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Why Agree to a Forest Easement? Perception of the Residents about the Adaptation of the Conservation Easement in Qianjiangyuan National Park

Siyuan He ^{1,*} and Yu Wei ²

¹ Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101, China

² Institutes of Science and Development, Chinese Academy of Sciences, Beijing 100190, China; weiyu@casisd.cn

* Correspondence: hesy@igsnr.ac.cn

Abstract: Conservation easements (CEs) were introduced in the Chinese context to resolve the conflict between rural land use and area-based conservation measures. As conservation easements are usually set on private lands, little is known about their adaptation to the collective land tenure. We introduced a social-psychological aspect to sustainable livelihoods (SL) for an integrated decision-making mechanism to assess rural residents' motivations for granting CEs. We surveyed farmers in the Qianjiangyuan National Park pilot area in order to explore how tangible factors, i.e., the livelihood assets, and intangible factors, i.e., farmers' perceptions of the livelihood environment, affected their true feeling of conservation easements. Results suggested that CEs that were adapted to the collectively-owned forestland followed a well-established grassroots democracy but sacrificed the CE's diversity in restricted uses tailored to specific landowners and properties. Institutional capital and perception of the economic environment appeared most important to affect farmers' acceptance of CEs. Furthermore, the livelihood assets affected farmers' perception of the livelihood environment, and their acceptance of CEs affected the perception of policy outcomes. Overall, our findings demonstrate the acceptance of conservation easements as a livelihood strategic choice and strengthen the importance of securing economic rights in the changing institutional environment.

Keywords: conservation easements; national park; resident perceptions; community sustainable development; sustainable livelihoods; institutional capital

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1. Introduction

Conservation easements (CEs) have become a popular conservation tool globally to achieve conservation goals on private lands [1–3]. CEs are often individually negotiated and therefore have a “limitless” diversity of permitted and restricted uses tailored to specific landowners and properties [4]. They are also supposed to avoid the high financial costs and difficult political issues associated with public acquisition and management to limit habitat loss [5,6]. Traditionally, a conservation easement is a voluntary, incentive-based legal agreement that limits certain land uses to attain land preservation and protection objectives [1,3,7,8]; therefore, this is a decision that involves not only economic but also sociological and psychological drivers [9].

A series of attempts to explain the motivation for conveying conservation easement has been made mainly in the United States, where conservation easements have a rather long and successful history. Easements are not yet as widely used in the private land of the European Union (EU), not because of the legal barrier but a lack of implementation practice and incentives for testing and wider application. Currently, the EU is taking projects to collect examples of conservation easements and evaluate their future potential for

conservation [10]. Therefore, our attention was first given to the mature research of the US cases, although there is no consensus on the strategy nor on the common drivers to be used to explain such decision-making [7,11–13]. Structural variables of the individual and the environment, such as social-demographic characteristics, soil conditions/land use status, and extension variables, were proved influential, including gender, education, income, location of residence, adulthood, household legacy, land already under conservation, etc. [9].

Moreover, eight motive-values were found effective under certain circumstances, of which several were non-financial ones [9]. For example, societal and environmental motives, such as social responsibility, land stewardship, and pro-environmental awareness, were important motivations for the transfer of conservation easements [11–13]. In addition, the perceived justice, such as information dissemination, participation in negotiation, and the expectation of the benefit, was also identified [7,11]. By contrast, financial motives were found to have little effect on the landowners' management and use decisions [14]. However, much research strengthened that financial incentives may have a stronger relationship with those whose activities on land consist of economically-driven behaviours [9,15,16]. Thus, economic dependence and commercial use of land are proved critical to affecting landowners' choice to engage in the adoption of land conservation practices, such as the granting of a CE [10,17,18]. Despite the mosaic drivers that are recognised to affect the granting of a CE, the expectation of the CE's benefit, the trust of the easement demander, and the perceptions of the ecological value of land are among the most important factors to impact landowners' decision-making [11].

The use of CEs to protect open space, habitat and ecosystems, and farmland has also extended outside of the US to developing countries, where the balance between the public and private benefit is crucial in the populated protected areas [19,20]. China is among the countries with the highest biodiversity, but it also faces the challenge of coordinating rural development and nature conservation [21,22]. During the recent institutional reform for a new national park system, CEs are proposed and practised as a promising conservation tool to improve the park-people relationship by reaching a win-win outcome of sustainable livelihoods and biodiversity conservation [21–23]. Considering China's social-political situation and rural land tenure system [24], CEs are adapted to the collectively-owned land under the operation of the rural grassroots democracy [25]. This is a solution to the lack of flexibility of permanent CE in dealing with dynamic social-ecological conditions and the fragments of conserved land due to private ownership, as was criticised by scholars concerning typical CEs in the US [26,27].

However, whether CEs can achieve the win-win goal is as yet unknown, especially when there is no research on the decision-making process of the farmers involved. Although there are considerable studies on the motivation for conveying conservation easement in the US, the different social, economic, political, and cultural differences make those research results enlightening but not conclusive for the developing world. Understanding the motives affecting participation in such programmes is vital to further development and refinement of policies to motivate community participation [28–30].

This paper addresses micro-level motivations that affect decision-making among farmers who have placed a CE on their collectively-owned land. In fact, very few households did not participate in the conservation easement programme because of its adaptation to the "collective", so this research aims to reveal people's true decisions if not constrained by the "collective action". This research takes a perspective of sustainable livelihoods (SL), which means that the paper treats the decision-making of conveying conservation easements as a whole procedure of choosing livelihood strategies based on the livelihood assets transformed by the environment of structures and processes in the vulnerable context and leading to certain outcomes [31]. In the Chinese context, conservation easements are supposed to improve rural land management by limiting restrictions of usufruct and multiple compensations according to conservation targets, making it a possible

approach to promote rural livelihoods in the protected areas [32]. Therefore, SL was introduced because this adaptation of conservation easements to the Chinese context is consistent with the growing emphasis on the importance of policies, institutions and processes (PIPs) that shape the types of livelihood strategies and the flow and interaction of livelihood assets [33]. In addition, the uncertainty of rural livelihoods because of the vulnerability contexts in which CEs take effect is worth exploring because of the trend of mainstreaming biodiversity conservation in China. Thus, the perspective of SL is helpful to reflect the complete decision-making mechanism in which livelihood assets, vulnerable contexts, PIPs, etc., become hypothesised motive-values that can be tested. In addition, studies on the choice of land conservation practices tend to treat the decision-making of coordinating nature conservation and production activities as a psychological process during which intentions and behaviours are belief-based [34–36]. Therefore, this paper introduced the social-psychological aspect in that conveying conservation easements is a livelihood strategy choice subject to the SL-based decision-making mechanism through the integration of vulnerability contexts, PIPs, and the perception of the livelihood environment.

The objectives of this study are as follows: (1) to understand farmers' attitude to conservation easements, (2) to identify the effect of tangible (livelihood assets) and intangible (perception of livelihood environment) conditions on farmers' true acceptance of a conservation easement, and (3) to explore relevant interactions between tangible and intangible conditions and between the acceptance of a conservation easement and its outcomes. These objectives are fulfilled by analysing data from the Qianjiangyuan National Park Pilot (QNP) of China with a constructed analytical framework with which research questions and hypotheses are further explained.

