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How human-elephant relations are shaped: A case study of integrative governance process in Xishuangbanna, China

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ABSTRACT

The conservation of nature is of paramount importance for preserving biodiversity. However, it can also give rise to conflicts and challenges for communities dependent on natural resources. In this paper, we focus on the issue of Human-Elephant conflict (HEC) in Xishuangbanna National Nature Reserve, China, and investigate the causal linkages between governance systems and HEC. Our research presents a comprehensive case study of a village located within the Xishuangbanna National Nature Reserve, delving into the intricate dynamics of human-elephant relationships spanning a three-decade period. Drawing on the integrated governance (IG) theory and actor-centered power (ACP) perspectives, we analyze the influence and interaction of three policy systems—Asian elephant conservation policy, agricultural development policy, and forestry policy—on the governance of HECs. Through our examination of power dynamics among multiple actors involved in policy formulation and those affected by policies, we aim to identify the driving forces influencing governance performance. We have identified noteworthy patterns of synergy and conflicting interests among agricultural, forestry, and elephant conservation policies, which have evolved at different stages of governance. The interplay between these policy systems significantly influences the habitat of wild elephants, the land-use patterns of adjacent communities, and the livelihood strategies adopted by local farmers. As a result of these interactions, an adaptive governance strategy on Human-Elephant Conflicts has emerged. Our findings offer novel perspectives on understanding the nuanced transitions in human-elephant relationships, providing valuable insights into the implications of policy interactions.

1. Introduction

The United Nations has declared the UN Decade on Ecosystem Restoration (2021−2030) (UN, 2021). This, along with multiple international initiatives to restore degraded lands (REF), aimed to address a suite of environmental challenges that had been predicted (e.g. Steffen et al., 2015;Scholes et al., 2018). The preservation of wildlife, particularly emblematic species, has been one of the major goals of international conservation efforts since the CBD was launched (e.g. Swanson, 1999). Nature conservation involves giving priority to the interests of those who value nature over those who seek to extract benefits from natural resources, even if that requires the destruction of nature. However, conservation efforts not only require some actors to make trade-offs between competing interests, but they can also lead to unintended negative impacts on ecosystems, known as ecosystem disservices (Takahashi et al., 2021; Dunn, 2010; Ango et al., 2014). Preserving natural habitats and the wildlife species that depend on them is crucial for generating and maintaining ecosystem services, which provide long-term benefits to humans and the environment. However, conservation efforts can also lead to unintended burdens and disturbances that extend beyond the missed opportunities to exploit natural resources in these habitats. For instance, the preservation or reintroduction of certain wildlife species can create challenges and conflicts with human communities, as seen in the cases of bears and monkeys in Japan (Takahashi et al., 2021), and wolves that are being reintroduced in multiple countries in Europe (Chapron et al., 2014). There are also numerous examples of conflicts between people and wildlife in tropical regions (Matseketsa et al., 2019).

Restoration of wildlife populations is an important aspect of nature conservation and restoration efforts, although they were not commonly

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discussed within the debate on ecological restoration. The restoration of wild animal populations was widely viewed as a way to correct a historical error (Ducarme et al., 2013). Wildlife species had been subjected to overhunting, habitat degradation, or declining populations, and addressing these issues was crucial to benefit both animal and human communities (Schirpke et al., 2018). These perceptions and narratives influenced to a great extent how academic studies of HWCs were conducted, how the problems and underlying causes were formulated, and what solutions were proposed to move forward.

The increasing discussion on conflict between humans and Asian elephants, which is a case of HWCs, has aroused the debate on the causes of human-elephant conflict (HEC) and the influencing factors shaping human-elephant relationships. Asian elephants are classified as an endangered species (IUCN, 2014). They are distributed in 13 countries across South Asia and Southeast Asia, spread over an area of 486,880km^2 (Menon and Tiwari, 2019). In China, Asian elephant has been listed as a first-class protected animal since 1988 (State Council of the People's Republic of China, 1989). Their primary habitat in China is the Dai Autonomous Prefecture of Xishuangbanna, Yunnan province. The population of the Asian elephant in China's southwestern Yunnan province has doubled from 150 to 300 in the past 30 years (Kerry, 2022). Successes of Asian elephant conservation efforts have caused conflicts with humans, or human-elephant conflicts, in China, as well as in other Asian countries (Madhusudan et al., 2015;Bandara and Tisdell, 2003; Li et al., 2018; Budd et al., 2021). People and elephants compete for space and resources therein. Elephants roam their habitat in search of food and will go beyond its boundaries if food becomes scarce. They are also attracted by the agricultural products that people grow on land neighbouring elephant habitats. Then, they damage crops and may attack, hurt, and kill people (Bandara and Tisdell, 2003). Human activities in areas adjacent to elephant habitats have resulted in the reduction and fragmentation of forests. The encroachment of human settlements and the expansion of agriculture into these areas pose a threat to the integrity of elephant habitats and can also influence the behaviour of these animals (Madhusudan et al., 2015).

Among the intricate competition for land and food resources in areas where elephants reside, a series of policies and their interconnections have significantly impacted the trajectory of land use transition and molded the dynamics of the human-elephant relationship. From a conservation perspective, extant research indicates that policies like those implemented in protected areas and natural forests have proven effective in safeguarding wild elephant populations. Nonetheless, these policies have also constrained the subsistence opportunities of indigenous communities residing in the vicinity of these protected areas (Aziz et al., 2013). Conversely, community-based economic progress, such as the cultivation of crops and the construction of transportation infrastructure, has disrupted the migration corridors of wild elephants and has consequently impacted their migratory behaviors (Chen et al., 2016). To date, there has been limited research exploring the relationship between policy interactions and their impact on human-environment conflicts (HEC), as well as local practices and responses to such conflicts. Recent studies in China and other regions, such as Ba et al. (2020), have shown that it is essential to analyze multiple policy interactions and adopt multi-actor analysis frameworks when land use needs give rise to competing demands. By doing so, we can gain a better understanding of how different actor groups operate and influence each other in the context of land use conflicts, as well as how these performances are influenced by policies and policy interactions.

This study focused on the transformation of human-elephant relationship in the context of the Asian elephant protection strategy under Xishuangbanna Nature Reserve, where the dual objectives of protection and development were pursued. Drawing upon the Institutional Governance (IG) framework, we identified three policy systems that impacted the human-elephant conflict: elephant conservation, agricultural development and forestry policies. We investigated the interplay between these policy systems and their respective impacts on the land use and human-elephant relationship at different stages. Building on this analysis, we employed the Actor-Centred Perspective (ACP) theory to investigate the governance performance on HECs by analyzing the power relationship between different actors. Section 2 of the paper introduced theories related to the IG framework and ACP theory and how these were used in the analytical frame applied in the research and this paper. Section 3 described the selection of the research site and the research methods adopted in the study. Section 4 presented our results, and Section 5 discussed the insights emerging from those results. The discussion part centered around the effectiveness, challenges, and potential areas for improvement in the governance of human-elephant conflict within a multi-policy system. Furthermore, our study has shed light on the inspiration and future prospects for the application of the theoretical framework presented herein in the context of researching human-elephant conflict.

2. Theoretical framework

Human-wildlife conflicts (HWC) constitute an emerging and rapidly growing topic of academic discussion, primarily situated within the realm of nature or biodiversity conservation studies. Matseketsa et al. (2019) suggest it especially to be an emerging problem in developing countries where wildlife conservation is pursued in or near areas where residents rely on agriculture or other natural resource use to meet livelihood needs. HWC discussions are, in that sense, part of nature conservation debates and adopt biodiversity conservation theory. The latter postulates the need to conserve nature and biodiversity, necessary for the survival of the human species, but also because nature holds intrinsic rights of existence. Discussions within this framework often focus on identifying threats to nature and biodiversity and finding solutions to overcome those threats. HWC studies adopt a conceptual model of wildlife and rural residents who find themselves in spaces where they compete for land and resources. The nature and biodiversity literature addresses international and national governance issues and challenges (e.g. Cano Cardona et al., 2022). We turned to two theoretical frameworks that have affinity with environmental governance to analyze HEC in Xishuangbanna. The first is the integrated governance (IG) framework (Visseren-Hamakers, 2018a;Visseren-Hamakers, 2018b), and the second is the action-centred power (ACP) theory developed by Krott et al. (2014).

