, natural gas, LPG	49.3	69.5	58.2	24.5	20.3
Biogas	0.7	0.3	0.7	1.2	0.1
Electricity	58.6	57.2	59.3	59.5	58.7
Solar energy	0.2	0.2	0.3	0.3	0.1
Other	0.5	0.2	0.2	1.3	0.1

Source: Bulletin on the Main Data of the Third Chinese Agricultural Census

2.2 Present status of rural human resources in Ukraine

In the same period, Ukraine has a completely different demographic trend than China, with the total population of China growing steadily from 2012 to 2021, while the total population of Ukraine is decreasing year by year, from 45,633.60 thousand in 2012 to 41,588.40 thousand in 2021. The rural population also changes at the same time. In 2012, the rural population was 14,252.7 thousand people, accounting for 31.23% of the total population of the country, and in 2021 it decreased to 12,628.8 thousand people, or 30.37%, which is not only lower than the world average of 43.4%, but also 5 percentage points lower than the share of the rural population in China in the same period. This indicates that the level of urbanization in Ukraine is higher than in China.

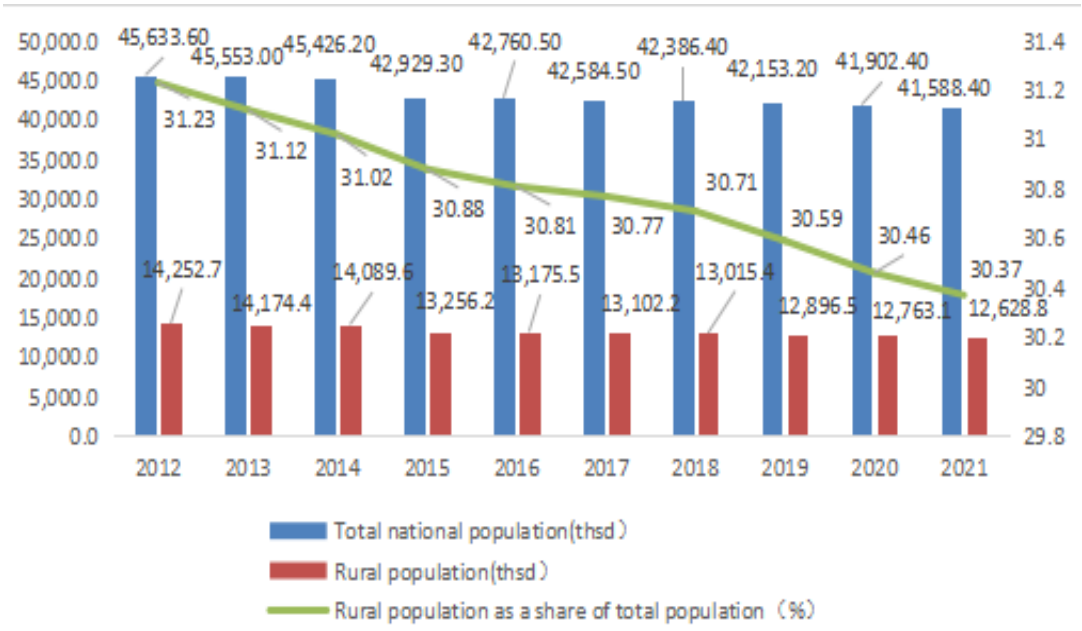


Figure 2.22 - Rural population in Ukraine from 2012-2021

Note:2015-2021 excluding the temporarily occupied territories of the Autonomous Republic of Crimea, and the city of Sevastopol.

Source: State Statistics Service of Ukraine

In terms of regional distribution, the number of rural population varies greatly among regions in Ukraine.

Table 2.14 - Rural Population of Ukraine by region (as of January 2021)

Region	Rural population (person)	Total Population (person)	Proportion of Rural Population to Total population (%)
Autonomous Republic of Crimea			
Vinnytsya	733286	1529123	47.95
Volyn	490155	1027397	47.71
Dnipropetrovsk	499941	3142035	15.91
Donetsk	372211	4100280	9.08
Zhytomyr	484368	1195495	40.52
Zakarpattya	784799	1250129	62.78
Zaporizhzhya	375412	1666515	22.53
Ivano-Frankivsk	755698	1361109	55.52
Kyiv	679236	1788530	37.98
Kirovohrad	335072	920128	36.42
Luhansk	273023	2121322	12.87
Lviv	970983	2497750	38.87
Mykolayiv	347116	1108394	31.32
Odesa	776131	2368107	32.77
Poltava	512487	1371529	37.37
Rivne	602689	1148456	52.48
Sumy	320142	1053452	30.39
Ternopil	558022	1030562	54.15
Kharkiv	492890	2633834	18.71
Kherson	392046	1016707	38.56
Khmelnytskiy	525724	1243787	42.27
Cherkasy	504755	1178266	42.84
Chernivtsi	508168	896566	56.68
Chernihiv	334464	976701	34.24
city Kyiv	2962180	x	0
city Sevastopol	…	…	…

Note:Excluding the temporarily occupied territories of the Autonomous Republic of Crimea, and the city of Sevastopol.

Source: Demographic Yearbook of Ukraine 2020

Zakarpattya, Ivano-Frankivsk, Rivne, Ternopil and Chernivtsi have a large number of rural population, accounting for more than 50%. In particular, the rural population of Zakarpattya is 784,799, accounting for 62.78% of the total population of this region., and the level of urbanization is very low. The rural population of Donetsk, Luhansk, Dnipropetrovsk and Kharkiv is very small, accounting for 9.08%, 12.87%, 15.91% and 18.71% respectively, which is far lower than the national average. See Table 2.14. In terms of age structure, Ukraine is similar to China, with the majority of people aged between 15 and 64 years old, but the proportion of rural population in this age group is lower than the national average, about 2 percentage points lower. However, the proportion of children aged 0-14 years old and the elderly aged over 65 years old in rural areas is relatively high. For example, the proportion of children aged 0-14 years old in rural areas is 16.68%, while the national proportion is 15.16%. The proportion of people over 65 years old in rural areas is basically the same as the national level, but also slightly higher than the national average level. The above data fully indicate that the child dependency ratio and elderly dependency ratio in rural Ukraine are high, and the dependency burden of rural population is relatively high, as shown in Figure 2.23.

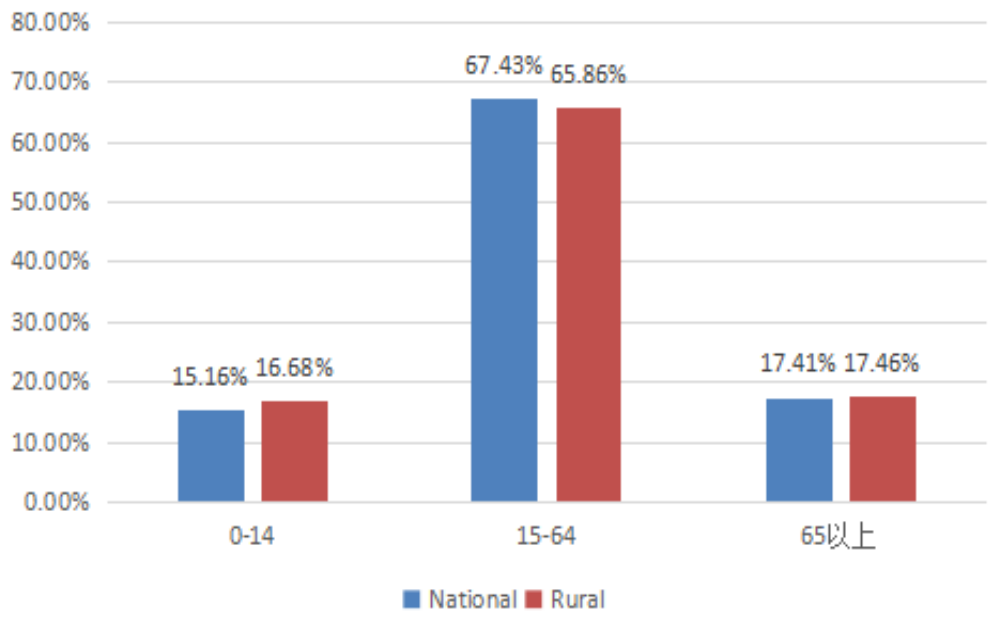


Figure 2.23 - Age composition of rural population in Ukraine (as of January 2021)

Source: Based on the relevant data in the Demographic Yearbook of Ukraine (2020)

Birth rate and death rate. Ukraine is completely different from China in terms of birth rate, death rate and natural growth rate. In terms of birth rate, although the birth rate of Ukraine also shows a declining trend during 2012-2021, the declining trend is relatively gentle, as shown in Figure 2.24, from 11.4‰ in 2012 to 7.3‰ in 2021. The decline was only 4.1 per thousand in a decade, compared with 7.05 per thousand in China. In terms of mortality rate, Ukraine has a relatively high death rate, which basically maintained at about 14.5‰ from 2012 to 2019, but increased significantly in 2020 and 2021, and even reached 18.5‰ in 2021. It is also evident from Figure 2.24 that the birth rate in Ukraine is much lower than the death rate over the years, and the gap between the two is getting wider. In this case, the natural growth rate of population in Ukraine from 2012 to 2021 shows a negative growth phenomenon, and the trend is serious year by year, which is completely different

from the population phenomenon in China.

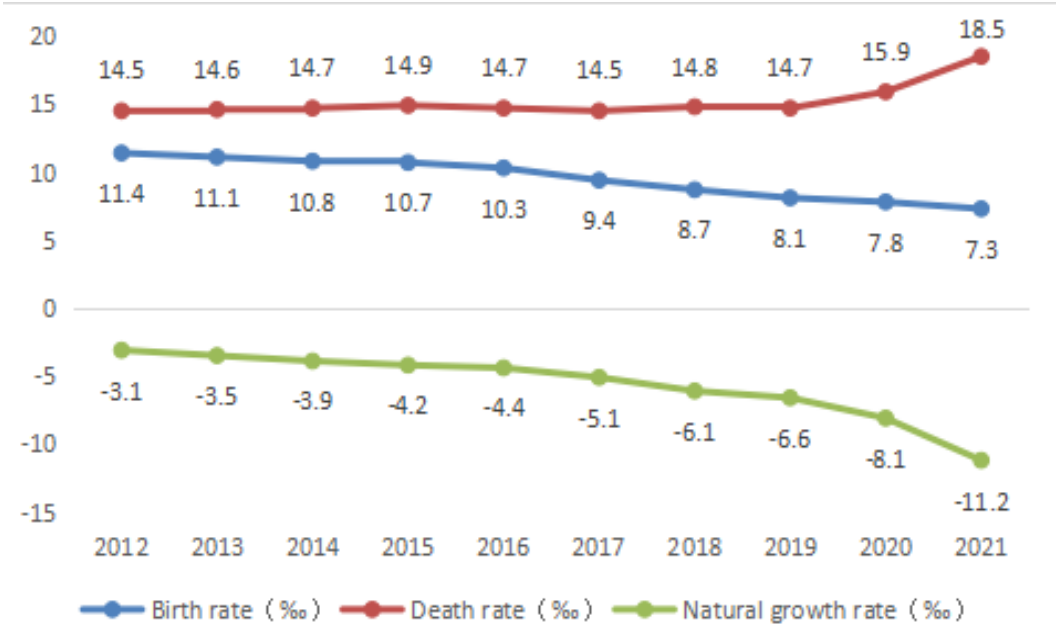


Figure 2.24 -.Birth rate, death rate and natural growth rate in Ukraine from 2012-2021

Source: State Statistics Service of Ukraine

Figure 2.25 shows the birth rate, death rate and natural growth rate of rural Ukraine from 2012 to 2021. It can be seen from the figure that the birth rate, death rate and natural growth rate of rural Ukraine from 2012 to 2021 are basically similar to the development trend of the whole country, but the birth rate and death rate are higher than the national average level over the years. The natural rate of population growth is even lower. As there is no specific statistical data on the birth and death rates of the rural population in China at present, it is impossible to compare the birth and death rates and natural growth rates of the rural population in the two countries. However, based on the birth rate, death rate and natural growth rate of China's

population, it can be inferred that the natural growth rate of China's rural population is higher than that of Ukraine.

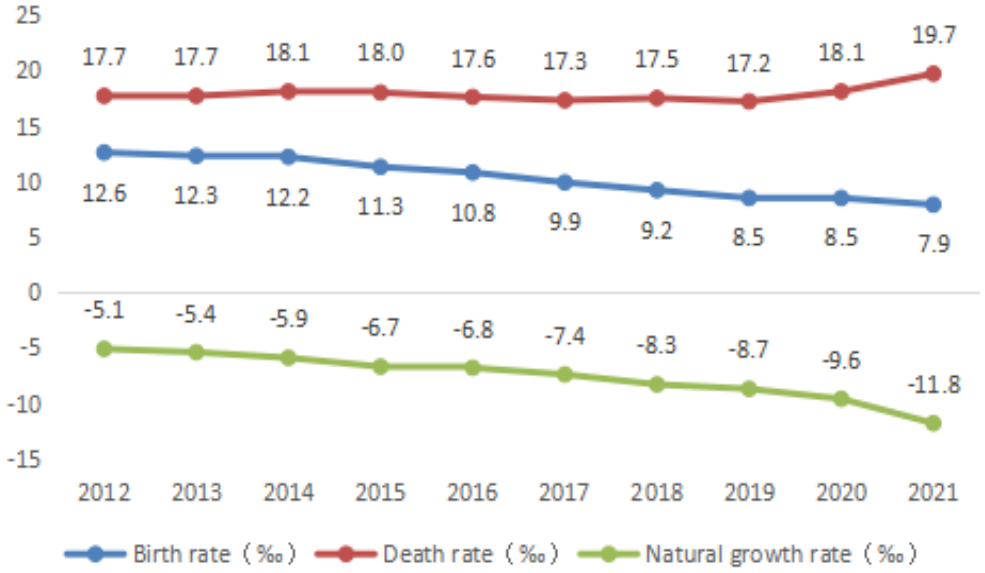


Figure 2.25 - Birth rate, death rate and natural growth rate in rural Ukraine from 2012-2021

Source: State Statistics Service of Ukraine

In terms of the natural growth rate of rural population in each region in 2021, there are big differences among different regions. For example, the mortality rate of rural population in Chernihiv is very high, reaching 28.4‰, while the birth rate is only 5.1‰. As a result, the natural growth rate of rural population in this region is -23.3‰, far exceeding the national average level. The phenomenon of negative population growth is particularly prominent (in 2021, the natural population growth rate of Ukraine is -11.2‰).Volyn, Zakarpattya, Ivano-Frankivsk, Lviv, Rivne, Odesa, and Chernivtsi have relatively better balance of birth and death rates, and natural growth rates are not particularly unbalanced, proportionally better than the national average. For example, in Zakarpattya region in 2021, the birth rate of rural

population is 10.4‰, the death rate is 14.3‰, and the natural population growth rate is -3.9‰. Compared with Chernihiv region, the natural population growth rate is 19.4‰, which shows the huge imbalance and difference of population growth in rural areas of Ukraine. See Table 2.15.

Table 2.15 - Birth rate, death rate and natural growth rate of rural population in Ukraine by region in 2021

Region	Birth rate（‰）	Death rate（‰）	Natural growth rate（‰）
Ukraine	7.9	19.7	-11.8
Vinnytsya	7.0	21.4	-14.4
Volyn	11.1	16.6	-5.5
Dnipropetrovsk	6.9	22.3	-15.4
Donetsk2	…	…	…
Zhytomyr	7.8	22.5	-14.7
Zakarpattya	10.4	14.3	-3.9
Zaporizhzhya	6.5	22.5	-16
Ivano-Frankivsk	8.4	16.6	-8.2
Kyiv	6.9	21.3	-14.4
Kirovohrad	6.2	21.1	-14.9
Luhansk2	…	…	…
Lviv	8.7	17.6	-8.9
Mykolayiv	7.5	18.9	-11.4
Odesa	9.5	17.7	-8.2
Poltava	6.2	22	-15.8
Rivne	11.9	16.2	-4.3
Sumy	5.4	23.7	-18.3
Ternopil	6.9	18.8	-11.9
Kharkiv	6.1	22.3	-16.2
Kherson	7.2	17.7	-10.5
Khmelnytskiy	7.0	24.2	-17.2
Cherkasy	5.9	22.4	-16.5
Chernivtsi	9.9	17.1	-7.2
Chernihiv	5.1	28.4	-23.3
Kyiv	x	x	x

Note: Excluding the temporarily occupied territories of the Autonomous Republic of Crimea, the city of Sevastopol and data calculated excluding Donetsk and Luhansk regions.

Source: State Statistics Service of Ukraine

Migration. According to the statistics of the National Statistical Service of Ukraine, from 2012 to 2021, the number of rural Ukrainians who emigrated abroad was generally higher than the number who moved in from abroad, except from 2014 to 2017. This is because the vast majority of Ukraine's rural population is poor and the country's economic situation is tough, which has led many able-bodied rural people to migrate to neighboring countries, such as Poland and the Czech Republic, to earn more money. In inter-state migration, immigrants are more than emigrants, and the migration rate is positive.

Table 2.16 - Rural migration in Ukraine from 2012-2021

Year	All flows of migration			Including inter-state migration		
	total immigrants	total emigrants	migration increase (decrease)	total immigrants	total emigrants	migration increase (decrease)
2012	199,531	203,159	-3,628	8,413	2,167	6,246
2013	184,708	192,799	-8,091	7,758	2,314	5,444
2014 [1]	155,157	152,158	2,999	6,493	2,370	4,123
2015 [1]	172,849	160,910	11,939	5,084	2,728	2,356
2016 [1,2]	94,068	75,408	18,660	2,385	1,261	1,124
2017 [1,2]	135,528	127,612	7,916	3,768	2,067	1,701
2018 [1]	198,356	209,098	-10,742	4,903	3,609	1,294
2019 [1]	166,002	187,163	-21,161	5,165	4,299	866
2020 [1]	128,059	139,482	-11,423	3,438	1,493	1,945
2021 [1]	136,127	144,285	-8,158	5,299	2,145	3,154

Note:

1 Excluding the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and a part of temporarily occupied territories in the Donetsk and Luhansk regions.

2 From April 2016 to September 2017 information on population migration was compiled according to available administrative data received from separate registration bodies (executive bodies of rural, village or city council, rural heads (if the executive body of rural council was not set up in line with the legislation).

Source:State Statistics Service of Ukraine

In terms of migration by regions, in 2021 the number of rural people emigrating abroad is still higher than the number of people emigrating from abroad, with Vinnytsya, Dnipropetrovsk, Zhytomyr,Kirovohrad, Mykolayiv, Sumy, Kharkiv, Kherson regions having a higher number of emigrants from abroad. For example, in 2021, the Mykolayiv region will have 134.8 emigrants per 10,000 people, which is 60.6 more than the incoming population, and the phenomenon of negative growth of migration rate is more prominent. See Table 2.17.

Table 2.17 - Total rates of population migration movement in rural Ukraine by region in 2021, *（Per 10 000 persons present population）*

district	All flows of migration			inter-state migration		
	total immigrants	total emigrants	migration increase (decrease)	total immigrants	total emigrants	migration increase (decrease)
Ukraine	**111.5**	**116.4**	**-4.9**	4.4	**1.8**	**2.6**
Vinnytsya	74.9	114.1	-39.2	0.6	0.4	0.2
Volyn	107.5	99.7	7.8	1.5	1.6	-0.1
Dnipropetrovsk	106.7	145.8	-39.1	3.1	1.3	1.8
Donetsk	…	…	…	…	…	…
Zhytomyr	123.9	155.8	-31.9	2.3	0.9	1.4
Zakarpattya	30.7	38.0	-7.3	2.8	3.5	-0.7
Zaporizhya	90.6	115.5	-24.9	2.7	1.8	0.9
Ivano-Frankivsk	75.2	78.6	-3.4	2.9	1.6	1.3
Kyiv	410.9	160.2	250.7	24.1	2.9	21.2
Kirovohrad	78.0	147.0	-69.0	1.1	1.0	0.1
Luhansk	…	…	…	…	…	…
Lviv	83.9	89.6	-5.7	1.2	0.9	0.3
Mykolayiv	74.2	134.8	-60.6	2.5	1.4	1.1
Odesa	111.9	110.9	1.0	3.0	2.2	0.8
Poltava	149.4	154.1	-4.7	9.4	3.2	6.2
Rivne	109.0	112.5	-3.5	2.1	3.3	-1.2
Sumy	111.6	167.4	-55.8	0.9	1.0	-0.1
Ternopil	82.9	102.4	-19.5	4.8	1.3	3.5
Kharkiv	127.9	173.6	-45.7	7.0	2.4	4.6

Continuation of the table.2.17

Kherson	65.9	102.8	-36.9	1.2	1.2	0.0
Khmelnytskiy	111.8	136.3	-24.5	3.6	1.1	2.5
Cherkasy	112.2	138.4	-26.2	1.6	1.0	0.6
Chernivtsi	59.1	59.9	-0.8	11.1	2.2	8.9
Chernihiv	122.5	146.4	-23.9	2.5	1.2	1.3
City of Kyiv	x	x	x	x	x	x

Note:Relative indicators are calculated excluding the relevant data for the Donetsk and Luhansk regions.

Source: State Statistics Service of Ukraine

In terms of age and gender, the highest mobility rates are found between the ages of 15-39, and more women than men move. In addition, this age group has a higher number of people moving abroad, with a negative migration rate, except for those aged 20-24. See Table 2.18. It can also be observed from the table that the number of rural people over 75 years of age moving abroad is also higher than those moving in from abroad.

Table 2.18 - Number of rural migrants in Ukraine by age and sex in 2021, (unit: persons)

	Total immigrants			Total emigrants			Migration increase (decrease)		
	both sexes	male	female	both sexes	male	female	both sexes	male	female
Total	136,127	61,081	75,046	144,285	59,104	85,181	-8,158	1,977	-10,135
of which by age, years									
0-4	12,727	6,539	6,188	8,984	4,572	4,412	3,743	1,967	1,776
5-9	8,432	4,334	4,098	10,146	5,134	5,012	-1,714	-800	-914
10-14	7,180	3,710	3,470	7,914	4,001	3,913	-734	-291	-443
15-19	10,084	4,231	5,853	18,583	8,304	10,279	-8,499	-4,073	-4,426
20-24	17,749	7,295	10,454	11,843	3,771	8,072	5,906	3,524	2,382
25-29	11,350	4,494	6,856	16,557	5,076	11,481	-5,207	-582	-4,625
30-34	12,452	4,903	7,549	16,562	5,942	10,620	-4,110	-1,039	-3,071
35-39	11,494	4,906	6,588	13,064	5,135	7,929	-1,570	-229	-1,341
40-44	8,556	4,136	4,420	8,644	3,865	4,779	-88	271	-359

Continuation of the table. 2.18

45-49	7,061	3,522	3,539	6,779	3,145	3,634	282	377	-95
50-54	5,993	2,974	3,019	5,291	2,469	2,822	702	505	197
55-59	5,948	2,748	3,200	4,826	2,097	2,729	1,122	651	471
60-64	6,542	3,221	3,321	4,941	2,277	2,664	1,601	944	657
65-69	4,360	1,961	2,399	3,431	1,362	2,069	929	599	330
70-74	2,815	1,104	1,711	2,555	898	1,657	260	206	54
75-79	1,331	455	876	1,442	419	1,023	-111	36	-147
80-84	1,400	409	991	1,788	433	1,355	-388	-24	-364
85 and older	653	139	514	935	204	731	-282	-65	-217

Note: Excluding the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and a part of temporarily occupied territories in the Donetsk and Luhansk regions.

Source: State Statistics Service of Ukraine

In conclusion, the overall natural growth rate of migration of rural residents in Ukraine is on a downward trend, with negative natural growth rates in all years except 2014-2017 (see Figure 2.26),which in a way reveals some problems in the countryside, such as low wages and few jobs, which are not attractive enough for residents, thus leading many young rural residents to emigrate. However, on the national average, the natural growth rate is positive in all years, which indicates that Ukraine as a whole has a high national attractiveness and is able to attract a large number of people from abroad.

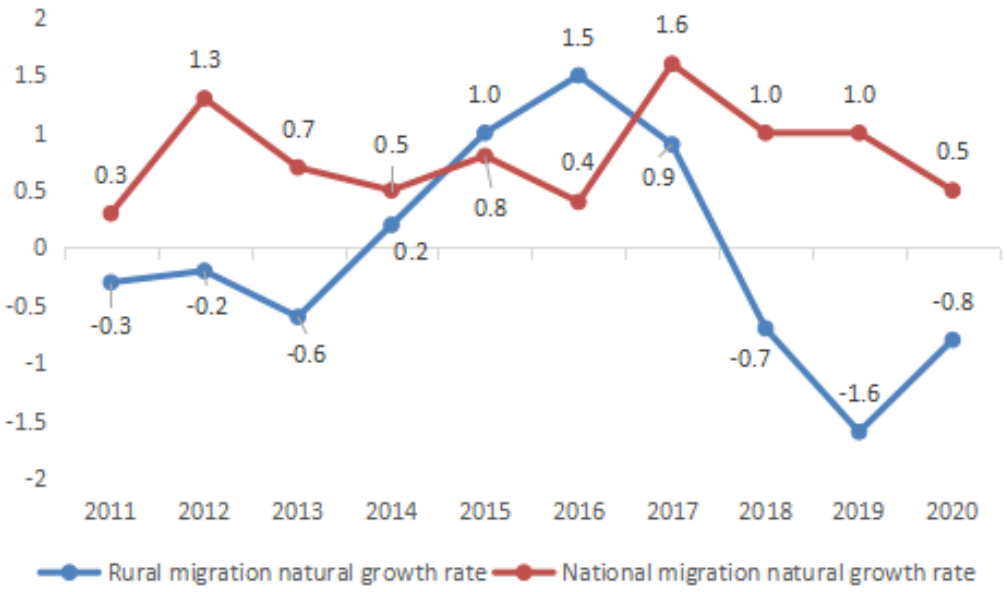


Figure 2.26 - Natural growth rate of rural migrants in Ukraine

Source: Demographic Yearbook of Ukraine 2020

Education status of human resources. Ukraine is an educational powerhouse with abundant educational resources and a high level of educated citizens. From elementary school to high school (grades 1-12), Ukrainians enjoy free and compulsory education, which is three years longer than that of China. Ukraine has a large number of colleges and universities with many famous brands. Although the population is only 40 million, there are more than 1,000 colleges and universities, and higher education has entered the stage of mass popularization.