2. Materials and Methods

2.1. Qianjiangyuan National Park and the Conservation Easement as a New Tool

Qianjiangyuan (Source of the Qiantang River) National Park pilot (QNP) is in the Yangtze River Delta region (Figure 1) in Zhejiang Province of China. It conserves central subtropical evergreen broad-leaved forest with a total area of 252 km² integrated from a national nature reserve, a national forest park, and a provincial scenic area. QNP covers four towns with 21 administrative villages and supports a population of 9744 people [37], and 80.3% of the land is collectively owned. Most people are engaged in crop cultivation, including rice, rape, maize, and *Camellia oleifera*, and agriculture and migrant work bring in 80% of the household income. Of the four towns, Qixi and Suzhuang are located in the previous national forest, national park, and national nature reserve, respectively.

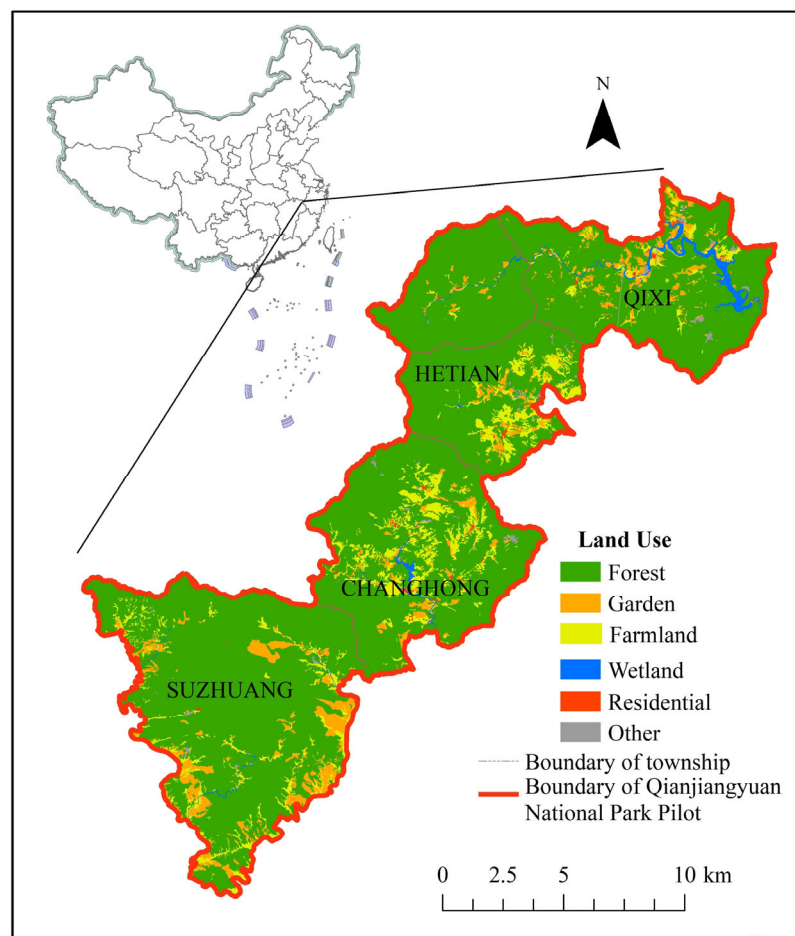


Figure 1. Location and land use of the Qianjiangyuan National Park pilot [38].

Kaihua County, where the QNP locates, has a forest cover of 80.96%, and forestry used to be a dominant industry (Figure 2). The rural reform of Kaihua has experienced several stages. The agrarian revolution between 1950 and 1951 overthrew the private ownership of land and established the public ownership of land through land reform. The mutual aid teams emerged in 1952, and then production cooperatives in 1954; finally, in 1958, the People's Commune (PC) was introduced with collective ownership, and the collective ownership of land belonged to three entities of the commune, the brigade, and the team. With the implementation of the Household Responsibility System in farmland, the collective forest tenure has begun its "Three-fixed" reform since 1981 to distribute forestland to households, however; this distribution of collective forests was stopped by the central government due mainly to the rapid loss of forest resources. In 2003, a new round of collective forest tenure reform (CFTR) was launched to solve property rights. The main reform is to allocate forestland to households and determine the farmers' rights to use and manage forestland and ownership of the forest. There is also supportive reform, including forest tenure mortgage loans, forestry insurance, and the establishment and development of forestry cooperative organisations. Meanwhile, Kaihua was designated a national ecological demonstration area in 1997, enlisted in the national forest ecological benefit compensation pilots in 2001, and a key supporting area of the provincial public welfare forest in 2004. Therefore, almost half of the forestland is under the protection of the public welfare forest, and incomes come mainly from compensation, under-forestry economy, rural homestay, etc., and the benefit right of public welfare forest is also allowed for applying for the pledged loan.



Figure 2. Typical village landscape of QNP (Zuoxi, Qixi County, **left**) and the nationally important agricultural heritage: running water fish farming system (**right**).

To better protect the forest and facilitate ecological restoration without land grabbing and high purchasing costs, CEs are introduced through a land-use reform initiated by the QNP management agency as a part of the national park's governance innovation. From March 2018, the park agency designed the implementation plan during the preparation period, and four working groups were set up to disseminate conservation ideology and implementation plan to towns and then villages. The negotiation was a two-step process taking place at the collective level and the village level for the villagers to entrust their contracted forestland to the village committee, and then the park agency signed a contract with the village committee. The contracts were registered from April to November 2020. The registered unit matches that of the forest ownership unit, and a certificate of registration of real estate was issued.

The CE contract has a fixed term of up to 31 December 2054, which agrees with the rural land contracting period. Rights and responsibilities for both parties were defined in the contract. A major right of the easement granters, i.e., farmers, is the annual compensation of 48.2 yuan/mu. In addition, they were also given priority in concession and branding of their products to provide goods and services in QNP. Accordingly, they are responsible for facilitating park management. Any breach of contract raises a penalty of 50% of the annual compensation to the land with easement by the party in breach. In total, 263,469 mu (ca. 176 km²) of land belonging to 3757 households of 21 village collectives was conserved by QNP Agency for the integrity of the subtropical forest system and the watershed, and this is 4.68 ha per household on average.

2.2. Analytical Framework

We developed a conceptual model of the easement granting mechanism from the local community's perspective. This model is informed by the attitude theory in park-people relations and sustainable livelihood literature, e.g., [39–43]. The implementation of the conservation easement is hypothesised firstly based on attitude theory [44], the attitude being a human psychological tendency expressed by evaluating a particular object with favour or disfavour, in this case, accept the easement reform or not. Attitude consists of beliefs, which are associations people establish between the attitude object and various attributes and are detected by perceptions. As positive attitudes are reasonable predictions of active actions, a perception-attitude-action chain is established. In the sustainable livelihoods analysis framework, livelihood assets are fundamental to deciding on livelihood strategies, here, granting an easement. The biophysical and institutional context and processes, which, in this research, are mainly the institutional innovation of the China na-

tional park system and the management regime, are also important in the sustainable livelihood analysis. Therefore, we suppose that livelihood assets are the internal base for livelihood strategy choice, and the biophysical and institutional context and processes are the external uncertainty for the livelihood decision-making; the acceptance of conservation easement is based on the condition of livelihood assets and the judgement of the livelihood environment and could lead to the action of granting a CE or not. Although, in reality, the individual action was constrained by the collective decisions, the attitudes were assumed to impact farmers' recognition of the policy outcomes because they were reasonable predictions of individual actions.