2.1. Integrated governance framework

We adopted an IG framework because our preliminary surveys revealed the intricate interactions and impacts of elephant conservation, forestry, and agricultural development policies on shaping the dynamics of Human-Elephant Conflict (HEC) in Xishuangbanna. Governance is defined as processes of interactions of laws, norms, power or language of an organized society over a social system by the government of a state, markets, or networks leading to decision-making when addressing a collective problem by means of creating, reinforcing, and reproducing social norms and institutions (Hufty, 2011). Policies fall within this definition as acts of governance or as governance instruments. The IG frame recognizes governance as a dynamic realm characterized by interacting governance instruments and acts (Visseren-Hamakers, 2018a;Visseren-Hamakers, 2018b). We chose the integrated governance framework rather than just framing integrated policy (c.f. Briassoulis, 2004), which would have been a possible alternative because the IG frame makes suggestions on how to analyze interactions and performances of interacting governance acts and instruments, including different sector policies.

The IG framework's proposal for the analysis of governance acts or instruments included three steps, which we adopted in our study. IG proposed as a first step to analyze the interactions between public, private, and hybrid governance acts and instruments, i.e., policies and rules. Secondly, the performance of the governance systems, composed

of interacting and integrated governance acts and instruments that were analyzed under the first step, was assessed. Key indicators to assess performance included knowledge development, changes in views among actors, and changes in relationships among actors (Visseren-Hamakers, 2018b). The third and final step entailed explaining the new relationships and the performance of the governance system under review. In this last step, IG theory held that it was necessary to use rational choice theory, institutionalism, constructivism, and critical theory to explain the governance system performance. Explanatory factors that could be assessed included actors' behaviour, institutional performance, the discourse framing by actors, and organisational structures erected during the governance processes.

2.2. Actor-centred power theory

ACP theory was developed by Krott et al. (2014) to understand and capture power in policy community settings. It recognizes that relations and interactions are susceptible to influence and that this can be conceptualised as power relations. Such power relations affect policy performance and outcomes (Ba et al., 2020; Brockhaus et al., 2014; Lund, 2015; Giessen et al., 2016; Rahman et al., 2016; Schusser et al., 2016). ACP holds that analyzing power relations between actors in a governance system helps to clarify the performance and outcomes of the latter (Movuh and Schusser, 2012; Krott et al., 2014).

ACP theory provides an analytical tool for assessing actors and their power sources specifically in evolving governance arrangements (Kimengsi et al., 2022; Sadath et al., 2017; Maryudi et al., 2016; Ba et al., 2020). It assumes a relationship between actor A, who alters the behaviour of actor B, without recognizing actor B's preference. In this case, actor A assumes the role of a 'potentate', while actor B becomes the 'subordinate' (Krott et al., 2014). Actor A has three sources of power to influence actor B: coercion, (dis-)incentives, and dominance of information. Coercion is defined as the potentate altering the behaviour of the subordinate by force in the form of regulations, physical threats, and physical acts. (Dis-)incentives represent promises of advantages or warnings of disadvantages. Dominant information occurs when the potentate holds exclusive knowledge and controls information, transmitting such information partially or untruthfully to the subordinate (Krott et al., 2014; Prabowo et al., 2017;Ba et al., 2020).

2.3. Theoretical framework: combining integrated governance framework with actor-centred power theory

The IG framework emphasis actors as key attributes of the governance system and its dynamics, which is relevant to better understand how actors influence policy-making and implementation, and how they interacted with those who were affected by policies and their interactions. To achieve this, we used the analytical elements of IG and ACP to define a research framework.

This research involves three main steps. First, we mapped polices and analyzed the relationship and interactions between three policy systems. We identified elephant conservation, agricultural development, and forestry policies as the relevant policy system and conducted an analysis of the tripartite policy systems, focusing on their policy goals, objectives, related programs (Sadath and Krott, 2012). Subsequently, we observed the governance performance by identifying three distinct policy interaction stages pertaining to the management of human-elephant conflicts within the research area, and then introduced the interplay between policy systems and governance performance on each interaction stage. Third, we used ACP theory to analyze relevant powerful actors, sources of power, and outcomes of use of power, in order to explain the performance of different governance stages (Fig. 1).

3. Methods

3.1. Study site

There are fewer than 250 Asian elephants remaining in China, and they are found in the Dai Autonomous Prefecture of Xishuangbanna in Yunnan province. To protect these elephants, the Xishuangbanna National Nature Reserve was established by the State Council in July 1986. The reserve covers areas of Jinghong City, Mengla County, and Menghai County and is divided into five sub-protected areas: Mengyang area in Jinghong City, Mangao area in Menghai County, Menglun area, Mengla area, and Shangyong area in Mengla County.

The total area of the reserve is 242,510 ha, which is equivalent to 12.68% of the total area of Yunnan province. The reserve is divided into three categories: core areas, buffer areas, and experimental areas (Table 1). The core area covers 107,424 ha or 44.3% of the reserve's total area, while the buffer area covers 72,607 ha or 29.94%. The experimental area covers 62,484 ha or 25.76%. A total of 20 villages and towns, and one city are located inside the area designated as the reserve (Yang and Tang, 2008).

We chose Village H, located in Mengla County, Yunnan province, as our research site. This natural village is situated within the reserve and experiences a marine monsoon climate, with an average temperature ranging from 15 to 22 °C and an average annual precipitation of 1334–2200 mm. The village is situated in the experimental areas of the reserve in Mengla County, as shown in Fig. 2. Village H is home to 112 males and 92 females, with an average age of 28.4 years, and is inhabited by the Yao minority. The village covers an area of 52.15 ha, with 9.71 ha being used for paddy fields, 42.44 ha for dry land, and 92.13 ha for rubber plantation. The per capita area of paddy field is 0.7 mu (0.047 ha), and the per capita area of dry land is 3.1 mu (0.21 ha). In 2015 and 2020, the per capita income of Village H was 22,528 yuan and 32,653 yuan, respectively. The per capita disposable income was 5691

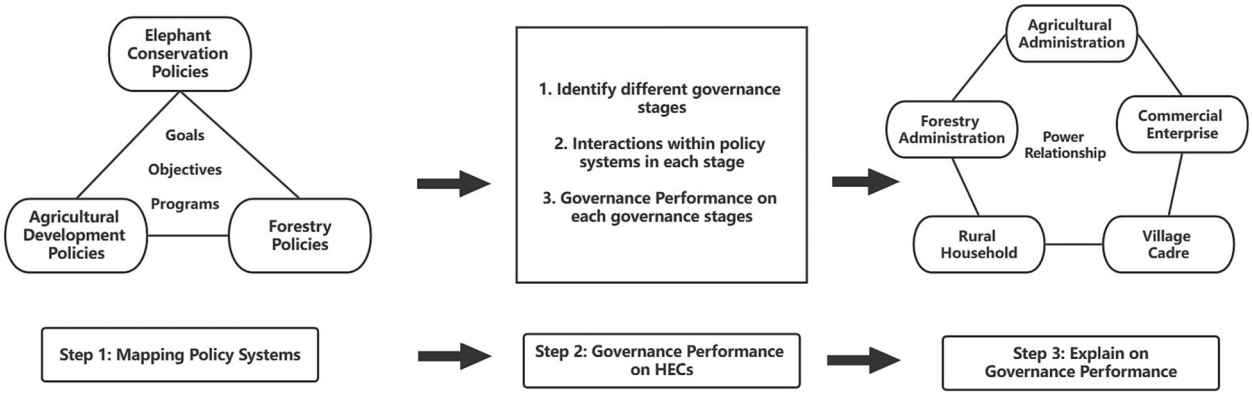

Fig. 1. Research framework.

Table 1
Functional division of the Xishuangbanna National Nature Reserve.