Figure 2.27 shows the changes in the number of general secondary education institutions in Ukraine. As can be seen from the figure, the overall number of general secondary education institutions in Ukraine has been decreasing over the decade, from 19,203 in 2011 to 13,991 in 2021, a decrease of nearly 6,000 institutions over the decade, which is largely related to the negative population growth in Ukraine. The number of secondary education institutions in rural areas,

which is basically the same as that of the whole country, also shows a clear downward trend, decreasing from 12,628 in 2011 to 8,446 in 2021, a decrease of more than 4,000 institutions in ten years, which is a significant reduction in the number of secondary education institutions. In contrast, the number of secondary education institutions in China has increased slightly over the same period, with little overall change, but the number of secondary education institutions in rural China, like Ukraine, has shown a decreasing trend year by year, decreasing by nearly 6,000 institutions over the decade.

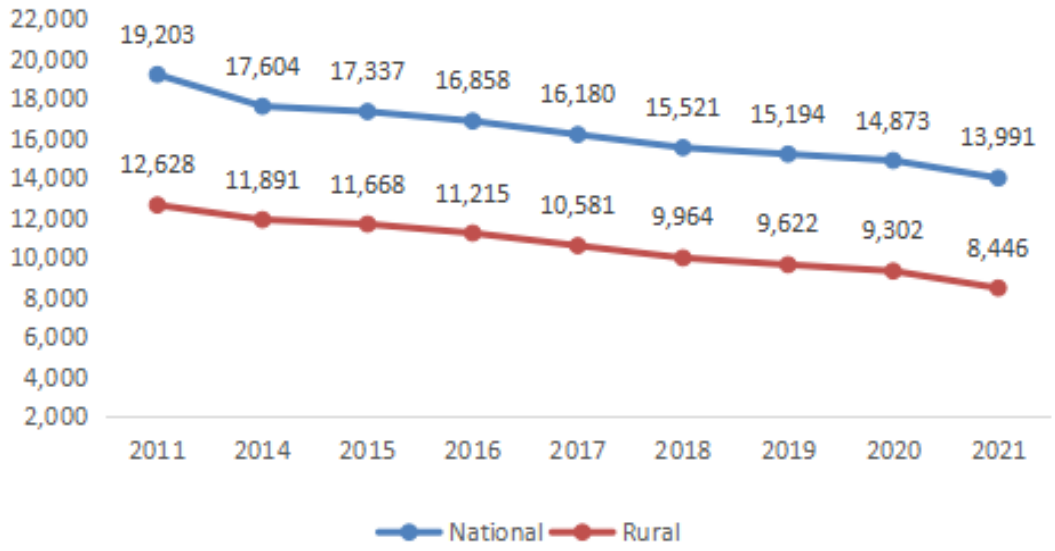


Figure 2.27- Changes in the Number of General Secondary Education Institutions in Ukraine

Note: In 2021, 1 GCSE in urban areas and 11 GCSE in rural areas based on state and public property are undergoing major repairs and are not operational for other reasons. 159 GCSE based on state and public property are suspended (16 in urban areas and 143 in rural areas).

Source: General Secondary Education in Ukraine 2021

Table 2.19 shows the profile of general secondary education institutions in Ukraine in 2021, from which it can be seen that the number of rural secondary education institutions in Ukraine in 2021 is more than that in cities, but the number of students and teachers is less than that in cities, indicating that rural secondary education institutions in Ukraine are smaller in size compared to cities. In terms of student-teacher ratio, the national average of student-teacher ratio in secondary education institutions is 9.7:1, including 11.9:1 in urban areas and 6.6:1 in rural areas, which is better overall than in China.

Table 2.19 - Overview of general secondary education institutions in Ukraine in 2021

	National	Urban	Rural	Student-teacher ratio		
				National	Urban	Rural
Number of schools	13,991	5,545	8,446	9.7:1	11.9:1	6.6:1
Number of students	4,230,358	3,034,679	1,195,679			
Number of teachers	434,755	254,814	179,941			

Note: Including part-time faculty

Source: General Secondary Education in Ukraine 2021

Status of human resources health care. According to the statistics of the State Statistics Service of Ukraine, the main diseases that cause death in rural areas of Ukraine are circulatory diseases, the rate of which far exceeds that of other diseases. Among all diseases, infectious and parasitic diseases, respiratory diseases, and diseases caused by external factors are decreasing year by year, while the rate of death from digestive diseases is increasing, while the rate of death from tumors and circulatory diseases remains high and is a serious threat to the health of the

Ukrainian rural population.

Table 2.20 - Mortality rates by diseases in rural Ukraine, Existing population per 100,000 people

Year	Infectious and parasitic diseases	Tumors	Circulatory diseases	Respiratory diseases	Digestive diseases	Diseases caused by external factors
2011	27.2	179.8	1231.1	60.2	49	113.7
2012	26.8	191.8	1221.2	56.1	56.2	112.5
2013	25.6	190.7	1231.8	54.2	58.2	109.1
2014	23.9	186.4	1271.7	52.1	57.4	112.1
2015	23.1	188.8	1273.6	51.6	54.6	106.8
2016	22.2	191.1	1244.5	48	54.7	100.4
2017	20.6	190.4	1224.6	43.5	54.7	97.3
2018	21.4	189.2	1231.4	43.7	61.5	94.9
2019	19.3	188.3	1212	40.6	61.6	93.2
2020	16.9	190.7	1263.3	46.8	61.4	88

Source: Demographic Yearbook of Ukraine (2020)

Healthcare institutions in Ukraine consist mainly of hospitals and out-patient facilities. Among them, the number of hospitals is decreasing year by year, as well as the number of beds per 10,000 population. In contrast, the number of out-patient facilities is on the rise, increasing from 7.4 thsd in 2000 to 10.4 thsd in 2017, as shown in Table 2.21. This shows that out-patient facilities occupy a very important position in the health care system of Ukraine.

Table 2.21 - Health care establishments of Ukraine

	Total hospitals, thsd.	Beds[1]		Total out-patient facilities,[1] thsd.	Capacity of out-patient facilities, thsd. of visits per shift	
		total, thsd.	per 10,000 population		total	per 10,000 population
2000	3.3	466	95.0	7.4	973	198.4
2001	3.2	466	96.6	7.4	980	203.4
2002	3.1	465	97.3	7.4	980	205.0
2003	3.0	458	96.6	7.6	981	206.8
2004	2.9	451	95.7	7.7	987	209.6
2005	2.9	445	95.2	7.8	990	211.7
2006	2.9	444	95.6	7.9	998	214.8
2007	2.8	440	95.2	8.0	992	214.7
2008	2.9	437	95.1	8.8	987	214.8
2009	2.8	431	94.2	8.8	1000	218.3
2010	2.8	429	94.0	9.0	993	217.7
2011	2.5	412	90.6	8.2	999	219.8
2012	2.4	404	89.1	8.3	1023	225.4
2013	2.2	398	88.0	10.8	1037	229.2
2014	1.8	336	78.5	9.8	912	213.4
2015	1.8	332	78.1	10.0	912	214.2
2016	1.7	315	74.3	10.2	915	215.6
2017	1.7	309	73.1	10.4	923	218.6

Source: Statistical Yearbook of Ukraine for 2017

However, in rural areas, the arrangement of medical facilities shows a different character. As can be seen in Figure 2-28, the number of hospitals and beds in rural areas of Ukraine is decreasing year by year, showing the same trend as in the country, especially in the years 2000-2015 there was a precipitous decline. At the same time the number of outpatient clinics and polyclinics is also decreasing, from 2321 in 2000 to only 474 in 2017, which is not the same trend as the country as a whole.

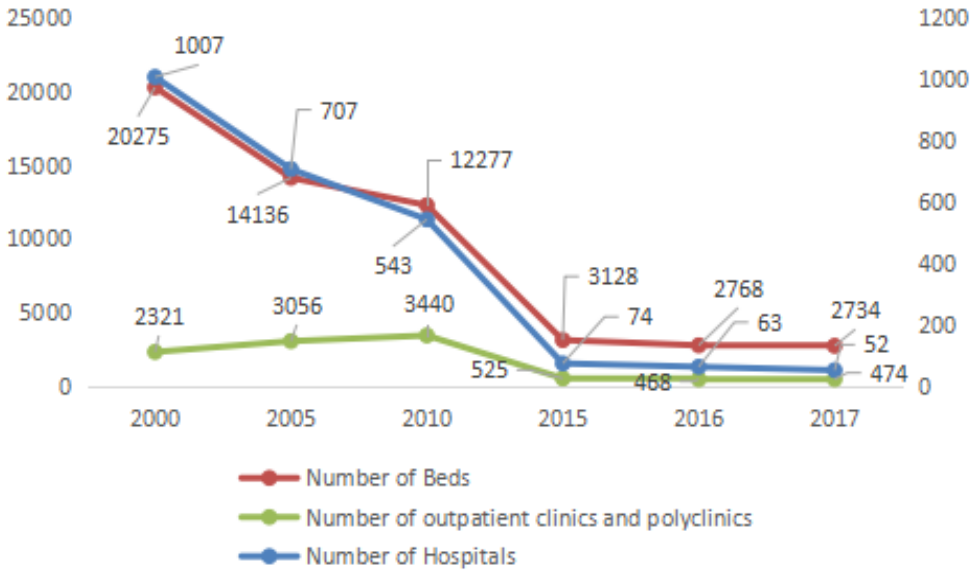


Figure 2.28 - The network of medical facilities in rural areas of Ukraine

(Institutions administered by the Ministry of Health of Ukraine)

Source: State Statistics Service of Ukraine

In terms of changes in medical personnel, the absolute number of doctors and paramedical staff has been decreasing since 2000, and the rate of decrease in paramedical staff in particular is more pronounced. In 2000, there were 541 thsd of nursing staff in Ukraine, in 2017 there were only 360 thsd, a decrease of 181 thsd. In terms of the allocation of medical staff per 10,000 population, in 2000 there were doctors per 10,000 population was 46.2, and in 2017 it was 44.1, a decrease of 2.1, which is not a significant change. However, the number of paramedical staff per 10,000 population has changed significantly, from 110.3 in 2000 to 85.4 in 2017, a decrease of 24.9.

Table 2.22 - Health care personnel of Ukraine [1]

	Medical practitioners (doctors)		Paramedical staff	
	total, thsd.	per 10,000 population	total, thsd.	per 10,000 population
2000	226	46.2	541	110.3
2001	226	46.8	530	110.1
2002	224	46.9	526	110.0
2003	223	47.1	523	110.3
2004	223	47.4	522	110.9
2005	224	47.9	496	106.2
2006	225	48.4	493	106.1
2007	223	48.3	488	105.5
2008	222[4]	48.3	465	101.1
2009	225[4]	49.1	467	102.0
2010	225[4]	49.3	467	102.4
2011	224[4]	49.3	459	101.0
2012	217[4]	47.9	441	97.2
2013	217[4]	48.0	441	97.4
2014	186[4]	43.5	379	88.6
2015	186[4]	43.7	372	87.3
2016	187[4]	44.0	367	86.5
2017	186[4]	44.1	360	85.4

Source: Statistical Yearbook of Ukraine for 2017

Material level of population. Employment status. From 2012 to 2021, the employment rate of urban and rural residents over 15 years of age in Ukraine showed a decreasing trend year by year, and the decreasing trend of the employment rate of the rural population was more obvious, with the employment rate of the rural population standing at 62.7% in 2012 and rapidly decreasing after a brief increase in 2013 to 46.7% in 2021, a decrease of 16 percentage points in just ten years.

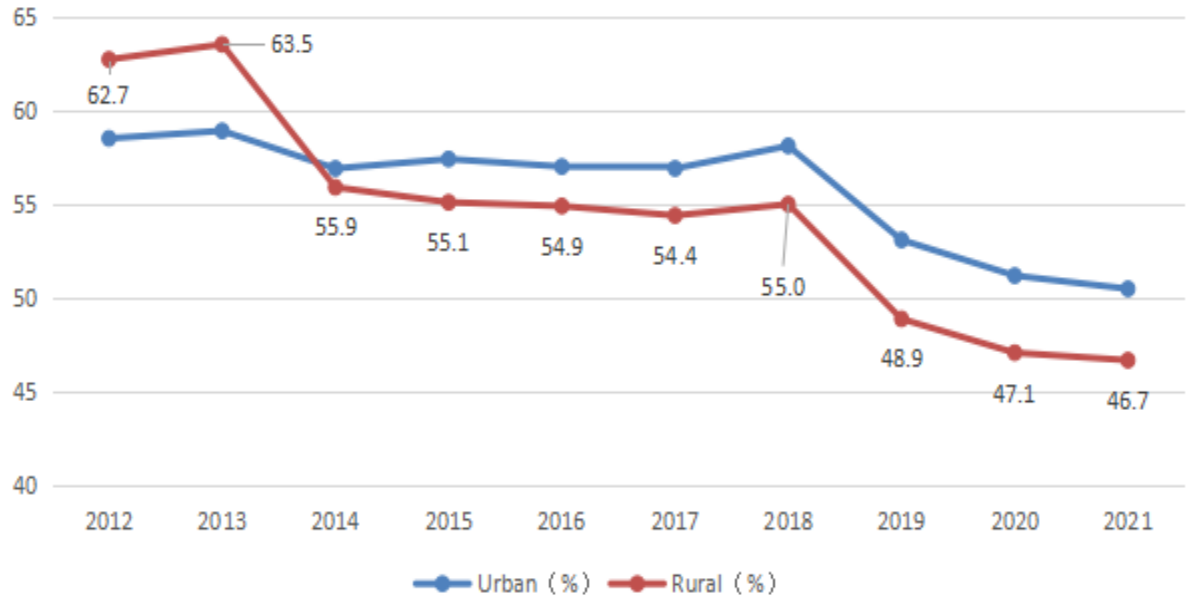


Figure 2.29 - Employment rate of urban and rural residents over 15 years of age in Ukraine from 2012-2021

Source: State Statistics Service of Ukraine

In terms of age structure, the employment rate of rural Ukrainians of working age basically remained above 60% in 2012-2021, with the higher employment rate in the 30-49 age group, where the employment rate was above 70%, followed by the 25-29 and 50-59 age groups, both of which had employment rates above 60%. The employment rates of the 15-24 and 60-70 age groups, on the other hand, are lower and show a decreasing trend year by year. See Table 2.23.

In terms of the industries in which the employed population is engaged, in 2012-2021 the largest number of people engaged in “Wholesale and retail trade; repair of motor vehicles and motorcycles”, followed by Agriculture, forestry and fishing, and then Industry.

Table 2.23 - Employment rate of rural inhabitants of Ukraine over 15 years of age, by age, 2012-2021 (%)

Year	15–24	25–29	30–39	40–49	50–59	60–70	Of working age
2012	40.3	72.5	76.9	79.5	66.4	39.8	67.4
2013	39.7	71.7	76.9	79.6	69.8	41.0	67.8
2014	31.8	65.2	72.6	76.6	61.2	22.9	62.0
2015	32.7	66.3	72.2	75.7	60.9	17.5	62.0
2016	32.1	66.3	71.5	75.5	60.9	17.5	61.6
2017	32.0	66.2	71.6	74.9	60.4	16.4	65.9
2018	32.0	68.5	72.2	75.8	62.5	14.4	67.6
2019	34.0	69.4	73.3	75.9	65.5	15.0	64.5
2020	28.9	66.0	71.4	73.4	65.8	14.4	62.4
2021	28.7	64.4	71.8	72.5	65.5	14.4	62.0

Note: Of working age refers to aged 15-59

Source: State Statistics Service of Ukraine

Thus, it can be seen that the industrial composition of the employed population in Ukraine is tertiary, primary and secondary industries, unlike China, where the employment structure of the population is "three, two, one", i.e. the employment structure of the Chinese population is "three, two, one", i.e. tertiary, secondary and primary industries. See Table 2.24.

Table 2.24 - Employed population by economic activities of Ukraine in 2012-2021, *(aged 15-70; thousands of persons)*

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total employed	19261.4	19314.2	18073.3	16443.2	16276.9	16156.4	16360.9	16578.3	15915.3	15610.0
Agriculture, forestry and fishing	3308.5	3389.0	3091.4	2870.6	2866.5	2860.7	2937.6	3010.4	2721.2	2692.7
Industry	3236.7	3170.0	2898.2	2573.9	2494.8	2440.6	2426.0	2461.5	2358.6	2313.2

Continuation of the table. 2.24.

Construction	836.4	841.1	746.4	642.1	644.5	644.3	665.3	699.0	664.4	690.8
Wholesale and retail trade; repair of motor vehicles and motorcycles	4160.2	4269.5	3965.7	3510.7	3516.2	3525.8	3654.7	3801.3	3648.7	3604.7
Transportation and storage	1150.9	1163.6	1113.4	998.0	997.2	991.6	995.1	999.0	975.2	961.0
Accommodation and food service activities	326.7	328.9	309.1	277.3	276.7	276.3	283.0	304.0	285.4	285.2
Information and communication	297.9	299.9	284.8	272.9	275.2	274.1	280.3	289.2	283.7	289.0
Financial and insurance activities	315.8	306.2	286.8	243.6	225.6	215.9	214.0	211.6	212.5	210.6
Real estate activities	322.2	314.3	286.1	268.3	255.5	252.3	259.4	259.7	251.2	248.2
Professional, scientific and technical activities	504.1	493.6	456.0	422.9	428.1	415.8	437.9	421.6	418.2	422.2
Administrative and support service activities	343.9	343.3	334.3	298.6	304.3	297.9	304.3	317.9	304.6	317.9
Public administration and defense, compulsory social security	1003,6 [2]	962.3	959,5 [2]	974,5 [2]	973.1	979.7	939.3	870,5 [2]	901,9 [2]	873.9
Education	1633.2	1611.2	1587.7	1496.5	1441.4	1423.4	1416.5	1388.7	1394.9	1244.0

Continuation of the table. 2.24.

Human health and social work activities	1181.4	1171.8	1150.5	1040.7	1030.4	1013.6	995.4	974.2	935.4	913.4
Arts, entertainment and recreation	225.6	226.5	221.2	207.9	201.6	199.8	196.9	197.6	196.0	178.7
Other types of economic activity	414.3	423.0	382.2	344.7	345.8	344.6	355.2	372.1	363.4	364.5

Source: State Statistics Service of Ukraine

In terms of unemployment rate, the number of unemployed people aged 15-70 in Ukraine in 2012-2021 is shown in Figure 2.30, from which it can be seen that the number of unemployed people in Ukraine fluctuates considerably during the decade, with the highest number of unemployed people in 2014 at 1,847.6 thousands and the lowest number of unemployed people in 2019 at 1,487.7 thousands, a difference of 359.9 thousands people. Table 2.25 presents a comparison of urban and rural unemployment, in absolute numbers the urban unemployed population is significantly more than rural in 2017-2021, almost twice the number of rural unemployed, but in the unemployment rate rural is higher than urban, which is mainly caused by the huge difference in population size between urban and rural.

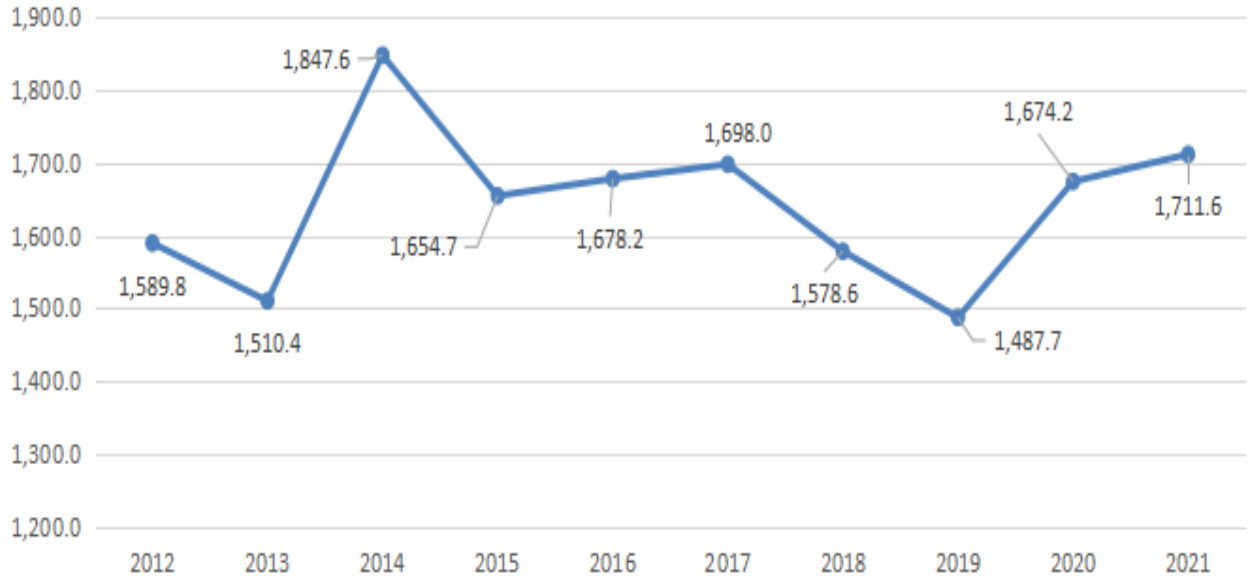


Figure 2.30 - Number of unemployed people aged 15-70 years in Ukraine from 2012-2021 (thousands persons)

Source: State Statistics Service of Ukraine

Table 2.25 - Comparison of urban and rural unemployment in Ukraine from 2017-2021 *(information is based on the results of Labour Force Survey)*

Year	In urban areas		In rural areas	
	thousands person	percent of economically active population in respective age group	thousands person	percent of economically active population in respective age group
2017	1142.9	9.3	555.1	9.9
2018	1063.1	8.6	515.5	9.2
2019	994.8	8.0	492.9	8.6
2020	1101.0	9.1	573.2	10.3
2021	1132.2	9.5	579.4	10.6

Source:State Statistics Service of Ukraine

Income status. In 2012-2021, the average monthly total resources of Ukrainian per one household are rising year by year, from only 4144.5 UAH in 2012 to

14490.6 UAH in 2021, which is more than three times higher. The highest share of cash income, which accounts for roughly 90% of total income, and the highest share of cash income, i.e. labor remuneration, is 59.8%. See Table 2.26.

Table 2.26 - Structure of income and total resources of households in Ukraine from 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Average monthly total resources per one household, UAH	4144.5	4470.5	4563.3	5231.7	6238.8	8165.2	9904.06	12118.5	12432.27	14490.6
Structure of household total resources	**percent**									
Cash income	91	90.8	91.2	89.4	86	87.5	89.9	92	93.9	93.9
-labor remuneration	50.8	50.6	48.8	47.2	46.7	52.4	54.5	57.3	58.3	59.8
- income from entrepreneurship and self-employment	4.1	4.1	5.2	5.5	5.2	4.4	6	6.5	5.8	5.7
- income from sales of agricultural products	2.8	2.8	3.2	3.4	2.9	3.0	2.5	2.4	2.2	2.5
- cash pensions, stipends and social benefits	27.1	27.1	27	25.2	23.1	20.2	19.9	19.2	20.8	19.8
- cash support from relatives, other persons and other cash income	6.2	6.2	7.0	8.1	8.1	7.5	7.0	6.6	6.8	6.1

Continuation of the table.2.26

Value of consumed products that were produced at private subsistence farms or individually procured	3.8	3.9	4.6	5.1	4.8	4.0	3.8	3.6	3.3	3.0
Non-cash benefits and subsidies to pay for housing and communal utilities, electricity, fuel	0.6	0.4	0.4	1.3	4.7	4.7	2.8	0.7	0.2	0.1
Non-cash benefits to pay for goods and services on heals protection, travel services, to pay for places in recreation departments etc., to pay for transportation and communications services	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.3
Other receipts	4.1	4.4	3.4	3.8	4.1	3.4	3.1	3.3	2.4	2.7
For information: total income, UAH	4031.9	4331	4470.9	5122	6095	8013.1	9720.24	11859.8	12247.8	14247.9

Source: State Statistics Service of Ukraine

Table 2.27 shows the structure of income and total resources of households in rural areas of Ukraine in 2021. As it can be seen from the table, in the four quarters of 2021, household income in rural areas of Ukraine is still dominated by cash

income, with an average share of 88.5%, but it is lower than the national average, which is 93.9% in 2021. Among cash income, labor remuneration still dominates in 2021, which is relatively similar to China. In addition, Ukraine is also relatively similar to China in terms of property income, i.e. both countries have a relatively low share of property income in total income. However, the difference with China is that the share of income from the sale of agricultural products in cash income is not particularly high in Ukraine, indicating that land is not the main dependence of rural residents in Ukraine, which is completely different from China, where land is still the main resource on which rural residents depend for survival.

