



Research article

The formation and evolution of vulnerability risk of rural poor groups under the perspective of social support — based on the analysis of “sensitivity-resilience”

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ABSTRACT

The anticipated sensitivity and resilience practices of the poor groups expose them to significant vulnerability risks, with social support actions arising from the return to poverty posing additional interference. To comprehensively prevent and mitigate vulnerability risks, breakthroughs in corresponding social support are essential. This study, through questionnaire surveys and semi-structured interviews, collected original data from 750 impoverished households in Lantian County, northwest China. Using a bottom-up approach, it constructed a “sensitivity-resilience” framework to assess the vulnerability and resilience mechanisms of the relatively poor groups. The research reveals that vulnerability and resilience interact in response to risk shocks. The strong livelihood dependence, capital accumulation deficiency, and sensitivity characteristics of social marginalization among rural relatively poor groups, coupled with fragmented and inefficient social support, exacerbate the degree of vulnerability risks, leading to an amplification of sensitivity and a reduction in resilience. Based on these findings, targeted at the characteristics of vulnerability risks and the fatigue factors of social support, this study proposes policy recommendations at two levels: system reengineering to reduce sensitivity and long-term reengineering to enhance resilience, aiming to prevent large-scale return to poverty.

1. Introduction

Poverty has coexisted with human civilization and is prevalent in various societal forms. Reducing poverty has become one of the United Nations' Millennium Development Goals [1]. Particularly for developing and least developed countries, poverty remains a significant constraint to economic development [2]. In the early 2020s, China has steadfastly fought against poverty, and, it successfully completed the arduous task of eradicating absolute poverty [3]. Subsequent poverty alleviation efforts shifted focus to addressing relative poverty, achieving the poverty reduction goals of the United Nations' 2030 Agenda for Sustainable Development 10 years ahead of schedule. Conceptually, while absolute poverty addresses individual survival challenges, relative poverty responds to more complex issues of social equity [4]. In the 1960s, Townsend reinterpreted the concept of poverty, arguing that it is the “relativity” of poverty that is absolute [5]. Subsequently, Amartya Sen proposed the theory of capability poverty in his book “Poverty and Famines,” suggesting an understanding of relative poverty from the perspective of “feasible capabilities,” where the essence lies in the deprivation of feasible capabilities rather than low income [6]. Building on these ideas, with the development of the times, relative

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poverty, in its manifestation, not only represents the survival challenges of individuals with low income and difficulty meeting basic needs but also encompasses the insufficient rights, resources, and opportunities of individuals in society. In terms of causation, poverty is not only an individual shortcoming but also a social consequence. Social systems, structures, power relations, and policy inequalities all contribute to the exacerbation of individual poverty. This is evident in how adverse natural and human conditions reduce the coping abilities of slum residents [7]. The limitation of employability, decision-making capacity of the poor, with less social resources make it difficult to improve the family's resilience and welfare level [8]. Adverse natural and human conditions further diminish the coping abilities of slum residents, leading them into poverty [9].

The concept of "vulnerability" was first introduced into the study of natural disaster science in the early 1970s. Some scholars argue that vulnerability refers to the sensitivity of a subsystem (such as an urban or ecological subsystem) to internal or external disturbances and the resulting degree of damage to the system itself [10]. As sociologists continue to delve into the study of poverty, a participatory approach is employed to identify poverty, possibilities, and the extent of poverty [11]. The ongoing expansion of the field of poverty vulnerability research has gradually become an important branch in vulnerability studies. Poverty vulnerability can be understood as the losses individuals and households may suffer when facing potential harmful external pressures and the impact of risk shocks that could lead them into a state of poverty. Tracing back to its origin, the earliest known concept of "poverty vulnerability" was first introduced by the World Food Program (WFP) in 1997, and then the World Bank, in its World Development Report 2000: Fighting Poverty, based on its expansion of the definition of poverty in its World Development Report 1990, incorporated risk and vulnerability when facing risks into the understanding of poverty. The World Bank provided a systematic exposition of this concept, officially establishing and widely accepting the term "poverty vulnerability" [12,13]. Vulnerability is a term closely associated with "risk" [14]. They are interdependent and not isolated, both embedded within the livelihood systems of farm households. The mechanism of vulnerability can be summarized by understanding the occurrence of poverty vulnerability through three links in a risk chain: risk, risk response and outcome [15,16].

From a short-term and static perspective, stochastic factors play a predominant role in the process of farm households escaping or falling into poverty [17,18]. However, from a long-term and dynamic perspective, structural factors such as household human capital financial capital and social capital play a leading role [19]. Climate change, by influencing the availability of resources, the sustainability of livelihoods, and the living conditions of urban informal settlers in Bhutan, increases the risk of poverty, acting as an external risk [18]. In fact, human vulnerability stems not only from the instability of the natural environment but also from economic and social capital, public service support, and the decision-making capacity of settlers, constituting internal risks. Each of these aspects is susceptible to risk, with the scale, frequency, and duration of these risks impacting the poverty vulnerability of households [20]. Moreover, households facing both external risks and weak internal capabilities are at a higher risk of relapse into poverty. Therefore, to mitigate the impact of climate and non-climate shocks on current and future periods for poverty-stricken populations, the possibilities of different states occurring should be considered (i.e., risks).

Moreover, families and individuals are risk-averse. Families have their own risk resistance and will take various actions to resist risks, reduce risk exposure through various ways, and take actions to resist risks before and after the event, which is a manifestation of resilience [21,22]. Resilience, as an internal attribute of an individual, is positively related to the resource endowment, as well as the overall quality of the individual, which is determined by variables such as health, mindset, and decision-making ability [23,24]. Resilience is a combination of various capabilities, and possessing a capability in a certain aspect implies the attainment of freedom in that specific area. In summary, resilience is a combination of various abilities, and when an individual possesses a certain capability, it implies the attainment of freedom in that specific aspect. The reason relatively poor groups remain in poverty is because they lack the feasible capabilities to lift themselves out of poverty. Within the required combination of capabilities to escape poverty, certain capabilities are deprived, leading to a mismatch between their own capabilities and social resources. This mismatch prevents them from fully accessing the social resources necessary to achieve the most basic level of well-being in their society [25]. If, at this stage, households lack necessary risk management measures, they will incur welfare losses when faced with risks [26]. It is therefore important to strengthen the resilience and adaptive capacity of poor households and the resources on which they depend [27]. Governments and formal organizations address poverty and vulnerability issues by advancing more targeted and equitable policy schemes, providing institutional support. This formal support aims to address poverty and vulnerability through official channels. The Indian government has promulgated the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), addressing poverty, climate change, and livelihood vulnerability by improving natural resources and rural infrastructure, constructing productive and durable assets [28,29]. In the risk adaptation strategy, enhancing the capability for poverty alleviation is crucial for relatively poor individuals. The Chinese Ministry of Human Resources and Social Security has undertaken large-scale, widespread, and diverse vocational skills training for relatively poor laborers, the unemployed, and on-duty migrant workers to enhance their vocational skills and entrepreneurial abilities [30]. Strengthening medical and social security infrastructure can help vulnerable groups enhance resilience [31]. Chile, through the privatization reform of the social security system, emphasizes government policies tilting toward vulnerable groups in society, proposing to safeguard the interests of socially disadvantaged populations [32]. Informal support may be another option, stemming from non-institutional support provided by families, friends, and informal organizations [33].

Besides, risk and risk response combine to lead to the ultimate welfare outcome. Currently, there is a growing focus in the academic community, both domestically and internationally, on the vulnerability and resilience mechanisms from a comprehensive perspective. Recent literature analyses emphasize that understanding the impacts of climate change and adaptation needs goes beyond solely considering climate change itself. Vulnerability and livelihood security are regarded as crucial components for comprehending the effects of climate change on humanity [34,35]. In response to this, scholars have developed numerous theoretical frameworks, assessment methods such as sustainable livelihood frameworks, modelling, climate vulnerability indices, and "indicator-assessment" models, leading to the accumulation of rich achievements in this field [36,37]. Many sociologists consider vulnerability as a dimension

of poverty to supplement the limitations of defining poverty solely through monetary standards. In fact, sociologists often use the term “social vulnerability” to distinguish it from “economic vulnerability”. Emphasizing only the vulnerability of social capital, much like economists solely focusing on economic vulnerability, is inherently incomplete. This is because vulnerability is a complex product of various environments, including economic, social, and natural factors. Therefore, the analysis of vulnerability should adopt a comprehensive perspective, particularly in the formulation of public policies, where vulnerability should be assessed from multiple dimensions. In the pursuit of sustainable development amid global changes, vulnerability and coping strategies can be socially differentiated based on household decision-making and resource capabilities. Decision-making capacity is crucial for adjusting and addressing the adverse impacts of climate change [38]. Increasing evidence suggests that successful adaptation and risk reduction strategies require not only acknowledging climate change and specific climate hazards but also recognizing human vulnerability and adaptive capacity disparities, as well as an acknowledgment of varying starting points in terms of resilience for different social groups or communities [39,40]. Enhancing awareness levels and building capital reserves contribute to strengthening the resilience of slum households in the face of risk shocks [41]. From a governmental perspective, intervention measures, especially in rural and tribal areas, can effectively address the challenges posed by climate change through livelihood improvements and increased agricultural productivity [42]. In comparison to existing research, there is a notable scarcity of studies that delve into the formation and logical connections of vulnerability and resilience within rural human habitat systems from the bottom up, specifically by employing the “sensitivity-resilience” analytical framework and focusing on the unique characteristics of rural China. Particularly, this paper articulates the specific factors that manifest as sensitivity and resilience for different poor groups. Furthermore, this paper emphasizes the importance of addressing the vulnerability risks of relatively poor groups and rebuilding resilience to enhance the robustness of social support, so as to effectively prevent and mitigate the vulnerability risks associated with rural relatively poor groups. This, in turn, is crucial for curbing the risk of large-scale relapse into poverty.