Functional Zones of Nature Reserves	Function	Regulations
Core area	Protect natural resources and environment, and ensure the integrity of natural ecosystem and the safety of biodiversity	Except for necessary observation, monitoring, and scientific research, no facilities and activities that affect or interfere with the ecological environment shall be set up or engaged
Buffer area	The buffer area is placed in-between the core area and the experimental area. It can relieve external pressure and prevent the influence of human activities on the core area	Only organized scientific and experimental observation, necessary monitoring, field patrol, and protection facilities construction shall be arranged in buffer areas
Experimental area	The large outer area of the nature reserve that allows human development	Scientific experiments, teaching practice, eco-tourism, necessary infrastructure, and supporting engineering facilities permitted by national laws and regulations can be carried out within the area
Biological corridor	Expand the habitat range of the main conservation populations and increase the connectivity between populations in fragmented sub-protected area. Reduce the harm caused by wildlife entering farmland and villages looking for food	

Source:Yang and Tang, 2008.

yuan and 9375 yuan in 2015 and 2020, respectively. Village H's residents earn their livelihoods from agriculture, migrant work, non-agricultural activities such as tourism, and remittances and subsidies (Gao, 2018).

3.2. Methodology

We conducted a single case study that utilized the process-tracing method to investigate changes in local livelihoods in Village H. The study covers a period of more than 30 years, starting from 1987 when the village moved to its current location in an alpine area. Data on local livelihoods was collected through face-to-face semi-structured interviews conducted from the year of 2015 until the present. The interviews focused on changes in land use, livelihood assets, livelihood strategies, and livelihood outcomes during that period.

A qualitative analysis based on policy texts was carried out to provide context for the study's findings, we consulted 19 key policy documents related to elephant conservation, agricultural development, and forestry policies that were promulgated by both the central government and local government between 1987 and the present day. Additionally, the researchers examined evidence of any established village rules and regulation notices, as well as inquiring about the presence of oral histories within the communities. By analyzing these policy documents and materials, the study aims to shed light on the governance of human-elephant conflicts (HECs), including the policy goals, objectives, and related programs. The study conducted fieldwork in Village H from November 2018 to August 2020, with visits lasting between 1 and 2 months. Continuous field research was also carried out from January 2021 to January 2022. The study interviewed actors affected by conservation policies related to elephants, agricultural development policies, and forestry policies. The interviewees included government department staff, companies operating in or near the reserve, insurance companies, forestry protection and wild elephant monitoring stations, forest rangers, village cadres, and others. The study used a snowball sampling method during interviews, resulting in a total of 67 interviews, all of which were coded. Descriptive statistics were used to analyze the results of the villagers, as shown in Table 2.

4. Results

4.1. Governance systems on human-elephant conflict in Xishuangbanna National Nature Reserve

4.1.1. Policy system mapping

4.1.1.1. Elephant conservation policies. The protection of Asian elephants in China has been a long-standing process, marked by the implementation of various policies and measures over the years. In 1988, China promulgated the "Wildlife Protection Law of the People's Republic of China" and the Asian elephant was listed as a first-class protected animal with the highest level of legal protection under Chinese law (The National People's Congress of the People's Republic of China, 2018). Subsequently, the government established the Wild Elephant Valley Nature Reserve in Yunnan Province since 1990.

(Xishuangbanna Dai Autonomous Prefecture People's Government, 2017), which harbors a significant population of Asian elephants. On April 2nd, 1996, the Fifth Session of the Eighth People's Congress of Xishuangbanna Dai Autonomous Prefecture in Yunnan Province enacted the "Regulations on the Protection of Wildlife in Xishuangbanna Dai Autonomous Prefecture, Yunnan Province". Since its implementation, a comprehensive system for the protection of wildlife in their natural habitats, rescue and breeding programs, as well as law enforcement and supervision mechanisms has been established and continues to be in effect. In 2016, The National Forestry and Grassland Administration of China launched the Asian Elephant Conservation Project Plan (2016–2025), with the primary aim of enhancing habitat protection, reducing human-elephant conflicts, and strengthening law enforcement efforts (Forestry and Grassland Bureau of Yunnan Province, 2015). In 2017, the National Forestry and Grassland Administration of China issued the National Park System Plan, which included the creation of a national park in Xishuangbanna, Yunnan Province, serving as a protected area for Asian elephants and other endangered species (Xinhua News Agency, 2019). In 2020, the "Implementation Plan for the Protection and Restoration of Asian Elephant Habitat in Yunnan Province" was approved by expert review, planning for five important Asian elephant habitats.The comprehensive launch of the Xishuangbanna Asian Elephant Monitoring and Early Warning Project has been initiated, with front-end monitoring and early warning equipment put into use in multiple locations, and dynamic information on Asian elephants monitored from multiple perspectives (Forestry and Grassland Bureau of Yunnan Province, 2020). In 2022, the Chinese government revised the Wildlife Protection Law, imposing stricter penalties for illegal wildlife trade and consumption, including trade and consumption of elephant products (The National People's Congress of the People's Republic of China, 2022).

In addition, cooperation on Asian elephant protection between China and Laos has also contributed to the increase in their population. In 2013, Yunnan Province and the government of Laos established a cross-border ecological protection zone that linked Xishuangbanna and three nature reserves in Luang Namtha, Oudomxay, and Phongsaly provinces in northern Laos, creating a contiguous protected area of 193,700 ha (Ministry of Commerce of the People's Republic of China, 2013).

In 2017, a team from the scientific research institute of the Nature Reserve Management and Protection Bureau of Xishuangbanna investigated the population of Asian elephants in the joint protection zone and compiled the Plan for the Protection of Asian Elephants in the China-Laos Cross-border Joint Protection Area. This plan aimed to