Table 2.27 - Structure of income and total resources of households in rural areas of Ukraine in 2021

(average monthly per one household, percentage)

	I quarter	**II quarter**	**III quarter**	**IV quarter**
Pay (labor remuneration)	47.1	50.5	46.4	46.9
Income from entrepreneurship and self-employment	3.4	3.5	4.7	5.7
Income from sales of agricultural products	6.5	7.1	10.2	6.8
Income from property (dividends from shares and other securities, interest on deposits, income from renting real estate, etc.)	0.5	0.2	6.7	4.7
Pensions	18.2	19.3	16.2	16.1
Scholarships	0.2	0.2	0.1	0.2
Aid, benefits, subsidies and compensation payments provided in cash	4.6	3.2	1.6	2.7
including:				
unemployment benefits	0.7	0.6	0.2	0.1
assistance to low-income families	0.1	0.2	0.2	0.2

Continuation of the table.2.27

child benefits	0.8	0.9	0.6	0.7
subsidies and benefits in cash for housing and communal services, electricity and fuel	2.5	0.9	0.1	1.2
others	0.5	0.6	0.5	0.5
Financial assistance from relatives and others	3.0	3.3	3.2	2.6
Alimony	0.1	0.1	0.1	0.1
Other money income	0.9	1.6	2.4	3.1
Money income	*84.5*	*89.0*	*91.6*	*88.9*
The cost of consumed products obtained from personal farms and from self-procurement	11.8	7.8	6.1	8.3
Non-cash benefits and subsidies for housing and communal services, electricity and fuel	0.2	0.0	0.0	0.1
Non-cash benefits for payment for goods and services for health care, travel services, vouchers for recreation centers, etc.	0.1	0.1	0.0	0.0
Non-cash benefits for payment of transport and communication services	0.0	0.1	0.1	0.1
Monetary valuation of assistance from relatives and other persons with foodstuffs	1.2	1.4	1.0	1.0
Non-money income	*13.3*	*9.4*	*7.2*	*9.5*
Total income	*97.8*	*98.4*	*98.8*	*98.4*
Proceeds from the sale of personal and household property	0.0	0.0	0.1	1.0
Proceeds from the sale of real estate	0.0	0.0	0.1	0.0
Use of savings, loans, debts repaid to the household	2.2	1.6	1.0	0.6
Total resources	*100.0*	*100.0*	*100.0*	*100.0*

Source: State Statistics Service of Ukraine

The monthly wages of employees in various sectors in Ukraine in January 2022 show that the wages of employees in the primary sector, i.e. in agriculture, forestry and pastoralism, are higher than in January 2021, but still lower than the average for the economy as a whole, which indicates lower economic incomes from agricultural activities and further explains the phenomenon of the higher number of rural residents moving abroad (Table 2.28)

Table 2.28 - Wage of regular employees by type of economic activity in Ukraine in January 2022

	Average monthly wage of employees in January		
	UAH	percent over	
		Jan-2021	the average level of economy
On average for an economy	14577	118,2	100,0
Agriculture, forestry and fishing	11899	124,4	81,6
Industry	15441	115,5	105,9
Construction	11392	123,3	78,1
Wholesale and retail trade and repair of motor vehicles and motorcycles	14798	124,4	101,5
Transportation and storage, postal and courier activities	15677	128,4	107,5
Accommodation and food service activities	9453	142,2	64,8
Information and communication	27198	124,0	186,6
Financial and insurance activities	24928	103,5	171,0
Real estate activities	12949	133,7	88,8
Professional, scientific and technical activities	19968	120,3	137,0
Administrative and support service activities	12550	121,8	86,1
Public administration and defence,compulsory social security	17446	114,5	119,7
Education	11489	111,4	78,8
Human health and social work activities	13245	125,3	90,9
Arts, sports, entertainment and recreation	11962	114,6	82,1

Source: State Statistics Service of Ukraine

In order to better analyze the income of rural population in Ukraine, the family distribution and population distribution of urban and rural residents in Ukraine are divided according to the per capita gross equivalent income. Through analysis, it is

found that in 2021, families and population with low per capita gross equivalent income per month in Ukraine are mainly concentrated in rural areas. In particular, income groups below 5,000 hryvnia are mainly concentrated in rural areas, while middle-income and higher income groups are mainly concentrated in urban households and populations, as shown in Table 2.29.

Table 2.29 - Distribution of households by per capita equivalent total income of Ukraine in 2021, *(on average per month)*

	I quarter		II quarter		III quarter		IV quarter	
	In urban areas	In rural areas	In urban areas	In rural areas	In urban areas	In rural areas	In urban areas	In rural areas
With average per capita equivalent total income per month, UAH	Percentage							
under 3000,0	5.9	13.3	7.4	16.6	5.2	8.4	3.7	6.2
3000,1-4000,0	11.2	16.9	13.0	19.0	10.9	14.1	8.1	12.9
4000,1-5000,0	16.4	16.6	15.8	18.8	14.6	14.5	12.0	15.9
5000,1-6000,0	16.7	17.7	14.8	14.0	13.2	12.5	15.5	15.9
6000,1-7000,0	13.1	11.9	12.4	9.5	12.4	12.8	13.9	12.4
7000,1-8000,0	9.8	7.8	9.9	7.1	10.8	11.0	11.1	9.1
8000,1-9000,0	7.4	5.7	7.0	5.1	9.1	8.1	8.4	7.4
9000,1-10000,0	6.1	3.9	5.4	2.7	5.6	4.9	6.8	6.0
10000,1-11000,0	3.6	2.2	4.0	2.5	4.4	3.5	4.9	4.2
11000,1-12000,0	2.5	1.1	2.7	1.7	3.9	2.9	3.9	2.5
over 12000,0	7.3	2.9	7.6	3.0	9.9	7.3	11.7	7.5

Source: State Statistics Service of Ukraine

Expenditure status. In order to unify the indicator caliber and better compare with the spending situation of Chinese residents, transportation and communication in the statistical indicators of the National Statistics Bureau of Ukraine were combined, and entertainment, culture and education were combined. According to the relevant statistical data of the National Bureau of Statistics of Ukraine, the

average monthly total expenditure per household in Ukraine increased year by year from 2012 to 2021, which was 3592.1 UAH in 2012 and 11243.4 UAH in 2021, more than three times that of 2012. Although the proportion of food consumption in the total consumption expenditure is decreasing year by year, it still occupies the highest proportion in the consumption structure. Moreover, compared with China, the proportion of food consumption in Ukraine is higher than that in China, indicating that Ukraine's economic capacity is slightly lower than China's. In addition, the proportion of medical and health consumption and entertainment, culture and education consumption of Ukrainian families is also relatively low, which is quite different from that of China (Table 2.30).

Table 2.30 - Structure of total household expenditures in Ukraine in 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Average monthly total expenditure per one household, UAH	3592.1	3820.3	4048.9	4952.0	5720.4	7139.41	8308.6	9670.2	9523.6	11243.4
Structure of household total expenditure	*percent*									
Total consumption expenditure	90.8	90.2	91.6	92.9	93.2	92.9	92.0	91.3	91.4	91.3
food and non-alcoholic beverages	50.1	50.1	51.9	53.1	49.8	47.9	47.7	46.6	48.1	45.9
alcoholic beverages and tobacco	3.5	3.5	3.4	3.3	2.9	3.1	3.4	3.2	3.5	3.0
clothing and footwear	6.1	5.9	6.0	5.7	5.6	5.5	5.4	5.5	4.8	4.8

Continuation of the table 2.30 -

housing, water, electricity, gas and other fuels	9.9	9.5	9.4	11.7	16.0	17.0	15.2	14.6	14.4	15.2
furnishing, household equipment and routine maintenance of the house	2.3	2.3	2.3	2.0	1.7	2.0	2.1	1.8	2.2	2.2
health	3.4	3.4	3.6	3.7	4.2	3.8	4.0	4.1	4.3	4.7
transport and communication	7.1	7.1	7.1	6.1	6.1	6.1	6.3	7.6	7.4	7.9
recreation, culture and education	3.3	3.3	2.9	2.6	2.5	2.7	2.8	2.7	2.4	2.7
restaurants and hotels	2.5	2.5	2.3	2.0	2.2	2.3	2.4	2.6	1.6	1.8
miscellaneous goods and services	2.6	2.6	2.7	2.7	2.5	2.5	2.7	2.6	2.7	3.1
Non-consumption total expenditure	9.2	9.8	8.4	7.1	6.8	7.1	8.0	8.7	8.6	8.7

Source: State Statistics Service of Ukraine

According to the statistics of the four quarters of Ukraine in 2021, the spending structure of Ukrainian rural households is quite different from that of urban households. Among them, food consumption occupies the highest proportion in the total consumption structure of Ukrainian urban and rural households, and rural households are higher than urban households, indicating that rural households are poorer than urban households. But when it comes to health care, urban households spend more than rural households in Ukraine, unlike in China, where rural spending is higher than urban spending. As for the expenditure on entertainment, culture and education, there is a big gap between urban and rural areas in Ukraine, with a

difference of about 2 percentage points every quarter. Moreover, the proportion in the total consumption expenditure structure is very low, which is also quite different from that in China (Table 2.31).

Table 2.31- Structure of total expenditure of households in urban and rural areas of Ukraine in 2021, *(average monthly per one household, percentage)*

	I quarter		II quarter		III quarter		IV quarter	
	In urban areas	In rural areas	In urban areas	In rural areas	In urban areas	In rural areas	In urban areas	In rural areas
Total consumption expenditure	93.2	90.9	92.3	90.8	90.8	85.7	92.3	90.2
food and non-alcoholic beverages	42.1	49.4	46.0	53.2	44.7	46.6	44.7	47.9
alcoholic beverages and tobacco	3.1	2.7	3.3	3.0	3.0	2.7	3.1	2.9
clothing and footwear	3.9	4.3	4.2	4.3	5.1	5.6	5.2	5.8
housing, water, electricity, gas and other fuels	22.6	16.5	14.7	10.8	11.4	10.0	16.4	13.7
furnishing, household equipment and routine maintenance of the house	2.0	1.7	2.4	2.3	2.6	2.4	2.3	2.0
health	5.0	5.0	4.9	4.2	5.0	4.2	4.9	4.0
transport and communication	7.2	7.4	8.0	8.3	8.2	8.3	7.4	9.8
recreation,culture and education	3.0	0.9	3.2	1.0	3.8	1.7	3.3	1.1
restaurants and hotels	1.3	0.7	2.1	0.9	3.5	1.7	1.5	0.6
miscellaneous goods and services	3.0	2.3	3.5	2.8	3.5	2.5	3.5	2.4
Non-consumption total expenditure	**6.8**	**9.1**	**7.7**	**9.2**	**9.2**	**14.3**	**7.7**	**9.8**

Source: State Statistics Service of Ukraine

Living conditions of the population. Figure 2-31 shows the changes in the housing stock in Ukraine, from which it can be seen that the housing stock in urban

areas of Ukraine has changed significantly, mainly showing a decreasing trend, while the housing stock in rural areas has not changed much, but has shown an overall increasing trend. The housing stock in rural areas has not changed much, but the overall trend has increased, from 371.8 million m2 in 2000 to 385.4 million m2 in 2017, with a relatively small increase.

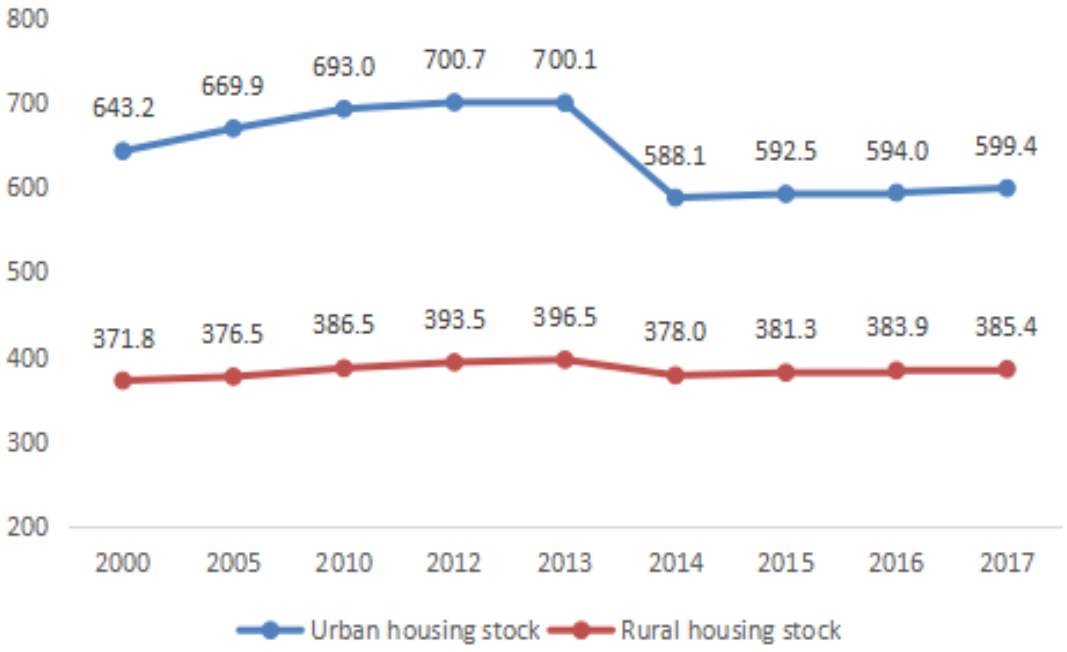


Figure 2.31 - Housing stock of Ukraine

Source: Statistical Yearbook of Ukraine for 2017

The total number of dwellings put into use in Ukraine in 2021 is 151,720, of which the number of dwellings put into use in urban areas is much higher than in rural areas, more than three times the number of dwellings put into use in rural areas. However, the average residential area is more rural than urban and higher than the national average. the average residential area in 2021 is 99.7 square meters in rural areas, compared to only 67.8 square meters in urban areas and 75.2 square meters in the national average.

Table 2.32 - Dwellings put into service of Ukraine in 2021

	2021	
	number of dwellings put into service, units	average size of dwelling sq.m of total area
Total	151720	75,2
in urban areas	116682	67,8
in rural areas	35038	99,7

Source: State Statistics Service of Ukraine

In terms of housing facilities in Ukraine, there is also a big difference between rural and urban areas in terms of facilities. For example, in terms of water supply, hot water supply and central heating, rural areas are far behind urban areas, but the gap between the two is gradually narrowing, indicating that the Ukrainian government has made great efforts to improve rural infrastructure. **Table 2.33 - Housing stock facilities of Ukraine**, (percent)

	2000		2005		2010		2016		2017	
	in urban areas	in rural areas	in urban areas	in rural areas	in urban areas	in rural areas	in urban areas	in rural areas	in urban areas	in rural areas
water supply	75.3	17.9	76.6	20.0	77.9	27.1	77.8	35.4	78.0	36.6
sewage	73.7	12.9	75.4	15.7	76.7	23.2	76.8	31.9	77.0	33.0
central heating	72.8	18.3	74.2	24.4	76.7	36.1	78.3	54.2	78.4	54.9
gas supply	81.6	82.5	81.8	84.1	82.5	84.5	82.4	84.2	82.3	84.3
hot water supply	58.4	4.3	59.7	5.4	60.9	11.5	62.8	22.7	62.7	24.0

Source: Statistical Yearbook of Ukraine for 2017

In addition, it is worth mentioning that there is no big difference between urban and rural areas in terms of gas supply, which is basically maintained at about 82%, and even rural areas are better than urban areas (Table 2.33).

2.3 Problems in human resource management in rural China and Ukraine

In recent years, the number of China's rural population has been decreasing year by year, but China has traditionally had a large population base and is the world's most populous and agricultural country. Under the premise of slowing population growth and changing population structure, the absolute number of China's rural population is still large, and at the same time, with the development of modern agriculture, modern agricultural techniques and equipment have replaced manual labor to a certain extent, which, together with the relative decrease in land resources and historical policies, has produced a partial surplus of labor. In order to optimize the structure of rural human resources and improve the efficiency of socio-economic operation, it is necessary to transfer these surplus labor forces, and there are two ways of transfer, one is industrial transfer and the other is regional transfer. Industrial transfer refers to the transfer of primary industry to secondary and tertiary industries. Regional transfer refers to the transfer from rural to urban areas. Since China has implemented the project of transferring surplus rural labor, a large number of surplus rural labor has been transferred out of the countryside and agriculture, and regional transfer and industry conversion have been realized. The figure 2.32 shows that the total number of rural migrant workers continues to increase from 2012 to 2021, and there are more outgoing migrant workers than local migrant workers. Outgoing migrant workers are mainly rural surplus laborers who have achieved regional transfer, and local migrant workers are mainly rural surplus laborers who have achieved industry transfer in rural areas.

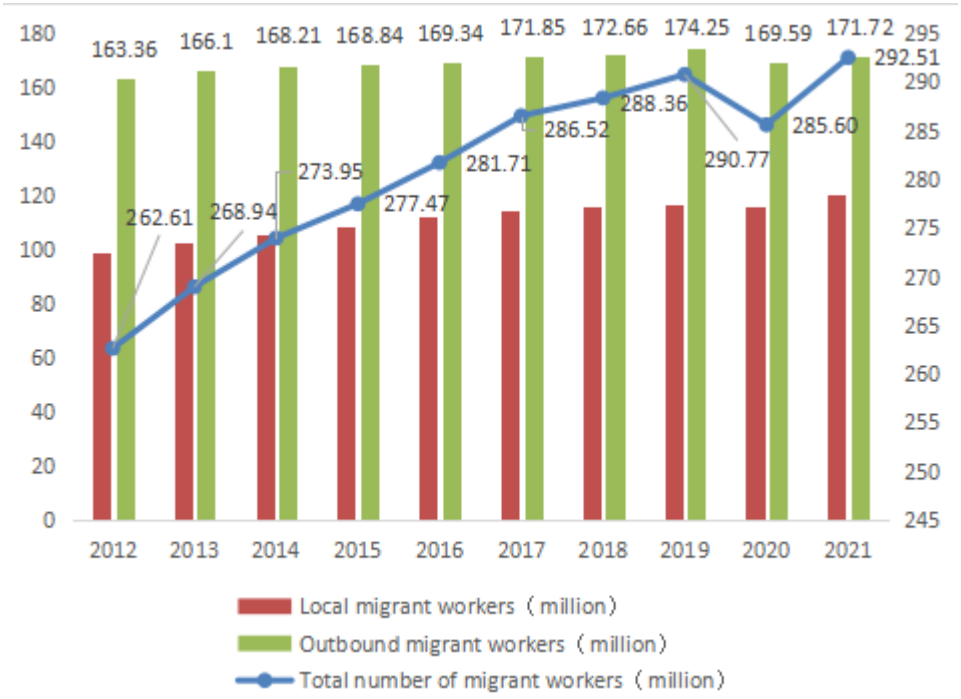


Figure 2.32 - Trend of transfer of surplus rural labor in China

Source: Statistical Bulletin of the National Economic and Social Development of the People's Republic of China

However, in recent years, it has become more and more difficult to transfer the remaining labor force. As seen from the above figure, the number of rural workers increased faster before 2017, and from 2017 onwards, the speed of migrant workers' transfer is getting slower and slower, and even decreases significantly in 2020. Analyzing the reasons, on the one hand, it is due to the implementation of the city closure policy in 2020 due to the new crown epidemic in China, which leads to the decrease of the number of rural migrant laborers. Besides, the more important reason is that in 2017, China implemented the rural revitalization strategy, which was implemented to solve the problems faced in the development of rural areas, such as the large number of human resources, low cultural quality and conservative thinking, etc. To this end, the Chinese government has tilted towards rural areas in

all aspects, such as policy formulation, funding, education development and infrastructure construction, which has made the social environment, economic environment, the industrialization of agriculture has been gradually realized, and the pace of industrialization in rural areas has become faster and faster. Many rural laborers have realized local employment, and at the same time, the good development momentum of rural areas has attracted a large number of high quality laborers to return to rural areas, which to some extent has affected the speed and scale of transferring surplus labor in some rural areas.

From the analysis of the above statistics, it is found that at present, China's rural human resources have a low level of education, poor medical conditions, and a large gap with urban areas, and the cultural and physical quality of human resources are not well guaranteed, analyzing the reasons mainly because of insufficient investment in education and medical care, which affects the improvement of human resources quality.

There are many ways to develop and manage human resources, such as education and training and medical care, which are important ways to guarantee the quality of human resources, among which education and training is the most important way of human resources development. The lack of investment in rural human resources education in China is mainly manifested in two aspects, one is the lack of investment in education and training of rural residents' families, the other is the lack of investment in education and training of national government departments. From the perspective of households, rural residents' investment in education is relatively small, which basically maintains at 10% of the total consumption. This

phenomenon is closely related to the low income of rural residents, which makes them willing but unable to invest in education and training. From the perspective of education investment by national government departments, per capita education expenditure is an important reference index reflecting a country's attention to education, and the shortage of education investment by national government departments is mainly reflected in the per capita education expenditure. Figure 2.33, Figure 2.34, and Figure 2.35 show the changes in the per capita educational expenditure of rural primary schools, rural junior middle schools and rural senior high schools in China. It can be seen from the figure that the per capita educational expenditure of rural schools is lower than that of ordinary schools no matter in rural primary schools, junior middle schools or senior high schools. It shows that the country's investment in rural education is lower than that in urban areas, and the lack of investment in education will certainly affect the improvement of the cultural quality of rural human resources.

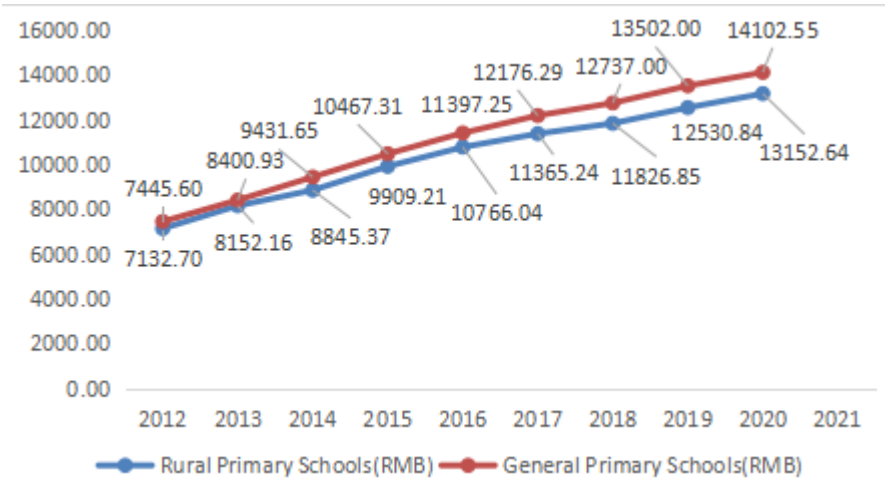


Figure 2.33 - Changes in the per capita educational expenditure of rural primary schools students in China

Note: Missing data for 2021

Source: China Education Expenditure Statistical Yearbook 2013-2021

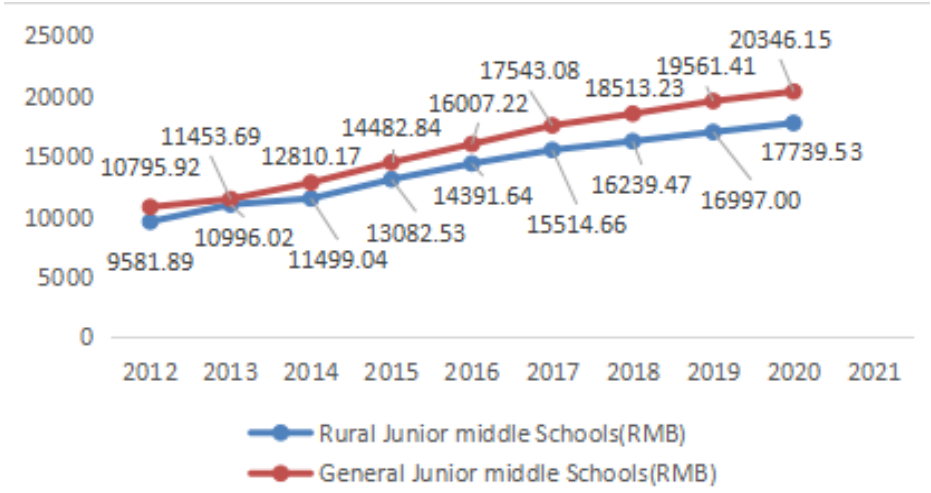


Figure 2.34 - Changes in the per capita educational expenditure of rural junior middle schools students in China

Note: Missing data for 2021
Source: China Education Expenditure Statistical Yearbook 2013-2021

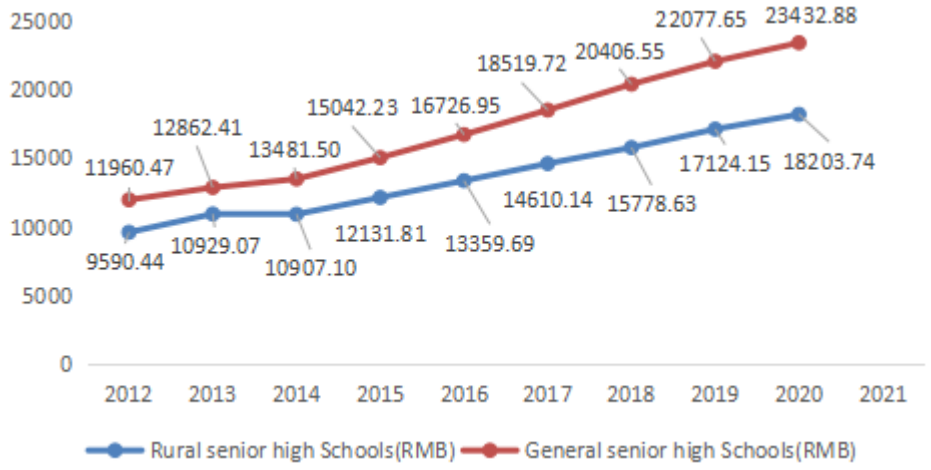


Figure 2.35 - Changes in the per capita educational expenditure of rural senior high schools students in China

Note: Missing data for 2021
Source: China Education Expenditure Statistical Yearbook 2013-2021

In addition, health care investment is also an important element of rural human resource management, and strong health care investment can improve workers'

longevity and productivity, and thus farmers' labor productivity, but China's investment in health care is also relatively weak, and can be analyzed from both household and state government sectors. In terms of household investment, rural households' spending on health care remains around 9.5% of total consumption from 2012 to 2021. In terms of the national government department's investment in health care, at present, the Chinese government attaches great importance to the important impact of health on residents' health, and also gradually increases the investment in health funding, see Table 2.34 , from 2012-2021, the total national health expenditure is increasing year by year, and the percentage of total health expenditure to GDP is also increasing year by year. In terms of rural health costs, although rural health costs are increasing year by year, the ratio of rural health costs to total national health costs has stagnated, remaining at around 23%, which is very detrimental to safeguarding the quality of rural human resources.