Advancing the resolution of relative poverty and consolidating and expanding the achievements in poverty alleviation are crucial objectives in implementing the rural revitalization strategy, particularly during the ‘14th Five-Year Plan’ period [49]. Accurately understanding the vulnerability risks and triggering factors of the rural relatively poor groups and reducing their vulnerability risks serve as a key lever to address relative poverty. This approach represents a feasible path to achieve substantive progress in advancing shared prosperity during the new historical stage in China. Simultaneously, the comprehensive poverty alleviation in China marks a historic achievement [43]. It is not only a triumph for the Chinese people but also a significant contribution to global poverty reduction

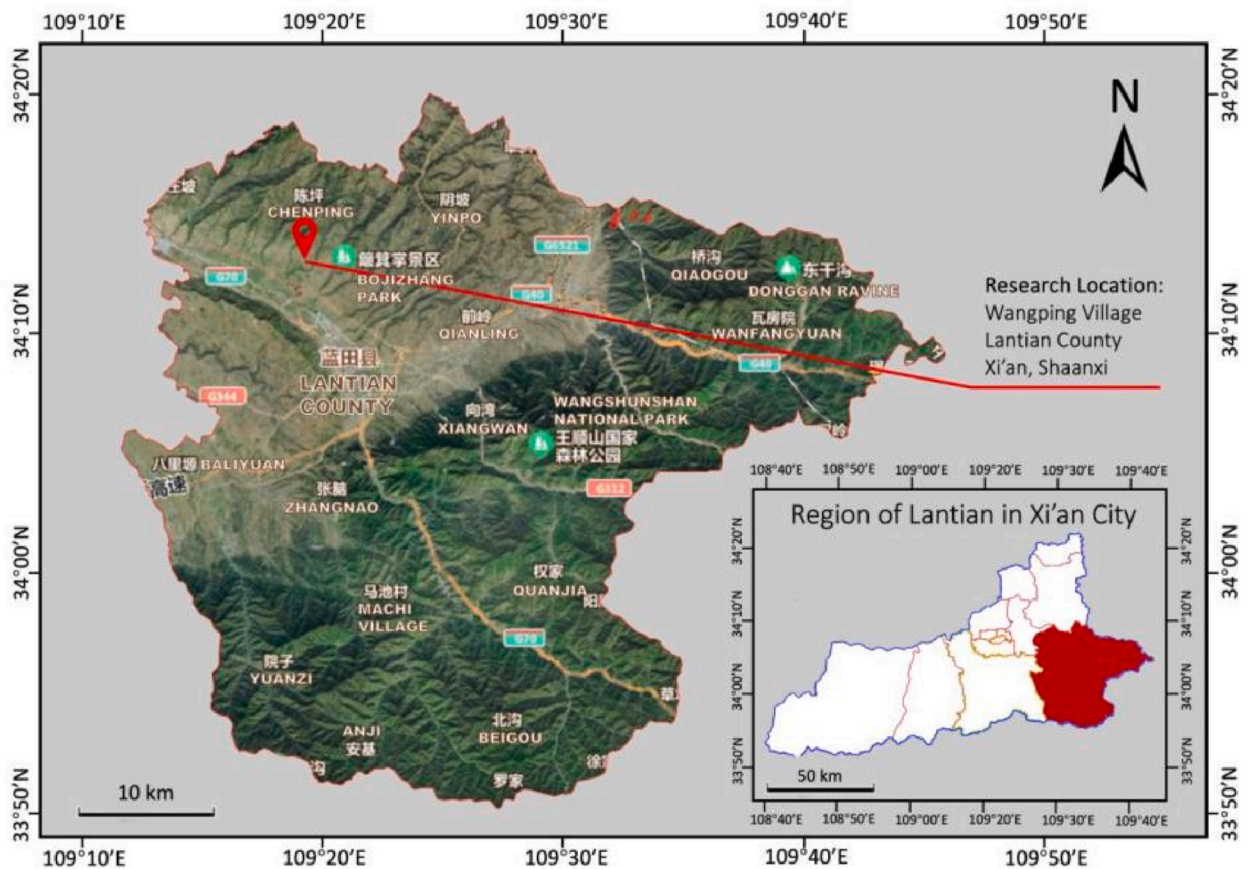


Fig. 1. Schematic diagram of the study area.

efforts. China’s success in poverty reduction is widely acknowledged globally, as its experiences can serve as valuable lessons and inspiration for other countries, injecting new impetus into the global poverty reduction cause.

2. Study area

Lantian County is located between 33°50’ to 34°19’ north latitude and 109°07’ to 109°49’ east longitude, with a total area of 2006 square kilometers. Situated in the eastern part of the Guanzhong Plain, at the northern foot of the Qinling Mountains, Lantian features a diverse topography with hills, plains, ridges, and mountains, characterized by significant elevation differences and a dense network of gullies and streams (see Fig. 1). The arable land covers approximately 35 square kilometers, which to some extent constrains agricultural development and improvements in the living environment. Lantian County adheres to an agricultural industry-based development strategy and vigorously promotes seasonal fruit industries such as cherries and grapes. The main sources of employment for the local population are farming, animal husbandry, and out-of-town labor work, with an average per capita disposable income for farmers reaching 8531 yuan. As of the end of 2022, the permanent population of Lantian County is 494,800, with 323,300 residing in rural areas, accounting for 65.85 % of the total population. The average years of education for the population aged 15 and above is 9.44 years. Among the permanent residents, 42,206 people (8.5 % of the total population) have attained a college education or above. The overall educational level of the population is relatively low.

Under the multiple perturbations of natural and human environment changes, the human-land relationship and social structure of the study area are constantly changing. On the one hand, under the influence of climate change, the climate is controlled and influenced by topography and monsoon winds, and there are large regional differences in climate. Various types of disasters occur in different regions and seasons, and the major ones are continuous rain, heavy rain, drought, hail, landslides, dry and hot winds, insect pests, earthquakes, and epidemics. Among them, drought and waterlogging occur more often, with the ratio of drought to waterlogging being 4.7:1 [44]. Hailstorms, dry and hot winds, and insect pests accompany the occurrence of drought and waterlogging. These disasters, to varying degrees, have caused threats and losses to people’s lives and property. In addition, the loss of rural population and capital under urban siphoning has, to some extent, impeded the transformation of the livelihoods of farming households, and has made it easy for rural areas to fall into poverty again. Of the county’s resident population, 74,002 are mobile, of which 66,597 are in the province as Lantian County is only 50 km away from the provincial urban areas, an increase of 37,793, or 104.37 %, compared with the sixth national census in 2010.

3. Methods

Based on the understanding of poverty vulnerability and resilience, this study will, from the individual risk dimension, utilize Moser’s vulnerability risk analysis framework, namely “Sensitivity-Resilience” [45]. Sensitivity is defined as the state where

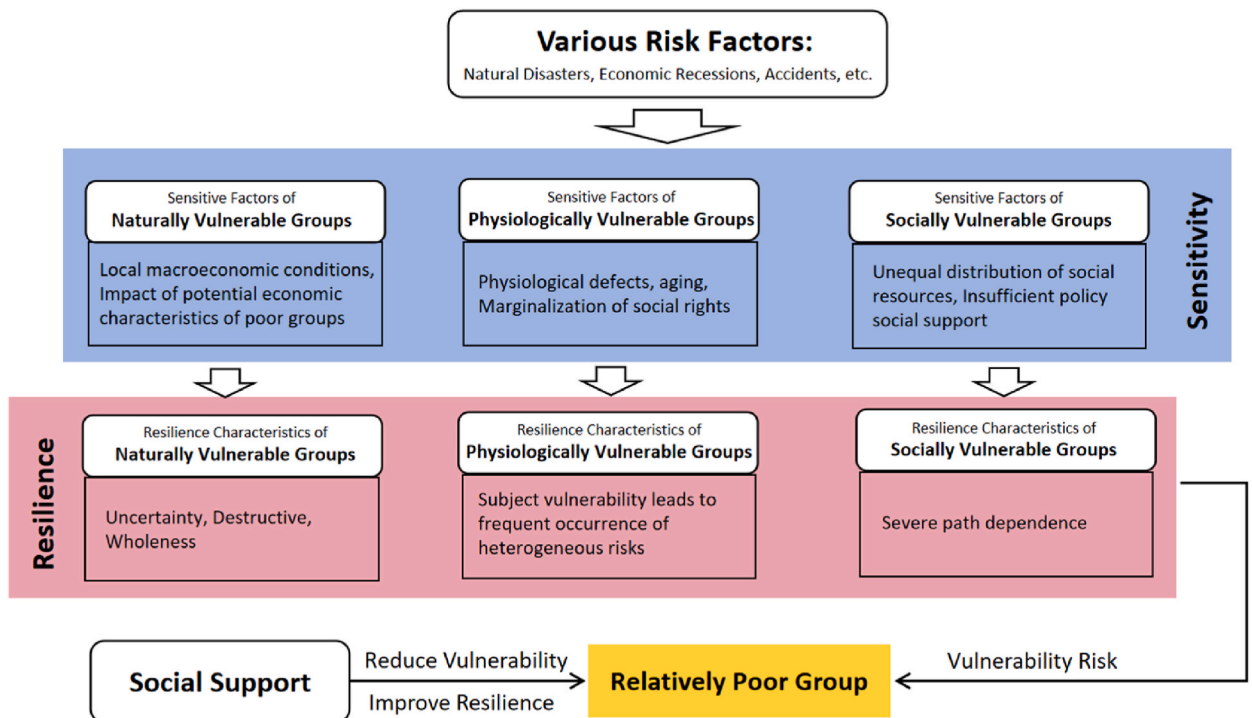


Fig. 2. Pathways of the impact of vulnerability risk.

individuals are exposed to changes in the social or environmental system and experience losses due to a lack of adaptability to these changes. It identifies the most vulnerable aspects of individuals in the risk disturbance [46]. Resilience is assessed by considering an individual’s recovery ability to cope with external risk impacts, evaluating the degree to which they can buffer disturbances and adapt to changes [47]. By examining how risk disturbance factors affect the behaviour of the relatively poor groups, this study aims to identify the characteristics and causes of vulnerability in relative poverty groups. Based on the definition of sensitivity and resilience, the research results are presented in terms of sensitivity and resilience elements (see Fig. 2). Furthermore, the study delves into the behaviours that disrupt the relatively poor groups and the adaptation mechanisms adopted by various stakeholders. Accordingly, the paper focuses on the adaptation mechanism challenges faced by relative poverty groups, breaking them down into systematic actions affecting disturbance sensitivity and analysing resilience response issues. The research also provides corresponding social support responses to reduce population sensitivity and reconstruct resilience mechanisms.