Figure 3 is used here as a useful heuristic tool to frame the analysis of the material-perception-attitude-action-outcomes chain. The framework contains the following main components: (1) the livelihood assets that support a farmer's decision-making on livelihood strategies. Conservation easement as a conservation tool will greatly affect farmers' life because of its potential restriction on resource use and other income-generating opportunities. Therefore, we take the granting of CE as a choice of livelihood strategy that could lead to alternative or diversified livelihoods, and such decision-making is well affected by livelihood assets [45]; (2) the cognition of the livelihood environment that reflects farmers' understanding of the external environmental conditions that may affect their decision-making. These conditions are mainly a manifestation of the biophysical and socio-economic environment interacting with the policies, institutions and processes (PIPs), which are treated as the external uncertainty of rural livelihoods to make more eco-friendly choices as they are now part of a national park [46]; (3) the acceptance of the conservation easement, which is farmers' attitude to the easement reform from its initiation to the current implementation. It was treated as a prediction of their true decision to transfer CEs because the real decision is unknown. The function of balancing public-private interests is manifested in the form of rights and responsibilities in the easement contract, so farmers will judge whether their livelihood expectation is met under these contents. In addition, how the contract is signed and whether it is well implemented also matters to farmers' attitudes to this new policy. Therefore, the acceptance is measured in terms of the content of the contract, the procedure of legitimating the contract, and the implementation of the contract; (4) the evaluation of the outcomes of the easement reform according to the functions and expected deliveries of the contract from the aspect of both public interest and private interest.

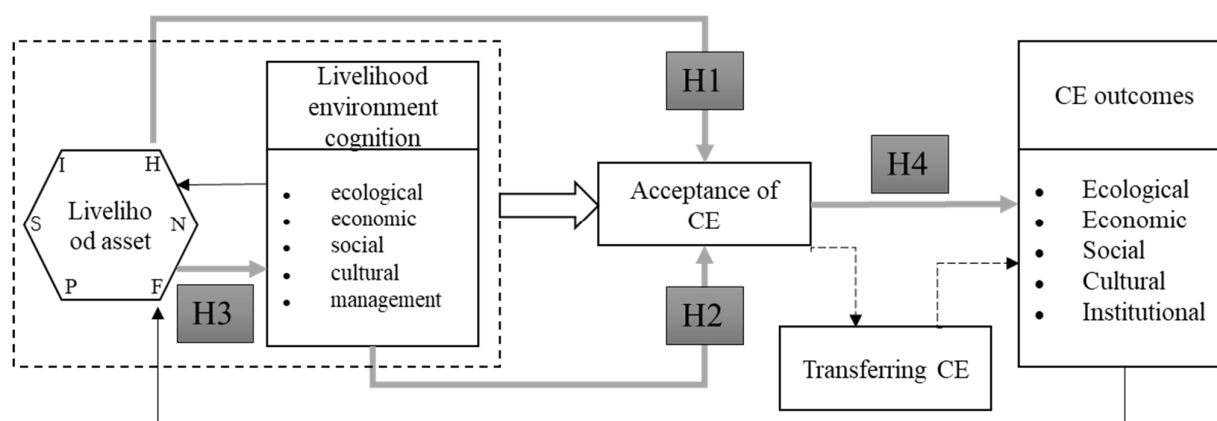


Figure 3. The overall analytical frame of the mechanism of the conservation easement from the perspective of sustainable livelihoods and the hypothesis (H: human capital, N: natural capital, F: financial capital, P: physical capital, I: institutional capital). The dotted rectangular shows the mechanism of the social-psychological process based on material conditions.

Under the analytical framework, for a conservation easement holder in the QNP, livelihood assets are the basic material that can affect their attitude to the conservation easement; livelihood assets may also affect farmers' perception of the external livelihood environment, which can affect the overall attitude to the conservation easement. Finally, their attitudes may affect their assessment of the policy outcomes. Thus, four hypotheses are proposed:

H1. *Livelihood assets affect farmers' acceptance of the conservation easement;*

H2. *Perceptions of the livelihood environment affect farmers' acceptance of the conservation easement;*

H3. *Livelihood assets affect farmers' perception of the livelihood environment, and;*

H4. *Acceptance of the conservation easement affects farmers' cognition of its outcomes.*

The livelihood assets were measured by human, natural, physical, financial, social, and institutional capital with 21 variables (Table S1). We proposed an institutional capital to explain the institutionalised assets that are not owned or manipulated directly by farmers but that affect farmers' actual use of their other capitals [47,48]. This is important because, with the integration of protected areas, China's national park inherits and optimises multiple management rules, be they formal regulations or customaries, to better manage natural resources. Human capital was referenced by people's knowledge, health, and household labour force rate. The exact number of working people was not used because migrant work was common in the research area. The major land-use types are farmland, orchard, and forestland; however, we found that farmers were very unfamiliar with the area and location of the collectively-owned forest, which is also not used to generate income under the policy of public welfare forest. Therefore, natural capital mainly focused on farmland for grain production and orchard for cash crop production. This research chose the built-up area of houses, livestock, durable goods as well as infrastructure to assess physical capital. The condition of infrastructure was measured by farmers' satisfaction with the traffic, water, and electric services in rural communities. This research used annual household income, credit, and government subsidies to measure financial capital. Membership in production cooperatives, government positions, village leadership, networking expenditure, and online time were used to capture social capital.

The perception of the livelihood environment was measured in five aspects which were integrated to represent the possibility of coordination between ecological conservation and economic development, and 12 variables were designed to measure with a 5-point Likert scale ranging from the most negative attitude to the most positive one [49] (Table S2). The perception of nature reflects farmers' modern ecological awareness when they are making eco-friendly production decisions [50], i.e., their understanding of the vulnerability to natural risks. Perception of the land economy reflects the potential risks to the household when making eco-friendly production decisions [51]. Perception of culture refers to traditional ecological awareness that exhibits values, beliefs, and norms that preserve biodiversity and ecosystems [42]. Perception of social conditions is a manifestation of farmers' altruism and reflects their understanding of the vulnerability to social risks [52,53]. Perception of management is the understanding of the institution and governance of the park based on the previous perception of the vulnerability context [54]. Psychologically, the perception of the ecological and cultural conditions reflects the internal motivation of livelihood decision-making, the economic perception, the external motivation, and the social and management perception, the motivation of adaptive management to institutional change.

The acceptance of the conservation easement is measured by three aspects of the contract content, the forming procedure, and its implementation. Twelve variables were designed by document research and semi-structured interviews (see Data collection) (Table S3). A 5-point Likert scale was used, ranging from the most negative attitude to the most positive one.

The livelihood outcomes in the sustainable livelihood analysis framework contain a wide scope of farmers' well-being but not about the public interest. In this research, the livelihood outcomes are expanded to include public interest measured by social-economic outcomes and ecological outcomes because of the application of conservation easement (Table S4). A 5-point Likert scale was used, ranging from the most negative attitude to the most positive one, to represent the change of variable before and after farmers transferred their conservation easement.

