Industrial Development Models and Constraining Factors of Poverty Alleviation Relocation in Deeply Impoverished Areas: A Case Study of Three Prefectures in Southern Xinjiang (Postprint)

Authors: Xie Dawei

Date: 2021-01-07T00:00:00+00:00

Abstract

Through an investigation of seven poverty alleviation relocation resettlement sites across the three prefectures of southern Xinjiang, this study quantitatively analyzed changes in key livelihood capital factors affecting industrial development before and after relocation, concluding that the resettlement sites have established the foundational basis and conditions for industrial development. Following relocation, migrants have developed advantageous industries by leveraging industrial parks, facility agriculture, newly developed land, and characteristic resources. Based on case studies, six industrial development models were identified, each with distinct industries and development conditions. The primary constraints on subsequent industrial development include limited employment channels for migrants, low land transfer rates, and difficulties in adapting to new industries. To promote the development of subsequent industries, it is recommended that more employment channels be provided for migrants and the employment skills of relocated migrants be enhanced according to local conditions in resettlement areas.

Full Text

Industrial Development Modes and Restraining Factors in Severe Poverty Regions After Poverty Alleviation Relocation: Cases from Three Prefectures in Southern Xinjiang

XIE Da-wei, ZHANG Nuo, SU Ying, YU Hong-fei
(Xinjiang Vocational and Technical College of Communications, Urumqi 831401, Xinjiang, China)

Abstract

Through an investigation of seven settlement sites for relocated impoverished residents in Kashgar, Kizilsu Kirghiz Autonomous Prefecture, and Hotan in Southern Xinjiang, this study quantitatively analyzes changes in key livelihood capital indicators affecting industrial development before and after relocation. The analysis concludes that resettlement sites have established the foundation and conditions for industrial development. Following relocation, migrants have developed competitive industries by leveraging industrial parks, facility agriculture, newly developed land, and characteristic resources. Based on case studies, the paper summarizes six industrial development models, each with distinctive industries and development conditions. Limited employment channels, low land transfer ratios, and difficulties adapting to new industries have emerged as the primary constraints on subsequent industrial development. To promote continued industrial growth, authorities should provide more employment channels for migrants and enhance their vocational skills according to local settlement conditions.

Keywords: poverty alleviation and relocation; follow-up industry; limiting factor; Xinjiang

Introduction

China' s targeted poverty alleviation strategy has entered a new phase, transitioning from "overcoming critical challenges"to "consolidation and enhancement." The task of poverty alleviation relocation has shifted from simply "moving out" to ensuring that relocated populations can "stay stable, have work, and become prosperous." Subsequent industrial development is crucial for achieving this goal. Field investigations demonstrate that through labor export, vocational skills training, and investment attraction, relocated farmers' income and living standards can be effectively improved. However, without scientific demonstration, blind relocation or incorrect industrial choices can create significant difficulties for local residents. Therefore, in the post-poverty-eradication era, industrial development and employment expansion must be prioritized as the core of relocation work, with focused analysis of industrial development models under different resettlement modes and potential problems to improve resident satisfaction.

Literature Review

Internationally, concepts related to poverty alleviation relocation include ecological migration, development-induced migration, and environmental migration. The concept of ecological migration emerged in the 1970s and has since been extensively studied. The United Nations University Institute for Environment and Human Security (UNU-EHS) redefined environmental migrants as people who must leave their original residences due to environmental pressures. Research indicates that low income is an important cause of poverty and provides specific

capability measurement scales. Domestic scholars have primarily studied follow-up industrial development for ecological migration and grassland migration, revealing that subsequent industrial development mainly suffers from a lack of leading enterprises, inability to sustainably increase farmers' income, and imperfect resettlement models. To develop follow-up industries and increase migrant income, market mechanisms must be leveraged to establish regional interaction mechanisms and improve interest guidance mechanisms. Studies on grassland migration show constraints including insufficient industrial support capacity and single industrial structures, with follow-up industries facing difficulties such as insufficient forage land, low returns from forage planting, and challenges in labor transfer. Different resettlement models require location-specific follow-up industrial development based on natural resource endowments.