3.1. Data collection

Data acquisition primarily involved household research and departmental interviews. Considering existing research, this paper formulated the research questionnaire and interview outline. A pre-survey was conducted on May 7–8, 2022, in Wangping Village, Lantian County, Xi’an City, Shaanxi Province. The final research questionnaire was subsequently revised. From May 13 to May 20, 2022, researchers visited the case study site for formal research. During this period, six semi-structured interviews were conducted with the village committee and relevant industry leaders, resulting in a total effective interview recording time of 5.5 h. Interview records were later organized to extract pertinent information and data from the case study site. Following this, household surveys were conducted with a focus on key subjects, including low-income households and ordinary farmers in the case villages. The questionnaire covered fundamental information about farmers, rural economy, and perceptions of poverty risk. Random sampling was employed for “one-on-one” interviews, with each household’s research duration ranging from 0.5 to 1 h to ensure authenticity, accuracy, and reliability of the obtained data. A total of 833 questionnaires were collected, with 750 deemed valid, resulting in a questionnaire validity rate of 90.6 %. The basic information of the interviewees is presented in Fig. 3.

3.2. Data analysis

3.2.1. Risk characteristics and causes of natural vulnerability groups

The occurrence of natural disasters, public health events and accidents has no certain rules. However, resolving the negative impact of the disaster requires a lot of time and effort, and to a certain extent, it is accompanied by the affected population for a certain period or throughout the production or life cycle. According to the results of the survey of 750 households, the number of farmers whose main livelihood is seasonal fruits has decreased by 32.06 %. Based on disaster statistics from recent years, the consequences of disasters

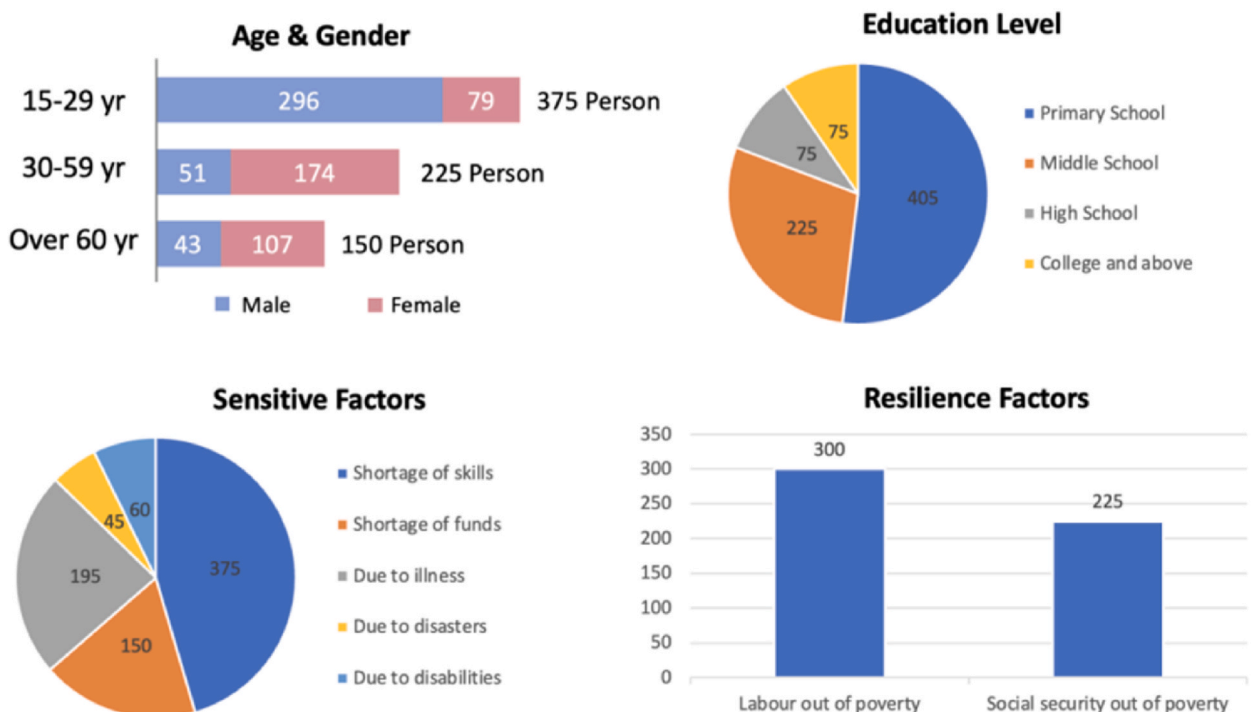


Fig. 3. Basic information of interviewees.

exhibit significant features such as loss of life and property, deprivation of individual viable capabilities, and a decline in welfare levels. Additionally, statistics from 232 households engaged in grape cultivation show that the average grape drop rate has reached 43.49 % in the past two years. Interview data (as shown in Table 1) and the history of Wangping village corroborate the prevalence of these phenomena.

In the face of the sensitivity characteristics of natural vulnerability groups with weak accumulated capital and high ecological risks, fiscal support measures are generally adopted to intervene and reduce sensitivity. Therefore, implementing various agricultural subsidies and support protection policies, establishing a sound agricultural support protection system, and timely and fully disbursing funds to farmers through effective agricultural subsidy policies can increase the transfer income of such groups. This approach is helpful in significantly enhancing their livelihood resilience.

The village government contributes 80% to the agricultural insurance for farmers. In the event of a natural disaster, the compensation amount is determined based on the extent of the losses. At the same time, the government provides villagers with temporary shelters and material assistance services (Village Director, interview data: HC2022051320).

From the perspective of building resilience against vulnerability, farmers have adopted responsive actions such as seasonal fruit processing and seeking off-farm employment to mitigate natural risks. The government tends to enhance governance capabilities or explore alternative development paths, such as tourism development, land consolidation, and agricultural industries. With formal social support provided by the government as the mainstay, various entities, including local governments, village committees, business enterprises, and impoverished households, form a diverse social support network with multiple forms of assistance.

The government encourages impoverished households to vigorously develop grape and apple industries. We have a grape industry demonstration park invested by the government. The village committee recruited me, allocated a piece of land for me to manage, and provides subsidies every year. The money from selling grapes belongs to us. It is through this initiative that our lives have gradually improved over the past two years. Without the help of the government and village committee before, life at home was very difficult (Villager W, Interview Data: HC2022051334).

The government specifically encourages poor groups to develop other agriculture industries with strong soil adaptability. This ensures that they can earn additional income from the industry, allowing them to have a sustainable source of income and building long-term resilience.

3.2.2. Risk characteristics and causes of physically vulnerable groups

In the past five years, among the interviewed groups in the research area, major medical expenses due to illness have been the second leading cause of financial strain for families (as shown in Table 1). Physiologically vulnerable groups, despite the potential for improved labor productivity and the promotion of educational human capital accumulation contributing to economic growth, generally exhibit poor physical health and low educational levels.

During the survey, it was observed that among the respondents who found it difficult to address most of their living issues through the minimum living allowance, the majority belonged to the group with primary school education or below, with a decreasing percentage as the educational level increased (as shown in Fig. 4). However, in Lantian County, the population with a cultural level above college accounts for 8.5 % of the total permanent population. Despite the higher education, this group faces poverty issues, with low cultural levels, weak family labor capacity, and a tendency to rely on livelihood maintenance through receiving minimum living allowances and relief funds. They lack competitiveness in the job market and struggle to secure high-income employment positions.

People from small and humble backgrounds, like us, have limited exposure and skills. My dad used to take care of my sick mom while working at the same time. However, as my mom's condition worsened over time, he had to prioritize taking care of her, leaving no extra time to learn any specific skills. It has been seven or eight years since I graduated. At that time, due to concerns about the family situation, I didn't think about going too far from home to find a job. I asked people in the village to help me find a job in a nearby factory (Villager Z, Interview Data: HC2022051324).

Physiologically vulnerable groups exhibit relative disadvantages in terms of economic capacity, developmental abilities, and social rights. Lacking robust human capital, they may have either no capacity for labor or only partial labor capacity. Consequently, they often find themselves in situations of relative deprivation in terms of both capability and rights.

Table 1

The financial difficulties experienced in past 5 years.

We have experienced many hail, frost, and flood disasters here. If there is a disaster in a year, the overall crop production will decrease by 40 %–80 %. It generally takes 2 years from seedling to the fruiting stage, which means farmers will probably have no income for two years. It should be noted that 70 % of the villages' annual income comes from fruit cultivation (village director, interview data: HC20220513).

Environmental Factors	NOH	Subject Factors	NOH	Policy Factors	NOH
Natural Disaster	226	Children's Education	127	Policy Changes	35
Sudden Disaster	103	Illness	225	Household Registration System	97
Crop Failure	205	Labor Shortage	214	Social Security System	62

*NOH: Number of households.

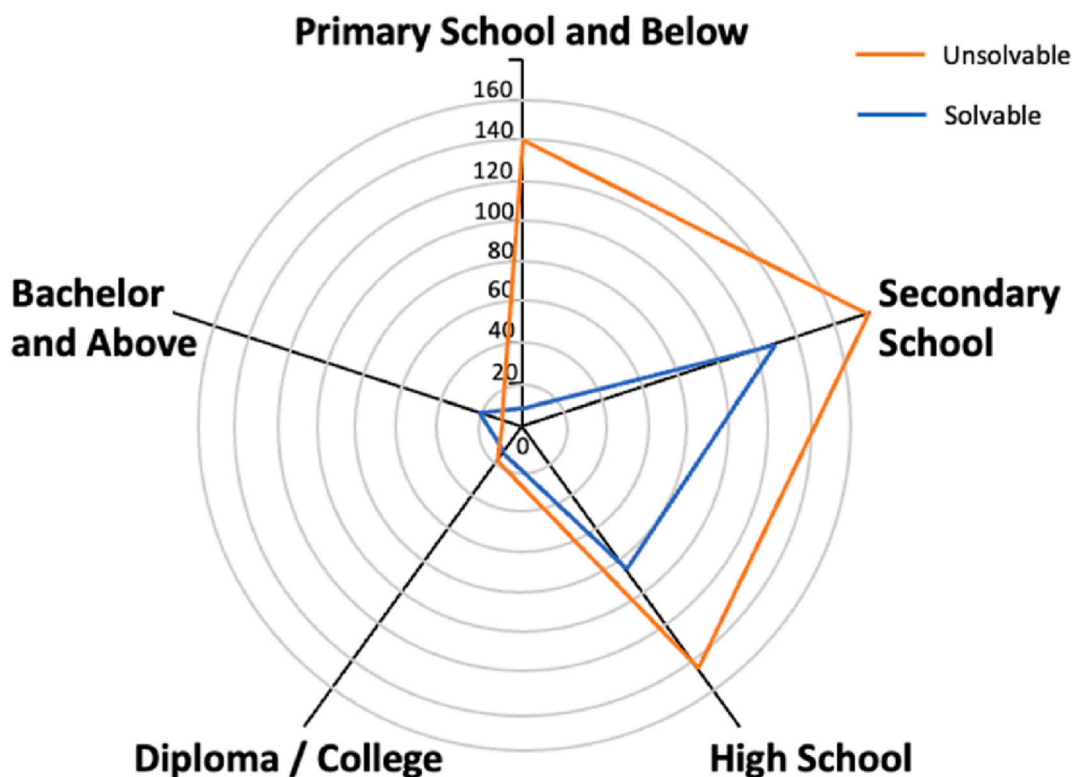


Fig. 4. Relationship between educational attainment and the ability of subsistence allowance to address most life issues.