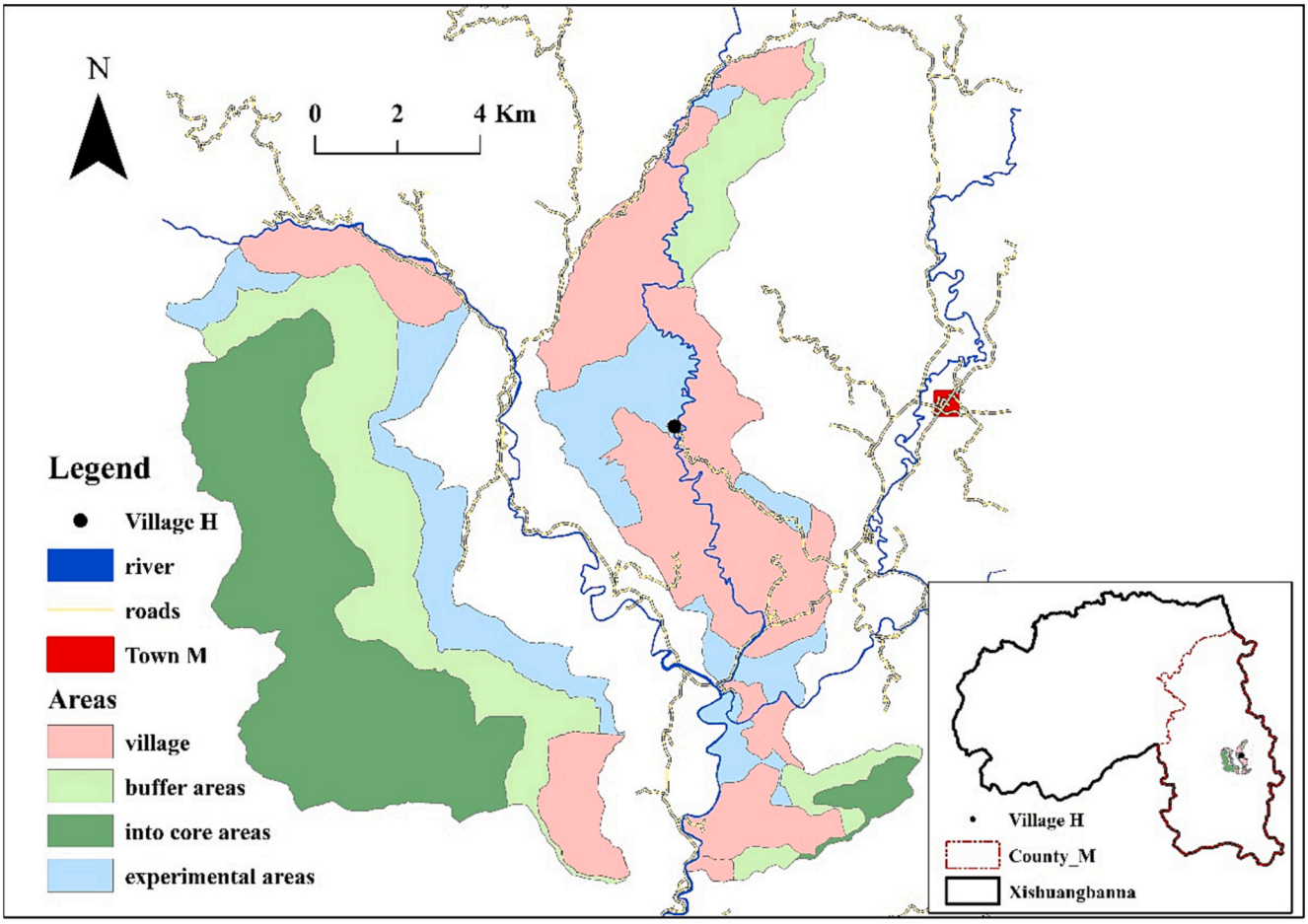

Fig. 2. Location of research site.
Source: National Catalogue Service For Geographic information and Planning Map in Mengla County Wildlife Conservation Station.

optimize the spatial dimension of elephant protection, improve bilateral management of the joint protection zone, and ensure long-term cooperation (Nature Reserve Management and Protection Bureau of Xishuangbanna, 2019). Under the cooperation programs, some of the increasing numbers of Asian elephants in China were estimated to have come from Laos.

4.1.1.2. Agricultural development policies and programs. The essence of the conflict between humans and elephants lies in the competition for food and habitat. The agricultural policy studied in this paper refers to the policy related to agricultural livelihood in the research area and the compensation policy for agricultural crops damaged by wild elephants.

Village H had been a rainforest village where residents practised slash-and-burn agriculture. However, in 1980, Yunnan Province implemented measures that required villages to demarcate state-owned forest, collective forest, and rotational agricultural lands. This had two significant effects on Village H: it limited the amount of land available for slash-and-burn agriculture and prevented any relocation of settlements, which disrupted customary migration patterns. As a result, the residents of Village H were forced to switch to dry land agricultural production.

During the period from the 1980s to the late 1990s, Village H was characterized by a subsistence self-sufficiency agricultural system. In the first decade following their relocation to Village H, residents engaged in subsistence agriculture, raising crops and poultry and gathering wild herbs and other natural resources for household use. In 1982, villagers began planting Amomum villosum, a ginger species commonly used in traditional Chinese medicine, to generate cash income. Production of this crop grew significantly from 1995 onwards, but such planting activities under the forest canopy was subsequently banned with the initiation of the natural forest conservation project conducted by the end of 1990s and reduced land available within the protected area(County government office of Maguan, 2018; Forestry and Grassland Bureau of Yunnan Province, 2022).

Since the end of the 20th century, with the needs of economic development, the local government gradually promoted cash crop planting, mainly rubber, sugarcane, and winter vegetables for the research area.

Rubber Project: Since the early 1980s, with the introduction of the Household Responsibility System and new technology, local governments of Xishuangbanna Dai Autonomous Prefecture began to encourage smallholder rubber production(Chapman, 1991). On the one hand, it was to meet the needs of China's rapidly industrialized economy for natural rubber as China surpassed the United States as the world's largest consumer of rubber; on the other hand, it brought local farmers unprecedented wealth and effectively moved households and communities out of poverty (Fox and Castella, 2013). Village H started rubber planting around 2003. Nowadays, the total area of rubber plantations has reached 3050 mu (203.3 ha). Rubber plantations have transformed a previously barren wasteland into a contiguous forested landscape, stretching between the Xishuangbanna reserve and the neighbouring agricultural areas and villages. Rubber planting, due to its change in land use, has led to a more monotonous landscape that lacks the diversity and complexity of habitats required by wildlife, causing wild elephants that used to forage in this barren land to leave and search for food elsewhere.

Table 2
Summary details of the interviews undertaken during the research.

Affiliated unit of interviewees	Position of interviewees	No. of interviewees	Interview topics
Forestry and Grassland Bureau in Mengla County	Director and staff of Mengla County Wildlife Conservation Station	2	Policy instruments conducted on Agriculture-Forestry-Elephant conservation system Local livelihood development, ecological protection activities and policies Transfer income for Village H
Agricultural Service Centre in Mengla County	Director of Agricultural Service Centre	1	Policy instruments conducted on guiding agricultural plantation in both Mengla County and Village H The governance cooperation between agricultural department and forestry department How to balance the conflict between agricultural plantation and the destruction by elephants
Forestry protection and wild elephant monitoring stations	Station manager and forest ranger	5	Wild elephant monitoring Community participation in elephant protection
Insurance Companies	staff	1	Insurance and settlements of claims on elephant insurance
Village Cadre	Village Party Secretary	1	Local participation in elephant protection and livelihood transition
Villagers	Local villagers	57	Transition in human-elephant relationship Transition in livelihood Interest in elephant protection

Sugarcane Project: Similar to rubber cultivation, sugarcane emerged as a major cash crop in Village H, driven by market-based incentives. The rise in demand for sugar in China during the 1980s and 1990s, coupled with inadequate domestic sugar supply, prompted the Chinese government to introduce policies aimed at encouraging sugarcane cultivation across various regions, thus meeting the growing demand for sugar in the domestic market(Li and Yang, 2015). This, in conjunction with sustained high international sugar prices, acted as a catalyst for the rapid development of the domestic sugarcane industry. Against this backdrop, the M county government took over a local sugar refinery and actively collaborated with towns to promote sugarcane cultivation in villages within the territory of Xishuangbanna Dai Autonomous Prefecture. This effort was furthered by subsidies and the construction of roads, which served to mobilise the enthusiasm of the villagers. As a result, sugarcane cultivation began to be undertaken on a large scale in Village H from the late 1990s onwards. Other economic crops included vegetables and fruits, which began to be cultivated on a small scale in the late 1990s, including pumpkin, stringless beans, chilli peppers, and aubergine, among others.

Wild Animal Insurance and Banana Project: The actual beginning of the HEC can be placed around 1990. The Yunnan provincial government began implementing regulations for compensation in 1992, which was further reinforced by the establishment of a wildlife protection fund in 1996. As the number of human-elephant conflicts (HEC) increased in recent years, Xishuangbanna National Nature Reserve collaborated with China's Pacific Insurance Company in 2009 to provide wild animal insurance for HEC losses, such as personal injury, economic losses resulting from crop and livestock damage, and damage to houses and infrastructure (Table 3). However, since the majority of elephant damage affected crops, these measures were primarily implemented to protect agricultural products.

The continuous damage caused by elephants since 2016 significantly impacted the livelihood options of the residents of Village H, leading to a modification in their strategies. One significant shift in land use patterns was the marked increase in banana cultivation since 2020. At first, only six households began planting bananas, with the household that had the most trees planting approximately 10,000 banana trees. These families earned annual incomes of 149,000 yuan (USD 23,500) from this crop, mainly through wild animal insurance.

The compensation policy and insurance scheme had a significant impact on the livelihoods and land use choices in Village H as the compensation paid for elephant damage became a new source of cash income for villagers. In the years leading up to the escalation of human-elephant conflicts, farmers mainly avoided crops that were easily damaged by elephants by adjusting their crop selection. However, due to a large number of insurance claims received by some banana growers in 2020. In 2021, more than half of the households in Village H started to plant bananas instead of corn and received insurance compensation for elephant damage to this crop; the total insurance paid for villagers whose bananas damaged increased from 9410 yuan in 2018 to 149,685 yuan in 2021 (Table 4), leading many to switch from growing corn to bananas, which were less attractive to elephants. However, it seemed that the availability of insurance compensation led to an increase in the number of crops damaged by elephants, and the insurance company's records showed that the number of elephant raids increased tenfold since 2019.