Study Area Overview

The three prefectures in Southern Xinjiang—Hotan, Kashgar, and Kizilsu Kirghiz Autonomous Prefecture (abbreviated as Kizilsu)—are located at the southwestern edge of the Taklamakan Desert, distributed in a contiguous area along the Kunlun Mountains, covering approximately 441,000 km^2. Hotan Prefecture, at the southernmost part of Xinjiang, borders the Karakoram Mountains and the northern Tibetan Plateau, with terrain dominated by mountains and Gobi desert, where oasis areas account for only 29.1% of the total. Kashgar Prefecture lies east of the Kunlun Mountains and west of the Taklamakan Desert, with desert comprising the majority of its area. Kizilsu Prefecture is situated at the intersection of the northern Kunlun and southern Tianshan Mountains, with mountainous areas exceeding [MATH_0]. The three prefectures govern 24 counties, including 7 pastoral and semi-pastoral counties. By the end of 2018, the total population of the three prefectures reached $7.7931\$\times10^{\{6\},withethnicminoritiescomprising94.83\times10}\{4\}\$$ people, with particularly large-scale relocation in 2019 involving $11\$\times10\hat{}\{4\}\$$ people across 10 deeply impoverished counties and cities including Shache, Yecheng, Zepu, Shule, Yingjisha, Jiashi, Yuepuhu, Makit, Hotan City, Moyu County, and Pishan County.

Data Sources and Research Methods

This study' s data and cases derive from field investigations conducted in October 2019 at seven poverty alleviation relocation settlement sites across the three prefectures. Survey questionnaires covered household member information, family income, and livelihood capital including farmland, pasture, vegetable greenhouses, skills training, and social organization participation. Research employed participatory rural appraisal methods, including collective interviews with community managers and quantitative questionnaire analysis. For each sample settlement, investigators used participatory tools to understand economic development, production activities, and community development. The survey primarily involved interviews with migrants, supplemented by multiple discussions with lo-

cal development and reform, poverty alleviation, and construction departments.

Industrial Development Foundations and Models

Industrial Development Foundation Analysis

Analysis reveals that key livelihood capital indicators affecting subsequent industrial development changed to varying degrees after relocation. Human capital, including education level and employment skills, showed minimal change in average education years but significant improvement in skills training participation. Natural capital, primarily farmland, decreased from 113.39$×10^{4}$ m^2 to 126.73$×10^{4}$ m^2 per capita. Material capital improved substantially, with the proportion of households owning vegetable greenhouses increasing from 16.7% to 72.8% and livestock sheds from 13.2% to 36.8%. Financial capital, mainly access to credit, improved markedly as loan difficulty decreased, with the proportion of migrants obtaining loans rising from 16.5% to 36.8%. Social capital, measured by cooperative organization participation and neighbor interactions, showed temporary reductions in neighbor interactions post-relocation but increased cooperative participation. Overall, migrants acquired improved development foundations, laying the groundwork for settlement sites to formulate industry policies based on resource advantages.

Common Industrial Development Models and Cases

Based on case studies, six common industrial development models have emerged in Southern Xinjiang' s poverty alleviation relocation settlements:

Model 1: Farmer + Industrial Park + Agriculture
Some settlements are built near industrial parks or satellite factories, where migrants engage in secondary and tertiary industries such as textiles, logistics, and electronics assembly. This model effectively integrates industrial parks, enterprises, and relocated households, solving employment issues while facilitating farmers' transition to industrial workers. The government provides new employment subsidies of [MATH_1] yuan per person and interest subsidies on actual loans from financial institutions. For example, in Kizilsu' s Aktau County, the Silk Road Jiayuan settlement built a new farmers' market where migrants engage in logistics and cleaning services, earning over [MATH_2] yuan per month in new income.

Model 2: Specialized Cooperative + Base + Farmer
Post-relocation, migrants possess material capital for industrial development but generally lack funds, technology, and market access. The "farmer + cooperative" model integrates livelihood resources at settlement sites, expanding production scale and achieving standardized cultivation and unified product sales. This model works across various settlement types and helps solve technical and marketing challenges. For instance, Kizilsu' s Aktau County Silk Road Jiayuan settlement established a standardized livestock breeding base where

migrants join cooperatives with livestock as shares, receiving unified enterprise procurement.

Model 3: Capable Individual/Large Household + Base + Farmer
According to Xinjiang' s relocation policy, migrants retain contracted rights to farmland and pasture in their places of origin. Economically stronger migrants can consolidate other households' land for cultivation, or external farming enterprises can lease land for industrialized agricultural operations, freeing labor for secondary and tertiary industries. Land transfers facilitate application of agricultural technology and crop shifts from traditional grains to high-value specialty fruits, medicinal herbs, and other cash crops. Xinjiang provides annual interest subsidies at 2%-4% for new project loans to poverty alleviation leading enterprises or large farming households to encourage land transfer.