In response to the low livelihood resilience and social marginalization sensitivity factors in the research area, the local government allocates 35 % of collective income to social security for physiologically vulnerable populations. For example, a certain proportion of collective enterprise income is set aside as the village collective public welfare fund, which is used to support the physiologically vulnerable groups in areas such as healthcare, education, and elderly care. This helps alleviate the issues arising from sensitivity factors.

The local government focuses on the inherent strengths of poor individuals, establishing targeted vocational training centres and implementing diverse vocational training courses for new farmers. This approach promotes school-enterprise cooperation and encourages farmers to seek employment locally, stabilizing job positions. Through this process, poor farmers not only acquire practical professional skills, breaking away from traditional mindsets, but also broaden their social support networks and accumulate social capital.

In non-vocational education, efforts are made to elevate the education level of the next generation in poor families, improving the intergenerational mobility of rural education and income. The options for vocational school education are expanded, increasing opportunities for children from poor families to pursue higher education. By enhancing the capabilities and intrinsic motivation of poor groups, their resilience to vulnerability risks is strengthened. In the face of future risk impacts, relatively poor and vulnerable groups can achieve self-support.

3.2.3. Risk characteristics and causes of socially vulnerable groups

In the face of risk shocks, according to a survey of 750 interviewed households, the number of families with an annual income below 50,000 yuan accounted for 35.52 % of the total. This group exhibits a relatively poor capacity for sustained income growth, making them susceptible to the impact of recurrent poverty risks. Moreover, they may face difficulties in promptly and effectively responding to the emergence and mitigation of such risks. Village government officials mentioned, that in the past two years, the number of identified impoverished households has not decreased, with no members exiting the poverty list. Such vulnerable groups need corresponding systems to protect their social rights, and lacking government support will increase the possibility of risk exposure and lead to the risk of poverty for vulnerable groups. At the same time, the path dependence on the social assistance system is the internal cause of the “waiting, relying, and needing” thinking, and it is also the key factor for the generation of risks.

As shown in Fig. 5, rural household registration has far greater demand for policy concessions, medical subsidies, and education benefits than those with urban household registration. Due to the unbalanced distribution of policy-based social support forces, the viability of socially vulnerable groups such as rural migrants, low-income households, and non-registered marginal households has been deprived. Among the permanent population in the study area, the floating population is 74,002. Compared with the sixth national census in 2010, the floating population increased by 104.37 %. Due to the slow process of the stripping of registered permanent

residence welfare and the slow process of urbanization of the transferred peasant population, the rural floating population is in a vacuum of urban welfare resource sharing. The feasibility of the rural floating population in terms of political freedom, economic conditions, social opportunities, and protective guarantees is weakened, and then it is difficult to realize the instrumental freedom of the family, which is manifested in the easy occurrence of anomie such as ambiguity, conflict in the adjustment process of the rural minimum-security system. In addition, there are also groups of marginal households receiving minimum living allowances. Due to the rigid requirements of the policy, the government did not include them in the scope of assistance during the precise identification process. Facing issues such as children’s education, medical treatment, and elderly care, it is difficult for them to solve with their own abilities and resources.

4. Result

The key to consolidating the achievements of poverty alleviation in China and effectively connecting them with rural revitalization lies in the post-poverty stability. However, during the investigation, it was observed that while social support actions drive the evolution of sensitivity and resilience among the relatively poor groups, there are still practical difficulties in the specific assistance process. This leads to exposure of vulnerable groups to risks before receiving aid, making the poverty alleviation process more challenging and prone to falling into poverty traps (as shown in Fig. 6). After interviewing other poor families in Wangping Village, several problems regarding poverty alleviation are revealed.

4.1. Fragmented social support and slow response cannot effectively reduce the vulnerability of the relatively poor people

Fragmentation of functions at the grassroots level, amplifying the sensitivity of naturally vulnerable groups. The sensitive evolution of poverty vulnerability is closely related to the governance capacity of grassroots functionaries. High governance villages can effectively perform service functions and meet the needs of the relatively poor rural population for social support. While weak villages, on the other hand, are often constrained by conditions such as management models and are slow to respond to risk shocks. The types of management models of local governments today include two main types, one is a strip management model differentiated based on industry areas, and the other is a block management divided according to different administrative functions. For most local governments within the poverty alleviation sequence, the first model is often adopted. In practice, the development of poverty alleviation work in some areas lacks the sense of overall layout, replacing the whole with parts; some focus on strategic deployment and pay little attention to the effectiveness of implementation; some areas are difficult to supervise due to the vertical management of personnel authority, administrative authority, and financial authority, all of which are separated, as a result, poverty alleviation work is looser. In view of this, this management system with clear management boundaries and compartmentalization has blocked the two-way collaboration between the local government and the external environment, resulting in the dissipation of poverty alleviation resources and duplication of construction, narrowing the benefits of poverty alleviation policies, and causing the scattering and inefficiency of government support. The impact of this problem will be magnified on the naturally vulnerable groups, directly leading to the survival dilemma of the damaged capital stock of farmers’ households in the affected areas.

Most of the managers of social organizations in the village are part-time administrative staff in the Sub-district Office , who originally belong to the street office management, and the bulk of their salary is also issued by the Sub-district Office , therefore, their work in the

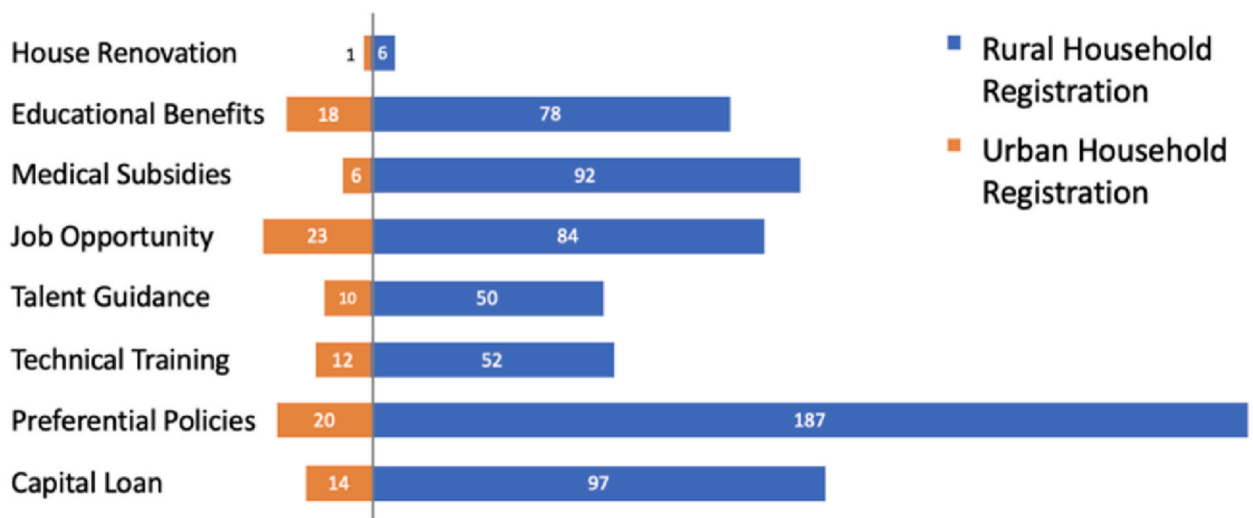


Fig. 5. Influence of household registration system on the demand for social support.