2.3. Data Collection

Key informant interviews and household interviews were conducted using a semi-structured and structured questionnaire, respectively. Key informant interviews were conducted to complement the information on the actual implementation process of the conservation easement on the collectively-owned forest, which could not be found in the formal policy documents and implementation guides. This information was used to form the final variables (Table S3 and S4). Key informants were all familiar with the CE reform in QNP, including five park agency officials, two government officials, three scholars, and three conservation practitioners. Three questions were asked. (1) What were the main difficulties of introducing the concept of CE to local people? (2) What were the main difficulties of facilitating it? (3) What would you like to change concerning the contract content, if possible? The key informant interviews were conducted from March to May 2021.

Structured interviews were conducted with a total of 255 randomly selected households between 11 and 16 May 2021, of which 241 were valid with an efficiency of 94.5%; 113 of the households were from 5 villages in Suzhuang, 77 from 4 villages in Qixi and 51 from 3 villages in Hetian. The sample size is proportional to the area of the collectively-owned forest of towns. Changhong was not surveyed mainly because it was similar to Hetian concerning the geographical location as a corridor of previously protected areas [22]. Interviews were conducted mainly in the local language, with the aid of local village committee members. We recorded the demographic details of the respondents, the livelihood assets, perception of the livelihood environment, acceptance of the conservation easement, and recognition of the policy outcomes. Table 1 presents descriptive statistics of respondents' socio-economic status and demographic characteristics in the three towns around QNP.

2.4. Data Analysis

Analyses were performed using SPSS v.22 and Microsoft Excel. The weights of variables of livelihood assets (Table S2) were calculated with the Entropy weight method (EWM) in Microsoft Excel. Detective factor analysis (DFA) was used to identify variables of livelihood assets that mostly contribute to the evaluation of rural livelihood assets. By deleting variables with a communalities value of less than 0.4, the original variables of livelihood assets of 21 were reduced to 10. The remaining variables were further used for factor analysis to extract effective information on livelihood assets for farmers with a KMO value of 0.711 [55], and the Barlett test was significant. New livelihood assets were extracted from factor analysis and used for regression analysis.

The results of the 5-point Likert scale were given a score from 1 to 5, and scoring on all statements was uniform. To provide a general measure of perceptions and attitudes, we averaged scores of individual respondents to produce a general attitude score for each statement, and all the scores of statements under the same item were further averaged to a composite score. Scores above the halfway point on the continuum of computed scores

(1–5) were considered to be indicators of positive attitudes [56] and further used in binary logistic regression analysis with a value of 1.

Kruskal-Wallis one-way ANOVA test was used to test the mean attitude scores of households from the three towns to determine whether there were significant differences in perception of their livelihood environment, acceptance of the conservation easement, and recognition of policy outcomes.

We performed binary logistic regression analyses in SPSS on the four hypotheses in the conservation easement implementation mechanism model for the whole QNP to assess how the material base and perception of uncertainty are related and affect attitudes towards the new conservation tool.

3. Results

3.1. Demographic Information and Livelihood Assets

The demographic feature is shown in Table 1. Among the respondents, 60% were male. The mean age of the respondents was 52.2, and almost 90% were above the age of 40. About one-third of the household owners had an educational level of primary school or less, and those who graduated from junior school were the most. The average family size was 4.05 persons. The average ratio of the workforce in a family was 67.90%, and 78.4% of households have more than half of their members as the workforce. In addition, this ratio was significantly higher in Hetian (74.78%) than in Suzhuang (58.41%) and Qixi (64.72%). Within the workforce, the average ratio of farmers was 38.71%, and that of migrant workers was 42.22%. Both the ratio of farmers and migrant workers were the highest in Suzhuang (42.77% and 43.04%). The average annual income of the household was 64 800 yuan (ca. 9927 USD), and the value was significantly higher in Hetian (100,200 yuan, 15,641 USD) than in Qixi (65,900 yuan, 10,286 USD) and Suzhuang (55,800 yuan, 8710 USD).

Table 1. Demographic and economic information of respondents in three towns.

Variable	Town			Statistics		
	Suzhuang (%)	Qixi (%)	Hetian (%)	χ^2	<i>df</i>	<i>p</i>
<i>Gender</i>				2.195	2	0.334
Female	44.2	36.4	33.3			
Male	55.8	63.6	66.7			
<i>Age</i>				9.119	6	0.161
18–24	2.8	1.3	0.0			
25–39	11.0	13.2	9.8			
40–59	64.2	59.2	74.5			
>60	22.0	26.3	15.7			
<i>The educational level of the household owner</i>				6.659	6	0.354
Primary and illiterate	32.7	35.1	27.5			
Junior high	45.1	44.2	49.0			
Senior high	20.4	13.0	15.7			
College and above	1.8	7.8	7.8			
<i>Household size</i>				3.620	4	0.460
1–3	35.4	36.4	49.0			
4–6	59.3	58.4	49.0			
>7	5.3	5.2	2.0			
<i>The ratio of the workforce</i>				16.972	6	0.009
<30%	8.0	10.4	0.0			
30%–50%	20.4	9.1	9.8			
50%–80%	49.6	48.1	52.9			
>80%	22.1	32.5	37.3			

<i>The ratio of the workforce engaged in farming</i>				6.552	6	0.364
<30%	36.3	44.2	45.1			
30%–50%	8.8	7.8	5.9			
50%–80%	37.2	32.5	43.1			
>80%	17.7	15.6	5.9			
<i>The ratio of migrant workers</i>				10.249	6	0.115
<30%	32.7	32.5	25.5			
30%–50%	8.0	9.1	21.6			
50%–80%	42.5	42.9	47.1			
>80%	16.8	15.6	5.9			
<i>Annual household income</i>				14.651	6	0.023
<10,000 yuan	11.5	11.7	7.8			
10,000–50,000 yuan	47.8	29.9	27.5			
50,000–100,000 yuan	18.6	32.5	23.5			
>100,000 yuan	22.1	26.0	41.2			

The total amount of livelihood assets for each household was 0.394, in which social capital was the highest (0.123), followed by institutional capital and human capital (0.102), physical capital (0.034), financial capital (0.033) and natural capital (0.0004). There was no significant difference in the total amount of household livelihood assets and their composition among the three towns.

After factor analysis, four factors were extracted to bear 64.3% of the original information on livelihood assets (Table 2). Factor 1 was identical to the original institutional capital, and Factor 4 contained only variables of natural capital. Factor 2 was a combination of the variables of human capital and social capital. It can be assumed that education level represented the intellectual ability that was gained from formal educational institutions, and the identity of a village leader brings more comprehensive abilities as social capital, so Factor 2 was extracted as a new human capital by integrating the two aspects. Factor 3 was a combination of variables of the physical and financial capital, which are economic capital defined by Scoones [57] (p.8). The scores of new livelihood assets showed that the economic capital was significantly high in Hetian.

Table 2. Factors that explain the livelihood assets of the QNP.