4.1.1.3. Forestry policies. Xishuangbanna, the only tropical rainforest in China, has faced conflicts between elephants and humans due to deforestation. Before 1981, China prioritized economic development and motivated the cutting down of forests for economic purposes. However, forest policies changed after the establishment of the Xishuangbanna reserve in 1981, shifting focus to harmonize regulations and achieve multiple objectives such as protecting species and promoting sustainable economic development. The policies were revised to incorporate a more sustainable approach, allowing understory planting and enabling wild elephants to access food within the protected area.

A pivotal point in natural resource management in China occurred in 1998 when floods caused significant property losses and casualties. China has implemented various forestry policies since 1998 with the goal of improving forest coverage, protecting biodiversity, and promoting sustainable forest management. These policies include the Natural Forest Protection Program, the Grain for Green Program, the Forest

Table 3
Standard of wild animal insurance.

Category	Standard of Indemnity in 2020
Casualty	The maximum compensation for death is 600,000 yuan, and the compensation for medical expenses is calculated according to the actual expenses incurred.
Houses and ancillary facilities	The compensation amount is calculated according to the actual amount of damaged facilities.
Crops	Rice: 900 yuan/mu; Corn: 600 yuan/mu
Cash crops	Rubber: 35 yuan/plant; Banana:10 yuan/plant; Sugarcane:1100yuan/mu; Fruit tree: 38 yuan/plant
Livestock	Pig: 40yuan/kg; Lamb: 40 yuan/kg; Cattle:40yuan/kg; Dog:30yuan/kg (Calculated at 30% of the market price usually)

Table 4
The insurance company's indemnity records of Village H from 2016 to 2021.

Year	Rice	Corn	Sugar cane	Pumpkin	Long bean	Rubber	Banana	Fruit tree	Casualty	Total
2016	6435	13,640	**41,930**	0	0	950	3990	0	0	66,945
2017	13,640	8000	**48,160**	0	0	0	0	0	0	69,800
2018	6380	13,120	**22,050**	0	0	0	9410	0	0	50,960
2019	540	**58,240**	0	0	0	6375	10,160	500	0	75,815
2020	540	10,880	0	250	2145	0	**149,700**	0	0	163,515
2021	360	19,200	0	0	0	0	**149,685**	0	600,000	769,245

Tenure Reform, and the Ecological Forestation Program(The Central People's Government of the People's Republic of China, 2011). The 13th Five-Year Plan set a goal of increasing forest coverage to 23% and promoting sustainable development (The National People's Congress of the People's Republic of China, 2016). The recent dual-carbon goal to peak carbon emissions before 2030 and achieve carbon neutrality by 2060 has further emphasized the importance of afforestation and reforestation efforts. China has set a target of planting 100 billion trees by 2025 to help achieve this goal (The National People's Congress of the People's Republic of China, 2021).

China's forestry policy reflects the demand for an increase in afforestation area and afforestation quantity. Consequently, an absolute logging ban was implemented in all nature reserves, including the Xishuangbanna National Nature Reserve. These policies facilitated forest restoration efforts in villages in and near the reserve, contributing to the protection and preservation of the region's natural resources. Understory planting may or may not have been permitted depending on the specific forest policies in place. The trees might have become denser due to these policies. During this period, the practice of understory planting was prohibited, and the available food for wild elephants in the protected area gradually decreased. Meanwhile, due to strict regulations on logging under the natural forest protection programme, forest density increased over time, with a canopy closure of 0.74 with an average breast diameter exceeding 20 cm, most of them are mature trees (National Forestry and Grassland Administration, 2023) as of 2023. It became evident that wild elephants found it challenging to move freely in such dense forests, resulting in a decrease in their activity frequency within the protected area and an increase in their behaviour of venturing outside in search of food (Yunnan.cn, 2021).

4.2. Performance of governance between three policy systems

4.2.1. Three governance stages on human-elephant conflicts

According to the analysis of the three policy systems, the policy system can be divided into three stages concerning the governance of human-elephant conflicts.

Stage1 (1980s-1998): From the 1980s to the end of the 1990s, during the first ten years of establishing protected areas, the three policy systems mainly focused on the introduction and development of policies for wild elephant protection, as well as the establishment of ecological compensation and wildlife conservation funds. The effects of forestry and agricultural policies on wild elephants' living conditions were not significant during this stage.

Stage2 (1998–2016): A crucial turning point was reached in the impact of forestry and agricultural policies on wild elephants' living conditions and the human-elephant relationship. Firstly, the implementation of the natural protection forest project in forestry policy pushed the protected areas to further protect natural forests, which included livelihood restrictions such as prohibiting farmers from entering the protection zone for undergrowth planting. Secondly, around the late 1990s, Village H shifted from its original subsistence farming to a market-oriented crop plantation that continues to this day. This change greatly altered land use patterns and foraging areas of wild elephants in Village H for over 20 years.

Stage3 (2016 onwards): The third turning point occurred around 2016 when incidents of wild elephants damaging crops substantially increased. From the policy changes perspective, the policy measure of compensating farmers for crop losses through elephant insurance has played an increasingly important role, even leading farmers to switch from driving away or replacing crops to planting crops preferred by elephants and feeding them. The different governance stages and the interaction of policy systems are shown in Fig. 3.

4.2.2. Interaction within agriculture-forestry-elephant conservation policy systems

During the three different governance stages, the interactions between agriculture, forestry, and elephant conservation policies exhibit significant variations, which have complex implications for the dynamics of human-elephant relationships in Xishuangbanna, especially regarding the issue of human-elephant conflict.

Forest policies such as afforestation activities have contributed to the recovery of the elephant population but have also constrained access to land and resources for villagers living near the reserve, exacerbating HEC. These policies have also resulted in the displacement of local communities and led to conflicts between conservation goals and human welfare.

Furthermore, it is essential to recognize that forestry policies, particularly afforestation projects, can have unintended consequences for wild elephant conservation. Although afforestation activities contribute to expanding forest cover and carbon sequestration, they may inadvertently lead to the creation of dense forests that restrict the movement and foraging behaviour of wild elephants. As a result, the availability of food sources for elephants diminishes, and heightened competition for resources increases, consequently elevating the risk of HEC.

The agricultural policies primarily aim to enhance the income of local residents and safeguard agricultural products. Nevertheless, these policies may inadvertently impact wildlife, including elephants, by encouraging the expansion of agricultural lands into elephant habitats, thereby increasing the likelihood of human-elephant conflict (HEC). To address these potential risks, measures have been implemented, such as regulated compensation for wildlife damage, including incidents involving elephants. Additionally, complementary initiatives, such as the establishment of the Wildlife Protection Fund and agricultural crop loss insurance, have been put in place to promote a balanced approach that addresses both human needs and wildlife conservation.

Fig. 3 illustrates the interaction among the three policy systems during the three stages, highlighting the synergistic effects and characteristics. During the first stage, the forestry policy system exhibits stronger synergy with the elephant conservation policy system, while the agricultural system plays a supporting role with less pronounced impacts on the elephant conservation policy. In the second stage, which fundamentally influences the governance of human-elephant relationships, the forestry and elephant conservation policy systems maintain a relatively coordinated approach due to the initiation of China's afforestation projects and the frequent issuance of forestry policies. However, conflicts arise due to changes in land use in elephant habitats. The most notable conflicts occur between the agricultural and forestry systems, where wildlife conservation policies restrict traditional livelihood patterns in local communities, and extensive new agricultural commercial