Model 4: Farmer + Characteristic Resources + Entrepreneurship
This model leverages tourism resources, border ports, and commercial storefronts for entrepreneurship and tertiary industry development. It transforms resource advantages into livelihood opportunities, particularly enabling ethnic minorities to utilize their skills in ethnic cuisine and handicraft processing. The government provides entrepreneurship loan guarantees of up to [MATH_3] yuan for leading entrepreneurs based on the number of poor households they employ, with interest subsidies. In Kizilsu' s Wuqia County, the settlement at the Torugart Port enables migrants to engage in micro-entrepreneurship through small shops, workshops, restaurants, and logistics services. Commercial storefronts in settlement communities are sold or rented to migrants at below-market prices, with each shop generating monthly income increases of [MATH_4] yuan.

Model 5: Farmer + Land Development + Specialty Agriculture
Some settlements provide migrants with land developed through water and soil conservation projects as a foundation for industrial development. Land is either allocated for independent operation or leased to large agricultural companies, with migrants receiving lease income and wages from agricultural employment. Both approaches shift from traditional crops to specialty agriculture including medicinal herbs, forage, and forestry. Initial government land provision ensures livelihood security during settlement. For example, Kizilsu' s Aktau County Silk Road Jiayuan settlement developed 666.67 hm^2 of saline-alkali land into forage bases, 333 hm^2 of facility agriculture bases, and 667 hm^2 of forestry bases, leasing 400 hm^2 and providing migrants with annual lease payments of approximately [MATH_5] yuan per household.

Model 6: Farmer + Facility Agriculture + Base + Animal Husbandry
Leveraging existing or newly built vegetable greenhouses and livestock sheds is the most common poverty alleviation approach in Southern Xinjiang. This integrated model combines facility agriculture, animal husbandry, and employment, providing conditions for developing modern agriculture and entrepreneurship. Initially, migrants rely on planting and breeding, but as they acquire skills and market information, they gradually shift to secondary and tertiary industries, achieving "dual insurance" through both industrial development and employ-

ment. In Artush City' s Arsai settlement, 1,000 households were relocated with 1,000 vegetable greenhouses and 1,000 livestock sheds allocated, ensuring most households received production facilities while those without access relied on labor export and government-purchased services such as forest rangers and security personnel earning [MATH_6] yuan annually.

Constraints on Industrial Development

Employment Transfer Constraints

In settlements relying on industrial parks, local governments build satellite factories when park employment is insufficient. However, these factories face problems of small scale, low development level, and limited labor absorption. While skills training helps some migrants find employment in parks or through government-purchased services, some settlements still suffer from insufficient jobs and difficult labor transfer. A minority find employment directions, but others remain without new opportunities. If long-term unemployment persists, migrants may fall into new livelihood difficulties. In land development settlements, remote locations limit access to employment and market information, while ethnic minorities face barriers in thinking, language, and customs that restrict outward employment pathways.

Land Management Constraints

Land-based resettlement requires developable land of sufficient scale. Without adequate land, migrants who must manage crops cannot seek urban employment, and insufficient land returns may not support household livelihoods—particularly when newly developed land is poor quality and difficult to lease. Some migrants face dilemmas between farming and migrant work, with potential for re-poverty or return migration. As Fei Xiaotong noted, Chinese society is fundamentally earth-bound, with land as the basic means of survival. Due to deep emotional attachment to land, migrants show low enthusiasm for land transfer —over [MATH_7] of farmland in places of origin remains self-cultivated, mostly in fragmented plots under 333.35$\times$10^{4}$ m^2, constraining agricultural industrialization and technology adoption. Remote locations between origin and resettlement areas make land management inconvenient, forcing farmers to plant low-technology, low-return crops like wheat, corn, and forage.

Adaptation to New Industries Constraints

Although migrants in facility agriculture and land development settlements remain in primary industry, their activities differ from traditional farming. Pre-relocation cultivation focused on low-technology grain crops, while post-relocation development involves facility agriculture and modern animal husbandry with higher technical requirements. Facing these new industries, migrants experience multiple adaptation difficulties in technology and market information, with some abandoning development due to lack of skills. Settlement

cooperatives require leadership from capable individuals or enterprises, but such leaders are scarce in Southern Xinjiang, resulting in low-level cooperation concentrated in primary industry. Traditional thinking and acquaintance-based society patterns hinder migrants' acceptance of cooperation with strangers and environmental adaptation.

Conclusions

This study, based on field investigations in three Southern Xinjiang prefectures, reveals that post-relocation migrants experienced increases in natural, material, human, and financial capital, while social capital temporarily decreased. Overall, relocated migrants possess improved conditions and foundations for industrial development. Six industrial development models have emerged, each with specific advantages, conditions, and constraints. Industrial development is primarily constrained by limited employment opportunities, low land transfer ratios, and adaptation difficulties.