Table 2.34- Health expenses in rural China from 2012-2021

Year	Total national health expenditure (100 million RMB）	Rural health expenditure(100 million RMB）	Rural health expenditure accounts for the total national health expenditure（%）	Total health expenditure as a percentage of GDP（%）
2012	28119.00	6838.54	24.32	5.22
2013	31668.95	8024.00	25.34	5.34
2014	35312.40	8736.80	24.74	5.49
2015	40974.64	9676.79	23.62	5.95
2016	46344.88	10886.87	23.49	6.21
2017	52598.28			6.32
2018	59121.91			6.43
2019	65841.39			6.67
2020	72175.00			7.12
2021	76844.99			6.72

Note: Data on rural health expenditure and the proportion of rural health expenditure accounts for the total national health expenditure from 2017-2021 are missing.

Source: China Health Statistics Yearbook 2022

In terms of per capita health expenditure, from 2012 to 2016, the per capita health expenditure of urban residents increased from 2,999.30 RMB to 4,471.50 RMB, an absolute increase of 1,472 RMB. The per capita health expenditure of rural residents increased from 1,064.80 RMB to 1,846.10 RMB, an absolute increase of 781 RMB, which is a big gap with that of urban residents. This shows that rural health expenditure is relatively low and urgently needs to be increased. See Table 2.35.

Table 2.35 - Per capita health expenditure in rural areas of China from 2012-2021

Year	Per capita urban health expenditure（RMB）	Per capita rural health expenditure（RMB）
2012	2999.30	1064.80
2013	3234.10	1274.40
2014	3558.30	1412.20
2015	4058.50	1603.60
2016	4471.50	1846.10

Note: Lack of per capita health expenditure in urban and rural areas from 2017 to 2021.
Source: China Health Statistics Yearbook 2022

From the above analysis of employment status, it is found that China's rural human resources are mainly employed in the primary industry, while the number of people employed in the secondary and tertiary industries is relatively small, which is out of sync with China's economic development. The deviation coefficient of employment structure can explain this problem. The deviation of employment structure refers to the deviation of employment structure compared with its corresponding industrial structure. This index can well reflect the coordination relationship between these two structures. The formula for calculating the deviation

coefficient of employment structure of an industry is as follows:

$$D_i = \frac{V_i}{E_i} - 1 \tag{2.1}$$

Among them, $\frac{V_i}{E_i}$ is comparative labor productivity of industry i. On the whole, the greater the absolute value of D_i, the greater the deviation between industrial structure and employment structure, that is, the worse the balance. The smaller the absolute value of D_i, the smaller the deviation between the industrial structure and the employment structure, that is, the better the balance. Specifically, when the deviation coefficient of employment structure of industry i is positive, it indicates that the percentage of output value of the industry is ahead of the percentage of employment composition, and the imbalance is caused by the improvement of labor productivity. When the deviation coefficient of employment structure is negative, it indicates that the percentage of industrial output value lags behind the percentage of employment composition, and the imbalance is caused by the decrease of labor productivity. When the deviation coefficient of employment structure is close to zero, it indicates the balance between industrial structure and employment structure.

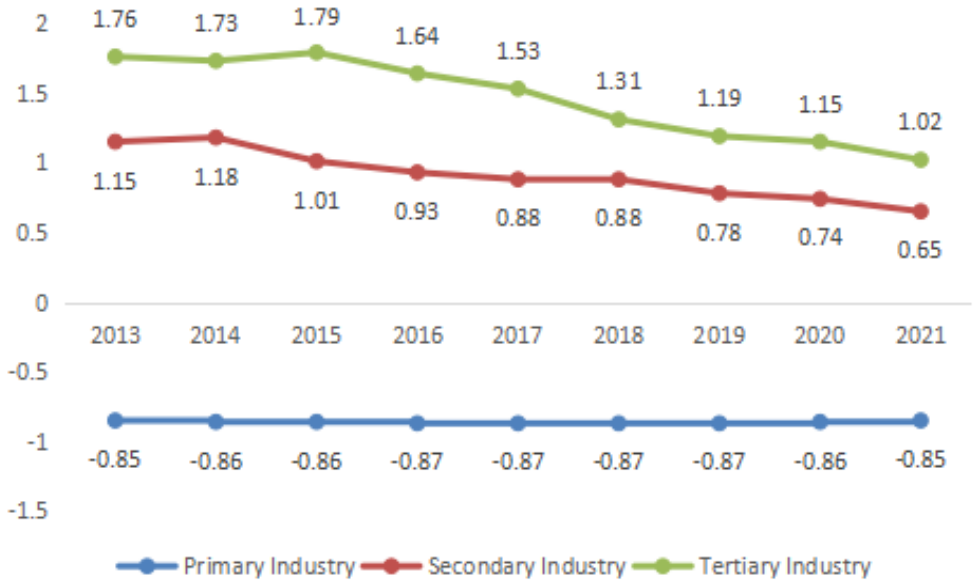


Figure 2.36 - Deviation coefficient of employment structure by industry of Chinese rural human resources

Source: Calculated from the relevant data in China Population and Employment Statistics Yearbook 2022, China Household Survey Yearbook 2022

Figure 2.36 shows the deviation coefficients of the employment structure of rural human resources in China by industry. Among them, the deviation coefficient of employment structure of primary industry is always negative, and the absolute value of the deviation coefficient is far from zero, and the deviation of structure in all years fluctuates around - 0.85 %, which indicates that the percentage of output value composition of primary industry lags behind the percentage of employment composition, that is, the comparative labor productivity of primary industry is less than 1, when the scale of labor force remaining in primary industry is larger, and the employment carrying capacity of industry is lower, especially the absorbing effect of land on labor force gradually decreases, and the development of employment structure and industrial structure is unbalanced. The deviation coefficients of the

secondary and tertiary industries are positive, indicating that the imbalance at this time is caused by the increase of labor productivity in the two major industries, and the employment deviation is very high, especially serious in the tertiary industry. However, the absolute values of D_i that can also be found in the graph show a yearly decrease, indicating that the deviation between the employment structure of secondary and tertiary industries and rural human resources is getting smaller and smaller, and the balance tends to be better.

To sum up, there are many problems in employment in China at present, such as low labor productivity in the primary industry, serious "invisible unemployment", and the need for labor force migration. The secondary and tertiary industries have high labor productivity, insufficient supply of high-quality talents, and reduced driving effect on employment. The incompatibility between China's industrial structure and the employment structure of rural human resources is not unrelated to the inefficient management of rural human resources. For example, the government departments have insufficient employment guidance and vocational skills training for rural labor. The rural labor force is mainly dependent on the relationship of "popularity, geography and blood", which leads to the blindness and spontaneity of the rural labor force. In addition, due to the lack of vocational skills and low cultural quality, it is difficult for them to find employment in the secondary and tertiary industries with higher technical content. Therefore, the primary industry becomes the main place for them to obtain survival materials. In this case, the deviation of employment structure and industrial structure of rural human resources becomes inevitable.

The plummeting birth rate is a prominent feature of Ukraine's demographic crisis. When Ukraine became independent, the number of births per year was above 600,000, in 2000 it was 500,000, and in 2021 it fell below 300,000. It can be clearly seen from Figure 2-25 that from 2012 to 2021, the natural growth rate of population in Ukraine was negative. In 2012, the natural growth rate of rural population was -5.1‰, and in 2021, it was -11.8‰. The phenomenon of negative population growth became more and more serious. In terms of fertility rate, from 1991 to 2001, Ukraine's fertility rate has been on a downward trend, and in 2001, it fell to 1.09, the lowest point in history[139]. From 2002 to 2012, the overall fertility rate in Ukraine showed an upward trend. But since 2016, Ukraine's fertility rate has been on a downward trend, reaching only 1.25% in 2021. See Figure2.37.

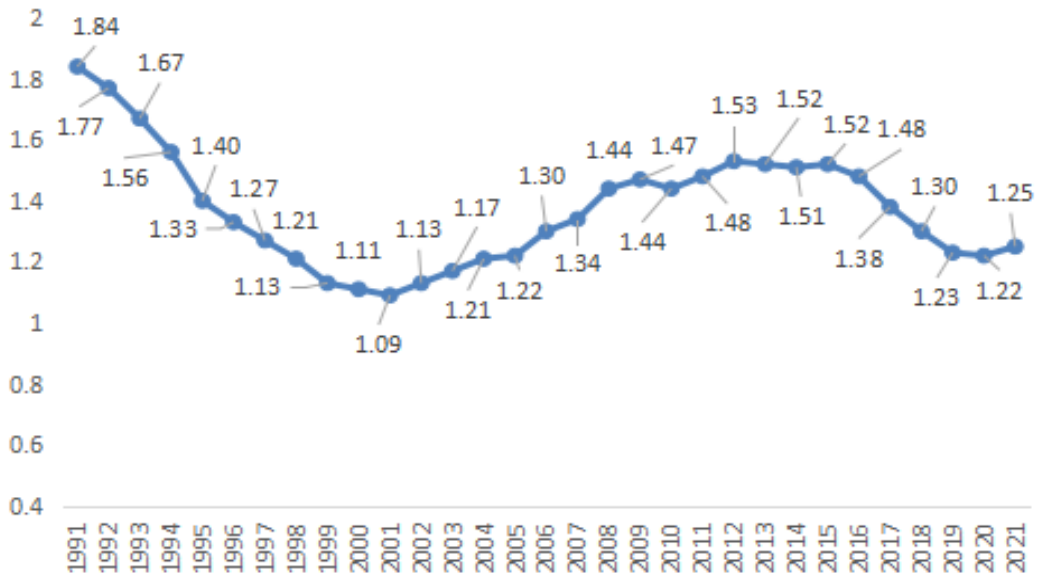


Figure 2.37 - Total fertility rate of Ukraine

Source: Compiled according to relevant data in the World Population Prospects of the United Nations, (unit: %)

Continued negative population growth will bring a series of social problems,

for example, the demographic dividend will disappear and both the economy, real estate, employment and healthcare will be hit hard; and then the labor force, especially the supply of young adults, will decrease and the aging phenomenon will be serious. Youth is the source of vitality for innovation, and even more so for driving the demand for economic development. As the young population decreases, the innovative power and vitality of the country is bound to be affected. Figure 2-23 shows that with 17.41% of the population aged 65 and older in 2021, and 17.46% in rural areas, Ukraine has entered an aging society (the UN stipulates that 7% of the total population is aged 65 or older, which indicates that the region has entered an aging society[140]). As a direct result of this, the retirement age and the length of service of the Ukrainian population will have to be increased.

There are many reasons for the persistent negative population growth in Ukraine, and the lack of population control is one of the most important ones. When a country's population grows too fast or stops growing or even becomes negative, the government needs to take appropriate policy measures to regulate the population, and there are two main means of regulation: adjusting the population fertility policy and the population migration policy. In terms of fertility policy, Ukraine has implemented many encouraging policies in terms of maternity leave and subsidies, but the fertility rate in Ukraine is still very low, which means that the measures introduced by the state have not fully motivated people to have children, and people's willingness to have children is low.In addition, labor migration is another major reason for the decline in Ukraine's population from the point of view of migration policy. In order to earn a living, many Ukrainians chose to go abroad in

search of well-paying jobs and never returned, while the sluggish economy prompted more Ukrainians to go abroad to earn a living, thus trapping Ukraine in a vicious circle. With 4 million people having left Ukraine in the past 10 years, Ukraine needs to adjust its migration policy, especially by introducing restrictive measures for nationals to emigrate to other countries, to reduce the rate of population loss.

The low level of economic income of the inhabitants of rural areas of Ukraine, as shown by the monthly wages of employees in various sectors of Ukraine in January 2022, the wages of employees in the primary sector, i.e. in agriculture, forestry and pastoralism, are lower than the average for the whole sector of the economy, which indicates the lower economic income from agricultural activities and further explains the phenomenon of the higher number of rural inhabitants moving abroad, see Table 2.28 . In terms of gross equivalent income per capita, in 2021, households and population with low gross equivalent income per capita per month in Ukraine are concentrated in rural areas, especially in the income group below 5000 UAH, while the middle and higher income groups are concentrated in urban households and population (Table 2.29)

There are significant differences in the structure of population consumption between rural and urban Ukraine. Among other things, food consumption measures the economic capacity of a country and region, and the share of total food expenditure in total personal consumption expenditure, i.e. Engel's Coefficient, is one of the main criteria for measuring the affluence of a household or a country. In general, all else being equal, a higher Engel's Coefficient indicates a lower income

in terms of households and a poorer country in terms of the country. Conversely, a lower Engel coefficient indicates a higher income in terms of households and a richer country in terms of the country. Table 2.27 presents the structure of total household expenditures in urban and rural areas of Ukraine in 2021, from which it can be seen that food consumption has the highest share in the total consumption structure of urban and rural households in Ukraine and is higher in rural than in urban areas, which indicates that rural areas are poorer than urban areas and the rural population has lower income.

The lower economic income and consumption levels of rural Ukrainians are strongly related to the unsatisfactory employment situation of farmers. The rise in unemployment among farmers leads to the rise in uncertainty about future income and the fall in consumer demand. The previous analysis of the current employment situation in Ukraine shows that the employment rate in rural areas of Ukraine is low and the unemployment rate is high. Figure 2.29 shows that the downward trend of the employment rate of the rural population over 15 years old in Ukraine is very obvious in 2012-2021, with the employment rate of the rural population at 62.7% in 2012, and then rapidly declining after a brief increase in 2013 to 46.7% in 2021, a decline of 16 percentage points in just ten years. Table 2.25 presents the urban-rural unemployment situation in Ukraine. From the table, it is clear that in absolute numbers the urban unemployed population is significantly larger than the rural, almost twice the number of rural unemployed, but in terms of unemployment rate the rural is higher than the urban, which is mainly caused by the huge difference in population size between urban and rural areas.

Analyzing the reasons, the high unemployment rate in rural areas of Ukraine and the low level of economic income and consumption are ultimately related to the sluggish economic form of Ukraine. There is a close interrelationship between economic growth and employment. According to the American economist Thomas, there is a positive correlation between the employment rate and the economic growth rate in terms of the aggregate analysis of economic growth, i.e. a higher economic growth rate is an indispensable prerequisite for maintaining a higher employment rate[141]. And full employment is conducive to increasing income, stimulating consumer demand, speeding up the flow of goods, increasing purchasing power, promoting increased investment, and advancing further economic growth. In addition, higher pay requirements are the main driver of people's employment[142], and higher pay is based on a strong economic foundation; therefore, only by promoting the development of the rural economy can employment be stabilized and incomes increased. From that perspective, it is ultimately necessary to promote the development of the entire national economy in Ukraine in order to change the current situation of high rural unemployment and low economic income and consumption levels.

The mortality rate of the rural population in Ukraine is very high, and Figure 2-25 presents the changes in the birth rate, mortality rate, and natural growth rate of the rural population in Ukraine from 2012 to 2021. As it can be seen from the figure, the mortality rate of the rural population of Ukraine has remained high since 2012, basically remaining around 17.5 ‰ during the decade, and even reaching 19.7‰ in 2021, far exceeding the birth rate of the population in the same year, which is 7.9 ‰

in 2021, which is 11.3 ‰ lower than the mortality rate. This phenomenon can directly lead to a decrease in the share of the rural working-age population, even in absolute numbers（Hirooka，2006）[143].

Thus, increasing the life expectancy of the Ukrainian population and improving the health status of the population are the main goals of health care development in Ukraine. However, the current poor quality of health care services in Ukraine affects the degree of achievement of the goals of health care development in Ukraine in two main ways. First, the lack of medical investment has affected the infrastructure development in Ukraine. Ukraine's medical welfare is doing very well, but rural medical infrastructure and services are lagging behind. The new epidemic has increased the burden on Ukraine's medical system, and the war has made the situation worse, with many medical facilities damaged or destroyed, and Ukraine's medical treatment capacity is getting weaker and weaker, unable to meet the treatment needs of key populations, such as the lack of resources for emergency and critical care in rural areas, which is very detrimental to the rural population. This phenomenon is caused by the lack of state investment in rural health care. Therefore, one of the main tasks in the development of health care in Ukraine is to allocate health care funds to rural areas, promote the expansion and decentralization of high-quality medical resources, and improve the unequal distribution of medical resources.

Second, medical technology is not developed, which affects the rate of disease healing. Medical technology, refers to the diagnosis and treatment measures taken by medical institutions and their medical personnel for the purpose of diagnosing

and treating diseases, making judgments and eliminating diseases, relieving conditions, alleviating pain, improving functions, prolonging life, and helping patients recover their health[144].The development of medical technology is closely related to the health status of the population, and Yurii Safonov, Viktoriia Borshch, Oleksandr Rogachevskyi (2021) point out that there is a growing technological gap between the Ukrainian healthcare system and the healthcare systems of developed countries. This situation is dangerous because in today's world healthcare is one of the main platforms of technological progress and is becoming a major industry in the most developed economies[145].Figure 2-28 and Table 2-22 present the changes in the network of medical facilities and medical personnel in rural areas of Ukraine. The significant decrease in hospitals, outpatient clinics, doctors, and nursing staff has been very detrimental to improving medical technology, revitalizing medical care, and promoting medical reform in Ukraine.

Conclusions to section 2

Section 2 is the core content of this study, which focuses on the empirical investigation and quantitative analysis of the current situation of human resource management in rural areas of China and Ukraine. On this basis, the existing problems in rural human resource management of the two countries were summarized and the causes were preliminarily analyzed. The main conclusions are as follows.

1. Both China and Ukraine have a serious demographic burden in rural areas, but the manifestations of the population burden are very different. Demographic burden

(also called demographic pressure) is a state of non-adjustment of the population, i.e. a mismatch or incompatibility of the demographic system with the economic, social, resource and environmental systems. Demographic burden includes both overpopulation and under population; it includes both the pressure of population quantity on other systems and the pressure of population quality and population structure on other systems; it can occur in areas with high population growth rate and in areas with low population growth rate. It is a relative indicator of the degree of economic and social burden on the labor force of a society. China and Ukraine are two countries with completely different economic systems and demographic structures, and the manifestations of the population burden are very different. China's rural population burden is characterized by overpopulation, specifically in the form of a large rural population, a large surplus rural labor force, and a high burden of child support and old-age support; Ukraine's rural population burden is characterized by under population, specifically in the form of a low natural population growth rate and natural migration growth rate, an increasing number of rural people moving out of the countryside, and continued negative rural population growth.

2. There are two main means of rural human resource management: education and health care. In these two aspects, China and Ukraine also show completely different characteristics. In the final analysis, it is caused by insufficient investment in rural education and health funds. In addition, affected by income level and traditional ideology, rural families also spend less on education and health care. These factors have a great impact on the quality of rural human resources in China.

Comparatively speaking, medical welfare in Ukraine is better than that in China. Medical care in Ukraine is free and medical security is in place, so rural families spend much less on medical care than in China. In terms of education, Ukraine is very rich in educational resources, even reaching the level of "surplus resources". Although the country has a small population, it has a large number of schools, and the compulsory education period is longer than that of China. The education guarantee of rural residents is better than that of China.

3. Good rural human resource management can promote employment and increase income, but the employment structure and income levels in China and Ukraine are not ideal. In China, rural residents lack formal employment guidance, the rural industrial structure is unreasonable, and agricultural industrialization has not yet been formed, thus leading to a large deviation and a more serious imbalance between the employment structure and industrial structure of the rural population. In terms of income level, although the per capita disposable income of the rural population is increasing in absolute terms, the growth rate is decreasing year by year. In Ukraine, the employment rate of rural human resources over 15 years of age is showing a decreasing trend year by year, and the unemployed population is increasing year by year. In terms of income, the income of rural residents in Ukraine is dominated by wage income, which is basically similar to that of China, but unlike China, the share of agricultural income of the rural population in Ukraine is relatively low, while the agricultural business income in China accounts for a large proportion of the total income of rural residents, which is not unrelated to the fact that China is a large agricultural country. In addition, the overall income level of the

rural population in Ukraine is lower than in China, and the economic capacity is lower, and the Engel coefficient of food consumption can explain this phenomenon.

4. There are many problems in rural human resource management in both China and Ukraine. China is mainly manifested in: the migration of surplus rural labor is hindered and the population pressure remains high, insufficient investment in education and medical care makes it difficult to guarantee the quality of rural human resources, human resource management is inefficient and employment structure deviates from industrial structure. Ukraine is mainly manifested in: population control efforts are not in place and negative population growth continues to be serious, high unemployment rate of farmers, and low economic income and consumption level, poor quality of medical services and high population mortality.

SECTION 3

SUGGESTIONS ON RURAL HUMAN RESOURCE MANAGEMENT

3.1 Ideas and principles of rural human resource management

The development and management of rural human resources plays an important role in the national economic and social development, and the interest subjects involved are also relatively complex. Besides involving rural human resources themselves, also include the government, enterprises and individuals, which also play an important role in the process of rural human resources development and management. In order to manage rural human resources well, it is necessary to mobilize all parties, use human capital theory as a guide, clarify ideas, determine development goals and principles, define development tasks and management difficulties, and, based on the experience of human resources development in other countries and the current situation of human resources management in rural China and Ukraine, formulate a practical rural human resources development plan that meets the national conditions of both countries.

With the development of economy and social progress, the way of economic growth of each country is also changing, from relying mainly on the increase of physical capital and the quantity of labor force in the past to gradually relying on scientific and technological progress and the improvement of the quality of human resources[146].Therefore, at this stage, the development and management of human resources in rural areas of China and Ukraine should also adapt to the needs of the

new situation, take rural construction as the goal, establish the concept of "human resources as the first resource", deepen the reform of rural education, systems, social security and other work systems, create better environment and conditions, and continuously improve the quality of human resources in rural areas of both countries as a whole. Based on this idea, the paper identifies the objectives, principles and contents of human resource management in rural China and Ukraine.

Objectives of rural human resource management. Rural human resources are one of the indispensable elements for rural economic development and should achieve the unity of quality and quantity. At present, many countries in the world have entered a new period of adjusting economic structure, transforming the mode of economic development and promoting the simultaneous development of agricultural modernization, therefore, rural human resources development and management should also conform to this form, so that the structure, quantity and quality of rural human resources can adapt to the changing characteristics of the times.

*Quantity Objectives***.** Population size is the natural basis of human resources, and the analysis of the current situation of rural human resource management in China and Ukraine in Part II reveals that both countries have a relatively serious population burden. China's population burden is mainly manifested by a large population base and a large surplus rural labor force; Ukraine's population burden is mainly manifested by negative population growth and a small rural population. For this reason, it is important to consider the different demographic status quo of the two countries and set different quantitative targets when formulating rural human

resource development plans.

China's total population grows steadily from 2012 to 2021, from 1359.22 million in 2012 to nearly 141.26 million in 2021. Due to the large population base, China's per capita resource possession is much lower than the world average. For example, China's per capita arable land area is less than 1/2 of the global average, per capita water resources are about 1/4 of the global average, and the per capita possession of some large mineral resources such as oil and gas and iron ore is also significantly lower than the world average[147].In terms of changes in the number of rural population, in 2012, the rural population was 637.47 million, accounting for 46.90% of the total national population, and by 2021, the rural population decreases to 498.35 million, with the proportion decreasing to 35.28%, as shown in Figure 2-1. Although the total rural population is decreasing year by year, with the increase of agricultural input and technological progress, agricultural labor productivity has been greatly improved, and the rural demand for labor force has gradually decreased, and there is still a large number of surplus labor force in the countryside. Therefore, the primary task of China's rural human resources management is to control the number of rural population, actively transfer rural surplus labor force, and reduce the stock of rural human resources[148].