Original Variables	Institutional Capital	Human Capital	Economic Capital	Natural Capital
H1	0.086	0.770	0.200	0.079
H4	0.084	0.844	0.119	−0.080
N1	−0.029	−0.165	0.165	0.766
N2	0.082	0.120	−0.103	0.807
P4	−0.017	0.271	0.676	0.054
F1	0.135	0.351	0.614	0.162
F2	0.008	−0.028	0.773	−0.045
S2	0.181	0.389	0.365	−0.193
I1	0.898	0.141	0.049	0.033
I2	0.917	0.071	0.049	0.023

3.2. Rural People's Understanding of Easement Reform: Uncertainty, the Contract, and Outcomes

As shown in Table 3, farmers held a positive attitude toward their livelihood environment, with an average score of 4.02. The highest score occurred in the perception of culture (4.32), followed by that of ecological (4.08), social (4.03), management (3.93), and economic conditions (3.76). Perception of culture was significantly different from that of the last three aspects, and significance also exists between the perception of ecological

conditions and that of the management and economic conditions, between economic and social and management conditions, and between social and management conditions.

As for the cultural aspect, farmers loved their land (B8 4.38) and recognised conserving forests as a tradition (B7 4.27). They also had good ecological awareness (B3 4.23) and were supportive of national conservation policies (B2 4.07). However, their perception of the current ecological status of QNP was significantly less positive (B1 3.93). Farmers agreed on the social effect of QNP to be a national conservation symbol (B10 4.14), but they were significantly more sceptical about the effect of easement in national park management (B9 3.92). Compared to the above-mentioned three aspects, more people held a neutral or negative attitude concerning national park management in terms of familiarity with national park management (B11 3.88) in general and its relation to community development (B12 3.98) in specific. The least positive attitude was about the economy when about one-third of farmers doubted the economic benefit of farmland and collectively-owned forest (B4 3.82, B6 3.80), and almost 40% of them doubted the income-generating potential of conservation easement (B5 3.66).

Table 3. Farmers' perception of their livelihood environment.

Statement	Proportion (%)					Ave.	Std.
	1	2	3	4	5		
B1 The ecological status of QNP is desirable	1.7	1.7	27.4	40.2	29.0	3.93	0.88
B2 I support ecological conservation policies	3.7	2.1	8.7	53.9	31.5	4.07	0.90
B3 I support forest preservation for generations	2.1	1.2	7.1	51.0	38.6	4.23	0.80
<i>Overall ecological perception</i>						4.08	0.87
B4 Land-based production is financially beneficial to my family	0.8	4.6	29.0	42.7	22.8	3.82	0.86
B5 Easement reform can increase household income	2.5	3.3	32.8	48.1	13.3	3.66	0.84
B6 Collectively-owned forest can generate economic benefit	3.3	3.3	22.4	52.3	18.7	3.80	0.89
<i>Overall economic perception</i>						3.76	0.87
B7 Protecting forest is a local tradition	0.4	1.2	7.5	53.1	37.8	4.27	0.68
B8 I love the land of my hometown	1.7	0.8	4.6	44.0	49.0	4.38	0.76
<i>Overall cultural perception</i>						4.32	0.72
B9 Easement reform will benefit national park management	2.5	4.1	14.5	56.4	22.4	3.92	0.87
B10 I'd like to see QNP becoming a conservation model	0.4	3.7	7.9	57.7	30.3	4.14	0.74
<i>Overall social perception</i>						4.03	0.81
B11 I am familiar with QNP management	1.2	2.5	22.4	54.8	19.1	3.88	0.78
B12 QNP pays attention to the community development	1.2	2.5	15.8	58.5	22.0	3.98	0.77
<i>Overall management perception</i>						3.93	0.78
The overall perception of the livelihood environment						4.02	1.12

Farmers' perceptions of the livelihood environment also differed among the three towns. People in Hetian held the most positive attitude, while those in Qixi had the most negative towards each aspect of the livelihood environment (Figure S1).

As shown in Table 4, farmers held a slightly positive attitude to the easement reform (3.60), with the most positive attitude towards the procedure of contract forming (3.69), and the score was significantly higher than that of the perception of the content of the contract (3.57) and the implementation of it (3.56).

Considering statements of the easement contract, farmers had a similar attitude to the three statements of the role of villagers, officers, and park agency in designing (C7 3.78), entrusting (C8 3.68), and contracting (3.72). Although they had the least doubt about the procedure, more than 30% held a neutral to a negative attitude.

As for content, farmers showed a neutral attitude toward the compensation standard (C1 3.09). Those who held a negative attitude account for 33.6% of farmers, and this neutral stand differed significantly from perceptions of other statements of content and those

of procedure and implementation. Their attitude to their responsibilities and rights was statistically different; 73.8% and 71.8% of farmers agreed on their role in assisting park management and following regulations (C5 C6). Compared to the two responsibilities, their attitude to the rights of benefit was much more conservative when ca. 30% of the farmers showed a neutral stand (C3 C4).

Low scores of perception of contract implementation were due mainly to farmers' attitude to the default costs (C10 3.45) and the contract period (C11 3.50). On the contrary, they held a more positive attitude toward the settlement of disputes (C12 3.73).

Table 4. Farmers' perception of the easement reform.

Statements	Proportion (%)					Ave.	Std.
	1	2	3	4	5		
C1 The compensation standard is appropriate	11.6	22.0	19.9	39.0	7.5	3.09	1.17
C2 The way of monetary compensation is appropriate	4.6	11.6	21.6	51.9	10.4	3.52	0.98
C3 That you have favourable access to concession is appropriate	2.1	7.5	32.4	47.3	10.8	3.57	0.86
C4 That you can use national park branding is appropriate	2.1	5.0	29.9	51.9	11.2	3.65	0.82
C5 You can assist in park management (e.g., patrolling and reporting illegal behaviours)	3.7	4.1	18.3	56.4	17.4	3.80	0.90
C6 It is reasonable that you obey rules (e.g., no logging)	2.5	5.8	19.9	51.9	19.9	3.81	0.90
<i>Contract content perception</i>						3.57	0.98
C7 You and your village committee can be involved in the preparation of easement reform	1.7	5.0	20.7	58.9	13.7	3.78	0.80
C8 You were willing to entrust your land to your village committee	3.7	6.2	23.2	52.3	14.5	3.68	0.93
C9 It is reasonable to sign the easement contract between your village committee and the park agency	2.9	6.6	24.9	56.8	8.7	3.62	0.85
<i>Contract procedure perception</i>						3.69	0.86
C10 Default cost is reasonable (50% of annual compensation)	4.6	11.6	27.0	47.7	9.1	3.45	0.97
C11 Contract period is appropriate (till 31 December 2054)	3.7	10.0	27.8	49.4	9.1	3.50	0.93
C12 There is timely conflict resolution	4.1	3.7	19.1	60.6	12.4	3.73	0.88
<i>Contract implementation perception</i>						3.56	0.93
The overall perception of easement reform						3.60	0.94

Farmers' acceptance of easement reform differed among the three towns (Figure S2). As for content, there was a significant difference between the three towns, with farmers in Hetian being the most positive. As for procedure and implementation, farmers' in Qixi held a significantly more negative attitude.