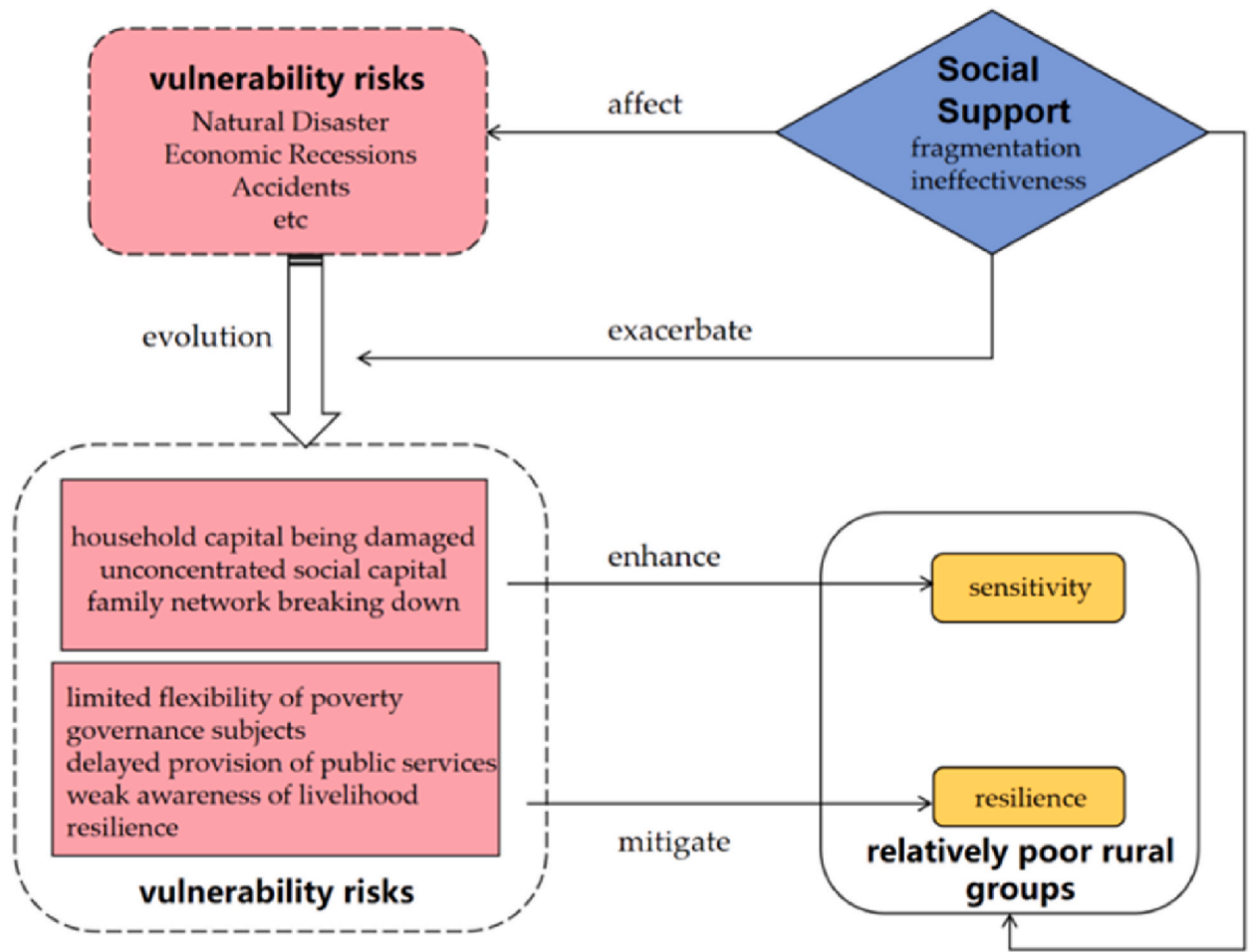


Fig. 6. Path diagram illustrating the evolution of sensitivity and resilience under the influence of social support challenges.

social organizations are affected , because they still have jobs in the Sub-district Office , they must follow the leadership there (the secretary of village party branch , interview data: HC2022051322)

The dispersal vertical relationships among social support subjects making it difficult to effectively pool and exert the effect of resources. With government implementation as an important subject of poverty governance, the relationship among the government, enterprises and social organizations is not coordinated. As a supplement to the government’s poverty alleviation governance, the social resources controlled by the market and social organizations are in a state of decentralized support, which cannot form a community scale effect. From the perspective of poverty vulnerability group sensitivity, this response cannot effectively concentrate social capital. In terms of the division of the relationship among the government and social organizations, the unequal affiliation makes social organizations suffer from the problem of role ambiguity and malfunction. Rural social organizations are manipulated by the township government and are marginal subjects of poverty governance, making it unable for them to realize the power of supervision and decision-making. In addition, the unclear division of labor, as well as the unclear powers and responsibilities of social organizations make it impossible for all subject resources to gather and concentrate on serving poor groups, reducing the utilization rate of resources, and inhibiting the vitality of social organizations to participate in poverty governance.

We say that we are developing a new type of farmers’ cooperative here, but in fact many decisions are made internally. We have reported that the decisions are unreasonable and want to communicate with the top (government), but no one is listening (villager H, interview data: HC2022051315).

As far as the government and enterprises are concerned, some enterprises participate in poverty governance based on the logic of profit maximization, attempting to obtain policy support for poverty alleviation in an “exchange of benefits for poverty alleviation” to create a branded business image. As a result of this utilitarian mentality, enterprises are not very dynamic in poverty governance, lack proactive responses, are dependent on government departments and have limited resource mobilization capacity.

Deviation of the social support niche and multiple disturbances increase multiple vulnerabilities. The poor are exposed to multiple perturbations and are often unable to withstand risky shocks because of their own sensitive attributes and weak capacity for adaptation

and transformation. Currently, the hollowing out of the population and the consequent dilution of the vernacular culture has led to a dilution of the vernacular cultural consensus at the household level, which has become a source of perturbation to the robustness of livelihoods. There is a massive exodus from the countryside. Aging and empty nesting have become common phenomena, and the traditional rural family support network has been broken. According to Parsons' research theory, China is a family-oriented society, a social support system formed based on a differential order pattern. And Mr. Liang Shuming even believed that, compared with the individual and social orientation of Western societies, the relationship-oriented of Chinese society plays an important role in the social system, in which formal organizational relationships and kinship family relationships are often mutually reinforcing. Poor rural families, due to their scarce social capital and relationship networks, mainly seek help from family members when they encounter risky shocks. However, the rapid development of the urban economy, especially the rise of the platform economy, has led to a massive influx of young adults from rural areas into the cities, as the cities offer many low-threshold employment opportunities. The geographical distance between family members has increased and the frequency of their meetings has decreased, so that when the rural poor need to seek assistance from their relatives, their family members who are far away from home are left in a state of vacancy as the main body of family support, which increases the degree of vulnerability of the rural poor.

4.2. Ineffectiveness: lack of formal institutional constraints and motivational support to create stable and sustained support for the resilience of the relatively poor

Social support systems influence the extent to which people in relative poverty are harmed by short or long-term response actions that alter the reflection rate of the state of exposure to adverse disturbances. The more resilient a social support system is, the better it can respond to risk perturbations. In practice, coping actions in response to disturbances need to be optimized.

Resilience risks in the context of disturbed horizontal relations. Horizontal relationships within the social support body include relationships within the government, between the Primary-level government in the township and the higher-level governments. In response to action, this paper attributes it to a long-term response to building resilience. In the actual development of poverty alleviation in concentrated poverty areas, collaborative governance between local governments and grassroots governments is essential. However, due to the imperfect communication mechanisms among various local governments and functional departments, and the interests and action logic of different government subjects, the undesirable phenomenon of mutual shirking and conflict among responsible subjects in poverty alleviation governance inevitably occur:

For example, in the case of poverty alleviation in the village industry, our poverty alleviation department is responsible for the initial investment of funds, but the technical support and platform security of the industry at a later stage are services that other dedicated departments are responsible for docking. This often leads to each department being responsible for its own, not wanting to be responsible for a little more. The front-end department is only responsible for investment and the back-end department is only responsible for technology, leaving the middle part (the interface between the two) empty. (Village chief, interview data: HC2022051312).

There is also a malfunction between the township government and the higher-level governments. On the one hand, there is insufficient integration of governance between the two, and many grassroots governments indulge in the rigidity of vertical directives, inspection and acceptance when implementing poverty alleviation policies, and adopt high-pressure methods tired of coping with tasks from higher levels, which can easily lead to a dysfunctional phenomenon of role falsification. On the other, the township government has created the problem of misplaced responsibility subjects in poverty alleviation work, i.e. a mismatch between the subject of responsibility and the assumption of responsibility. The failure of poverty alleviation to achieve the desired governance effect is influenced by multiple underlying causes, but in the case of current poverty alleviation responsibilities, this undoubtedly limits the flexibility of the main body of poverty governance at the grassroots level, an action that deepens vulnerability in other areas and undermines long-term resilience, increasing the risk of vulnerability of the rural poor.

Lack of top-level design of social support systems and failure to build long-term resilience. Respondents have a strong perception of the plight of public service provision, such as incomplete social security [programs](#) and uneven distribution of social resources in rural areas. In terms of vulnerability resilience, there is a lack of broad and effective policy response at the government level. When relatively poor groups are exposed to risk shocks, the existing social security system for the rural people is unable to cope with the adverse disturbances, leading to the vulnerable groups falling back into the poverty trap. In China's rural areas, there are very few systems that can really play a role in social security, including rural endowment insurance, rural cooperative medical care, social assistance systems such as rural households enjoying five guarantees, low-income insurance, and some social welfare systems developed by local governments.

However, the occupational security in the rural social security system is in a blank state, in which unemployment insurance, work-related injury insurance and other items are missing. With the industrialization of agriculture, the proportion of non-agricultural industries is gradually increasing, the employment structure of the rural labour force is being actively adjusted, and the number of rural people going to work outside the country, especially across provinces, is on the rise, thus increasing the demand for occupational security among the rural population.

City life is so convenient! Take children's schooling and the elderly's retirement for example, urban children can go to good public schools even if their parents don't work, but our rural children's household registration is not in the city, even if we can find jobs here, our children have no chance to go to good schools in the city. In the years I worked as a nanny in the city, I saw that the urban elderly people have sufficient pension, living in the city could not spend all their monthly pensions, while the elderly people in our village had too little to spend (villager F, interview data: HC2022051309)

In contrast, in terms of building livelihood resilience, the coverage of free health services for the elderly is incomplete. When faced with the shock of disease risk, weak villages are limited by the level of rural medical technology and the number of mobile health service stations in township health centres, and are slow to respond to unexpected disasters, therefore relying on urban resources for relief. The difficulty of access to health care and treatment for rural residents poses a serious challenge. Such groups are unable to manage adaptively in the face of adversity.

Lack of motivational support for poor groups to build livelihood resilience. In the face of current vulnerability, the government has adopted policy interventions and social assistance for the poor, but most of the rural vulnerable groups are less educated and find it more difficult to understand the spirit of policy documents, and the publicity of social security policies lacks specific relevance and a long-term response to build livelihood resilience. “poverty alleviation should increase people’s confidence first and help them acquire knowledge and skills”. To alleviate poverty, we must first support aspirations, and we must help people improve their knowledge and skills” has long been the focus of Secretary General Xi’s emphasis on poverty alleviation, and in local poverty governance, the poverty of vulnerable groups in terms of their conceptual understanding should be regarded as a priority element that needs to be addressed first.

In the process of poverty eradication, formal social support functions cannot be achieved without the awakening of the self-subjective consciousness of the rural poor. Overall, the social support lacks the assistance and cultivation of poverty alleviation aspirations and the tenacious spirit among vulnerable groups in rural areas. An excessive amount of material and financial support in the form of handouts can only cultivate a sense of entitlement and dependence among certain individuals. Only by changing the structure of social support and helping them to establish poverty alleviation aspirations and a tenacious spirit can fundamentally solve poverty issues and mitigate the vulnerability and risks faced by relatively poor rural populations.