In the same period, Ukraine has a completely different demographic trend than China, with the total population decreasing year by year from 2012 to 2021, from 45,633.60 thousand people in 2012 to 41,588.40 thousand people in 2021. The number of the rural population is changing in parallel. In 2012, the rural population was 14,252.7 thousand people, accounting for 31.23% of the total population of the

country, and in 2021, the rural population decreases to 12,628.8 thousand people, decreasing its share to 30.37%, see Figure 2-22.From the perspective of natural population growth rate, the birth rate of rural population in Ukraine during 2012-2021 is far lower than the death rate, and the natural population growth rate presents a negative phenomenon with a serious trend year by year, as shown in Figure 2-25. Therefore, the primary task of rural human resource management in Ukraine is to actively introduce relevant policies to encourage the birth rate and increase the birth rate. At the same time, medical reform should be implemented to improve the medical level and social security and reduce the population mortality rate. In a word, increasing the total population is the top priority for Ukraine to implement rural human resource management in the future.

Quality Objectives. Quality objectives is the central task of rural human resources development and management, its content mainly includes two aspects, one is the development of human resources intelligence quality, the other is the development of human resources physical quality. In the second part, the paper investigates the cultural level and physical quality of rural human resources in China and Ukraine, and analyzes the management loopholes in the process of guaranteeing the quality of rural human resources in the two countries in detail. The analysis found that in terms of the cultural quality of rural human resources, the current level of education of China's rural population is low and the basic education facilities are weak, and there is a large gap with urban areas; although Ukraine has better overall educational resources than China, there is still an imbalance of educational resources between urban and rural areas. In terms of physical quality, rural residents

in both countries suffer from different degrees of diseases, but the mortality rate of the population in rural areas is higher than that in urban areas because the medical treatment capacity is weaker in rural areas and the conditions are not well treated. The main reason for the weaker quality of human resources in rural China and Ukraine is the insufficient investment in education and health care in rural areas. Therefore, the qualitative objectives of rural human resources management in China and Ukraine in the future are: to coordinate the efforts of all parties, to increase the investment in education and medical care in rural areas, to strive to improve the scientific and cultural quality, the quality of production skills and the physical quality of rural human resources in both countries, to make the rural human resources of both countries fit the development trend of modernization and industrialization of agriculture in their respective countries, to fit the needs of leapfrog development of rural economy, to adapt to the development of knowledge-based economy and economic globalization, and to provide talent assurance and intellectual support for sustainable, stable and healthy economic development.

*Structural Objectives***.** The structural objectives of rural human resources development and management is to change the unbalanced regional distribution, unreasonable age structure and unreasonable employment structure of rural human resources in two countries on the premise of realizing the quantity and quality goals of human resources, and finally realize the optimal allocation and full employment of rural human resources.

In terms of regional distribution, the regional distribution of rural population in

both countries is very uneven. At present, the rural population of China is mainly distributed in the western regions of Tibet, Yunnan, Gansu, Guizhou and so on. The rural population in these regions accounts for a relatively high proportion, especially 63.39% in Tibet, while Beijing, Shanghai, Guangdong and other regions are economically developed and the speed of urbanization is faster, and the rural population is relatively small. For example, Shanghai only has 10.69%, which is the least rural population in China. See Table 2-1.The rural population of Ukraine is mainly distributed in Zakarpattya, Ivano-Frankivsk, Rivne, Ternopil, Chernivtsi and other regions, and the rural population accounts for more than 50%, especially the rural population of Zakarpattya is 784,799. It accounts for as high as 62.78% of the total population of the region, and the level of urbanization is very low. The rural population of Donetsk, Luhansk, Dnipropetrovsk and Kharkiv is very small, accounting for 9.08%, 12.87%, 15.91% and 18.71% respectively, which is far lower than the national average. See Table 2-14.

In terms of age structure, the proportion of children aged 0-14 years old and the elderly aged over 65 years old in rural China is higher than the national average, especially the proportion of the elderly is 4.3 percentage points higher than the national average, and the burden of child support and elderly support in rural population is heavy, as shown in Figure 2.2. In rural Ukraine, the proportion of children aged 0-14 years old and the elderly aged over 65 years old is also high. For example, the proportion of children aged 0-14 years old in rural areas is 16.68%, while the national proportion is 15.16%. The proportion of people over 65 years old in rural areas is basically the same as the national level, but also slightly higher than

the national average level, as shown in Figure 2-23.

In terms of employment structure, from 2012 to 2021, there is a large deviation between employment structure and industrial structure of China's rural population, and the degree of imbalance is relatively serious. During the same period, the employment rate of rural residents over the age of 15 in Ukraine showed a year-on-year decline. In 2012, the employment rate of rural population was 62.7%, which rose briefly in 2013 and then fell rapidly to 46.7% in 2021, a decline of 16 % in just ten years, as shown in Figure 2-29. In terms of the industries employed by the population, the industrial composition of Ukraine's employed population is tertiary industry, primary industry and secondary industry, indicating that Ukraine's level of industrialization is relatively low.

To sum up, the goals of China and Ukraine in terms of population structure in the future are: to change the unbalanced distribution of rural human resources in the two countries through population migration and urbanization; The unreasonable age structure in rural areas can be alleviated by developing rural economy and improving rural social security level. By adjusting the industrial structure, increasing the training of farmers to improve the unreasonable state of rural employment structure, so as to fully realize the optimal allocation of rural human resources and full employment.

The principle of coordinated and sustainable development. At the core of sustainable development is the harmonization of PRED, that is, the coordination of population (P), resources (R), environment (E), and development (D).When the quantity, quality, structure and flow of human resources meet the requirements of

PRED coordination, human resources will promote sustainable development; otherwise, they will hinder it.For example, when the quantity of rural human resources in a region meets the needs of regional natural resources utilization and environmental protection, the quality of human resources meets the needs of social and economic development, and the flow and allocation of human resources coincide with the layout of social and economic development, then rural human resources will play a promoting role in the sustainable development of the region. And vice versa. The implementation of the development of rural human resources is to promote the coordinated development of rural human resources with natural resources, environment, economy and society, and gradually transform all the factors that are not conducive to sustainable development to adapt to the direction of sustainable development.

The principle of combining stages and levels. The development of rural human resources is a gradual process. Different regions have different levels of economic development and different requirements on the quality of workers. Even if the same region presents different characteristics of industrial structure in different stages of economic development, there will naturally be differences in the quality requirements of workers. Therefore, it is necessary to determine the focus of human resources development in different periods according to the economic development level of each region and the characteristics of the change of rural industrial structure, in accordance with the phased principle.

Rural production and rural economic construction need different types of agricultural talents, and various types of agricultural workers such as production and

operation type, professional skills type and social service type are indispensable types of talents for rural development. Therefore, the development and management of rural human resources should determine the number of different levels of human resources development according to the actual situation of each place, form a multi-level talent network of high, medium and low level, etc., and realize the structural goal of rural human resources development.

*The principle of combining repetitiveness and development***.** The so-called repetitiveness means that the development means and management approach implemented for the rural population are not successful at once, that is, the development of rural human resources needs to go through several repeated processes to achieve the expected development results. For example, education and training is an effective way to develop rural human resources, but when farmers receive training, they need to go through several repeated gradual processes to acquire knowledge and improve skills. It is impossible to transform a potential laborer into a real human capital with only one training, so the development and management of rural human resources should follow the principle of repeatability.

Human resources cannot achieve immediate economic benefits in the short term like material resources. Therefore, it is necessary to examine human resources development from the perspective of development, and take into account long-term interests as well as short-term interests. By constantly summing up experience, constantly adjusting development priorities, and improving development measures according to the time and place to ensure a fundamental improvement in the overall quality of farmers after a period of training and exercise, we will ultimately promote

the development of the rural economy.

*Grasp rural education to improve the quality of farmers***.** Education and training is the main way to develop rural human resources. One of the important tasks of rural human resources management is to address the current problems of rural education, take practical measures to actively promote comprehensive reform of rural education, implement the combination of agriculture, science and education, reasonably adjust the structure of rural education, and form a multi-level education structure combining compulsory education, vocational education, adult education and farmer training.At the same time, it is also necessary to reform the teaching content and teaching methods to make them not only fit the current economic form and employment needs, but also meet the future market needs in accordance with the development trend of the times, so as to ensure that rural human resources can be successfully employed. Only by improving the production level and vocational skills of farmers can the strategy of "science and education for agriculture" and "talents for agriculture" be put into practice and the effectiveness of education be truly improved.

Doing transfer work to rationalize population allocation. The quantity and quality of human resources differ from region to region. In order to make better use of the real human resources and develop the potential human resources, on the one hand, we should increase the adjustment of the rural economic structure and make full use of the rural human resources by reforming the existing land management system and adjusting the industrial structure, so as to realize the full utilization of people's talents and land[149].On the other hand, we should do a good job in

ecological migration, and guide rural human resources to achieve cross-regional mobility by introducing preferential policies, publishing employment information, and raising income levels, so as to ensure balanced development of urban and rural populations and optimize the rural population structure. In addition, for those rural areas where there is a shortage of agricultural talents and an unbalanced talent structure, we should actively attract foreign talents by optimizing the rural economic environment.

Improve infrastructure and provide institutional and policy safeguards. Systems and policies have security and support functions, which can both restrain people's behavior and provide guarantee for their behavior. Rural human resource development and management is a systematic project, which needs to be guaranteed by corresponding systems and policies; otherwise, rural human resource development and management is likely to be a formality. To ensure the sustainable and efficient implementation of rural human resource development and management, relevant systems and policies must be created and improved. For example, it is necessary to adjust the population policy according to the development of the times, formulate the policy for the benefit of farmers, improve the employment system and sound the social security system, etc., and strive to establish a fair, balanced and orderly environment for rural human resources development.

3.2 Experience of rural human resource development and management

Developed countries attach great importance to the education and training of rural human resources, and have a complete education and training system from basic education to vocational training and technical promotion. While emphasizing the combination of theory and practice, they attach great importance to the equal importance of production and life. In addition, they have legislation and corresponding incentive measures, professional management institutions and adequate funding guarantee. Germany, Japan and the United States are the representatives of the development and management of rural human resources in developed countries.

European model - Germany[150-151]. Germany is the main representative of the European model, the so-called European model refers to the family farm as the main agricultural business unit for agricultural production, the government, schools, scientific research institutions and agricultural training network of four organic combination, through a variety of ways to educate and train farmers[152].Germany has a very complete vocational education and training system, which is divided into agricultural vocational and technical schools, agricultural specialized schools, advanced agricultural specialized schools and higher agricultural universities.

Agricultural vocational and technical school. Agricultural vocational and technical schools are primary vocational education, administered by state and county education departments, with a three-year duration. Students in the first year mainly receive basic education, four days a week in the school to receive theoretical

professional training, one day to the enterprise internship. The second and third years are mainly practical exercises, focusing on the cultivation of students' hands-on ability and the ability to solve practical problems, so students need to receive professional skills training in enterprises. The training costs are jointly borne by the enterprise and the school, and the enterprise bears the high cost, about 3/4, which mainly includes the salary of the training personnel, the allowance of the trained personnel, and the cost of equipment wear and tear.

Agricultural specialized school. The main responsibility of agricultural specialized schools is to train rural human resources in operation and management. Farmers can choose to continue their studies in agricultural vocational and technical schools for three semesters after they finish their studies. The main learning content of these three semesters is the courses of operation and management. The first semester is from November to March of the second year, focusing on agricultural theory; In the second semester, the theoretical study time is short, only 20 days in school, mainly to receive practical education in enterprises, do general experiments; The third semester, which runs from October to March of the second year, focuses on education, psychology, business management, agricultural machinery, and taxation.

Advanced agricultural specialized school. The main task of advanced agricultural specialized schools is to train enterprise management personnel. After graduation from a specialized agricultural school, farmers work for a year and then can voluntarily choose whether to continue their studies in an advanced agricultural specialized school. Advanced agricultural specialized schools only have one year of

schooling, mainly studying business management and marketing. They teach in small classes, usually with no more than 24 students in a class. Students spend 60% of their time in class, and 40% of their time will be divided into different groups according to their major for discussion, practice and summary. After graduating from advanced agricultural schools, some students become state-approved "masters" or business owners, running or helping others manage a business.

Higher agricultural university. Higher agricultural universities, including junior college and undergraduate, are the highest level of vocational education and mainly train senior talents in agricultural scientific research. Higher agricultural University lasts 4 years, mainly studying applied technology, with emphasis on cultivating students' scientific research ability. After completing undergraduate studies, students may obtain a master's degree or continue to study for a doctoral degree.

East Asian model - Japan[153-154]. Japan is the main representative of the East Asian model. Under the East Asian model, the per capita cultivated land area of countries is very small, and it is difficult to form a large scale of land management like Europe. Therefore, the East Asian model often takes national legislation as the guarantee to implement multi-level, multi-directional and multi-objective education and training for farmers. Japan has a large population density and is a typical country with more people and less land. In the process of rural human resources development, the following management approaches are mainly implemented.

Establish a high-level education and training system. The Japanese government attaches great importance to the training of farmers. The training of farmers is planned by the state, and the agricultural departments at all levels of the government

and their related departments are responsible for the guidance and cooperation. In this training system, the education system is the main unit of farmer training. At present, agricultural education in Japan has formed five levels from high to low: undergraduate education, agricultural university education, agricultural higher school education, agricultural preparation school education and agricultural guidance education[155].

Implement the system of studying abroad and at home. In order to enable young farmers to learn advanced agricultural knowledge and scientific management methods, Japan implemented a system of studying abroad and at home. The National Association for the Education of Rural Youth and the International Association for the Exchange of Agricultural Practitioners were responsible for specific assignments, and the funds required were paid by the local government. The study abroad system began in 1952, when the International Agricultural Exchange Association sent young Japanese farmers as interns or visiting students to advanced agricultural countries in Europe and the United States to study and practice. Since 1963, the overseas study program has targeted young farmers under the age of 30 or those who are about to become farmers. The National Rural Youth Education Promotion Association has sent them to advanced rural homes and organizations for further study.

Carry out popular education on agricultural technology. It is a very important work to carry out agricultural technology popularization education in Japanese farmer education. It is mainly run by the Japanese central and local governments, with the participation of agricultural organizations and social groups such as the

Agricultural Improvement Popularization Center, the Agricultural Cooperative Council and the Agricultural Youth Club. According to the provisions of Japan's Agricultural Improvement Promotion Law, the central government and prefectures give technical guidance to farmers, and the agricultural improvement popularization Center is implemented in detail. Agricultural cooperative Counci also actively carries out agricultural education activities. Almost all counties have special training facilities, which not only provide accommodation, but also are equipped with modern audio-visual machines, playing an important role in agricultural technical guidance and agricultural knowledge popularization. The Agricultural Youth Club is a voluntary mass organization with members under 25 years old. It is an important group for learning agricultural technical knowledge in Japan.

North American model -- the United States[156-157]. The North American model has the characteristics of mechanized farming and scale management. They combine agricultural scientific research, agricultural education and agricultural technology popularization to form a complete whole. This model has greatly improved the overall quality of farmers[158].

Organize technical training. The federal government survey found that relying on university education and experimental research is difficult to achieve the purpose of fully developing rural human resources. The main reason for this is that some farmers live in poverty and cannot afford to fund education, and some farmers, although they have the funds to receive training in universities, cannot receive formal education due to job restrictions. Therefore, in order to improve the education level of farmers and improve the adult education and agricultural

extension service system, correspondence education, short-term training courses, lecture tour classes and rural "mobile library" came into being[159].

Establish an agricultural science and education system. The United States has spent 50-70 years in developing an agricultural science and education system. In addition to the establishment of experimental stations, extension stations and agricultural colleges in each state, the U.S. Department of Agriculture also has a special agricultural research agency and invests a high amount of money in research. At the same time, there are four "national" research centers and ten "regional" centers under the U.S. federal agricultural education and research institutions. This model has many advantages, first of all, it avoids duplication of research because universities and experimental stations are managed by each other; secondly, it combines teaching and research, so that students can be the first to perceive the latest research results and broaden their knowledge, so that they can actively deal with problems; finally, this model can turn research results into real productivity in the shortest possible time, so that farmers to quickly grasp the new research results and promote agricultural income growth.

Leveraging the role of non-governmental organizations. U.S. NGOs include both national and local social groups, professional social organizations, and international cooperative organizations. These social groups and organizations provide assistance to rural human resource development and management from political, legislative, economic, educational and professional guidance aspects respectively. For example, the National Federation of Farmer Cooperatives calls for the state to provide a favorable political and economic environment for rural

construction, the Agricultural Finance Council provides services to farmers from the financial aspect, the Cooperative Association is mainly engaged in cooperative education activities, and the Agricultural Office uses lobbying to provide welfare protection for farmers, etc.

Experience of rural human resource development and management in India [160-161]**.** To meet the demand for food from a rapidly growing population, the Indian government has focused on scientific research and agricultural education to improve agricultural labor productivity. At present, the Indian government has established a very complete agricultural education system and a network of agricultural vocational training. In general, agricultural education in India shows the following characteristics.

Close integration of agricultural education and production practice. In order to improve the skills and proficiency of agricultural workers and agricultural technicians, India places great emphasis on practical teaching, with schools having practice sites and requiring trainees to spend 50% of their time in production practices. The annual winter horticulture and vegetable training course for farmers, for example, generally lasts 21 days, or at least 4-5 days, and is designed according to the needs of winter horticulture and vegetable crop planting, with a very distinctive seasonality, relevance and effectiveness [162].

Combination of teaching, research and promotion. Indian higher agricultural education was established on the model of the American land-grant colleges, following the belief of the Indian Council of Agricultural Research (ICAR) that agricultural universities should "serve agriculture and rural society, with emphasis

on accelerating the solution of rural socio-economic problems." Teaching, research and extension are combined. Indian agricultural universities treat extension education and research equally and include them in the university's work plan. In terms of faculty, the vast majority of teachers are engaged in both teaching and research as well as extension work.

Combination of government, research sector and agricultural universities. The Indian agricultural extension system is relatively well developed, with both agricultural extension institutions established in agricultural universities and a national association for agricultural extension management. Agricultural extension education in India is shared between the government, the research sector, agricultural universities, and the private sector. In the case of the government, it is primarily the responsibility of three directorates, the Department of Agriculture, the Department of Agricultural Research and the Department of Rural Development, under the Ministry of Agriculture and Rural Development of the central federal government. Indian governments at all levels attach great importance to agricultural education, not only by allocating funds but also by giving concessions in terms of taxation and land use. In addition to the experimental fields on campus, schools have established regular contacts with farmers and conduct experiments on their land to show farmers the latest research results.

Experience of rural human resource development and management in Brazilian [163-164]**.** Brazil is one of the countries with high economic development rate in the world, and its national economy has an average annual growth rate of 7%. The Brazilian economy has been able to maintain a high growth rate for a long time,

which is inseparable from its efforts to develop human resources and science and technology [165]. Specifically, farmer education in Brazil presents the following characteristics.

Implementing a multi-level education management system. The Brazilian federal and state governments have decentralized leadership over education. The Presidency has a Council of Education, which is responsible for formulating national regulations for all types of education and approving syllabi and curriculum implementation. Each state government has a state education council to manage education in its region. The Ministry of Culture and Education is the federal government's functional agency in charge of education. It sets guidelines, determines standards, draws up plans, and supervises the implementation of all types of education in the country, and is responsible for higher education as well as vocational education and supplementary education for adults in the country. The state governments have state education secretariats, which are responsible for primary and secondary education. The federal universities have a "special autonomy system" and maintain their relative independence.

Diversification of educational structure. In response to the uneven socio-economic structure, Brazil has adopted a multi-form, multi-level and multidisciplinary approach to education. In terms of forms of education, Brazil has two types of education: formal and non-formal. Formal education includes primary, secondary, and higher education, while non-formal education includes various types of vocational education, adult supplementary education, special education, and literacy education. In terms of subject matter, both formal and non-formal education

include basic literacy and professional skills education, but with different emphases.

Emphasis on vocational skills training. In terms of the current economic and social structure, Brazil's industrial development is still at a medium level, and its employment structure is mainly labor-intensive, requiring a large number of laborers with intermediate skills. For this reason, secondary vocational education occupies a very prominent place in both formal and non-formal education, and in secondary vocational education institutions, Brazil attaches particular importance to the vocational skills training of trainees, both in terms of class schedule and training content, so that graduates can master a skill and do not consider university as the only way out.

Emphasis on the combination of theory and practice mode of operation. The typical representative of combining theory and practice is the German dual system, which is the "secret weapon" of Germany's economic take-off. The "dual" system refers to both the "school" and "enterprise" subjects, and also refers to the "student" and "apprentice" dual identity. Germany places great emphasis on the teaching concept of "enterprise as the main body and school as the secondary body", and attaches importance to practical courses and practical teaching, as well as the cultivation of students' hands-on skills. In addition, countries that advocate the combination of theory and practice also emphasize the timing of teaching, fully respecting farmers' wishes, so that teaching does not delay farmers' working hours as much as possible, which fully mobilizes farmers' enthusiasm to participate in training [166]. The talents trained under this mode of education have strong vocational ability and good hands-on ability, and are therefore widely welcomed by

the society.

Multi-channel absorption of school resources. The lack of financial resources is a challenge in the process of human resource development in many countries, and the adequacy of financial resources directly determines the quality of rural human resource development and management [167]. The previous analysis shows that Germany, the United States and other countries have basically established a comprehensive financial investment mechanism for rural human resource development, and have introduced preferential policies to attract private institutions to participate in the investment mechanism. For example, U.S. education is decentralized, a system that dictates that U.S. vocational education is no longer entirely dependent on the government for funding, but is more diversified, with education funding provided by the federal government and local governments such as states, as well as funding from social groups and private funding. For another example, Japan also does very well in the financing of school resources. Japan implements a school running mode that is complementary to social organizations such as the state, enterprises and the private sector. Under this mode, many well-known enterprises set up their own vocational schools and set up personnel standards according to their own needs, which not only cultivates professional and technical talents urgently needed by themselves, but also provides technical training for enterprises that purchase their own products and services. These enterprises can also receive tax incentives and subsidies from the government for running schools, and the competent departments of the industry provide help and guidance to these enterprises.

*Actively play the macro-control role of the government***.** Rural human resource development and management is generally market-driven, but Western economists believe that governments also play an active role in rural human resource development and management [168]. In both developed and developing countries, in Europe, Asia and North America, governments play a very important role in rural human resource development. For example, the development of education cannot be achieved without the exercise of governmental rights, and the solution of any major educational problem requires the intervention of governmental rights. Vocational schools, especially public vocational schools, depend on the government for the deployment of human and financial resources, and even private vocational schools need government involvement to better develop education, promote technology, and integrate resources [169]. In addition, the government has made important contributions to reducing farmers' burden and formulating agricultural support policies [170]. Therefore, the active role of government macro-control is one of the main reasons for the rapid development of rural economies and the high quality of farmers in the United States, Germany and Japan.

3.3 Basic model of rural human resource management

Policy-guided model. The so-called policy-guided model refers to the model in which governments at all levels should formulate policies according to the social development status and economic development characteristics in the process of rural human resources development and management to guide people and society out of a

difficult situation or to act collectively toward a certain goal. In this model, policy is the key, and it is authoritative and standardized, which stipulates the goals to be achieved, the principles of action to be followed, the clear tasks to be accomplished, the working methods to be implemented and the specific measures to be taken within a certain period of time, with very strong guidance and direction[171]. The human resource management experience of other countries also shows that the macro-regulatory role of the government should be actively played, so the policy-led model should become a model to be followed in the future rural human resource management in China and Ukraine, under which three specific measures can be taken.

Adjustment of population policy to effectively control the number of rural population**.** Population policy is a fundamental part of human resource policy, and is the policy measures taken by a country in response to its rapid population growth or the cessation of population growth or even negative growth. Specifically, it refers to a series of measures taken by the government to achieve predetermined economic and social development goals related to population, aiming to influence changes in fertility, mortality, population age structure, physical quality of population, cultural and educational level, moral and ideological level, as well as population migration and regional distribution [172]. Population policy includes fertility policy and migration policy. Different countries will adopt different population policies due to different population development conditions and will make appropriate adjustments according to the actual situation of population development [173].

China is currently implementing the fertility policy of "one couple can have

three children". Before this policy was introduced, China's population fertility policy roughly went through three stages of development. The first stage is the stage of encouraging birth policy: In 1949, the People's Republic of China was just founded. In order to restore economic development, a large number of labor forces were needed. Therefore, during this period, China actively encouraged birth, and a couple could have more than one child. The second stage is the stage of birth restriction policy. Under the guidance of the national fertility policy, China's population increased rapidly. In the 1960s, the population of China was nearly 700 million at the time of the second population census, which seriously did not match the level of China's economic development. Therefore, China began to restrict the birth of the population, and the population policy of "one child for each couple" was put into effect. The third stage, gradually open the birth stage. The implementation of the one-child policy has brought many drawbacks, such as the imbalance of gender structure and the prominent aging contradiction. For this reason, China has adjusted the population policy successively since 2014, from "every couple can have two children" to the full implementation of the three-child policy. Under the guidance of these population policies, China's population structure is gradually balanced. As far as we can see, China's natural population growth rate is relatively low and has been declining continuously in the past ten years, from 7.43 ‰ in 2012 to 0.34 ‰ in 2021, as shown in Figure 3.1. As can be seen from previous censuses in China, although the total population is increasing, the annual average growth rate is decreasing. Compared with the sixth China census in 2010, the annual average growth rate of the seventh population census in 2021 is only 0.53%, as shown in

Figure 3.2. These two sets of data show that China's population growth rate is slowing down and the population pressure is easing year by year, which is mainly due to the timely adjustment of China's fertility policy. In the future, China needs to continue to maintain this fertility policy, gradually relieve the pressure of overpopulation and promote the long-term balanced development of population.