Farmers held a neutral attitude toward the outcomes of easement reform, and their attitudes differed greatly towards different aspects of the outcomes (Table 5). Their perceptions of the cultural (3.97) and ecological outcomes (3.94) were significantly more positive than that of institutional (3.27), economic (3.15), and social outcomes (3.08).

Considering the statements of the outcomes, farmers believed that people's ecological awareness improved after easement reform (D5 3.97), and forests were better conserved (D1 3.94). For institutional outcomes, farmers held a significantly more positive attitude toward their participation in park management (D6 3.79) when the situation of customary regulations and rural co-operatives was perceived as rather stable (D7 3.22, D8 2.79). Economic outcomes were not favoured in terms of incomes (D2 3.15) and ways of making a living (D3 3.15) when more than half of the farmers claimed no improvement at all. The social outcomes were also not recognised when about 20% of farmers thought that QNP was only known to people in Kaihua County.

Table 5. Farmers' perception of the outcomes of easement reform.

Statements	Proportion (%)					Ave.	Std.
	1	2	3	4	5		
D1 Forests are better conserved	2.9	5.8	22.8	31.5	36.9	3.94	1.04
<i>Ecological outcome perception</i>						3.94	1.04
D2 Annual household income increases	5.4	12.0	51.0	25.7	5.8	3.15	0.90
D3 The ability to make a living improves	6.6	10.0	51.5	25.3	6.6	3.15	0.93
<i>Economic outcome perception</i>						3.15	0.91
D4 QNP's popularity increases	19.5	8.7	27.0	34.0	10.8	3.08	1.28
<i>Social outcome perception</i>						3.08	1.28
D5 Awareness of resource conservation increases	3.3	1.7	18.7	47.7	28.6	3.97	0.91
<i>Cultural outcome perception</i>						3.97	0.91
D6 You are more involved in park management	2.1	2.5	29.5	46.5	19.5	3.79	0.86
D7 Customary rules and regulations improve	9.1	14.5	31.1	35.3	10.0	3.22	1.10
D8 Rural economic co-operatives increase	19.1	16.6	36.1	22.4	5.8	2.79	1.16
<i>Institutional outcome perception</i>						3.27	1.12
The overall perception of the outcomes						3.39	1.11

Farmers had similar perceptions of outcomes in three towns with some differences in perception of specific statements (Figure S3). In general, farmers in Hetian held the most positive attitude. Farmers in three towns all held positive attitudes to ecological outcomes but not to social or economic outcomes. As for the institutional outcomes, significant differences occurred between farmers in Hetian and the other two towns.

3.3. Why Do Rural People Transfer the Easement

For H1, binary logistic regression analysis found that livelihood assets had a significant positive impact on farmers' acceptance of the easement reform (Table 6). The more assets any household had access to, the higher likelihood that farmers agreed on the easement reform. The effect of institutional capital stood out, i.e., a better understanding of the customary rules and national park regulations of resource management can lead to a higher likelihood of farmers' acceptance of the easement contract.

Table 6. Impact on the perception of CE reform with identified factors of livelihood assets.

Perception of CE Reform		Livelihood Assets	
		Total Score	Institutional Capital
Overall	B	1.276 **	0.509 ***
	Wald	6.206	8.388
	Exp(B)	3.584	1.664
Content perception	B	1.325 ***	0.513 ***
	Wald	7.632	9.698
	Exp(B)	3.762	1.671
Procedure perception	B	1.700 ***	0.576 ***
	Wald	10.97	11.245
	Exp(B)	5.473	1.78
Implementation perception	B	1.006 **	0.417 ***
	Wald	5.178	7.393
	Exp(B)	2.734	1.518

Notes: **, *** illustrate the significance at the level of 0.05, and 0.01.

For H2, binary logistic regression analysis found that the perception of the livelihood environment had a significant positive impact on farmers' acceptance of the easement reform (Table 7). The more positive the overall attitude to the coordination between conservation and development, the more likely farmers were to accept easement reform. In specific, the perception of the economic environment was the most influential factor to have a positive impact on the acceptance of easement reform. Stronger confidence in the role of easement in bringing economic benefit can lead to a higher likelihood of accepting easement in terms of the content (B5), procedure (B5, B6), and implementation (B6). Perception of cultural conditions, i.e., the belief in protecting the forest as a local tradition (B7), will increase the likelihood of accepting the content of the contract. As for the perception of social condition, the more positive farmers thought of CE as an initiative in QNP management (B9) and the QNP becoming a conservation model (B10), the more likely they accepted the contracting procedure and the whole reform. Perception of management conditions also took effect. A better understanding of QNP management and its relation to community development can lead to a higher likelihood of accepting the content of the contract (B11, B12) and agreeing on its implementation (B11).

Table 7. Impact on the perception of CE reform with identified factors of the perception of livelihood environment.

Perception of CE Reform		Livelihood Environment Perception						
		Overall	Economic		Cultural	Social		Management
			B5	B6	B7	B9	B10	B11 B12
Overall	<i>B</i>	2.944 ***	0.885 ***	0.594**			0.578 **	0.710 **
	<i>Wald</i>	13.231	7.565	5.415			3.863	5.228
	<i>Exp(B)</i>	19.000	2.422	1.812			1.783	2.033
Content perception	<i>B</i>	3.504 ***	0.773 ***		0.693 **			0.630 * 0.757 **
	<i>Wald</i>	10.798	8.823		4.787			3.818 6.128
	<i>Exp(B)</i>	33.245	2.166		1.999			1.878 2.131
Procedure perception	<i>B</i>	3.611 ***	0.670 **	0.494 **		0.846 ***		
	<i>Wald</i>	11.450	5.512	4.451		13.281		
	<i>Exp(B)</i>	37.000	1.954	1.639		2.329		
Implementation perception	<i>B</i>	1.889 ***		0.92 ***				0.813 ***
	<i>Wald</i>	7.153		21.851				13.103
	<i>Exp(B)</i>	6.611		2.51				2.254

Notes: *, **, *** illustrate the significance at the level of 0.1, 0.05, and 0.01.

For H3, livelihood assets also showed a significantly positive impact on farmers' perception of their livelihood environment, thus indirectly affecting farmers' attitudes to CE reform (Table 8). The more assets any household had access to, the more likely farmers held a positive attitude towards the uncertainty in their livelihood, i.e., they felt coordination existed between ecological conservation and economic development. With more abundant livelihood assets, farmers were most likely to consider conservation as a local tradition and felt a deep affiliation with their hometown (cultural). There was also a higher likelihood of farmers perceiving conservation policy and practice as desirable to their homes and future generations (ecological). They were more likely to agree on the potential economic benefit from land and forest under easement (economic), and knew more about QNP management and its relation to community development (management). The least likelihood then occurred to farmers' perception of the social aspect, but still, they were more likely to see easement as a way of benefiting QNP management and the conservation cause (social). In addition, institutional capital was found to significantly affect the perception of the cultural, economic, and management environment.

Table 8. Impact on the perception of livelihood environment with identified factors of livelihood assets.