5. Discussion

While the current poverty alleviation efforts have made effective progress, the task of consolidating and expanding the achievements remains arduous, and the degree of vulnerability among the relatively poor groups remains high [48]. The fundamental reason for this vulnerability is that, under internal and external risk disturbances, the adaptability of various actors and policy interventions is challenging to restore the welfare losses caused by the impact of risks, leading to changes in the vulnerability status of the relatively poor groups [49]. Meanwhile, as the system is exposed to multiple disturbances, such as social networks, household livelihood decisions, and environmental changes [50]. The differences in its inherent sensitivity, adaptability, and transformative capacity create a clear connection between state vulnerability and resilience. Factors in vulnerability outcomes may further deepen the degree of risk [58]. To address the fragmentation and inefficiency in the evolution of the “sensitivity-resilience” process, it is necessary to reshape the resilience of social support from the perspective of reducing sensitivity and rebuilding resilience. This involves restructuring social support mechanisms (see Fig. 7), to prevent and mitigate the vulnerability risks of rural relative poverty, and avoid large-scale relapse, and promote effective linkage between consolidating and expanding poverty alleviation achievements and rural revitalization [51].

5.1. Fragmented social support and slow response cannot effectively reduce the vulnerability of the relatively poor population

Shift the logic of governance, mitigate the impact of multiple sensitivities with multiple subjects and forms. The effectiveness of the

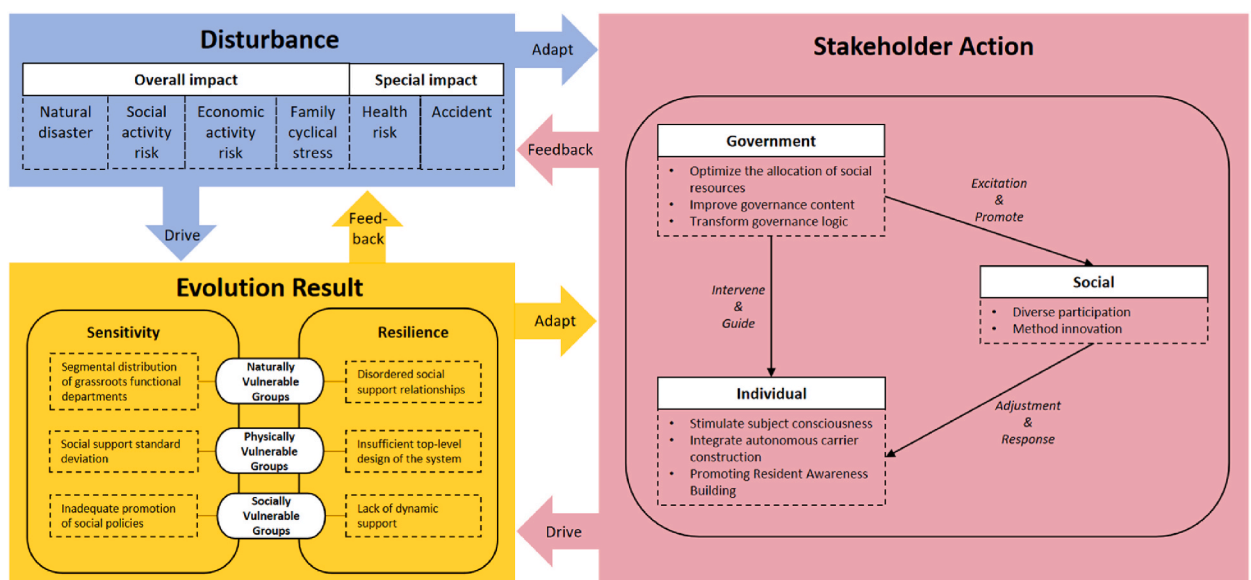


Fig. 7. Social support mechanism for resilience.

risk-resistance mechanism for preventing and resolving vulnerability relies on strong foundational power. The prevention of the risk of large-scale poverty return in the rural revitalization stage cannot be separated from a pluralistic approach to governance, and embedding foundational power in various forms will help form a permanent monitoring of the risk as well as establish a rapid detection and response mechanism to reduce the vulnerability sensitivity of the poor [52]. A social support network with multiple subjects and forms of support should be built, which is led by formal social support provided by the government, and complemented by the participation of social organizations, individual subjects, enterprises and businesses, and rural grassroots organizations. Social organizations are encouraged to combine their own strengths and, according to the actual situation of different vulnerable groups, to formulate practical measures to help the poor according to the principle of “what is lacking is what is needed”, to improve the ability of the poor to escape from poverty and increase their income [53]. On this basis, the public is encouraged to enrich their support through mainstream media. In the era of “We Media”, also known as self-media which refers to a form of media where individuals or small groups create, control, and distribute content, encouraging the rural poor to express their personal demands through mainstream information channels such as live internet platforms and new media can not only increase their chances of obtaining instrumental social support, but also give them emotional social support [54].

Restructuring the distribution of interests in social integration mechanisms and reducing the sensitivity of resource allocation structures. The 14th Five-Year Plan proposes to “establish a sound policy system for the equal exchange and two-way flow of urban and rural elements and promote the flow of more elements to the countryside” [55]. At present, there is a relative imbalance between urban and rural development, regional development, and industrial development in China’s rural development. Resources such as *education*, health and elderly care in rural areas are relatively lagging [56,57]. In the long run, this will lead to vulnerable groups falling back into the poverty trap [58,59]. Based on this, the existing resources of the social support system should be organised in the following three ways: Firstly, the state should adjust the structure of fiscal expenditure, with fiscal expenditure appropriately tilted towards rural areas. It should balance the distribution of social security resources, narrow the gap between rural and urban areas in terms of health care, school conditions and educational level, employment opportunities, and pensions, and strive for equal social opportunities for the rural poor. At the same time, it should insist on supplementing agriculture with industry and developing rural areas with urban areas to improve the efficiency of factor allocation as well as the integrated development of rural primary, secondary and tertiary industries. Secondly, the scope of social assistance recipients should also be expanded [60]. By ensuring efficient financial support, increasing financial investment, strengthening the construction of rural industries and infrastructure, and improving the reform of the market allocation of factors, a smooth and healthy development environment for the relatively poor rural population can be provided and the occurrence of risks can be reduced. Thirdly, the role of the third distribution should be emphasised to expand the sources of funding [61].

Expanding and raising the standard of social security, weaving a solid network of protection against vulnerability risks. The rural social security system is a social security system in which the state and society guarantee the basic livelihood of the rural population in accordance with the law [62]. On the one hand, with the rapid development of the platform economy, more and more villages are experiencing hollowed out and the social support base is gradually. The poor, especially the physiologically vulnerable, will not be able to withstand risky shocks due to their social capital and network of relationships [63]. On the other hand, China’s rural social security system is mainly based on ensuring basic protection for the most vulnerable [64]. For those who suffer from natural disasters, disability, or other low-income citizens, the main support comes in the form of material assistance and social aid. However, with the restructuring of the agricultural industry, more and more rural people are becoming new agricultural operators or flexible employment groups, but the rural social security system lacks effective Occupation guarantee for such groups, making them a group with a higher risk of vulnerability. In the post-poverty alleviation era, it is necessary to coordinate the active actions of finance, agriculture and rural areas, social security, civil affairs, and other departments to strengthen the basic protection for low-income groups and implement mechanisms to help needy groups, to prevent them from returning to poverty due to illness and old age [65]. At the same time, vulnerable risk groups without job security are in urgent need of support from relevant national social security policies, which can be improved by perfecting top-level design, steadily increasing the reasonable guidance for flexibly employed migrant worker groups to participate in basic medical insurance for employees and basic pension insurance for urban workers in accordance with regulations, promoting employment and entrepreneurship assistance, and gradually realizing the equalization of social security policy services in urban and rural areas.

5.2. Break through inefficiencies and recreate long-term mechanisms for the resilience of the vulnerability of the relatively poor

Establishing and improving mechanisms to help low-income rural people and less developed areas and improving the overall development of areas that have escaped poverty are important parts of the consolidation and expansion of rural revitalization and effective linkage [66]. At this stage, the main position of people who have escaped from poverty should be respected. It should be insisted that rural revitalization is developed for farmers and rural construction is built for farmers. Meanwhile, reshaping the subjectivity of relatively poor people in modern development, and promoting the formation of an effective endogenous risk-resistance mechanism are also necessary.

Stimulate the consciousness of rural vulnerable groups and encourage them. Giving full play to the main role of the relatively poor population and stimulating the endogenous motivation for rural revitalization are the keys to success in the fight against poverty. As the labour quality of the rural poor is generally low, local governments need to specifically develop a new vocational training operation mechanism for farmers that is suitable for the economic and industrial environment of that local area. With a specific focus on the poor individuals’ own strengths, they should rely on targeted vocational training bases, develop diversified forms of vocational training courses for new farmers, and promote school-enterprise cooperation to promote employment for farmers in their local areas and

stabilize their jobs. At the same time, improving the quality of employment services such as career counselling and guidance for vulnerable groups in rural areas. In this process, poor farmers not only learn professional skills and weaken their traditional ideology, but also broaden their social support network and accumulate social capital [67]. In terms of non-vocational education, the implementation of 12 years of free and compulsory education will effectively raise the level of education for the children of poor families [68] and improve intergenerational mobility [69] in rural education and income. As teachers in rural areas are less qualified than that of national average level [70], rural youths often do not have the advantage of being admitted to general high schools because of their performance in secondary school examinations. Therefore, the “general-vocational stream” education models such as Business, Engineering, IT and Health and Social Care should be improved, broadening the options of vocational education, and increasing the opportunities for children from poor families to receive higher education [71]. In this way, the resilience of poor people to vulnerability risks is enhanced by improving their own capacity and endogenous motivation. As a result, when faced with risk shocks in the future, the relatively poor and vulnerable groups can support themselves.