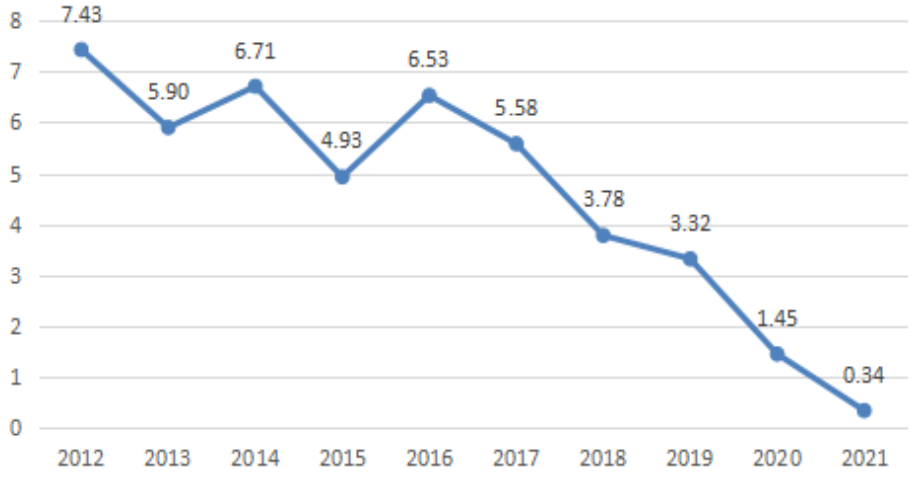


Figure 3.1 - Natural population growth rate of China from 2012 to 2021

Source: China Statistical Yearbook 2022

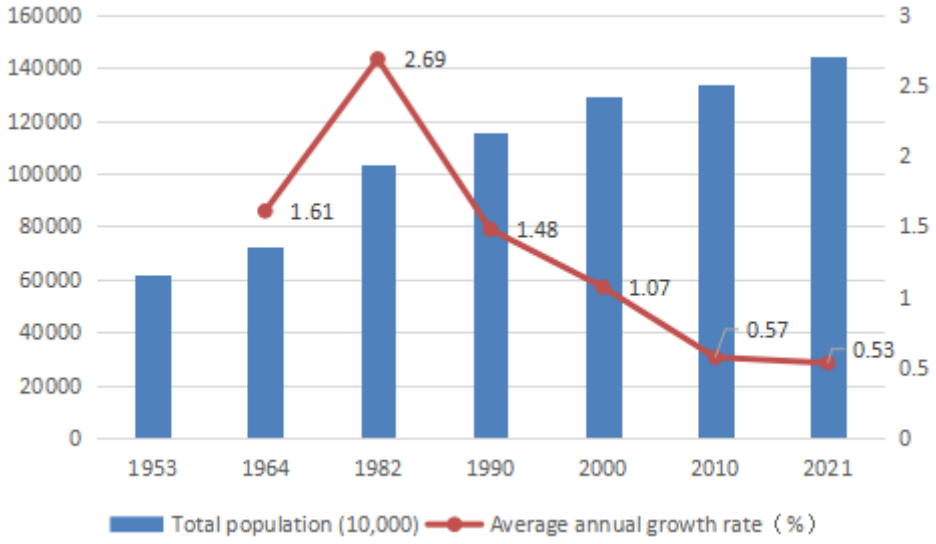


Figure 3.2 - Population censuses in China

Source: Bulletin of Census of China (1st to 7th)

From the perspective of population migration policy, China has vigorously

implemented the transfer project of rural surplus labor force in recent decades, which has achieved great results and greatly promoted the process of urbanization in China. However, some new problems have been encountered in the process of the transfer of rural surplus labor force, that is, with a large number of high-quality rural young workers moving out of the countryside, the overall quality of rural employees began to decline, which seriously affected rural construction and rural economic development. To this end, China timely adjusted the population migration policy, implemented the rural revitalization strategy, and encouraged high-quality workers to return to the countryside, but the effect of the implementation of the policy is not obvious, the ability of rural employment is still insufficient. Therefore, on the basis of China's urbanization level has achieved good results, the future focus of China's human resources development should be shifted to rural areas, continue to introduce relevant preferential policies, increase rural investment, improve the level of rural infrastructure construction and wage and welfare, gradually enhance the attractiveness of rural areas, and attract more high-quality workers to invest in rural construction.

Different from the overpopulation in China, Ukraine has a serious shortage of population, the death rate is greater than the birth rate, and the natural growth rate of population increases negatively and has a serious trend year by year, especially in rural areas, as shown in Figure 3.3. In this case, the urgent task of Ukraine's rural human resource management is to adjust the fertility policy and increase the birth rate. At present, Ukraine has also introduced many encouraging policies in population fertility, but the birth rate is still very low, and the population crisis has

not been alleviated. The main reason is that the Ukrainian government has not really stimulated the fertility desire of farmers. Therefore, the Ukrainian government needs to adjust the population fertility policy and take stimulating the fertility desire of farmers as a breakthrough to increase the birth rate. There are many factors affecting the fertility intention of the population, the most important of which is high economic pressure and lack of energy. Therefore, the Ukrainian government needs to increase the inclusiveness of fertility policy, promote the integration of fertility policy with economic and social policies, reduce the cost of family fertility, parenting and education, and release the potential of fertility policy. Specific efforts can be made from the following aspects: lowering the marriage age; Extended maternity leave; Reducing the burden of childbirth and education; Give birth subsidies and tax incentives, through these measures to enhance the willingness of farmers to give birth, improve the birth rate. At the same time, the mortality rate in Ukraine is very high, even much higher than the birth rate. One of the main reasons is the relatively poor medical conditions in Ukraine. Therefore, increasing the investment in medical care and reducing the mortality rate is also an important measure to ease the pressure on the rural population in Ukraine.

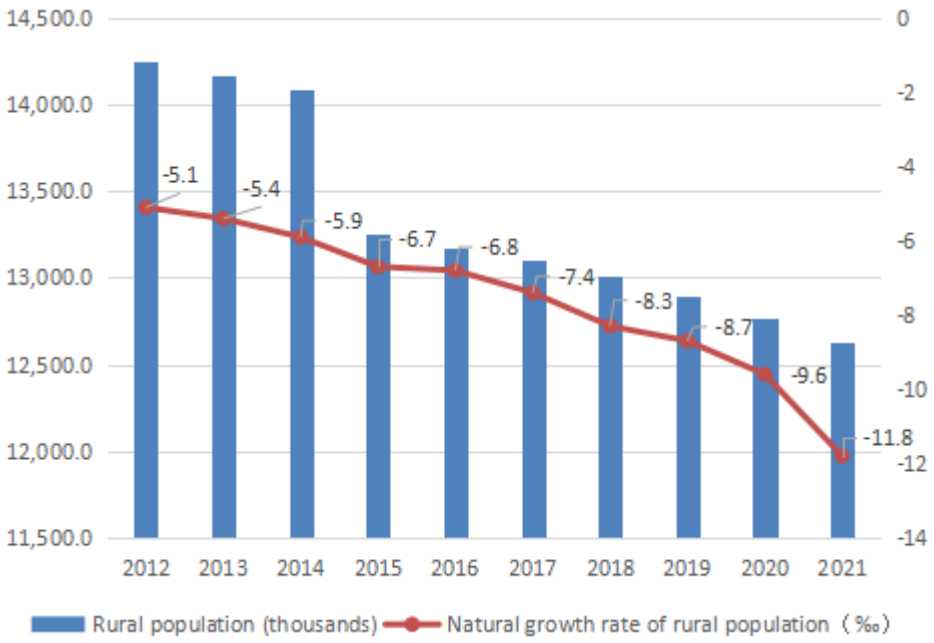


Figure 3.3 - Rural population and natural growth rate in Ukraine from 2012 to 2021

Source: State Statistics Service of Ukraine

Labor migration is another major reason for the decrease of Ukraine's population. After independence, the economy of Ukraine has been depressed for a long time, with high unemployment and low income for the common people. Many Ukrainians seek high-paying jobs abroad and never come back. The economic malaise has pushed more Ukrainians out of the country to make a living, and Ukraine is trapped in a vicious cycle of shrinking population. In order to alleviate the crisis of insufficient population, the Ukrainian government should adjust the migration policy in addition to the fertility policy, such as increasing the domestic income level, reducing prices and other encouraging policies to attract farmers to stay in Ukraine to work. Restrictive policies can also be adopted to reduce the employment of Ukrainian farmers leaving the country, such as limiting or

prohibiting skilled workers from leaving the country to work, and limiting the age and length of employment of those leaving the country.

*Adjust investment policy and optimize the economic environment to absorb rural human resources***.** From the experience of other countries in rural human resources management, the government plays an important role in the process of rural human resources management. One of its tasks is to strengthen the support for rural human resources development and play the role of the government as the main body of investment. In China and Ukraine, inadequate investment in education and health care and poor rural infrastructure capacity hamper the improvement of the quality of human resources. In addition, along with the improvement of China's urbanization level and the transfer of rural surplus labor force, the comprehensive quality of China's rural labor force is low, which seriously affects the pace of rural development. Therefore, absorbing migrant workers to "return" and attracting high-quality workers to work in rural areas is a key point in the current development of rural human resources in China. From the perspective of Ukraine, the number of Ukrainian rural population emigrating, especially to other countries is very large, one of the main reasons is the low level of economic income in rural areas. Therefore, increasing government investment, optimizing rural education conditions, medical conditions and infrastructure conditions, and improving farmers' income are the key to the effective implementation of rural human resources development and management.

Increasing government investment is not only in the amount of investment, but more importantly in the way of investment. Increasing the amount of government

investment can relieve the economic pressure of rural human resources development and management, so that the existing rural labor force can realize self-value-added as soon as possible. But if the way of investment and investment is not reasonable, also can not get the expected investment benefits. In terms of investment in education, some preferential policies are introduced for rural laborers who are willing to participate in education and training, such as subsidies for farmers' training, and farmers' trainees can obtain corresponding employment opportunities and labor remuneration with qualification certificates or training certificates. The reason for such a proposal is that some farmers lack training funds, and even if they are willing to train, they will give up the opportunity to receive training due to economic poverty Therefore, subsidies can greatly increase the number of farmers who receive training. In addition, the finance at all levels should adjust the expenditure structure and arrange sufficient funds in the finance for workers' training and implement it as a long-term system. Tax relief for social forces and labor-using enterprises that organize farmers' education and training. Various training funds for farmers should be centrally managed and scientifically deployed for use to maximize the utility of financial resources. A fair, impartial and open supervision and inspection body can also be established, so that the government's financial expenditure can be traced and the flow of funds can be prevented from being unclear, so that the training funds can really be implemented to the farmers.

In terms of health care investment, the current lack of investment in health care in rural areas of China and Ukraine has left most rural health institutions in a dilapidated state, with poorly paid medical personnel and a serious loss of primary

health care professionals, which has seriously affected the process of rural modernization and constrained the pace of rural economic development. This makes the basic human capital investment, which should be equally enjoyed by urban and rural residents, benefit only the urban population and hardly take into account the vast number of farmers, thus making it difficult to improve the overall quality of the vast number of farmers [174]. In addition, on the whole, China's medical welfare is worse than Ukraine's. Ukraine basically implements a universal free policy, but many Chinese residents do not have medical insurance and have to pay for their own medical expenses. The phenomenon of "poverty caused by illness and return to poverty due to illness" is very common. Rural medical security seriously lags behind the needs of farmers, which directly affects the improvement of the physical quality and health of the rural labor force. Therefore, China and Ukraine need to increase medical investment in rural areas, improve the level of rural basic medical facilities, raise the salaries of rural health care workers, and reduce staff turnover. Strengthen the construction of rural medical and health teams, improve the level of medical care of rural health personnel, and provide medical security for rural human resource development and management. In addition, in terms of medical investment China should also popularize the rural medical insurance system and improve farmers' medical welfare so that farmers have money to see a doctor and can afford to see a doctor.

To attract high-quality workers to work in rural areas, in addition to promoting further improvement of public services such as education, health care and social security, the government should also focus on developing rural public infrastructure,

further improving the level of rural public services and creating a clean and tidy rural living environment. In addition, the government should strengthen preferential policies to attract all kinds of talents to start businesses in rural areas. For example, by taking measures to increase employment subsidies, raise farmers' income, lower the price level in rural areas, give financial support, and implement supporting services to guide laborers who have left home to start their own businesses, improve the satisfaction and happiness of residents living in rural areas, and make high-quality laborers willing to stay in rural areas, thus solving the problem of scarce and serious loss of rural talents.

*Introduce employment policies to promote full employment of the rural population***.** The employment policy that is commonly implemented in many countries is "workers' independent employment, market-regulated employment, and government promotion of employment", in which the government plays a very important role in the employment of the population. In China, there is a lack of formal employment guidance for rural residents, and the employment structure and industrial structure of the rural population deviate greatly from each other, and the degree of imbalance is more serious. In Ukraine, the employment rate of rural human resources over 15 years old shows a decreasing trend year by year, and the unemployed population is increasing year by year. To promote the full employment of the rural population, it is indispensable for the government to introduce relevant preferential policies.

Employment policy refers to a series of programs and measures developed and implemented by the government to solve the employment problem of workers, and

is a fundamental tool to ensure the employment of rural human resources. China and Ukraine can make efforts in the following aspects. First, the state should implement employment assistance policies such as social insurance subsidies, guaranteed loans for business start-ups, tax and fee reductions, internship subsidies and one-time employment absorption subsidies, and make efforts to reduce employment and business start-up costs for farmers and graduating university students by conducting small-scale and specialized offline matchmaking activities and enhancing information matching between farmers and employment units. For those who have difficulties in independent employment and entrepreneurship, they can reasonably develop a number of temporary public welfare positions for unified placement. Second, improve the intra-regional labor collaboration mechanism, guide cities with better economic bases to sign labor export agreements with rural areas with poorer employment, develop jobs through multiple channels through employment assistance bases, entrepreneurship incubation bases, and entrepreneurship parks for returning to the countryside, develop and grow the intra-regional labor market, and guide farmers to transfer to non-agricultural industries in their local areas. At the same time, we organize various types of special recruitment, build government platforms for farmers and college graduates to find jobs, improve the public employment service system, and enhance their employment opportunities. Strengthen the construction of rural human resources brands, focus on labor-intensive industries and other areas with high employment capacity, tap the potential within agriculture, create human resources brands with local characteristics, guide the rural population to develop industries such as special breeding, food

processing, rural e-commerce and rural tourism, and develop rural employment positions in depth.

The unemployment rate of rural human resources over 15 years old in Ukraine is relatively high. The root cause of unemployment is the low level of social and economic development in Ukraine, and the society cannot provide adequate employment opportunities for farmers. Therefore, the fundamental means for the government to ensure the full employment of farmers is to promote the rapid development of rural social economy. Economic development increases employment, and economic stagnation or regression reduces employment. Therefore, the key to fundamentally solve the problem of employment is to promote the development of rural social economy. Under the market mechanism, Ukraine can adopt the following policies and measures to promote employment, for example, improve relevant laws and regulations, clarify government functions, and ensure the employment of farmers; Implement proactive fiscal policy to boost economic growth and create job opportunities for farmers; Providing employment services through the talent market or labor market; Establish a labor reserve system and solve employment problems from multiple perspectives. Through these measures, the serious problem of unemployment in rural Ukraine can be alleviated to a certain extent.

In short, as an important part of the national economic policy, employment policy plays a powerful role in regulating the social economy and politics. Through the formulation and implementation of effective employment policies, the government can not only create employment opportunities and ensure the full

employment of the labor force, but also promote the rational development and efficient utilization of human resources, so that the labor force can flow reasonably under the market mechanism. In addition, the effective implementation of government employment policy can also play a regulating role in the balance of social supply and demand. In the context of economic growth and the continuous emergence of new industries, the market has a large demand for labor. In this case, industrial policies can guide workers to find jobs and effectively avoid economic growth stagnation caused by insufficient labor supply. In the case of economic depression, labor supply is bound to exceed demand, there is a high unemployment rate. In this case, the labor force can be integrated through the implementation of the labor reserve system to improve the quality and skills of the labor force, so as to prepare the labor force for the next round of economic growth and meet the demand of the future labor market. Therefore, regardless of economic growth or economic depression, the effective implementation of employment policy can not only achieve a relative balance of labor supply, but also promote the balance of the total social supply through the balance of labor supply.

Education and training type model. Potential human resources can only form real human capital through human capital investment through education and training, which is one of the fundamental purposes of human resources development and management [175]. In rural construction, farmers are the main body and rural human resources are the key. Transforming rural labor force into human capital is a practical move to promote the high-quality development of rural areas and

agriculture, and the realization of this task mainly depends on education and training, which is the most important way to transform rural human resources into human capital [176-177]. The following three measures can be taken.

Increase farmers' vocational skills development and enhance their employability. No matter what kind of education and training, the final result is to increase farmers' vocational skills and improve their employability. Therefore, farmers' education and training should build a series of professional course mechanism with vocational skills as the main line and project courses as the theme, so as to realize the mutual integration between enterprises, training and employment positions and improve farmers' employability by classification and level [178].

In terms of the form of education and training, to improve farmers' vocational skills, we need to first strengthen national education [179]. National education is fundamental, and strong measures must be taken to ensure that all people receive the basic education required by the state, while vigorously improving the quality of education so that the new generation of students has the high quality required in the knowledge-based economy. In line with this, it is necessary to improve the quality of teachers, improve the curriculum, emphasize the modernity of teaching materials and methods, further guide social forces to run schools, and vigorously promote the reform of the higher education system to meet the needs of society for various types of high-level human resources, etc. The key to upgrading farmers' vocational skills is still to be achieved by strengthening vocational and technical education, striving to achieve formalization, practicality and quality of vocational and technical education and training, so that vocational and technical education can play a greater

role in the development and utilization of rural human resources [180].The development of vocational and technical education should adhere to market orientation and focus on relevance and timeliness [181]. We should further improve the vocational skills qualification appraisal work and the vocational qualification certificate system, and strictly control the "employment threshold" [182]. In addition, in recent years, under the economic restructuring and urbanization development, special attention should be paid to vocational skills training for laid-off workers, urban migrant workers, and those left behind in rural areas.

Re-employment training should be done for laid-off workers. Re-employment training refers to the training of vocational skills, professional ethics and professional discipline for workers who have had one work experience after they have been unemployed or laid off. Re-employment training is an important measure to help workers improve their re-employment ability and thus realize re-employment as soon as possible [183]. The forms of re-employment training should be diversified, short-term training, medium-term training and long-term training can be set, and laid-off workers can choose flexibly according to their actual situation. The content of re-employment training mainly includes vocational guidance, vocational skills training and entrepreneurship training. There are also many ways of re-employment training, for example, the state should mobilize the whole society to actively participate in and implement re-employment training programs, provide training services for laid-off workers, and for education and training units that have the conditions and undertake re-employment training tasks better, as determined by the labor department, they can be designated as

re-employment training units and given corresponding support. Also strongly encourage and support industry departments and enterprises to do a good job of laid-off workers to change training, to prepare for industrial restructuring or the upcoming merger and bankruptcy of industries and enterprises, to increase the training of in-service workers, unemployment risk, competition awareness education and a variety of new skills training, to prepare the conditions for their career change. At the same time, the state should formulate corresponding policies to link the use of training funds to the performance of training institutions, and also adopt training qualification, training project bidding, etc. to make training more responsive to market demand and achieve better training results [184].

Job training should be provided to migrant workers in cities. Farmers have lived in the countryside for a long time, are not familiar with the urban environment, and lack awareness of political laws and urban security. Training them in this aspect of knowledge will be of great help for them to better integrate into the city and alleviate the public security and environmental protection problems in the city. However, the focus of the training is still vocational skills training. The vocational training of rural laborers for migrant work is generally highly targeted. Specific professional and technical ability training is provided according to the needs of the workers. It can greatly enhance the competitiveness of rural labor force in the labor market and talent market.

We should focus on the training of rural stranded personnel in agricultural production knowledge and agricultural extension, and strive to cultivate them into new farmers with more prominent professionalism, better comprehensive quality

and higher income[185]. For the cultivation of such personnel, it is necessary to firstly determine the cultivation target, and secondly, to clarify the investment subject, on the basis of which education and training can be carried out. There are two important indicators for the selection of the cultivation target, one is to have a strong willingness to train, and the other is to have a good learning ability, one of which is indispensable. The mode of cultivation can be a combination of classroom teaching and distance learning. Before distance learning, big data can be used to analyze massive data such as farmers' education level, age distribution, regional distribution, regional agricultural development characteristics, and the number of working population to better understand farmers' personalized cultivation needs as well as the market supply and demand for talents, so as to provide more targeted cultivation programs for the implementation of distance learning.

Building rural learning organizations and strengthening the leading role of rural community education. Community education is a variety of educational activities for all citizens of the community using the educational and cultural resources of the community, with the goal of promoting human and community development in the community. Community education is a product of social development and changes of the times. The practical experience of international and domestic community education clearly shows that only by implementing community education oriented to community members and based on the principle of promoting human development can we meet people's different educational needs[186]. Community education has great flexibility and adaptability, and has shown the advantages it has in the development of vocational education and transfer training.

In rural areas, the village committee is a specific community organization, an important carrier for farmers to exchange ideas and learn culture, integrating management, services and cultural activities, and a breakthrough, expansion and extension of single school education. It has very powerful functions, such as implementing open schooling, so that residents of the same village can share educational facilities; organizing various cultural activities, spreading knowledge and science and technology, and improving the cultural quality of residents; promoting the development of various types of education, and realizing the integration of school, social and family education; participating in corporate education, and jointly building and developing the corporate community environment. Based on such functions of community education, China and Ukraine can take the following measures to develop rural human resources. First, understand the educational needs of the unemployed population in their jurisdictions and create conditions to give targeted training. Along with the economic system reform and industrial structure adjustment, more and more laid-off people are in urgent need of transferring to new jobs, and coupled with the continuous influx of new working people into the labor market, the social employment pressure is increasing. To this end, communities should keep abreast of the employment intentions and employment needs of the unemployed population under their jurisdiction, hire experts and technicians to conduct knowledge and skills lectures in the community, or purchase relevant online courses and distribute teaching materials to organize joint learning for the unemployed, so as to strengthen their vocational skills training, enhance their employability and realize re-employment as soon as possible.

However, it is important to note that the content of the courses and training materials should be simple and easy to understand, so that farmers can understand and learn at a glance, and can use them to become rich. Second, hold regular learning experience exchange meetings. The community can regularly invite village business leaders and agricultural leaders to teach farmers about their successful experiences in planting, breeding, fishing, horticulture and flowers, etc. Since these successful people are familiar people around the residents, their successful experiences and role models have stronger persuasive and motivational values, which can help farmers acquire agricultural knowledge and grasp scientific and technological information faster and more effectively. Thirdly, the community can also absorb more high-quality educational resources through the acquaintance effect. For example, college students in the jurisdiction can invite professors from colleges and universities to give lectures in the community to train farmers in modern agricultural technology and planting and breeding technology, help farmers realize scientific farming and breeding, and at the same time answer questions and doubts that farmers are concerned about. In this way, not only can education cost be saved, but also the most advanced agricultural knowledge can be learned by farmers. Break the traditional production idea, broaden the farmer's employment idea.

In short, it is a very important measure in the education and training mode to build a positive learning organization through the community or village committee and strengthen the guiding role of rural community education. The community or village committee can make use of various educational resources to pass on social culture, teach advanced knowledge and skills, stimulate the potential ability of

residents in the jurisdiction, improve their cultural quality and quality of life, meet their needs at different levels, and promote their rapid growth.

*Adjusting education structure and building a lifelong education system for farmers***.** Today's society is a learning society, where the cycle of knowledge renewal is shortened, the frequency of innovation is accelerated, and the demands on human quality are increased, making continuous learning an urgent need for individuals, organizations, and society. The same is true for rural human resources, and in response to the new demands on farmers in the new era, many countries have launched continuing education and lifelong education. The so-called lifelong education is the sum of all kinds of education that people receive in all stages of their lives, including all stages and modes of the education system, including school education and social education, formal education and non-formal education[187]. The vocational and technical education and continuing education in Australia has broken through the limitation of traditional one-time education and established a multi-cycle education model of "learning-work-re-learning-re-work"[188-189], which is of great significance to the promotion of German national economy.

Lifelong education has two main characteristics, the first is lifelong, which is the most important feature of lifelong education. It breaks through the framework of formal schools and views education as a continuous learning process throughout an individual's life, including both formal education and non-formal education. The second is flexibility, which is expressed in the fact that anyone who needs to learn can receive any form of education anytime and anywhere, and the time, place, content and way of learning are all decided by individuals. People can choose the

learning that best suits them according to their own characteristics and needs. Based on these two characteristics of lifelong education, rural human resource training can be implemented in the following three ways.

First, increase investment in rural continuing education. For example, the state subsidizes farmers' training accordingly, and farmers' trainees can obtain corresponding employment opportunities and labor remuneration with their qualification certificates or training certificates. Second, further strengthen post-employment continuing education. In order to further enhance the intrinsic effectiveness of rural human resources and keep them updated with the knowledge and skills required for industrial restructuring and agricultural science and technology progress, it is necessary to vigorously strengthen the continuing education of human resources on the job so that each individual human resource can generally receive lifelong education. From the perspective of social development, such a cycle of "learning-working-learning" is extremely necessary because it not only enables the knowledge structure of human resources not to become obsolete due to the rapid development of technology, but also enables human resources to continuously update their knowledge, enhance their skills and improve their overall quality. However, it should be noted that the training content should be set to match the real needs of farmers and regional industrial development planning, so that the supply and demand can be matched and the learning can be applied, and farmers can truly feel the close connection between training and agricultural production[190].Third, community education is one of the ideal ways to build a lifelong education system. Community education better fits the development

concept of lifelong education in terms of educational continuity, social adaptability, diversity of educational means, and cooperation between education and various sectors of society, and has an important role in building a lifelong education system that cannot be underestimated. From early childhood education to senior education, cultural education to vocational education, the role of community education is irreplaceable. The paper has already made a detailed analysis of the guiding role of community education, so I will not repeat it here.