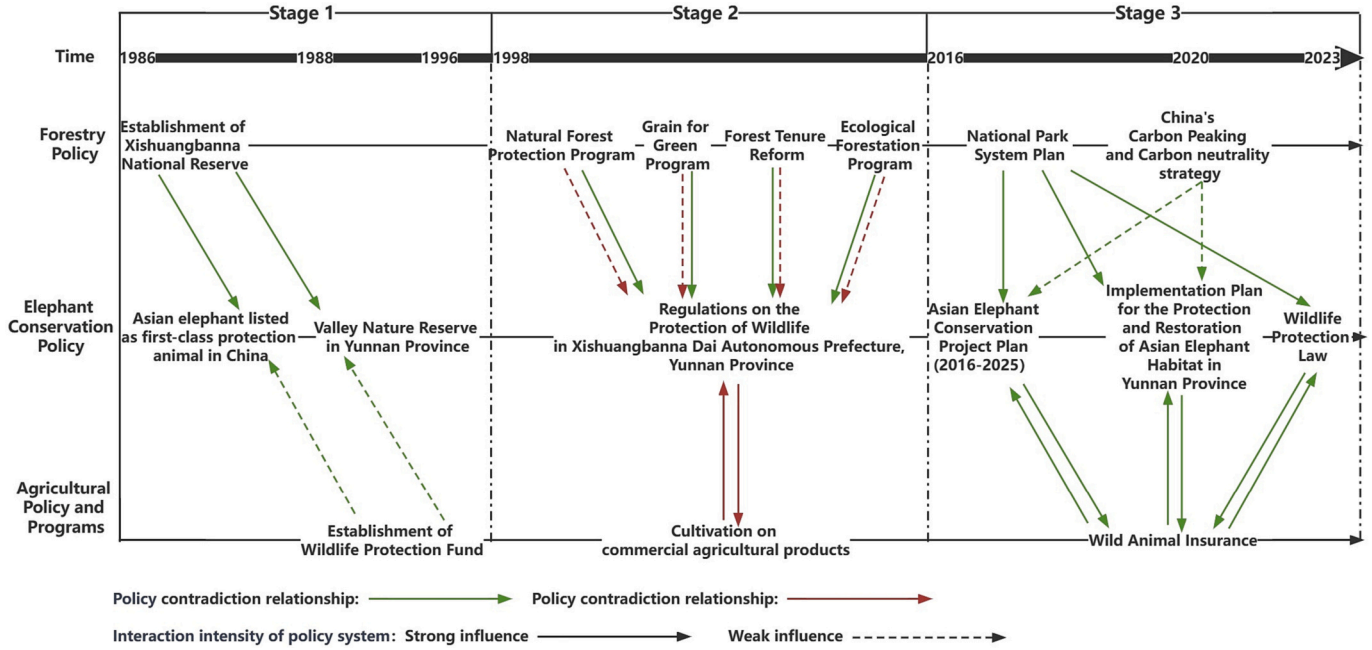

Fig. 3. Interaction among Agriculture-Forestry-Elephant conservation policy systems.

cultivation disrupts elephant ecological corridors. Thus, during this stage, conflicts outweigh synergy among the three policy systems. In the third policy stage, the objectives of the three policy systems undergo further changes, particularly in forestry and elephant conservation policies. Each policy embraces more diverse goals, encompassing climate change, afforestation, biodiversity, and other objectives, establishing stronger connections and synergy among different policy systems due to shared goals. Simultaneously, within the agricultural policy system, increased emphasis on wildlife insurance policies for elephants has, to some extent, alleviated the previous conflicts with other policy systems and has tended towards coordination.

4.2.3. *Governance performance on human-elephant relationship*

The changing land use in Village H has been driven by several factors that have had a significant impact on the environment and local communities. The key drivers of land use change has been the expansion of agriculture and the afforestation activities under Natural Forest Protection Program and Grain for Green Program, which has resulted in the land change in Village H in recent 30 years (Fig. 4).

With the increase in the number of wild elephants from 170 in the 1980s to about 250 today, the existing food is no longer sufficient to meet the needs of elephants. Moreover, the increase in vegetation density in the protected area has led to a decrease in the availability of food for elephants, pushing them to the edges of the protected area, where they have started to forage and live near agricultural lands and villages.

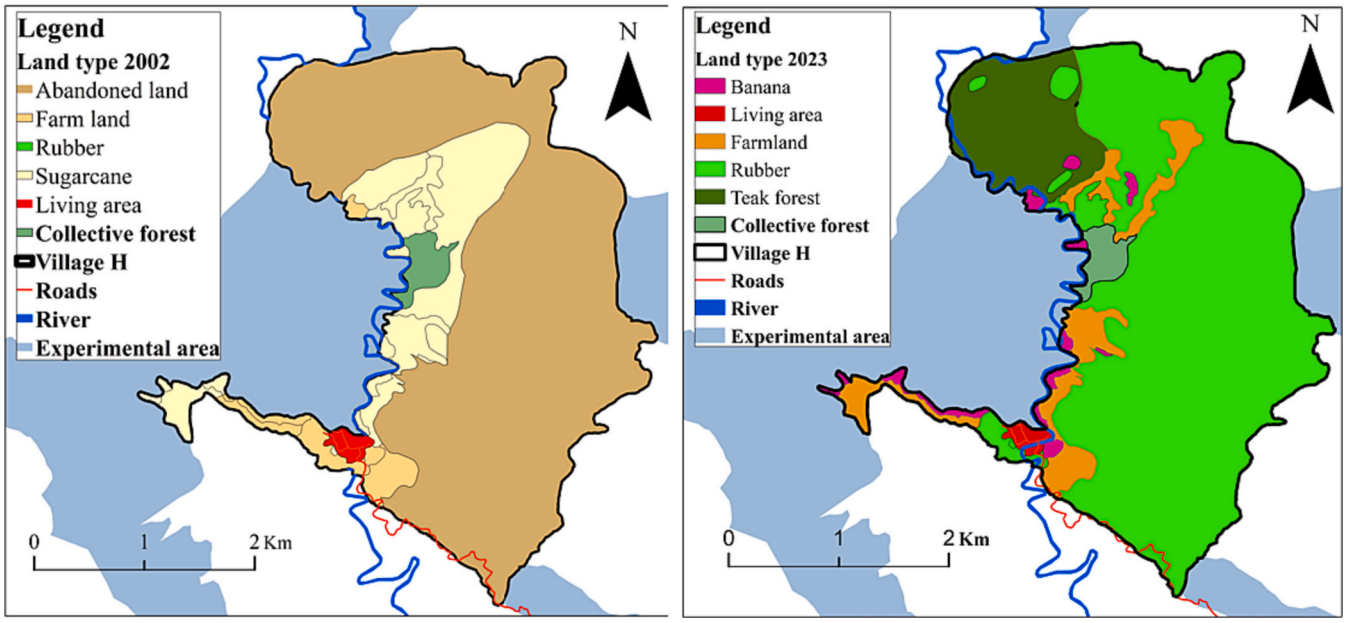

Fig. 4. Land use in Village H in 2002 and 2023.
Source: Google Earth Historical Image, Visual Interpretation and the Planning Map in Mengla County Wildlife Conservation Station.

This has resulted in a significant overlap between the wild elephant foraging trails and agricultural production land, targeting sugar cane, corn, and other crops, leading to increased human-elephant conflicts (Fig. 5). Villagers reported that elephants often roamed back and forth between Manyan, Jinchanghe, and Mengban counties.

Meanwhile, farmers engaged in crop cultivation in agricultural production have also changed along with the changes on the governance of human-elephant conflicts. Over the years, the protective policies implemented in the reserve have created a conflict between environmental conservation and local livelihoods. The restrictions on forest access, which was previously a crucial source of livelihood for the locals, have led to a reduction in opportunities for income generation. The increasing damages caused by elephant since 2016 has forced villagers to modify their farming practices, abandoning sugar cane production and instead growing vegetables to minimize the damage caused by elephants. Furthermore, the government's compensation policy and insurance scheme have also influenced the livelihoods and land use choices of local farmers. As a result, compensation for elephant damages has emerged as a new source of cash income, prompting farmers to switch to more profitable crops such as bananas. However, this has led to a further reduction in agricultural land and intensified the overlap between the wild elephant feeding trails and agricultural production land.

4.3. Power factors on explaining the policy systems and governance performance

To explain the dynamics of the human-elephant relationship in Village H, we utilized the ACP theory to identify the power factors that have influenced the governance performance over the past 30 years. We first identified the five key actors whose power relations affected the outcomes of policy measures and HEC: the county forestry bureau, county agricultural bureau, commercial enterprises seeking to engage in transactions in Village H, village cadre, and local villagers. We then examined the changes in the powerful actors and their relationships across different governance stages to identify the power factors that shape the interactions between different policy systems.