Perception of Livelihood Environment		Livelihood Assets	
		Total	Institutional Asset
Ecologic perception	<i>B</i>	1.977 **	
	<i>Wald</i>	5.503	
	<i>Exp(B)</i>	7.218	
Economic perception	<i>B</i>	1.708 **	0.594 ***
	<i>Wald</i>	10.749	11.524
	<i>Exp(B)</i>	5.518	1.812
Cultural perception	<i>B</i>	2.924 ***	0.781 ***
	<i>Wald</i>	8.75	7.025
	<i>Exp(B)</i>	18.617	2.185
Social perception	<i>B</i>	1.371 **	
	<i>Wald</i>	4.894	
	<i>Exp(B)</i>	3.939	
Management perception	<i>B</i>	1.589 ***	0.522 ***
	<i>Wald</i>	7.459	7.352
	<i>Exp(B)</i>	4.901	1.686

Notes: **, *** illustrate the significance at the level of 0.05, and 0.01.

For H4, farmers' acceptance of CE reform had a significantly positive impact on their recognition of the outcomes, especially of the cultural, institutional, and economic aspects (Table 9). A higher acceptance of the contracting legitimacy (procedure), the contract period (implementation), and the responsibility of managing the park (content) all led to a higher likelihood of recognising the cultural outcomes. A higher acceptance of the contracting procedure and the right to use the branding led to a higher likelihood of sensing positive institutional change. The perception of the contracting legitimacy (procedure) and that of the compensation standard and the access to concession (content) took a positive effect on farmers' recognition of the economic outcomes. The latter also positively affected farmers' recognition of the social and ecological outcomes.

Table 9. Impact on the recognition of outcomes with identified factors of the perception of CE reform.

Perception of Outcomes		Perception of CE Reform							
		Overall	Content			Procedure		Implementation	
		C1	C3	C4	C5	C7	C8	C9	C11
Overall	B	2.563 ***		1.460 ***		0.822 ***		0.685 **	
	Wald	46.225		23.222		8.177		6.213	
	Exp(B)	12.972		4.308		2.276		1.984	
Ecological outcome	B	0.907 ***	0.669 ***						
	Wald	7.489	14.896						
	Exp(B)	2.477	1.953						
Economic outcome	B	2.006 ***	0.433 ***	0.733 ***				0.753 **	
	Wald	16.473	7.711	7.787				6.49	
	Exp(B)	7.431	1.542	2.082				2.122	
Social outcome	B	1.508 ***	0.886 ***		0.566 ***				
	Wald	14.430	17.191		8.06				
	Exp(B)	4.518	2.426		1.762				
Cultural outcome	B	2.365 ***			0.622 ***		0.885 ***		0.629 ***
	Wald	41.926			7.71		10.276		6.795

	<i>Exp(B)</i>	10.641		1.862		2.422	1.876
	<i>B</i>	2.231 ***		0.675 ***		0.741 ***	0.554 **
	<i>Wald</i>	30.948		6.798		6.951	4.115
Institutional outcome	<i>Exp(B)</i>	9.306		1.964		2.098	1.74
						2.033	

Notes: **, *** illustrate the significance at the level of 0.05, and 0.01.

4. Discussion

The study aimed to understand how the farmers accept conservation easement as a new conservation tool from the perspective of sustainable livelihoods, given both the livelihood assets and the psychological context of decision-making. By constructing a decision-making mechanism framework, we expanded the classical approach of livelihood asset-strategy relation on structural variables to an integrated decision-making procedure, including vulnerability context and PIPs of the SL analytical approach. We found that farmers' perceptions of their livelihood environment played a key role in their acceptance of the conservation easement (Table 10), and farmers' true attitudes impacted their recognition of the outcomes even though they granted a conservation easement to the national park agency because of collective decisions. This finding highlights the relevance of including vulnerability and governance variables to complement livelihood decision models based only on economic/structural factors.

Table 10. Major motivations compared with representative research results.

Motive-Value of Private Landowners [9]	Motivations for the Collective Forestland
Place attachment	QNP as conservation model;
	Institutional assets;
Environmental motives	Understanding of park management and community development;
Witnessing land development	-
Societal motives	Novel conservation tools;
Motivation to protect open-space	-
Family heritage (legacy property)	-
Cultural motivations	Forest conservation tradition
Financial motives	Economic expectation

4.1. The Effectiveness of Conservation Easement Is Yet to Improve

The conservation easement is an effective conservation tool that could maximise the benefits of multi-stakeholders through limited restrictions on private land use [58]. In China, the adaptation of conservation easement to the collectively-owned land in QNP partly responded to the requirement of rural livelihoods, echoed the research that CE should stabilise the long-term benefit in the designing and promotion to own the trust of farmers [59]. Admittedly, several local conditions favoured the acceptance of the conservation easement. First, the rural grassroots democratic system was relatively mature to legitimise the procedure of easement contracting (Table 5), indicating that the village committee in China acts as a bridging organisation in “community broker” positions between individual farmers and the public power to avoid their confrontation [60]. Second, the park management agency worked closely with the local government to promote the dissemination of policy information, and this cooperation is similar to what was revealed elsewhere [7]. Third, the easement contract was not permanent but followed the local household contracting system with a limited contract period and dynamic compensation standard to better adapt to changing social and ecological conditions [26,61,62]. Fourth, the low natural assets indicate an acceptable opportunity cost with restrictions on productive land. Last but not least, farmers had a strong sense of place and valued their cultural traditions, and embraced conservation policies to conserve forests for the next generation

(Table 3, B8, B7, B2, B3). These external and internal conditions all suggest that conservation easement may become a promising tool in QNP.

However, results show that farmers' true acceptance of the conservation easement was not very high, and their recognition of its outcomes was low. Although the basic grassroots democracy took action in the negotiation of contract contents, about 1/3 of the farmers still did not accept the contracting procedure, indicating that conservation easement was mainly a top-down procedure. As for the contract content, rights were significantly less acceptable than responsibilities. This could be due to a mismatch between people's expectations and the delayed implementation of incentive policies [63].

The research found that, in general, farmers with a higher acceptance of the conservation easement were more likely to praise the outcomes. In specific, contract content was the key element to affect outcomes. This is because the economic and institutional outcomes were directly related to the design of the compensation standard, the implementation of concessional schemes, granting of national park brands, and other rights, to facilitate alternative livelihoods and increase the added value of products [64]. These economic and institutional outcomes finally reduce the unsustainable use of resources for better ecological outcomes. In addition, procedural justice would help farmers to recognise institutional outcomes since, in this way, a trusting relationship between the policy designers and the acceptors can be built [65]. The overall perception of the outcomes was, however, neutral, and a gap occurred in recognition of the ecological and economic outcomes, indicating that conservation easement was yet to balance conservation and livelihoods from the perspective of farmers. As for the social outcome, the popularity of QNP was perceived to be at the provincial level, and almost 20% of farmers thought that QNP was only a park at the county level. This recognition greatly deviated from the proposed role of national parks in the protected area system and showed that farmers did not fully understand the concept and functions of a national park. Such knowledge, or the lack of it, can influence intentions of undertaking conservation action [29], such as active participation in national park management [43,66,67]. Perceptions of the institutional outcomes also confirmed that there was a lack of supportive mechanisms, such as production cooperatives or the publicity of their existence.