Institution guarantee model. Institution refers to the sum of a series of customs, morals, laws, regulations, etc. that are unified within a specific society and regulate social relations between people [191]. It includes the informal system recognized by the society and the formal system stipulated by the state [192]. The institutional guarantee model is the various institutional systems established on top of the various systems to guarantee the smooth implementation of rural human resources development and management [193].

Standardize the mechanism of population movement and improve the system of rural human resources market system. Population mobility is an inevitable topic in rural human resource development and management. The so-called population movement is a variety of short-term, repetitive or cyclical movements of population between regions. Depending on the timing of population movements, population movements can be classified as long-term, temporary, cyclical and round-trip movements. Population mobility exists in any country and region [194]. A moderate scale of population mobility can boost regional economic growth and increase population income level, but excessive population mobility can cause imbalance of

population spatial structure and lead to social instability [195]. Therefore, in the development and management of rural human resources, it is necessary to regulate the mechanism of population mobility, improve the system of rural human resources market system, improve the organization of rural human resources mobility, transform the disorderly free mobility into orderly mobility, and reduce the blindness of population mobility [196].

After China vigorously implemented the policy of transferring surplus rural labor, China's urbanization level has increased significantly, the number of rural population has decreased year by year, and many rural areas have even experienced a lack of rural labor resources. Therefore, China has now shifted the focus of rural labor development to the implementation of the rural revitalization strategy, and gradually guided the orderly return of rural labor to rural areas. Specific measures can be taken as follows: First, strengthen preferential policies to attract all kinds of talents to rural entrepreneurship. By taking measures such as creating an environment, financial support and supporting services to guide the labor force to return to their hometowns to start their own businesses, and encourage migrant workers, capital and talents to return home to set up economic entities. Advocate powerful entrepreneurs with advanced technology to promote the economic development of their hometowns and contribute to the construction of new rural areas. Second, strengthen non-agricultural development. On the one hand, promote the construction of agricultural industrialization, promote industrialized operation, and promote the transfer of labor force to the agricultural field. On the other hand, it promotes the pace of industrialization and cultivates new industrial industries by

carrying out a series of activities such as investment promotion to enhance their ability to absorb rural labor. Thirdly, to guide the local transfer of rural labor force and reduce the negative impact on rural areas caused by the foreign movement of rural labor force.

The main reason for the decline in Ukraine's population is labor migration. The economy has been in the doldrums for a long time since independence, with high unemployment and low incomes. Many Ukrainians have chosen to work abroad in order to earn a living, and many have left the country and never returned. In addition, the mortality rate in rural Ukraine is currently much higher than the birth rate, and it is getting worse every year. As a result of these two factors, the total number of Ukrainians in the countryside is decreasing year by year, which seriously affects the development of the Ukrainian rural economy. For this reason, in addition to adjusting the population's fertility policy, improving the level of medical care, and trying to increase the fertility rate and reduce the mortality rate, Ukraine needs to adjust the mechanism of population mobility, increase the number of rural workers, and reduce the number of emigrants. Specifically, Ukraine can take the following measures, such as attracting farmers to stay in Ukraine for employment through encouraging policies such as increasing domestic income levels and lowering prices. After all, the main purpose for farmers to work abroad is still caused by low domestic income, so raising income and lowering prices are fundamental measures to attract Ukrainian farmers to stay in the country. In addition, Ukraine can also reduce the number of Ukrainian farmers leaving the country for employment by introducing restrictive policies, such as limiting or prohibiting technicians from

leaving the country for work, limiting the age and length of employment of workers leaving the country, etc. This can, on the one hand, reduce the number of workers leaving the country and ensure the adequacy of rural workers, and more importantly, protect Ukraine's intellectual property rights, after all, technicians make an outstanding contribution to the country's economic construction, and the loss of too many technicians will inevitably lead to the outflow of technology, thus affecting the level and speed of domestic economic and social development.

Formulate rural human resources development plan and improve rural human resources management system. The work of rural human resource management is very complex and involves many interest subjects. To manage rural human resources well, it is necessary to mobilize all parties, take human capital theory as the guide, clarify ideas, determine development goals and principles, define development tasks and management difficulties, and make a practical rural human resource development plan on the basis of a full understanding of the current situation of rural human resource management. Rural human resources development planning refers to the formulation of a plan to guide and regulate the development of rural human resources according to the sustainable development trend of a certain period of time in a rural area, so that the quantity, quality, structure and allocation of rural human resources can be coordinated with the resources, environment and economy of the area. It includes the forecast of rural human resources, education and training, reasonable allocation, social secur [197]. Rural human resources development planning is both a fundamental condition for sustainable rural development and a need and guarantee for the realization of the overall benefits of

rural human resources development.

China and Ukraine need to follow the principles of equity and fairness in developing rural human resource development plans. Equity and fairness are the basis for sustainable development. Human resource development in rural areas requires narrowing the gap between different groups of people in rural areas, achieving equity in education and social welfare, and equal access to education rights and social welfare for all. Rural residents should have the same access to basic education and basic public health services as urban residents, and rural residents in underdeveloped and underdeveloped areas should also have the same access as rural residents in developed areas.

In addition, there are certain procedures that must be followed in China and Ukraine when developing rural human resource development plans. First, the guiding ideology of the plan should be determined. In addition to the basic guiding ideology of the rural human resources development plan that serves the overall goal of rural socio-economic development, it is also necessary to establish specific guiding ideology in accordance with the different characteristics of rural areas in China and Ukraine to ensure the direction and relevance of the planning work, so that the plan can better guide the actual work and promote the development of rural human resources. Second, determine the objectives of the plan. The objectives of rural human resources development planning include scale objectives, hierarchical objectives, structural objectives and layout objectives. Each goal is based on the results of rural human resources projection in the early stage, and combined with the specific situation of rural human resources development and the possible degree of

attainment, the near-term, medium-term or long-term goals are determined respectively. Third, analyze the basic current situation. On the one hand, the current quantity, quality, structure, distribution and social security of rural human resources are classified and described; on the other hand, the current situation of rural human resources is analyzed qualitatively and quantitatively to find out the existing problems. This is the practical basis for proposing the objectives of rural human resources development planning and its countermeasures. Fourth, to propose countermeasures for human resources development. On the one hand, it is necessary to propose countermeasures and measures for the realization of the near-term goals in response to the problems existing in the current situation of rural human resources; on the other hand, it is necessary to propose forward-looking strategies and measures for the future development of rural human resources with regard to the medium- and long-term goals of the plan.

In conclusion, the purpose of rural human resources development planning is not only to improve the overall quality of rural human resources, but also to emphasize the equity and fairness of rural human resources development and the sustainable development of rural human resources. The rural human resource development plan enriches the connotation of rural human resource development, expands its extension, and systematizes, rationalizes and matures the development and utilization of rural human resources.The development of a complete and realistic rural human resource development plan can fully guarantee the perfection of the rural human resource management system, which is an essential link and an important element in the process of rural human resource development and

management.

*Improve the rural social security system and the rural medical and health service system***.** The prerequisite for human capital development is a healthy body, and a healthy body is the basic element to ensure the success of human capital development [198-199]. The development of rural health care can ensure the steady improvement of the physical quality of rural human resources and escort the development of rural human resources.

At present, China's rural medical and health care equipment is rudimentary, the working environment is very unsatisfactory, the loss of technical personnel is serious, the comprehensive quality of existing medical and nursing staff is low, and the level of rural medical security is seriously disconnected from the needs of the public, which brings unnecessary economic losses to farmers' families. In terms of rural health costs, although rural health costs are increasing year by year, the ratio of rural health costs to total national health costs has stagnated, remaining at around 23%, which is very unfavorable to safeguarding the quality of rural human resources. In addition, there are many rural residents who lack the awareness of healthcare investment and do not have medical insurance, thus directly affecting the physical quality and health of the rural labor force. Therefore, in the future, China needs to make efforts to improve the rural social security system and actively improve the rural medical and health care service system. Efforts can be made in three aspects. First, increase investment in rural medical care [200]. On the one hand, the government will increase investment in rural medical care, and on the other hand, it will attract private investment in the medical industry. On this basis, the

construction of rural medical facilities should be optimized, the salary level of medical staff should be raised, and the turnover rate should be reduced. Second, speed up the construction of modern hospitals. Carry out the reform of medical separation and health center property right system, carry out the reform of stock system. Taking the state-owned assets as the preferred stock of the state in the health center, it has the right to distribute dividends but not the right to make decisions; According to the will of employees, state-owned capital should be gradually withdrawn from the medical field, and a corporate governance structure of modern enterprise system should be established. Third, improve the level of rural medical and health care. On the one hand, popularize rural health knowledge education, positively guide farmers to seek medical treatment behavior; On the other hand, strengthen the management of rural medical workers, especially their regular training, so as to improve their medical level and professional skills. In addition, more publicity should be made to encourage farmers to buy medical insurance and improve their medical security ability.

Improving the health status and increasing life expectancy in Ukraine is the direction in which efforts need to be made in terms of health care in Ukraine in the future, and in order to achieve this goal, Ukraine can take the following measures. First, improve access to quality health care for all people. For example, providing access to pre-hospital care for rural population living in remote settlements by developing a network of obstetric stations and mobile forms of medical care[201]; ensuring access to emergency and specialized care for people of remote areas with a small number of residents by developing regional air ambulance services to comply

with the "golden hour" requirements; increasing the volume of high-tech types of medical care included in the program of state guarantees of free medical care; creation of a modern system of palliative care for seriously ill people [202].Second, to overcome the shortage of general practitioners in Ukraine and implement a programme for the management of patients with chronic diseases, including a set of measures to prevent worsening of the disease, such as ensuring close interaction between general practitioners and specialists, continuity of in-patient and out-patient care, remote health monitoring, and provision of medication to patients during out-patient care. Thirdly, to improve the professional competence of medical workers and establish an independent certification system for Ukrainian doctors; Improve the salary of medical staff, enhance their enthusiasm for work. In addition, the form of healthcare financing in Ukraine must change in order to make effective use of the growing flow of funds. Ukraine needs a transition to an insurance system of financing medical services, which provides health insurance and motivates its participants to improve efficiency.

Conclusions to section 3

In section 3 "Suggestions on rural human resources management" mainly analyzes the future direction of China and Ukraine's rural human resources management efforts. This study firstly clarifies the ideas of rural human resources management, determines the objectives, principles and contents of management, and provides theoretical reference for the effective implementation of rural human resources management in China and Ukraine. Secondly, it introduces the experience

of rural human resource management in many countries, which provides practical basis for implementing rural human resource management in China and Ukraine. On this basis, combining with the problems existing in the rural human resources management of the two countries, the paper puts forward three management modes. This study draws the main conclusions as follows.

1.Rural human resource development and management is not a blind act, the implementation process is very complex and involves many interest subjects. To ensure the effective implementation of rural human resource management, it is very important to plan and clarify the ideas in advance. To this end, this study identifies the objectives and principles of rural human resource management in China and Ukraine, specifies the development tasks and management difficulties, and recommends that both countries, based on the experience of human resource development and management in other countries, formulate a practical rural human resource management plan that meets the conditions of both countries from the current situation of rural human resource management.

2.This study proposes three management models: policy-guided model, education and training model, and institutional guarantee model. These three management models are proposed to draw on the experience of other countries, follow management planning, and fit the problem focus, providing ideas and methods for the effective implementation of rural human resource management in China and Ukraine in the future.

3.The economic system and political foundation of China and Ukraine are quite different, and the development and management methods of rural human resources

are also inevitably different. Therefore, under the three management models, some specific measures taken by China and Ukraine may be different. For example, the measures taken by China and Ukraine are different in the adjustment of population fertility policy, the improvement of population flow mechanism, the employment guidance of rural human resources, and the improvement of rural medical security system. Take the adjustment of the fertility policy as an example, China emphasizes maintaining the current fertility level and reducing the population. Ukraine, on the other hand, needs to encourage fertility and try to increase the birth rate and reduce the death rate.

4. The rural human resource management experience of other countries can be learned from and utilized, which shows that two countries with completely different economic systems and political bases can adopt the same management measures. Therefore, for China and Ukraine, although the two countries have different national conditions and different population bases, it does not mean that the two countries can not adopt the same management methods. For example, China and Ukraine can follow basically the same management ideas or even adopt basically the same management measures in the formulation procedure of rural human resource development planning, the construction of lifelong education system, the financing of rural education and medical expenses and so on. Taking the construction of lifelong education system as an example, China and Ukraine can build rural lifelong education system by increasing investment in rural continuing education, strengthening post-employment continuing education and promoting the development of community education.

CONCLUSIONS

This study systematically reviews the relevant literature, summarizes the experiences of rural human resource management in countries with different levels of economic development, and uses a combination of quantitative and qualitative research methods to investigate and analyze the current situation and problems of rural human resource management in China and Ukraine as examples.

In the course of the research, the following conclusions were obtained.

1.Both China and Ukraine have a serious population burden in rural areas, but the manifestations of the population burden are very different. China's rural population burden is characterized by overpopulation, as evidenced by a large rural population, a large surplus rural labor force, and a heavy burden of child support and old-age support; Ukraine's rural population burden is characterized by underpopulation, as evidenced by a low natural population growth rate, an increasing number of rural people moving out of the countryside, and continued negative rural population growth.

2.Ukraine is better than China in terms of quality assurance of rural human resources. This study considers education and health care as two important indicators of the quality of the population. Education is a prerequisite for the high cultural quality of the population, while health care is the basis for the good physical quality of people. The study found that Ukraine has better educational resources than China, and the population has higher cultural quality; in terms of health care, Ukraine has free medical care for all, and medical benefits are better than China,

and rural residents have less pressure to seek medical care, which is conducive to the development of good physical quality.

3.The problems of human resource management in rural China are mainly manifested in three aspects. Firstly, the migration of surplus rural labor is hindered and the population pressure remains high. Secondly, insufficient investment in education and medical care makes it difficult to guarantee the quality of rural human resources. Thirdly, human resource management is inefficient and employment structure deviates from industrial structure.

4.The problems of human resources management in rural Ukraine are:Firstly, population control efforts are not in place, and negative population growth continues to be serious. Secondly, high unemployment rate of farmers, and low economic income and consumption level. Thirdly, poor quality of medical services and high population mortality.

5.This study proposes three management models: policy-guided model, education and training model, and institutional guarantee model. These three management models are proposed to draw on the experience of other countries, follow management planning, and fit the problem focus, providing ideas and methods for the effective implementation of rural human resource management in China and Ukraine in the future.

6.Among all human resource management means, education and training are the most important management paths and the key to the take-off of rural economies and the improvement of human resource quality in each country. This study argues that potential human resources can form real human capital only through education

and training. Three specific measures can be taken: Firstly, increase farmers' vocational skills development and enhance their employability.Secondly, building rural learning organizations and strengthening the leading role of rural community education.Thirdly, adjusting education structure and building a lifelong education system for farmers.

7. The implementation of rural human resource management needs to be informed by the experience of other countries. Different national systems have given birth to different national policies, thus making each country accumulate its own unique experience in the process of rural human resource management. Although these experiences have certain regional limitations and may not be suitable for other countries' national conditions, they may also have certain inspirational value for other countries to optimize the means of rural human resource management. This study summarizes the experience of rural human resource management in China and analyzes the impact of decentralization on rural human resource management in Ukraine. In addition, it also sorted out the means and approaches of rural human resources management in the United States, Germany, Japan, India and Brazil. The results showed that these countries all laid great emphasis on three aspects in the process of rural human resources management, namely emphasis on the combination of theory and practice mode of operation, multi-channel absorption of school resources and actively play the macro-control role of the government.

REFERENCES

1.Meera, A.(2003).Origins and Historical Influences on Human Resource Development: A Global Perspective.Human Resource Development Review,2 (1), 82-96. https://doi.org/10.1177/1534484303251170

2.Yurii, S., Viktoriia, B., & Oleksandr, R.(2021). Health care as a system-creating element of human capital: strategies of its development by the case of Ukraine. Baltic Journal of Economic Studies,7 (4),176-181.

3.Róbert, T.,Levente, A.,& Gábor, H.(2019).Some Experience of the Complex, National Human Resource Development Programmes in the Hungarian Rural Regions.Eastern European Countryside, 25(1),95-119. https://doi.org/10.12775/eec.2019.004

4.Harbisson.(1989). Human Resources as National Wealth. Shanghai People's Press.

5.National Bureau of Statistics of China.(2022).China Population and Employment Statistics Yearbook .China Statistics Press.

6.Liu,X.Y.(2007). Analysis of the impact of rural human resource development on farmers' income increase and countermeasures. *Modern Agricultural Science and Technology*,2,127-128.

7.Yang,Y.J., Chen,X., & Yi,Y.L.(2019).*Study on the Development of Rural Human Resources and "Four Synchronization" in Henan Province*.China Agricultural University Press.

8.Yu,F.L. (2017). Discussion on rural human resource development and rural regional economic development. *Rural Economy and Technology*, 28(8), 196-197.

9.Wang,W.F.(2013),*Research on the Development of Rural Human Resources in Henan Province*[Doctoral dissertation, Beijing Forestry University].UA Campus Repository.

10.360 Encyclopedia. (2022, August). *Human Capital Theory*. https://baike.so.com/doc/5418497-5656661.html.

11.Schultz,W.T.(1987). *Transforming traditional agriculture*. The Commercial Press.

12.Zhao,Q.C.(2001).*Research on Human Resource Development.* Northeast University of Finance and Economics Press.

13.Wu,Z.H.(2020).*Investing in People - Economics of Population Quality. Translation*. The Commercial Press.

14.Guo,H., et al.(2007).*Human Capital Theory: Theoretical and Empirical Analysis of education*. Citic Press.

15.Amartya, S.(1982). *Poverty and Famines-An Essay on Entitlement and Deprivation*. Clarendon Presss.

16.Marshell.A.(1996). *Memorials of Alfred Marshell*, Editedby A .C. Pigou, NewYork.

17.Yujiro,S.(2005).*Development Economics - From Poverty to Affluence (Third Edition)*.Oxford University Press.

18.Solow,M.R.(1956).A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, 70 (1),65-94.

19.Kenneth,A.(1957). Review: Uncertainty in Economics and Other Reflections. J*ournal of Political Economy*,65 (1),81.

20.Nelson, R. R., & Phelps, E. S. (1966). Investment in Humans, Technological Diffusion, and Economic Growth. *American Economic Review*, 56(2), 69–75.

21.Hirofumi,U.(1996).On the occasion of the inaugural conference of Environment and Development Economics. *Environment and Development Economics*,1 (1) ,1-2. https://doi.org/10.1017/S1355770X00000322

22.Strauss,J., & Thomas, D.(1998). Health, Nutrition and Economic Development. *Journal of Economic Literature*, 36(2), 766–817.

23.Ingersoll,L.(2002).Human Resource Management in Australia: Strategy, People, Performance .I*nternational Employment Relations Review*,8(2),56-62.

24.Lee,S.(2001).The Successful Factors of e-Learning for Human Resources Development. *Journal of Agricultural Extension & Community Development*,8(1),33-41.

25.Mather,D.(2008).Household Income and Assets in Rural Mozambique,2002-2005:Can pro-poor Growth Be Sustained. *Research Roport,* 66E,63-69.

26.Liu,E.H.(2014).Research on Chinese Rural Human Resources Development and Management under the New Situation to Strengthen. *Applied Mechanics and Materials*,25(2),363.

27.Yi, G., You, Z., Dai,Y.B.,Liu,Y.X., & Zhang, J.Y.(2005). Rural human resources development and farmer education, Higher Agricultural Education. 10,90-92.

28.Geng, T.T.(2011).Research on Higher education access to rural areas and rural human resources Development. *Reform and opening up*,22,142. https://doi.org/10.16653/j.cnki.32-1034/f.2011.22.110

29.Jiang,S.S.(2019).Analysis on the present situation of rural human resources. *Science and Technology Economy Guide*, 28 (08) ,205-206.

30.Hou, H.J.(2020). Research on Rural human resources Development based on the background of rural revitalization Strategy. *Business Economics*,9,111-113. https://doi.org/10.19905/j.cnki.syjj1982.2020.09.039

31.Lou,W.(2005). Rural talent motivation and innovation. *Adult Education*,2,7-9.

32.Cai, F., & Lin,Y.F.(2003). Chinese Economy. *China Finance and Economics Press*.

33.Sahoo,C.K.,Das,S., & Sundaray,B.K. (2011).Strategic human resource management: Exploring the key drivers. *Employment Relations Record*,11(2),52-57.

34.Erika,B., & Hasan,B. (2015).The Importance of Human Resources Development and its Impact in Increasing of National Port Productivity. *Procedia Engineering*,50(3),125.

35.Cui, X., Di, Y., Zhou, C., Liu, X., Nan, N., & Xu, S. (2018). Training mode of applied talents in resource recycling science and engineering major from the perspective of circular economy. Renewable Resources and Circular Economy, 1, 12–15.

36.Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. Planning for Higher Education, 31(3), 15-22.

37.Duan, W. (2016). Research on regional circular economy standard system -- A case study of the first batch of national circular economy standardization cities in Shanxi Province. China Standardization, 16, 105-110.

38.Hu, X.D.(2018).The significance of the times of human resource management information construction. *Northern Economy and Trade*,11,141-142.

39.Sanjay,G., & Lu,F.(2019).The significance of professionalization of human resource management. *Family Business*,06, 70-72.

40.Tomuletiu,A.E., & Moraru,A.(2010).Rural education in Romania: Present and perspectives. *Procedia-social and Behavioral Sciences* ,2(2),402-406.

41.Tie, M.(2012). Research on rural human resources development in the context of integrated urban-rural development. *Labor Security World (Theory Edition)*, 10,63-66.

42.Tao,L.(2013).Study on the current situation and countermeasures of rural human resources development in the process of urban integration. *Journal of Huaihai University of Technology (Humanities and Social Sciences Edition)*, 11(17):103-105.

43.Yue,X.H.(2014).Analysis of the realization path of China's rural talent resources development. *China Collective Economy*, 18,109-110.

44.Wang, H.B.(2015). *Research on the development of rural human resources in the process of urbanization in China* [Master dissertation, Shandong Normal University].UA Campus Repository.

45.Wang,Fang.(2017). Analysis of human resource development path in new rural construction. *Rural Science and Technology*,28,23-24.

46.Li,A.M.(2017).The current situation of rural human resource development and response strategies. *Human Resource Management*, 07,306-307.

47.Wan,X.F(2017).Problems and countermeasures of human resource development and management faced by rural economic organizations. *Knowledge Economy*, 08,20-21.

48.Peter,K.(2001).The need for attention to the issue of rural education. *International Journal of Educational Development*,l,21-32.

49.Organisation for Economic Co-operation and Development.(2005). *The new rural paradigm: policies and governance* .OECD,2005.

50.Gichangi,M.M.,&Mumbo,H.M.(2018).Policy making to address imbalances in human resources for eye health in rural Kenya. *Community eye health*. 31,47.

51.Yang,C.B., & Yasmin,F.(2022).Effects of high-performance human resource practices in the education sector: The mediational model. *Frontiers in Psychology*,28,56-63. https://doi.org/10.3389/FPSYG.2022.1042082

52.Kaushik,I.(2019).Assessment of public health systems focussing on infrastructure & human resources for health, at rural facility level in Arunachal Pradesh, India. *The Journal of Community Health Management,*6(2),36-40. https://doi.org/10.18231/j.jchm.2019.008.

53.Wang,S.J., & Wang,G.H.(2018). A study on human resource development and economic growth in Japan, *Northeast Asia Forum*,27(01),35-48. https://doi.org/10.13654/j.cnki.naf.2018.01.00

54.Schultz,W.T.(1990).*On Investment in Human Capital*. Beijing School of Economics Press.

55.Ravlić,Sanela.,Glavaš,J., & Vojinović,Z.(2020).ECONOMIC FACTORS OF RURAL AREA DEVELOPMENT OF THE REGION, FINANCIAL SOURCES AND HUMAN RESOURCES. *Economics of Agriculture,*67(4),1125-1139. https://doi.org/10.5937/EKOPOLJ2004125R

56.Dreeben, R. (1967).The contribution of schooling to the learning of norms. Harvard Educational Review, 37 (2), 211–237. https://doi.org/10.17763/haer.37.2.e6v4554265l57836

57.Yang,S.L.,Wang,W.R., & Wang,Y.L.(2018). Research on the Coordination of Human Capital Level and Economic Development Level and Influencing Factors. *Population and Society*,31, 80-90.

58.Jones.C.(2002).Sources of U.S. Economic Growth in a World of Ideas. *American Economic Review,*92 (1),36-41.

59.360 Encyclopedia.(2023,May).*Rural Human Resource Development Planning*. http://www.1mpi.com/doc/1d653d635a96ec600bb9e420/2.

60.Schultz,W.T.(1990).*Human Capital Investment*. The Commercial Press, 1990.

61.Stimson, R. J., Stough, R. R., & Roberts, B. H. (2006). Regional Economic Development. *Springer-Verlag Berlin Heidelberg*.

62.Li,Y.R.(2016).Rural human resource development and rural regional economic development. *China Agricultural Information*, 7, 24-25.