4.3.1. 1980s-1998: actors and their relationship under self-sufficiency livelihood period

From the establishment of the Nature Reserve in the 1980s until 1998, several powerful actors were involved in the management of the reserve, including the Forestry administration, village cadre, and villagers. The villagers relied on the forest and farmland to build houses and produce food, and their economic activities were influenced by forest protection policies that limited their access to forests.

The county forestry bureau was responsible for implementing forest protection policies and placed forest rangers in the reserve protection stations. Villagers who engaged in unauthorized logging activities were fined, and the village cadre mediated between forest rangers and villagers to reduce or abandon the fines.

In this power relation, the county forestry bureau assumed the role of potentate in the ACP categorization, and the villagers occupied the role of subordinates. The county officers relied on coercion to exercise their power. However, another relevant power relation existed between the county forestry bureau and the village cadre, who mediated between officers and perpetrators. The village cadre used their dominance of information to influence forest officers and tried to find reasons to justify logging activities and reduce fines.

4.3.2. 1998–2016: actors and their relationship under the cultivation of commercial crops

During the period of livelihood transformation starting in 1998, private companies began to enter Village H and the HEC arena. The county government was approached by a sugarcane company, and they mobilised the village cadre to hold meetings with local villagers. As a result, villagers began to produce sugarcane which they sold to the company. The County Agricultural Bureau was responsible for facilitating agricultural projects, while the County Forestry Bureau was responsible for protecting forest land and restricting livelihood activities in forest areas.

There were four actors involved in power relationships during this period: commercial enterprises, county agricultural bureau, forestry administration, and villagers. Table 5 lists the power relationships and the power sources that allowed these actors to establish their positions.

4.3.3. 2016 onwards: changing point on livelihood strategies and the change in powerful actors

The increased damage caused by elephants in Village H has led to significant changes in the local livelihood strategies. The villagers have shifted from market-oriented agricultural production to a strategy that

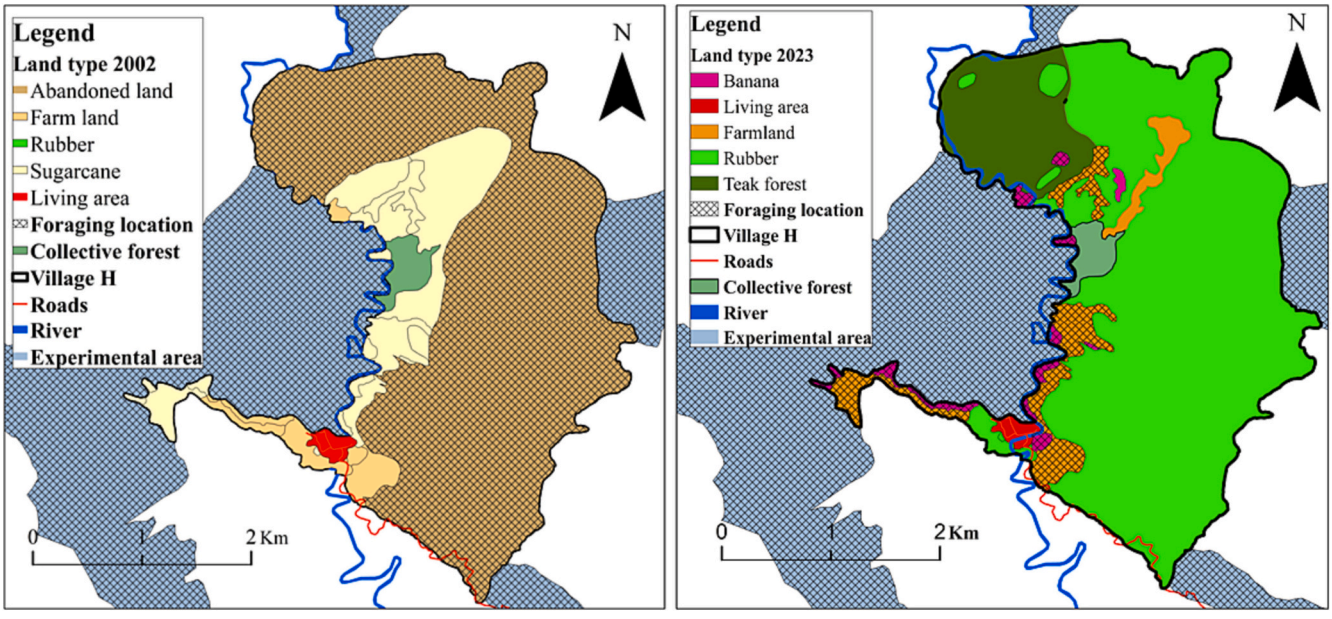

Fig. 5. Foraging location of elephant in Village H in 2002 and 2023.
Source: Google Earth Historical Image, Visual Interpretation and the Planning Map in Mengla County Wildlife Conservation Station.

Table 5
The evolution of power relationship among the Xishuangbanna HEC actors.

Period	Policies	Actors and power relationships	Power source
1987–1998 Self-sufficiency period	Forestry policy Elephant protection policy	1. Forestry administration > villagers	Coercion
		2. Village cadre > villagers	Incentive and dominance of information
1998–2016 Production commercial crops	Forestry policy Elephant protection policy Agricultural policy	1.Commercial Enterprise > Agricultural administration	Incentive
		2.Agricultural administration > villagers	Incentive
		3.Forestry administration > villagers	Incentive
		4.Commercial Enterprise > villagers	Incentive and dominance of information
2016 onwards Diversified livelihood strategies under HEC	Forestry policy Elephant protection policy Agricultural policy	1. Forestry administration > villagers	Incentive
		2. Agricultural administration > villagers	Incentive
		3. Villagers > Commercial Enterprise	Dominance of information

considers market opportunities, risks, and compensations for damages caused by elephants. As a result, insurance has become an important safety measure, and power relations between commercial enterprises and farmers have undergone a significant change.

One notable change is the way in which some villagers have started using critical information to reverse the power relations with commercial enterprises. By signing contracts with banana companies, these villagers have gained access to important information that they can use to their advantage. For example, some villagers have started planting bananas but not cultivating the trees, hoping that elephants will destroy them. This behaviour can be seen as a way for the villagers to turn the tables on the commercial enterprises, using their knowledge of the elephants' behaviour to gain an advantage in the power dynamics.

However, it is important to note that the power relations between the county forestry administration, agricultural administration, and the villagers have remained largely unchanged. These organisations still maintain a dominant position based on their control over information and incentive structures. This suggests that while some villagers have been able to use critical information to their advantage, the overall power dynamics in Village H remain uneven.

Overall, the situation in Village H highlights the complex interplay between environmental factors, livelihood strategies, and power dynamics. As the damage caused by elephants continued to increase, it became important to find ways to balance the needs of the community with those of the commercial enterprises and government agencies involved. This required new approaches to information sharing and incentive structures, as well as a deeper understanding of the social and economic dynamics at play in the village. Another noteworthy aspect was that as rights actors, the villagers' relationships underwent a transformation from the long-standing resistance and defence against elephants to the act of feeding them.

5. Discussion

5.1. Sectoral policies and wildlife conflicts

Elephant conservation, agricultural, and forest policies were critical in ensuring the survival and prosperity of the Xishuangbanna elephant population (Zhang and Wang, 2003). We identified that various complementary, synergistic, and occasionally conflicting sectoral policies influenced the trajectory of the Xishuangbanna human-elephant conflict (HEC). This finding was not unexpected, as different policy interactions may align or occasionally contradict and conflict (David, 1991). Our analysis also provided insight into the interactions between different sectoral policies and their impact on the evolution of human-elephant relationships, a topic rarely addressed in HEC literature (e.g. Gross et al., 2021). We found that to achieve balance between conservation and development, different governance systems needed to maintain a dynamic equilibrium, resulting in an adaptive governance strategy for HEC in Xishuangbanna.