Key recommendations include:
1) **Combine local realities with constraint analysis**: Industrial model selection must consider local resource endowments, climate, existing industrial bases, and market characteristics, focusing on developing competitive industries such as high-quality agriculture, green organic farming, modern services, and rural tourism. Particular attention must be paid to preventing job shortages that cause migrant accumulation at settlements and ensuring sufficient land area to support livelihoods.

2) **Emphasize skills training**: Lack of technology is the primary constraint across models. Training should be expanded according to industrial needs —industrial park migrants need industrial worker skills, facility agriculture and modern animal husbandry require cultivation and breeding techniques, and entrepreneurship demands greater government support and guidance. Southern Xinjiang's industrial poverty alleviation must shift from material assistance to technical support.

References

[1] SEN Amartya. Poverty: An ordinal approach to measurement[J]. Econometrica, 1976, (44): 219-231.

[2] HE Jiali, MA Zhihu, CHEN Xuao. Empirical study on follow-up industry development in Qinba mountain area after returning farmland to forest from the perspective of comparative advantage theory: Based on the investigation of the present condition of the follow-up industry in Shanxi, Sichuan, and Chongqing[J]. China Review of Political Economy, 2015, 5(2): 211-224.

[3] HOU Maozhang, ZHOU Jing. The follow-up industry development of the poverty alleviation and relocation in Hunan Province[J]. Economic Geography, 2017, (8): 177-181.

[4] MENG Xiangjing. Analysis on characteristics of ecological migrants in Sanjiangyuan area in China and its effects on ecological migration project[J]. Population and Development, 2011, (4): 2-8.

[5] GE Gengaowa. Exploration on policies of ecomigration in pastoral areas of Inner Mongolia: A case study of ecomigration of Sonid Right Banner, Xilingol[J]. Magazine Office of Study and Exploration, 2006, (3): 61-64.

[6] ROSS S, WALL G. Evaluating ecotourism: The case of North Sulawesi, Indonesia[J]. Tourism Management, 1999, 20(6): 673-682.

[7] GOFFMAN Ethan. Environmental refugees: How many, how bad[J]. CSA Discovery Guides, 2006, (7): 1-15.

[8] SHUI Wei, XU Guowei, LAN Xiaoxiong, et al. A review of study on ecological migrant[J]. World Regional Studies, 2012, (1): 150-157.

[9] LUO Guihua. Investigation on the Three Rivers Ecological resettlement and the industry follow-up of development[J]. Journal of Qinghai Nationalities University(Social Sciences), 2009, 35(2): 81-86.

[10] ZHAO Hongli, CHEN Xiuwen, JIANG Yue. Eco-industrial development model immigrants follow-up study: National nature reserve as an example to Sanjiangyuan[J]. Ecological Economy, 2009, (7): 105-108.

[11] REN Shanying, ZHU Guangyin. The follow-up industry development mechanism of ecological migration in Three River Sources Area[J]. Ecological Economy, 2012, (10): 107-110.

[12] LI Sheng. Analysis on the situation of subsequent industry development of Inner Mongolia grassland ecological immigration[J]. Heilongjiang National Series, 2014, (1): 101-105.

[13] XIE Dawei. Difficulties in production and life faced by herdsmen in Xinjiang after their centralized settlement and the solution: Based on research on L settlement point in Y city[J]. Social Sciences in Xinjiang, 2018, (6): 142-151.

[14] KONG Deshuai, HU Zhentong, JIAO Jinshou, et al. Study on the development model of follow-up industry in different types of pastoral areas: Take Tianzhu County of Gansu Province as an example[J]. Rural Economy, 2014, (6): 60-64.

[15] CHEN Zhongxiang, CHEN Liang. Further development mode of the resettlement areas for the migrants in Ningxia[J]. Arid Land Geography, 2008, 31(6): 960-963.

[16] WANG Fang, LU Fuming, YANG Zhaoping, et al. Residents' perception and satisfaction on ecological migration in Xinjiang Tianshan heritage site[J]. Arid Land Geography, 2019, 42(3): 653-663.

[17] ZHANG Lijun, WANG Fei. A probe into the developmental countermeasure after ecological migration in the western pasturing region of China[J]. Journal

of Minzu University of China (Philosophy and Social Sciences Edition), 2011, 38(4): 31-36.

[18] ZHANG Xiaochen, HUANG Li, WANG Lulu. Discussion on development models of water project reservoir area and resettlement area in Yunnan Province[J]. Water Power, 2019, 45(5): 12-16.

[19] FEI Xiaotong. The foundations of Chinese society[M]. Beijing: People' s Publishing House, 2008: 1.

Note: Figure translations are in progress. See original paper for figures.