4.2. Material and Non-Material Conditions Work Together to Affect Decision-Making

Rather than revealing farmers' attitudes to the conservation easement reform, we would also like to understand their decision-making mechanism for a sustainable livelihood under protected area management. Results show that both livelihood assets and perceptions of the livelihood environment were significantly positively related to farmers' true attitudes toward the conservation easement. This finding accords with several studies evaluating the uptake of conservation policies, which show the positive correlation of behaviour with the livelihood assets and risk perception or awareness of the problem [46,68].

In general, more livelihood assets favours the acceptance of conservation easements because of their role in resisting livelihood risks, as was revealed in other studies [45,69,70]. This abundance of materials also increased their psychological confidence in the livelihood environment which can be ecologically and economically coordinated. Specifically, institutional capital is a critical complement of farmers' private assets and an effective predictor of policy acceptance and decision-making of livelihood strategy, because they largely define farmers' access to other livelihood capitals and greatly enhance farmers' belief in the economic, cultural, and national park management (Table 7).

Furthermore, farmers who believed that the livelihood environment was more ecologically and economically coordinated were more likely to accept conservation easement because they perceived lower risks when CEs conform to this coordination (Table 9). This risk-averse idea suggests possible ways of improving farmers' acceptance of conservation easements. For example, the income expectation of the conservation easement and the management plan of the collective-owned forest should be more specific and feasible (Table 3, B5, B6), the relationship between the establishment and management of QNP and

community development, as well as the implementation path of a coordinated ecological and economic development at the livelihood scale, must be introduced to farmers (Table 3, B12). Conservation easement as an innovation of the national park system and its management objectives (Table 3, B9) should also be explained other than as a simple alternative to the previous eco-compensation policy. Last but not the least, the moral incentives are important because local people have the tradition of protecting forests (Table 3, B7), which is evidenced in many inscriptions of village rules dating back to almost a quarter-century ago. Local people also have abundant traditional knowledge to regulate the spring water conserved by upper forests to manage fish ponds around houses, recognised as a nationally important agricultural heritage (Figure 2).

4.3. *The Benefit Dichotomy Exists, and the Design of CEs Needs Improving*

The purpose of the conservation easement was to balance public benefit and community livelihood; however, its implementation in QNP has not achieved this target yet. Here, the livelihood environment was used to represent the external uncertainty for livelihood decision-making, and the results showed that community people supported ecological ideology at the macroscale but doubted their livelihood development opportunities at the microscale. Therefore, this dichotomy of benefits in and outside of communities intensified the perceived uncertainty of rural development with the introduction of the conservation easement.

The fundamental reason for farmers' doubt of the comprehensive benefits of land management through conservation easement lay largely in the violation of the "non-possession" of the conservation easement when a "one-size-fits-all" contract was implemented. As timber production and harvest of non-timber forest products were banned, it weakens the advantages of the conservation easement to render only limited restrictions to land use and is largely not in line with farmers' expectation of the innovation of a national park system in general, and of the easement reform, in specific [71]. In addition, although there was an efficient top-down social mobilisation and information dissemination as well as a credible grassroots democracy for farmers to sign the contract when other rights in the contract were not demonstrated or realised, they were very suspicious of the conservation easement as a useful tool to coordinate public and private interests.

The psychological process of decision-making demonstrated that farmers were not very active in participating in national park management. Although they expressed strong ecological awareness and local cultural attachment, these positive attitudes had yet to become practical support to national park management and had no impact on their acceptance of conservation easement. The psychological process also indicated that the voluntary of individual families might be constrained by the collective due to administrative power and rural customs. Their neutral attitude to the conservation easement may be due to no loss under the new policy [72–74]. However, their focal concern of the economic risks was likely to become an unstable factor for the relationship between the national park and the rural communities [75].

The "one-size-fits-all" design of conservation easement is not effective because communities differed in livelihood assets and risk perceptions and then their attitudes to the conservation easement. This whole decision-making is affected by the historical development of the relationship between protected area management and farmers. Historically, Suzhuang was part of a nature reserve, and Qixi was adjacent to a forest park, while Hetian was nearly not affected by any type of PA. It was found that farmers in Suzhuang had the lowest livelihood assets and average income but good awareness of nature conservation due to nature reserve management, and their acceptance of the conservation easement was not the lowest due to their long-built trust in conservation agencies. On the contrary, farmers in Qixi were unsatisfactory with the compensation and economic outcomes because of their loss of income due to the suspension of tourism after the forest park became a part of the new QNP. Not restricted by any type of PA before, farmers in Hetian had the most abundant livelihood assets and a positive attitude to their livelihood

environment to make risks bearable, so they held the most positive attitude to the conservation easement.

Accordingly, the aforementioned results and explanation have direct implications for developing better conservation easement contracts that take into account the social-economic differences and the livelihood requirements of rural communities. In fact, easements should be set on land with high conservation values [76–78], so it is reasonable to evaluate the necessity of transferring the conservation easement of all the collectively-owned forests. To make conservation easement acceptable to farmers, the national park agency and farmers should work together to determine whether a plot should be included in the easement plan so that the ecological and economic outcomes are balanced and measurable to ensure effective land use [58].

5. Conclusions

Through the case of QNP, this study offers three main contributions to the understanding of CE usage and granting in the collective land tenure in a developing country. First, CE as an innovation to resolve the conflict of rural land use and protected area enclosure was effective only to a certain degree because it is not granted by an entirely voluntary individual household, but matches collective land tenure under which some personal needs were undoubtedly sacrificed. Second, understanding the institutions concerning resource management of the national park is critical to increasing farmers' confidence in a coordinated ecological-economic livelihood environment and then their acceptance of conservation easement. Finally, economic rights were the essential concern of farmers, and tangible benefits which are achieved accordingly are a decisive factor for them to accept conservation easement.

Our results provide policy implications, particularly for the current conservation easement schemes of national parks. The effectiveness of policy incentives could be enhanced if the farmers' decision-making mechanism is considered. The dichotomy of ecological awareness and livelihood requirement should be connected to maximise the comprehensive benefits of rural land use in the protected areas. On the one hand, rights and responsibilities must be practicable for farmers to truly understand the role of a conservation easement in land use management, and they should consider farmers' ecological knowledge and ability to link their awareness to livelihood outcomes. This is an important way to facilitate farmers' active participation. On the other hand, it is necessary to re-examine the conservation value of collectively-owned forests at the landscape level to evaluate the possibility of their multi-functionality in conservation and production rather than achieving "absolute fairness" from the perspective of farmers by banning all the other land use forms. The criteria and indicator for enhancing sustainable forest management offers a framework to differentiate the productive, protective, and social roles of forests among different locations concerning the zoning of the national park pilot and its management goals and objectives. Plot-specific management may be difficult to realise for a populated area, but tailoring management to the county level is worth trying to sustainably conserve the forest while generating income for local people. Therefore, further attention can be extended from motivation to policy effects, given the dynamics of livelihood strategy and evaluation of livelihood outcomes, thus exploring ways for maximising regional forestry values.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/f14050872/s1>, Figure S1: Perception of livelihood environment by people in three towns; Figure S2: Perception of easement reform in three towns; Figure S3: Perception of the outcomes of easement reform in three towns; Table S1: Variables of livelihood assets and their measurement; Table S2: Variables of perception of livelihood environment; Table S3: Variables to measure the acceptance of the conservation easement. Table S4: Variables to assess the outcomes of the conservation easement.

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