Initially, forest policies implemented by China's forest administration in and around the Xishuangbanna National Nature Reserve supported conservation efforts. However, later policies for forest protection and restoration, which reduced land available to Village H residents and increased tree cover, led to elephants encroaching on croplands and settlements. Likewise, agricultural policies promoting private agriculture and cash crops like sugarcane and bananas significantly affected the HEC, as these crops attracted wild elephants. The agricultural administration was then tasked with developing compensation schemes to address the damage caused by elephants to crops and livelihoods. The compensation scheme, organized as an insurance facilitated by the forestry administration, did not address the underlying causes of HEC. Thus, these policies and schemes interacted to exacerbate the HEC in Xishuangbanna, highlighting the need for a holistic and integrated approach to tackle the issue.

5.2. Adapting livelihoods under HWCs

The incidence of elephant damage and changes in the livelihood strategies of Village H residents provided empirical evidence of how intersectoral policies influenced the trajectory of the HEC. Moreover, these changes in livelihood strategies offered insights into understanding these developments. As observed in other locations (Cano Cardona et al., 2022), residents in or near protected areas adapted livelihood strategies and related land use practices. This adaptation is not surprising, as rural dwellers worldwide modify their livelihoods in response to new opportunities, awareness, capabilities, or needs, as part of rural modernization occurring globally (Rudel et al., 2002; (Uriarte et al., 2010). The trajectory of livelihood strategy changes in Village H was also expected. Particularly among rural populations transitioning from subsistence livelihoods, incorporating cash crop production is a common phenomenon (i.e. Gc and Hall, 2020). In the case of Village H and other residents in or near the Xishuangbanna National Nature Reserve, this change had implications for the HEC.

However, a counterintuitive adaptation of Village H residents' local livelihoods has emerged in recent years. Our fieldwork evidence suggests that villagers are planting bananas, a new crop with increased market demand (Forsyth and Bright, 2016), anticipating elephant destruction and subsequent insurance compensation. This response makes sense from the villagers' perspective but is undesirable for the agricultural department and insurance company, representing a rational economic response to a perverse incentive. The measure itself is rational, as the agricultural authority ensures compensation for farmers who grow crops to meet their livelihood needs and market demands when production is lost due to crop damage. Villagers choose to plant bananas because they fetch higher prices than sugarcane and rubber, and they receive compensation when crops are damaged.

Another interpretation of this phenomenon suggests that Village H residents are gradually integrating themselves into a complex of actors involved in conserving the Asian elephant population. When villagers grow crops targeted by elephants due to difficulties in meeting their food needs and receive compensation through the insurance scheme for crop loss, they effectively become food providers for a portion of the elephant

population. These trends may have implications for future strategies and arrangements related to the Xishuangbanna reserve elephant population, potentially transforming villagers living in or near the reserve into participants in alternative elephant population management arrangements. In such an arrangement, villagers could be formally engaged to provide various services, including growing crops that sustain elephant populations, as well as other services required by the reserve and elephant population. Similar schemes involve local people assuming a monitoring role in protected areas, receiving compensation for lost income when foregoing land use activities that degrade the protected area or its resources (Li et al., 2018).

5.3. Power relations among HWC actors

Our power relation analysis provided valuable empirical evidence regarding the evolution of the Xishuangbanna HEC, revealing mechanisms of how policies designed to address specific objectives were implemented and produced effects (Allen et al., 2020). This analysis allowed us to understand the actors responding to opportunities created by policies and their relationships with other actors to fulfil expectations or seize opportunities resulting from new policies.

Our analysis demonstrated that key actors involved in policy implementation changed alongside the development and implementation of new policies. In the early stages of the Xishuangbanna HEC, the county forestry administration and village cadre were the primary actors, reflecting a traditional governance situation with limited public participation. As the HEC evolved and new policies were devised by conservation, forestry, and agricultural authorities, new actors entered the policy implementation arena and began to exert influence. During the crucial period of HEC developments in Xishuangbanna (1998–2018), one key new actor emerged: private companies. However, during this time, the county agricultural administration, forestry administration, and village cadre remained influential (Table 5 and section 4.3).

A significant change occurred in more recent years, with the lead influencing role shifting to the county government, the forestry public administration, and the insurance company. The management of wild elephants and the role of Village H residents have evolved. Rather than the county forestry administration and village cadre determining how to address wild elephant damages, these issues are now managed differently. Villagers have been assigned a more prominent role, and any undesired or detrimental outcomes are handled according to mechanisms that adhere to good governance standards. Consequently, in the latest phase of the Xishuangbanna HEC, the county government and agricultural public administration have engaged a reputable insurance company to assess damage, estimate loss, and compensate affected parties. This suggests that the governance of the Xishuangbanna HEC has adapted in accordance with underlying policies and livelihood strategy adaptations within the village itself.

In conclusion, the role of villagers has evolved since the emergence of HEC. Although they have consistently been the powerful actors in the conflict, the actors exercising power over them have changed. This indicates that even in a subordinate role, villagers have been and remain a key player in elephant conflicts in Xishuangbanna and their resolution. The villagers, in their influential role, have adapted their sources of power over time, transitioning from coercive and information dominance in early stages to incentive and information dominance in later stages, ultimately altering the power relationship with commercial enterprises.

5.4. Implications for conceptual and methodological approaches to HWCs

The case of the Xishuangbanna National Nature Reserve elephant population, related conflicts such as those in Village H, and our analysis approach have broader implications for HWCs. HWCs are often presented as issues threatening wildlife populations due to overhunting or resource exploitation (Gross et al., 2021). However, the Xishuangbanna case demonstrates the concurrent restoration of wildlife populations, resulting from complementary sectoral policies and livelihood transitions driven by rural population needs, market opportunities, and national policies aimed at modernizing rural livelihoods and improving wellbeing. Although evidence is limited regarding the prevalence of this phenomenon in HWC cases (Gross et al., 2021) – maybe this statement needs to be adjusted if we find such cases), it can be hypothesized that it is not uncommon, as livelihood transitions occur even in the world's most remote areas. This has significant implications for future HWC analyses (Matseketsa et al., 2019).

Our study found value in combining two analytical frameworks: the Institutional Governance (IG) and Actor-Centered Power (ACP) frameworks. The IG framework facilitated analysis of the broader governance structure influencing the HEC and its development, enabling the identification and examination of relevant policies, their interactions, and their impact on the HEC. The ACP framework provided an additional layer of analysis, enhancing our understanding of the Xishuangbanna HEC.

The ACP theory focuses on governance, distinguishing actors who interact to reach decisions concerning collective problems (c.f. Hufty, 2011). ACP posits that power relationships between actors matter in decision-making processes and can be analyzed using the ACP framework. Understanding power relations between actors in a governance arrangement improves comprehension of policy implementation and outcomes. While we do not advocate the exclusive use of IG and ACP for analyzing other HWC cases, we believe that enhancing understanding of governance at the actor interaction level has merit and could provide feedback for policy design and implementation, potentially creating an adaptive policy feedback loop.

6. Conclusion

This paper has undertaken an analysis of the causal linkages between various governance systems and human-elephant conflict (HEC) in Xishuangbanna National Nature Reserve, China, spanning the period since the 1980s. Integrated Governance (IG) theory and Actor-Centred Power (ACP) have served as our primary analytical frameworks, illuminating the intricate interactions between multiple policies and how integrative governance systems have shaped and influenced the trajectory of Xishuangbanna's HEC.

Our investigation has revealed that elephant conservation policies, agricultural policies, and forest policies have played pivotal roles as driving forces behind the occurrence of HEC in Xishuangbanna. The central objective of this study was to comprehend how these three policy systems have converged into an integrated governance system during different time periods and how they have impacted the distribution of elephants, local land use patterns, and the livelihoods of local communities. By utilizing the concept of power among actors, we were able to provide valuable insights into governance performance and assess the interplay between different governance systems.

Furthermore, our research in this case village has laid the foundation for exploring the relationships between diverse governance systems, particularly focusing on the influence of insurance policies on governance performance. As we proceed, conducting further research on larger samples would allow for comparative studies across different regions, and potentially even different countries, refining our research methodologies and strengthening our evaluation framework by establishing a more profound connection between IG and ACP theories.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Data availability

No data was used for the research described in the article.

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