Give full play to the function of intra-family support networks to effectively enhance the resilience of families of vulnerable risk groups. Blood relations are still the main source of social support, so seeking support from blood or kinship relations such as parents and siblings is an important strategy for relatively poor groups [72]. Specifically, people tend to seek social support based on their environment and social status, with urban residents preferring working relations and rural residents preferring blood ties. Family ties are therefore particularly important for poor families in rural areas. When families face crises and difficulties, the power of family members to help each other is often the strongest. The quality of family relationships and the degree of estrangement directly affect the attitude of the entire family towards poverty and the way they jointly cope with difficulties. Under the trend of population exodus [73], the government needs to guide enterprises, social organizations, and other social forces to collaboratively build a social network of relationships for the poor and guide rural community social organizations to carry forward the tradition of mutual assistance among neighbors and develop a social support system centred on mutual assistance in production, old age and relief, so as to enhance the resilience of vulnerable and at-risk populations. At the same time, community social work service organizations are encouraged to provide the necessary support and assistance to families at risk of physical and natural vulnerability in the community [74], including information and advice, resource provision, volunteer matchmaking assistance, problem assessment and other related services, and to guide party members to participate in support services for families at risk of vulnerability, and assist them in building social support networks and enriching the types of support resources to effectively reduce such families’ vulnerability sensitivity.

Promote income growth to help build the livelihood resilience of vulnerable risk groups. In the face of the sensitivity characteristics of naturally vulnerable groups with weak cumulative capital and high ecological risk, financial support is generally used to intervene accordingly to reduce the sensitivity level [75]. Therefore, by implementing various policies to support and benefit farmers, for example improving the agricultural support and protection system, distributing agricultural funds to farmers in full and on time, and increasing the transfer income of such groups, can significantly improve their livelihood resilience. For the risk of mismatch of social resources faced by socially vulnerable groups and the risk of marginalization of social rights faced by physically vulnerable groups, measures can be taken to enhance their technological and cultural literacy through improving the vocational education and skills training system, building a platform for matching information on supply and demand of rural labour, and improving employment support policies to promote income for the socially vulnerable groups to achieve stable employment. At the same time, exploring the reform of property rights of rural collective assets, developing and strengthening the rural collective economy, and increasing the property income of farmers are also important means to enhance the sustainable livelihood resilience of the socially vulnerable groups.

Give play to the function of legal protection and provide the base for the guarantee of long-term resilience building. In social support for the rural poor, legal support is not only a compulsory guarantee to bind the various support subjects to complete their social support work in accordance with the law, but also a weapon used by the rural disadvantaged to defend their legitimate rights and interests [76]. The construction of regulations should be improved so that precise poverty alleviation can “really help the poor” and “help the real poor”. First, in the process of precise poverty alleviation, cases of misappropriation of poverty alleviation funds, inaction of cadres, or superficial work still exist, and these phenomena require us to speed up the improvement of existing laws and regulations. Only by establishing a sound construction of binding systems and regulations can poverty alleviation work be put into practice, so that poverty alleviation funds can be used for the poor areas, the poor and weak that really need help. Secondly, it is not enough to have a binding system. The law, as the minimum guarantee of social order and morality, is the bottom line of morality and, it is necessary to tighten this red line. For example, the punishment system should also be included into the regulations, so that those who are corrupt and seek personal benefits in poverty alleviation work can be punished accordingly [77]. Furthermore, the construction of an assessment system for poverty alleviation work should be improved, with clear rewards and punishments, to give cadres both the motivation to help the poor and the fence that they dare not slacken off. In addition, the vulnerable groups in rural areas should use their legal weapons to defend their rights and interests. This requires that social support should be given to the vulnerable groups in rural areas so that they can have the law to follow.

6. Conclusion

The paper employs the “sensitivity-resilience” framework to identify vulnerability factors and explore social support challenges. The study reveals that rural vulnerable groups are influenced by both external adverse disturbances and internal structural deficiencies. In terms of sensitivity, the main manifestations include ecological risks and weak cumulative capital, lack of livelihood resilience and social marginalization, inadequate public service provision, and weak policy support. Resilience is primarily exhibited through policy responsiveness, heterogeneity in subject characteristics, and the status of the social support system. In the evolution of the “sensitivity-resilience” dynamics, the social support actions arising from vulnerability challenges can, in turn, feedback to generate

sources of disturbance or intervene in large-scale relapse processes. Based on this, the exploration of new paths for social support needs to integrate social support theories. Through mechanisms that resist relapse risks and promote subjective reshaping, a comprehensive approach is required to construct a preventive mechanism for large-scale relapse risks. This approach aims to consolidate and expand the achievements of poverty alleviation and effectively connect them with rural revitalization.

Poverty remains widespread to date, with a significant number of impoverished populations in Sub-Saharan Africa, Central Asia, Latin America, and some island nations in the Pacific and Atlantic regions. Developed countries in Europe and North America also experience a certain proportion of their populations falling below the poverty line. Moreover, with the risks of climate crises, resource shortages, and the dismantling of traditional global industries, there is a potential significant increase in the impoverished population globally. Therefore, through an empirical study of 750 rural households in China, this paper integrates vulnerability, resilience, social support, and poverty governance, contributing theoretical innovations and governance practices. It brings Chinese wisdom to global poverty governance, advancing the construction of a “human destiny community for poverty eradication.” Of course, the study still has some shortcomings and areas for further exploration. While it identifies characteristics and causes of vulnerability and resilience, breaks down short-term/long-term responses and dilemmas to alleviate vulnerability and build resilience from the perspective of social support, it still lacks exploration of the connection between vulnerability and resilience. In future research, besides adaptability, “disturbance-action” may serve as one of the connecting bridges.

Ethics statement

All participants were approved by the Institutional Ethics Committee of Northwest A&F University, China (permits 20221023) and were performed according to the Academic Ethics Procedures and Guidelines of the People’s Republic of China. No other specific permissions were required for these activities. All parents, guardians or next of kin provided written informed consent for the minors to participate in this study. All adult participants provided written informed consent to participate in this study.

Data availability statement

The data associated with my study has not been deposited into a publicly available repository. The data will be made available on request through the authors’ direct contacts, under some terms and conditions.

CRediT authorship contribution statement

Lingling Li: Writing – original draft, Project administration, Funding acquisition, Conceptualization. **Jingyi Xu:** Conceptualization, Data curation, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing. **Yunjuan Liang:** Writing – review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: The financial support was provided by The National Social Science Fund of China (Major Program) Grant No 22ZDA101.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e30305>.

References

- [1] Tenth Session, Committee on Development and Intellectual Property (CDIP), 2012.
- [2] Gao Qiang, Z. Hengyuan, The effective linkage of consolidating and expanding the achievements in poverty alleviation with rural revitalization: progress, problems and suggestions, *Front. Econ. China* 18 (1) (2023) 96–117.
- [3] Holding high the great banner of socialism with Chinese characteristics and uniting for the comprehensive construction of a modern socialist country: Report at the 20th national congress of the CPC. *People’s Daily*, 2022–10–26 (1).
- [4] Sangui Wang, Mingyue Liu, From absolute poverty to relative poverty: theoretical relationships, strategic shifts and policy priorities, *Journal of South China Normal University: Social Sciences* 6 (2020) 13.
- [5] P. Townsend, *Poverty in the United Kingdom*, California: University of California Press, 1979.
- [6] Amartya Sen. *Poverty and famines: an essay on entitlement and deprivation*, Oxford university press, 1982.
- [7] Xiaoqin Xie, Wang Xiaoqing, Liao Lihua the practical types and mechanisms of relative poverty governance in the context of common prosperity, *Journal of Public Management* 20 (4) (2023) 107–120+173.
- [8] Rajiv Pandey, et al., Climate change vulnerability in urban slum communities: investigating household adaptation and decision-making capacity in the Indian Himalaya, *Ecol. Indicat.* 90 (JUL) (2018) 379–391.
- [9] N. Sokolova, Sociological approach to assessing the social resources of the territorial community (on the example of Taganrog, Rostov Region), *Caucasian Science Bridge* (2023) 88–95.
- [10] UNDP, UNDP/UNDRO : Disaster Management Manual, UNDP, 1991.
- [11] R. Chambers, M. Leach, Trees as savings and security for the rural poor, *World Dev.* 17 (3) (1990) 329–342.
- [12] Programme, World Food. “WFP Support for Vulnerable Children in Madagascar May Face Cutbacks Due to Lack of Funding”.