63.Standing Committee of the Chinese People's Congress.(2023,March). *Agricultural Technology Extension Law of the People's Republic of China*. https://baike.so.com/doc/6704339-6918306.html

64.Zhou,J.W.(2018). Interaction between rural human resource development and rural regional economic development. *Agricultural Economics*, 03,141-142.

65.Zhang,J.R., & Yu,L.(2013). Analysis of the Impact of Human Resource Development on China's Rural Sustainable Development, Economic Forum.

66.Admin.(2019,September).*Academicians, experts salute New China's 70th birthday Agricultural science and technology contribution to food security reaches 60%* .https://www.zg3n.com.cn/article-106596-1.html

67.Zhang,Y.H.(2017).Research on Rural Human Resource Development and Economic Development. *Economic Management (Digest Edition)*, 3, 298.

68.360 Encyclopedia. (2023,February). *Urbanization*. https://baike.so.com/doc/59294-62364.html.2023.2.15.

69.Urbanization rates in countries around the world. http://www.360doc.com/content/20/0716/07/11642211_924525180.shtml.2023.6.13

70. Medvid, V., Pylypenko, V., Pylypenko, N., Ustik, T., Volchenko, N., & Vashchenko, M.(2019).Factors of rural development in the context of decentralisation: empirical research，*Economic Annals-XXI*, 177(5-6), 126-140. https://doi.org/10.21003/ea.V177-11.

71.Mojsovska, S. (2011). Decentralization and Regional Policy in the Republic of Macedonia: Developments and Perspectives. Papers on Decentralisation and Regional Policy in South Eastern Europe No. 4. The London School of Economics and Political Science, London, UK. http://eprints.lse.ac.uk/id/eprint/63574

72.Stegney, M. I. (2014). Sustainable development of rural territories under decentralization: from theory to practice.*Nikolaev: FOP Shvets V. D*.

73.Gogol, T. V. (2011). Multifunction development of rural territories is a strategic purpose of public regional policy.Derzhavne Upravlinnya: Teoriia i Praktyka (Public Administration: Theory and Practice), 1, 1-10. http://academy.gov.ua/ej/ej13/txts/Gogol.pdf

74.Petrushenko,Y. M. , Kostyuchenko,N. M. , & Danko, Y. I. (2014). Conceptual Framework Of Local Development Financing In UNDP Projects In

Ukraine. *Aktual'ni Problemy Ekonomiky= Actual Problems in Economics*, (159), 257.

75.Arkorful, Vincent,E., Benjamin,K.L., Anastasia,H., & Ibrahim, B.(2021). Decentralization and Citizens'Participation in Local Governance: Does Trust and Transparency Matter?—An Empirical Study. *Forum for Development Studies,* 48,1–25.

76.Gutorova, O. O. (2016). Problems and prospects of rural areas' development in Ukraine. Aktualni Problemy Innovatsijnoi Ekonomiky (Actual problems of innovative economy), 4, 68-73. http://journals.uran.ua/index.php/2524-0455/article/view/90410/86170

77.Ministry of Regional Development, Construction and Housing and Community of Ukraine (2019). Monitoring of the process of decentralization and reform of local self-government. https://storage.decentralization.gov.ua/uploads/library/file/425/Моніторинг_10.07.2019.pdf

78.Ministry of regional development, construction and housing and communal services of Ukraine (2016), Methodical recommendations for the formation and implementation of forecast and program documents for the socio-economic development of the united territorial community.http://www.zoda.gov.ua

79.Gong,Q., Liu,C., & Wu, M.(2021). Does administrative decentralization enhance economic growth? Evidence from a quasi-natural experiment in China. *Economic Modelling,* 94,945–52.

80.William, D.（2019）.Ukraine’s Decentralization Reform,Working Paper Research Division Eastern Europe and Eurasia,03/Nr. 1, June 2019

81.Nadiia, D., Svitlana, Boiko., Alina, B ., & Inna, D.(2021).Development of rural areas through fiscal decentralization. Proceedings of the 2021 International Conference “ECONOMIC SCIENCE FOR RURAL DEVELOPMENT” Jelgava, LLU ESAF, 11-14 May 2021, 102-114. https://doi.org/10.22616/ESRD.2021.55.010

82.Danish Institute for International Studies.(2018). *Decentralization in Ukraine: Supporting Political Stability by Strengthening Local Government*,53, http://pure.diis.dk/ws/files/2543996/DIIS_Report_07_Ukraine_WEB.pdf.

83.Zhalilo,Y.A., Makarov, H. V., Danylyak, O. O., Rudenko, A. F., Romanova, V. V., Pavlenko, I. A. & Shevchenko, O. V. (2018), Detsentralizatsiya vlady: Yak zberehty uspishnist’v umovakh novykh vyklykiv? [Decentralization of Power: How to Maintain Success in the Face of New Challenges?], Kyiv: National Institute for Strategic Studies,12–13, https://niss.gov.ua/sites/default/files/2019-05/Dopovid_ Decentralization-ready-474fa.pdf .

84.William, D.（2019）.Ukraine’s Decentralization Reform,Working Paper Research Division Eastern Europe and Eurasia, 2019 03/Nr. 1, June 2019

85.Lelechenko,A.P.,Vasylieva,O.I.,&Kuibida,V.S.(2019). Local self-government in the conditions of decentralization of authority. *Institute of Civil Society*.

86.Kregul, Yu., & Batrymenko, B. (2016). Reform of local self-government in Ukraine. *Foreign Trade: Economics, Finance, Law*, 1, 17-27.

87.Sokurenko, V., Shvets, D., & Uvarov, V. (2020). Predictive competence in terms of readiness for innovation activity. *Science and Education*, 3(3), 15-59.

88.National bureau of statistics of China.(2022).*China statistical yearbook*. China Statistics Press.

89.Zhang, E,C., & Zheng,Wan.L.(2019). A study on labor export of migrant workers and human resources development in rural areas in China - taking Hebei Province as an example.*Agricultural Economics*, 11, 70-72.

90.Lv,L.M.(2022).*Research on the evaluation of new vocational farmers' training effects*[Doctoral dissertation, East China Normal University]. UA Campus Repository.

91.Wu,X.(2018).Combining building regional agricultural brands with rural revitalization. *People's Forum*, 17, 74.

92.Zhang,Y.E.(2018).Research on the docking of rural human resources development and "precise poverty alleviation" strategy. *Agricultural Economics*, 2, 78-79.

93.360 Encyclopedia.(2022,August). *Surplus Rural Labor* https://baike.so.com/doc/6535096-6748834.html.2023.3.21

94.Sixteenth Central Committee of the Communist Party of China.(2003). *Decision of the Central Committee of the Communist Party of China on Several Issues Concerning the Improvement of the Socialist Market Economy System*.

95.National Bureau of Statistics of China.(2023). *Statistical Bulletin on National Economic and Social Development of the People's Republic of China (2013-2022)*.

96.Pi,J.H.(2013).Cultivating new types of professional farmers : a new orientation of rural vocational education. *Higher Agricultural Education*, 8,106.

97.Jin,X.(2014).Developing modern agricultural vocational education to vigorously cultivate new types of professional farmers. *China Vocational and Technical Education*, 21, 262.

98.Zhu,Q.Z.(2013).The connotation and characteristics of new professional farmers and their status and role. *China Agricultural Information Network*,17, 16-17.

99.Wu,Y.S., et al.(2010).The connotation of new professional farmers and their cultivation methods. *Continuing Education Research*, 1,35-42.

100.General Office of the Ministry of Agriculture.(2012). *Guidance on pilot work of cultivating new type of professional farmers*.

101.Zhu,Q.Z., & Wen,J.C.(2012). On new type of professional farmers and their cultivation[J]. Agricultural Engineering, 3,1-4.

102.Kang,J.P., & Wang,Y.(2015).Analysis of the shortage of new professional farmers in China and its causes--a survey based on Shou County, Anhui Province. *Contemporary Economic Research*, 4, 73-81.

103.Chen,Z.J.,et al.(2016).*Quality competence and responsibility of new professional farmers*. China Agricultural Science and Technology Press.

104.Xu,H.(2016).Mechanisms of new professional farmer cultivation: a theoretical analysis framework. *Agricultural Economic Issues*, 8,9-15.

105.Jin,S.N.,Song,Z., & Chang,L.B. Research on the willingness and influencing factors of cultivating new professional farmers in production and management---Take the data of farm households in Heilongjiang as an example. *Modern Agricultural Science and Technology*, 6,322-324.

106.Wang,J.,&Yu,S.Y.(2014).Analysis of factors influencing farmers' willingness to participate in new vocational farmer training--an empirical study based on 683 farmers' questionnaires in Chongqing. *Journal of Southwest Agricultural University*, 1,57-61.

107.National Bureau of Statistics of China.(2022,May).*The Third National Agricultural Census Main Data Bulletin* .http://www.stats.gov.cn/sj/tjgb/nypcgb/

108.Li Wei.(2014). Research on the cultivation of new professional farmers. [Doctoral dissertation, Southwest University of Finance and Economics].UA Campus Repository.

109.People's Daily. (2021,July). *The central government will invest 1.5 billion this year to cultivate more than 1 million new professional farmers.* http://www.xinhuanet.com/politics/2017-09/03/c_1121592737.htm

110.Hu,H.S.,&Li,T.(2020).Exploring the cultivation path of new professional farmers in the context of big data. *Southern Rural*, 2,49.

111.Yan,T.W., Zhang, L. & Zhang, J.B. (2017). Exploration and reflection on the cultivation of new professional farmers--a survey based on the East-West Lake District of Wuhan City.*Journal of Huazhong Agricultural University (Social Science Edition)* 03, 35-41. https://doi.org/10.13300/j.cnki.hnwkxb.2017.03.005.

112.Allied Agricultural Industry Chamber of Commerce.(2022，September）*The Ministry of Agriculture and Rural Development has issued a new policy on "training new professional farmers"*.https://www.sohu.com/a/242854452_758692

113.Chen ， X.W.(2023). China's agricultural policy outlook. http://finace.sina.com.cn, January

114.Li,X.G.(2018).Forging agricultural skill talents for rural revitalization. *China Talent*, 11,50-54.

115.CPC Central Committee and State Council of China. (2018). *Strategic Plan for Rural Revitalization (2018 - 2022).*

116.Wu,Z.M., Zheng,A.X.,& Liu,X.(2019). Vocational education and training of new vocational farmers under the strategy of rural revitalization. *Education and Career*,10,27-34.

117.Cui,Z.C.(2018).High-level talent cultivation model and optimization strategy based on human capital aggregation effect. *Journal of Henan Normal University (Philosophical and Social Edition)*, 4, 75-79.

118.Guo,W.J.(2019).The problems and countermeasures of China's rural human resource management in the perspective of rural revitalization.*Management,*1, 80-83.

119.Xue,J.(2018).The development path of China's rural human resource investment in the context of rural revitalization strategy. *Journal of Tianjin Sino-German University of Applied Sciences*, 3, 25-28.

120.Liu,N., & Liao, P.(2021). Influencing factors, effects and countermeasures of rural human resources return under rural revitalization strategy. *Agricultural Economics*, 12,68-70.

121.Hao,H.J.(2014).Exploring rural human resource management and development in China. *Regional Economy*, 04, 153-157.

122.Sun,X.L.(2018). Study on rural revitalization from the perspective of rural human resources supply. *Theory Monthly*, 5,130-134.

123.Li,X.J.(2018).Exploration of rural human resources development from the perspective of rural revitalization strategy. *Agricultural Economics*, 7, 63.

124.Pan,Y.C., & Meng, X.X.(2018). Analysis of human resource management in rural governance, Agricultural Economics, 6, 59.

125.Zhu,L.R.(2018).An analysis of rural human resource management. *Farmer Training*, 5, 246-250.

126.Li,J.L.(2018).Research on the transformation of rural human resources development and application in the context of innovation drive. *Agricultural Economy*, 8,69-71.

127.Yang,L.L.(2019).Rural revitalization strategy and rural human resource development and its evaluation. *Shandong Social Science*,10,147-152.

128.Wu,Y.R.(2011).Is China's Economic Growth Sustainable A Productivity Analysis. *China Economic Review,* 11,45-51.

129.National Bureau of Statistics of China.(2022).*China Rural Statistical Yearbook* , China Statistics Press.

130.National Bureau of Statistics of China.(2023). *Statistical Bulletin on National Economic and Social Development of the People's Republic of China (2013-2022)*.

131.Kock,J.H., & Pillay, B.J.(2018).South Africa's rural mental health human resource crisis: a situation analysis and call for innovative task-shifting. *Family Medicine & Primary Care Review*,20(2),124-130. https://doi.org/10.5114/fmpcr.2018.76454

132.Kovalenko,A.(2023).Natural Resource Booms, Human Capital, and Earnings: Evidence from Linked Education and Employment Records. *American Economic Journal: Applied Economics*,15(2),184-217.https://doi.org/10.1257/APP.20200762.

133.National Bureau of Statistics of China.(2022,December).*China's Third National Agricultural Census Main Data Bulletin (No. 5)*.http://www.stats.gov.cn/tjsj/tjgb/nypcgb/qgnypcgb/201712/t20171215_1563599.html

134.Lei,Y.(2014). Quantitative analysis of consumption level of rural residents in China. *Statistics and Decision Making*, 6,136-137. https://doi.org/10.13546/j.cnki.tjyjc.2014.06.036

135.360 Encyclopedia.(2022,June).*Retaliatory consumption*. https://wenda.so.com/q/1638054440213713.2022.12.5

136.Yao,M.(2012). Analysis of changes in the structure of consumption demand of urban and rural residents in China. *Productivity Research*, 11,45.

137.360 Encyclopedia.(2021,April).*Engel coefficient standard*. http://www.360doc.com/content/20/0605/00/28217523_916555342.shtml

138.Mai,X.C., & Wang,C.Y.(2011).Analysis of Factors Affecting the Change of Consumption Structure of Residents. *Business Economics*, 1,3-4.

139.Futagami,K.,&Nakijima,T.(2002).Population Aging and Economic Growth. *Journal of Macroeconomics,*23 (1),83-90.

140.Hu,J.B.(2001).The interrelationship between economic growth and full employment. *Journal of Nanjing Agricultural University (Social Science Edition)*, 2,9-16.

141.Risse,L.(2023).The Economic Impacts of the COVID-19 Pandemic in Australia: A Closer Look at Gender Gaps in Employment, Earnings and Education. *Australian Economic Review*,56(1), 91-108. https://doi.org/10.1111/1467-8462.12502

142.Hirooka, M. (2006). Innovation Dynamism and Economic Growth. A Nonlinear Perspective. Chettenham, UK, Northampton, MA, USA, “EdwardElgar”.

143.360 Encyclopedia.(2023,April).*Medical Technology*. https://baike.so.com/doc/6972187-7194873.html.

144.Yurii,S.,Viktoriia,B.,&Oleksandr,R.(2021).HEALTH CARE AS A SYSTEM-CREATING ELEMENT OF HUMAN CAPITAL: STRATEGIES OF ITS DEVELOPMENT BY THE CASE OF UKRAINE，*Baltic Journal of Economic Studies*，7(4),176-181. https://doi.org/10.30525/2256-0742/2021-7-4-176-181

145.Singh,S.R.(2022).Development of Human Resources in Agriculture and Rural Area. *Asian Man (The) - An International Journal*,16(1),90-92. https://doi.org/10.5958/0975-6884.2022.00010.X

146.National Bureau of Statistics of China.(2022,December). *NBS spokesman answers reporters' questions on national economic operation in November 2021.* http://www.stats.gov.cn/sj/sjjd/202302/t20230202_1896570.html

147.Xiao,X.Z.,&Yuan,L.(2018).Study on the influencing factors and countermeasures of the increment of rural human resources in the post-poverty eradication era. *Rural Economy and Technology*,4,184-187.

148.Mao,D.Z.(2006).*A study on human resource development in rural China*[Doctoral dissertation, Huazhong Agricultural University]. UA Campus Repository.

149.Sug,I.C.(2010). International Comparative Study of Youth Unemployment and Human Resource Development: Focusing on the Case of Germany, France, and Japan.*Zeitschrift der Koreanisch-Deutschen Gesellschaft für Sozialwissenschaften*. 20 (4),211-244.

150.Xiao,X.H.(2011).The main practices of human resource development in Switzerland, Germany and France and their significance. *Journal of China Jinggang Mountain Cadre College*,4(5),130-133.

151.Yang,Y.J., Chen, X., & Yi,Y.L.(2019).*Research on human resource development and "four synchronization" development of farms in Henan Province.* China Agricultural University Press.

152.Tadashi, I.(2016).Human Resource Development in Peacebuilding: Japan's Way of Contributing to Peace. *East Asian Policy,*8(4),9. https://doi.org/10.1142/S1793930516000441

153.Wan,Y.(2010).Insights of Korean and Japanese rural education on China's rural human resource development. *Science, Technology and Industry*,10(01),119-122.

154.Liang,Y.P.(2010).The experience and inspiration of farmers' education and training in developed countries. *Journal of Higher Correspondence Education (Philosophy and Social Science Edition)*, .

155.Zhou,S.H.(2017) .Experience and Enlightenment of Rural Human Resource Development in America. Proceedings of 2017 2nd International Conference on Education, Sports,Arts and Management Engineering(ICESAME 2017) , China,1072-1075.

156.Ponder, H.(1987).Human Resources Development in Rural America—Myth or Reality. *American Journal of Agricultural Economics*,69(4),879-880. https://doi.org/10.2307/1242220

157.Niewoln , L.(2010).Expanding the Boundaries of Beginning Farmer Training and Program Development: A Review of Contemporary Initiatives to Cultivate a New Generation of American Farmers. *Agriculture, Food Systems, and Community Development,*1,65- 68.

158.Wang,W.F.(2011). Comparison of domestic and foreign experience in rural human resource development and lessons learned. *Southern Agriculture*, 5,94-97. https://doi.org/10.3969/j.issn.1673-890X.2011.05.032

159.Mishra,M.(2012).Human Resource Reallocation Model for Accelerating Agro based Rural Economy, Retarded Through Rapid Modification by Cross Border Infiltration - A Study in North Bengal Districts, West Bengal, India. *International Journal of Social and Economic Research*,1 (2) ,472-499.

160.Rashmi, D.(2018).Rural Human Resource Development in light of Deen Dayal Upadhyaya Grameen Kaushalya Yojana in the state of Chhattisgarh.*Asian Journal of Management*,9(1) ,432-434. https://doi.org/10.5958/2321-5763.2018.00066.5

161.Yang,Y.J., Chen,X., & Yi,Y.L.(2019).Study on the Development of Rural Human Resources and "Four Synchronization" in Henan Province. China Agricultural University Press.

162.Savassi, L.,Dias,M.,Boing, A.,Verdi, M., & Lemos, A.(2020).Educational strategies for human resources in home health care: 8 years' experience from Brazil.*Pan American journal of public health*,44 ,103. https://doi.org/10.26633/RPSP.2020.103

163.Rossana, P.,Eliana,A., & Julio, C.(2020).Organisational innovation in human resource management: aspects influencing quality of life at work in Southern Brazil. *Latin American Journal of Management for Sustainable Development*,5(1),87-92.

164.Wilson, A.C.,Graziella,M.C., & André, L.F.(2019).Teaching and research in human resource management in Brazil: Convergence or divergence?. *RAE: Revista de Administração de Empresas*,59 (3),215-221.

165.Ethiopia， Wuletaw，& Mekuria.(2014). Effectiveness of Modular Training at Farmers' Training Center: Evidence From. *American Journal of Rural Development,*2,46- 52.

166.Li G.X., & Yang Z.Z.(2013). The policy of cultivating new professional farmers in the United States and its inspiration. *Agricultural Economic Issues*, 5,93-97.

167.Wei,Y.(2017). Transformation of local government management functions in rural human resource development. *Agricultural Economics*,1,68-69. https://doi.org/10.3969/j.issn.1001-6139.2017.01.023

168.Cheng,C.X.(2017) . Rural human resources development and circulation changes under the reform of deepening market economy system. *Business and Economic Research*, 16,134-136.

169.Zheng,X., & Yu, M.Y.(2018). Study on the optimization of local government behavior in the construction of entrepreneurship park in the context of "double creation" , *Education Review*, 233(11),5-9.

170.Gu,L., & Chen,S.W.(2010).Research on human resource management based on the principle of system dynamics. *Journal of Dalian University of Technology (Social Science Edition)*, 31(2),11-15.

171.360 Encyclopedia. (2022, April). *Population Policy.* . https://baike.so.com/doc/6538332-6752071.html

172.Sulaiman,M.(2016). Making Sustainable Reduction in Extreme Poverty: A Comparative Meta -Analysis of Livelihood, Cash Transfer and Graduation Approaches. *Washington, DC: CGAP*, 5,35-37.

173.Wang,Y.(2005). Analysis of farmers' health care investment in China. *Rural Economy*, 12,28.

174.Shi,W.P.(2009). Reform and Development of Rural Vocational Education in an International Perspective. *Education Development Research*, 5,37-42.

175.Xing, H.,Huang , Y.J., & Fo,Z.H.(2010). A study on the current situation of urban-rural integrated development of vocational education. *Education and Vocational* , 11,52-57.

176.Liu, X.W., & Sui L.G.(2020). A study on internal quality assurance strategies of vocational education and training in the European Union. *Adult Education*, 2, 82-87.

177.Tang,S.L., & Cao, Y.(2005). *Theory of Rural Vocational Education*. Higher Education Press.

178.Wang,J.Y.,Feng,Q.Y., & Zhang,J.(2016). Education and precise poverty alleviation and precise poverty eradication. *Education Research*,7,12-21.

179.Chen,L.(2003). Research on Human Resource Development in Western China[Doctoral dissertation, Central University for Nationalities]. UA Campus Repository.

180.Noor, M., & Dola, K.(2011). Investigating training impact on farmers' perception and performance. *International Journal of Humanities and Social Science*,6,55-61.

181.Jiang,S.J.(2018).Research on the development and management of rural human resources in the perspective of technical poverty alleviation. *Agricultural Economy*, 3, 70-72.

182.Zhang,Y.E.(2018).Research on the docking of rural human resources development and "precise poverty alleviation" strategy. *Agricultural Economics*, 2, 78-79.

183.360 Encyclopedia. (2023, May). *Re-employment Training*. https://baike.so.com/doc/6501781-6715496.html.2023.5.4

184.Li,B.(2019). Promoting the quality and efficiency of new vocational farmer cultivation from five aspects - Speech at the National Conference on the Exchange

of Experience in New Vocational Farmer Cultivation and Promotion of Information Work . *Farmer Science and Technology Training*, 1, 6-8.

185.360 Encyclopedia. (2023, May). *Community Education*. https://baike.so.com/doc/5979712-6192676.html

186.360 Encyclopedia. (2023, May). *Lifelong Education*. https://baike.so.com/doc/6020636-6233633

187.Gitika,S., Pauline,S., Timothy,B., John,B., & Brendan,B.(2017). Human resource development practices, managers and multinational enterprises in Australia. *Education + Training,*59 (5), 483-501. https://doi.org/10.1108/ET-02-2016-0023

188.Peter.M.(2014).A Review of Human Resource Development Trends and Practices in Australia: Multinationals, Locals, and Responses to Economic Turbulence. *Advances in developing human resources*,16(1),92-107.

189.Lu, Z.X.(2017). The dilemma of "poverty caused by education" in rural education and its conceptual shift. *Educational Theory and Practice*, 2,10.

190.360 Encyclopedia. (2022, July). *System*. https://baike.so.com/doc/3100265-3267739.html

191.Aoki,M., Oaki, M. A., Greif,A., & et al.(2001). *Toward a Com-parative Institutional Analysis*. Cambridge: MIT Press.

192.Bloom，D.，& et al.(2007)．Demographic Change，Social Security Systems and Savings．*Journal of Monetary Economics,*2,54．

193.360 Encyclopedia. (2023, March). *Population Mobility*. https://baike.so.com/doc/6511805-6725530.html

194.Sun,A.J., & Liu,S.L.(2014). Analysis of economic growth effects of demographic changes. *Population and Economy*, 1, 37-46.

195.Bloom，D.(2009).Demographic Change and Economic Growth in Asian. *Asian Economic Policy Review,* 4,85-91.

196.360 Encyclopedia. (2023, May).*Rural Human Resource Development Planning.* http://www.1mpi.com/doc/1d653d635a96ec600bb9e420/2

197. Zhou,J.W.(2018). Interaction between rural human resource development and rural regional economic development.*Agricultural Economics*, 03,141-142.

198.Bloom, D., & Canning, D. (2003). Health as Human Capital and its Impact on Economic Performance. *The Geneva Papers on Risk and Insurance*, 28(2), 304–315.

199.Hidechika,A.,Yasuyo,O., & Rumiko,A.(2015).Human resources for health development: toward realizing Universal Health Coverage in Japan. *BioScience Trends*,9 (5) ,275. https://doi.org/10.5582/bst.2015.01125

200.Edmonson, C., Marshall, J., & Gogek, J. (2020). Keeping the Human in Health Care Human Capital: Challenges and Solutions for RNs in the Next Decade. *Nurse Leader*, 18(2), 130-134.

201.Yurii,S., Viktoriia,B., & Oleksandr,R.(2021). HEALTH CARE AS A SYSTEM-CREATING ELEMENT OF HUMAN CAPITAL: STRATEGIES OF ITS DEVELOPMENT BY THE CASE OF UKRAINE, *Baltic Journal of Economic Studies,*7(4),176-181.https://doi.org/10.30525/2256-0742/2021-7-4-176-181