- [13] Christiaan Grootaert, et al., World Development Report 2000/2001 : Attacking Poverty, 39.6, World Bank Publications, 2000, pp. 1145–1161.
- [14] Aschbacher Kirstin, et al., Chronic stress increases vulnerability to diet-related abdominal fat, oxidative stress, and metabolic risks, *Psychoneuroendocr* (2014) 14–22.
- [15] Jeffrey Alwang, Paul B. Siegel, Steen L. Jorgensen, Vulnerability: a view from different disciplines, Social protection discussion paper series 115 (2001).
- [16] John Hoddinott, A. Quisumbing, Methods for Microeconomic Risk and Vulnerability Assessments, Social Protection Discussion Papers and Notes, 2010.
- [17] Amartya Sen, Capabilities, lists, and public reason: continuing the conversation, *Fem. Econ.* 10 (3) (2004) 77–80.
- [18] R. Pandey, C. Yangchen, M. Thiyaharajan, J. Kishwan, Attributable factors for climate change adaptation among urban informal settlers of a least developed country, *Bhutan, Habitat Int.* 136 (2023 Jun 1) 102817.
- [19] Ren Zhong, Guo Yan, The impact of environmental regulation and social capital on farmers' adoption of low-carbon agricultural technologies, *J. Nat. Resour.* 38 (11) (2023) 2872–2888.
- [20] Liyang Wan, Hecheng Wu, A Study on the Sustainable Development of Poverty Alleviation of Urban Households in China: Based on the Perspective of Poverty Vulnerability, vols. 2020–2, 2021, pp. 23–30.
- [21] Y.T. Maru, M.S. Smith, A. Sparrow, et al., A linked vulnerability and resilience framework for adaptation pathways in remote disadvantaged communities, *Global Environ. Change* 28 (2014) 337–350.
- [22] C. Shubham, J. Jalan, A. Suryahadi, Assessing household vulnerability to poverty from cross-sectional data: a methodology and estimates from Indonesia, *Discuss. Pap.* (2002) 1–36.
- [23] Vidya Diwakar, A. McCullough, Resilience and Sustainable Poverty Escapes in Niger, 2019.
- [24] Kumar, Shashidhar , et al. "Rural Development Program in Tribal Region: A Protocol for Adaptation and Addressing Climate Change Vulnerability".
- [25] Bina Agarwal, I. Robeyns, J. Humphries, Capabilities, Freedom, and Equality Amartya Sen's Work from a Gender Perspective, Oxford University Press, 2006.
- [26] Kristjan Piirimäe, K. Pachel, A. Reihan, Adaptation of a method for involving environmental aspects in spatial planning of river basin management—a case study of the Narva River basin/Keskonnaaspekti ruumilisse planeerimise haaramise meetodi kohandamine vesikonna veemajandusega—Narva joe valgla juhtumiuuring, *Est. J. Ecol.* 59 (4) (2010) 302–320.
- [27] Pandey Rajiv, S.K. Jha, Climate vulnerability index - measure of climate change vulnerability to communities: a case of rural Lower Himalaya, India, *Mitig. Adapt. Strateg. Glob. Change* (2012) 487–506.
- [28] Simran Sekhri, et al., Mountain specific multi-hazard risk management framework (MSMRMF): assessment and mitigation of multi-hazard and climate change risk in the Indian Himalayan Region, *Ecol. Indicat.* 118 (2020) 106700.
- [29] Sandeep Tambe, M.L. Arrawatia, A.K. Ganeriwala, Managing Rural Development in the Mountain State of Sikkim, India, Mountain Research and Development, 2012.
- [30] Hongmin Fan, N. Zhang, C. Meng, Internet use, finance acquisition and returning migrant workers' home entrepreneurship — empirical analysis based on CLDS2016, *Singapore Econ. Rev.* 68 (5) (2023) 1787–1813.
- [31] Hang Yin, Mingang Lin, Evaluation of the implementation effect of medical assistance for vulnerable groups: an analysis based on the survey data of the "construction project of social policy support system for urban and rural families in difficulty, *Social Security Research* 1 (2017) 8.
- [32] J. Zhang, Carmelo Mesa-Lago, Fabio Bertranou, Basic principles of social security and pension reform in Chile, *Social Security in China* 9 (2016) 3.
- [33] Yao Yuan, A review of informal support theory and research, *Chinese Population Science* 1 (2003) 6.
- [34] Kevon Rhiney, et al., Assessing the vulnerability of caribbean farmers to climate change impacts: a comparative study of cocoa farmers in Jamaica and trinidad, in: E. Thomas-Hope (Ed.), *Climate Change and Food Security: Africa and the Caribbean*, 2017.
- [35] B. Wisner, Five years beyond Sendai—can we get beyond frameworks? *International Journal of Disaster Risk Science* 11 (2) (2020) 239–249.
- [36] Rajiv Pandey, et al., Sustainable livelihood framework-based indicators for assessing climate change vulnerability and adaptation for Himalayan communities, *Ecol. Indicat.* 79 (2017) 338–346.
- [37] Pandey, and Jha, Climate vulnerability index - measure of climate change vulnerability to communities: a case of rural Lower Himalaya, India, *MITIG ADAPT STRAT GL* 17 (5) (2012) 487–506, 2012.
- [38] Yueyue He, Changchun Zhou, Evaluation of livelihood vulnerability of farmers in poverty-stricken areas and analysis of influencing factors, *Statis, Decis. Making* 36 (19) (2020) 70–74.
- [39] UNEP, *The Adaptation Gap Report 2016: Finance*, United Nations Environment Programme (UNEP) Nairobi, 2016, p. 50. Available at: <https://climateanalytics.org/media/agr2016.pdf>.
- [40] Rajiv Pandey, et al., Climate change vulnerability in urban slum communities: investigating household adaptation and decision-making capacity in the Indian Himalaya, *Ecol. Indicat.* 90 (JUL) (2018) 379–391.
- [41] Shashidhar Kumar Jha, et al., Rural development program in tribal region: a protocol for adaptation and addressing climate change vulnerability, *J. Rural Stud.* 51 (2017) 151–157.
- [42] Gao Qiang, Z. Hengyuan, The effective linkage of consolidating and expanding the achievements in poverty alleviation with rural revitalization: progress, problems and suggestions, *Front. Econ. China* 18 (1) (2023) 96–117.
- [43] Pramod K. Singh, H. Chudasama, Evaluating poverty alleviation strategies in a developing country, *PLoS One* 15 (1) (2020) e0227176.
- [44] Ruifang Liu, et al., Analysis of environmental field characteristics and triggering mechanism of heavy rainstorms in Lantian, Shaanxi, *Henan Sci* 41 (7) (2023) 1019–1027.
- [45] C. Moser, C. Mciwaine, "Household responses to poverty and vulnerability, in: *Confronting Crisis*, ume 3, Commonwealth, Metro Manila, The Philippines.", 1997.
- [46] Stefan Dercon, Income risk, coping strategies, and safety nets, *World Bank Res. Obs.* 17 (2) (2002) 141–166.
- [47] Katherine H. Franks, et al., The interaction between psychological resilience and perceived stress in relation to memory performance in middle-aged adults, *Alzheimer's Dementia* 19 (2023).
- [48] Kun Yan, *Poverty Alleviation in China*, Springer-Verlag Berlin An, New York and London, 2016.
- [49] Hanbing Li, Zhitao Wang, Identity, rural governance and prevention of return to poverty—a multiple case study based on the practice of entrepreneurship and poverty reduction in poverty-stricken villages, *Public Manag. Policy Rev.* 11 (6) (2022) 77–95.
- [50] Ying Wang, et al., Role of social networks in building household livelihood resilience under payments for ecosystem services programs in a poor rural community in China, *J. Rural Stud.* 86 (2021) 208–225.
- [51] Joern Birkmann, Risk and vulnerability indicators at different scales: applicability, usefulness and policy implications, *Environ. Hazards* 7 (1) (2007) 20–31.
- [52] Yuanzhi Guo, Jieyong Wang, Poverty alleviation through labor transfer in rural China: evidence from Hualong County, *Habitat Int.* 116 (2021) 102402.
- [53] Joyashree Roy, et al., Sustainable Development, Poverty Eradication and Reducing Inequalities, 2018.
- [54] Y. Zhang, T. Jiang, J. Sun, et al., Sustainable development of urbanization: from the perspective of social security and social attitude for migration, *Sustainability* 14 (17) (2022) 10777.
- [55] Wanda Sang, The time value and implementation strategy of rural points system, *Open J. Soc. Sci.* 10 (1) (2022) 276–289.
- [56] Min Bao, Aging initiatives in China for the next five years based on the plan for the development of national undertakings for the aged and the elderly care service system during the 14th five-year plan 2021–2025, *Journal of The College of Liberal Arts and Sciences Tokyo Medical and Dental University* 53 (2023) 43–58, 2023.
- [57] H. Stephen Kaye, Charlene Harrington, Mitchell P. LaPlante, Long-term care: who gets it, who provides it, who pays, and how much? *Health Aff.* 29 (1) (2010) 11–21.
- [58] Zhanlian Feng, et al., China's rapidly aging population creates policy challenges in shaping a viable long-term care system, *Health Aff.* 31 (12) (2012) 2764–2773.
- [59] Yong Ge, et al., Who and which regions are at high risk of returning to poverty during the COVID-19 pandemic? *Humanities and Social Sciences Communications* 9 (2022) 1.

- [60] Milli Lake, Rachael S. Pierotti, Arthur Alik-Lagrange, Resilience, vulnerability, and social isolation: barriers to poverty reduction in war, *Int. Stud. Q.* 67 (4) (December 2023) sqad075.
- [61] Ling Zheng, Hua Zheng, Research on family relationship influencing factors and family relationship types of migrant elderly: an analysis based on grounded theory, *Lanzhou Journal* 3 (2020) 17.
- [62] Yupei Jiang, Zhen Feng, The role of community service satisfaction in the influence of community social capital on the sense of community belonging: a case study of Nanjing, China, *J. Hous. Built Environ.* 37 (2) (2022) 705–721.
- [63] X. Huo, M. Lin, Evolution of the rural social security system in a large country over 35 years: institutional transformation and the Chinese experience, *China Agric. Econ. Rev.* 14 (1) (2022) 1–16.
- [64] Mira Bierbaum, Valérie Schmitt, Investing More in Universal Social Protection: Filling the Financing Gap through Domestic Resource Mobilization and International Support and Coordination, No. 44, ILO Working Paper, 2022.
- [65] M. Hong, J. Wang, M. Tian, Rural social security, precautionary savings, and the upgrading of rural residents' consumption structure in China, *Sustainability* 14 (2022) 12455.
- [66] J. Lind, Politics and Governance of Social Assistance in Crises from the Bottom up, *BASIC Research Working Paper 4*, Brighton, vol. 2022, Institute of Development Studies, 2022, p. 4.
- [67] Yuanzhi Guo, Yansui Liu, Sustainable poverty alleviation and green development in China's underdeveloped areas, *J. Geogr. Sci.* 32 (1) (2022) 23–43.
- [68] Jinfang Wang, Hui Xiao, Xiaojin Liu, The impact of social capital on multidimensional poverty of rural households in China, *Int. J. Environ. Res. Publ. Health* 20 (1) (2022) 217.
- [69] Can Tang, Liqiu Zhao, Zhao Zhong, Does free education help combat child labor? The effect of a free compulsory education reform in rural China, *J. Popul. Econ.* 33 (2) (2020) 601–631.
- [70] Jing Lou, Li Jie, Export expansion and intergenerational education mobility: evidence from China, *China Econ. Rev.* 73 (2022) 101797.
- [71] David H. Monk, Recruiting and retaining high-quality teachers in rural areas, *Future Child.* (2007) 155–174.
- [72] Yan Mengqing, The impact of “general-vocational education stratification” on parental education anxiety among Chinese junior high school students and strategies research, *Frontiers in Educational Research* 6 (2023) 29.
- [73] Ting Ma, et al., An estimate of rural exodus in China using location-aware data, *PLoS One* 13 (7) (2018) e0201458.
- [74] Terry Cannon, Reducing People's Vulnerability to Natural Hazards Communities and Resilience, *WIDER Research Paper*, 2008. No. 2008/34.
- [75] John R. Graham, M.E. Jones, M. Shier, Tipping points: what participants found valuable in labour market training programmes for vulnerable groups, *Int. J. Soc. Welfare* 19 (1) (2010) 63–72.
- [76] Joan Maya Mazelis, *The Only Way We Going to Survive: Social Support and Social Capital Among the Poor*, 2012.
- [77] Yuyin Li, Research on the rationality of precision poverty alleviation, *Open J. Soc. Sci.* 7 (4) (2019) 347–354.